Chapter 6. Property Protection

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

- Relocating the building out of harm's way,
- Erecting a barrier to keep the hazard from reaching the building,
- Modifying the building so it can withstand the impacts of the hazard,
- Modifying the sewer lines to prevent sewer backup,
- Taking care of nearby trees that may damage the building and utilities, and
- 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.

6.1. Relocation

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. However, experienced building movers can handle any job.

Small, wood frame buildings are the easiest to relocate

Hollis Kennedy House Movers

In areas subject to flash flooding, deep waters, ice floes, or other high hazard, relocation is often the only safe approach. Relocation is also preferred for large lots that include buildable space outside the floodplain or where the owner has a new flood-free lot available.

Some buildings, especially heavily damaged or repetitively flooded ones, are not worth the expense to protect them from future damage. 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.

This home in Lake County was not worth relocating, so it was acquired and demolished by the County. The site is now open space.

Lake County Stormwater Management Commission

Acquisition, followed by demolition, is most appropriate for buildings that are difficult to move − such as larger, slab foundation, or masonry structures − and for dilapidated structures that are not worth protecting.

One problem that sometimes results from an acquisition and demolition project is a "checkerboard" pattern in which nonadjacent properties are acquired. 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.

Local implementation: In 2003, the Riggs Grove mobile home park and campground in Aroma Park's floodplain was purchased with State funds and cleared. The site has been redeveloped by the Village as open space and a campground. It will be vacant during ice jam season and can be evacuated following flood warnings in the summer.

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.

6.2. Barriers

Flood barriers: A flood protection barrier can be built of dirt or soil ("berm") or concrete or steel ("floodwall"). Careful design is needed so as not to create flooding or drainage problems on neighboring properties.

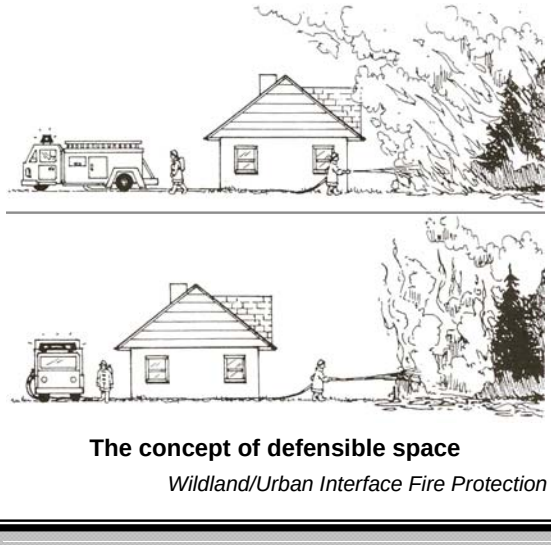
Depending on how porous the ground is, if floodwaters will stay up for more than an hour or two, the design needs to account for leaks, seepage of water underneath, and rainwater that falls inside the perimeter. This is usually done with a sump and/or drain to collect the internal groundwater and surface water and a pump and pipe to pump the internal drainage over the barrier.

Barriers can only be built so high. They can be overtopped by a flood higher than expected. Barriers made of earth are susceptible to erosion from rain and floodwaters if not properly sloped, covered with grass, and maintained. A berm can settle over time, lowering its protection level. A floodwall can crack, weaken, and lose its watertight seal. Therefore, barriers need careful design and maintenance (and insurance on the building, in case of failure).

This barrier in Otto Township protects the home from flooding from the stream to the left.

Fire breaks: A fire break is another type of barrier – brush and other fuel are cleared away from the building so a fire may not reach it. This is called the concept of "defensible space." Defensible space involves providing sufficient space between the structure and flammable vegetation.

Within this space, the fire service has room to battle the wildfire before it reaches the structure or to stop a structural fire before it ignites the wildland vegetation. With sufficient defensible space, the structure even has a chance to survive on its own when fire service personnel and equipment are not available, as often happens during a significant wildfire.



The concept of defensible space

Wildland/Urban Interface Fire Protection

Local implementation: There are no documented cases of flood barriers in the County. Local fire chiefs report that some roads act as fire breaks, but there need to be more fire breaks and clearance of flammable materials around homes.

CRS credit: The Community Rating System credits barriers, such as floodwalls, that protect a single building. It also credits larger levees that protect entire neighborhoods, but not an individual floodwall. The credit is dependent on the number of buildings protected and the flood protection level.

6.3. Retrofitting

The previous property protection measures keep the hazard from reaching a building. An alternative is to modify or "retrofit" the site or building to minimize or even prevent damage. There are a variety of techniques to do this.

Building elevation: 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. Raising a building above the flood level 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 to be elevated above the base flood elevation.

Elevating a building will change its appearance. If the required amount of elevation is low, the result is similar to putting a building on a 2- or 3-foot-high crawlspace (see example to the right). If the building is raised 4, 6, or more feet, owners are concerned that it will stick out like a sore thumb and may decline to implement an elevation project.

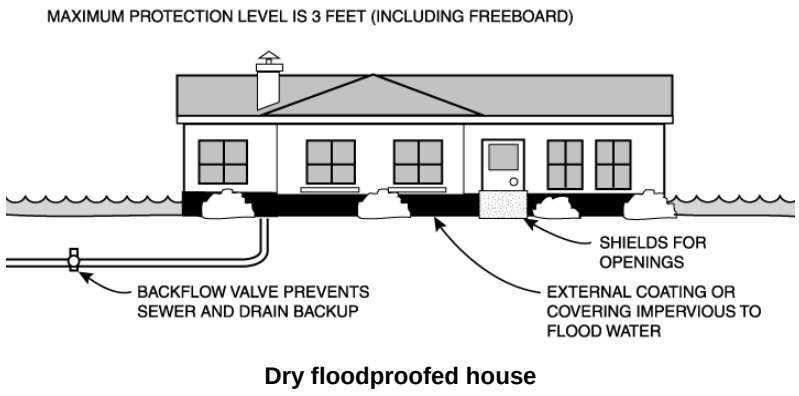
Elevated home on the Kankakee River

Another problem with this approach is with basements. Only the first floor and higher are elevated. The basement remains as the foundation. All utilities are elevated and the basement is filled in to protect the walls from water pressure. The owner loses the use of the basement, which may be deterrence to trying this approach.

A third problem with elevation is that it may expose the structure to greater impacts from other hazards. If not braced and anchored properly, an elevated building may have less resistance to the shaking of an earthquake and the pressures of high winds. Given the low threat of earthquakes and low flood depths in Kankakee County, careful design and construction should prevent these secondary problems.

Floodproofing: *Dry floodproofing* is a retrofitting measure where all areas below the flood protection level are made watertight. Walls are coated with waterproofing compounds or plastic sheeting. Openings (doors, windows, and vents) are closed, either permanently, with removable shields, or with sandbags. Dry floodproofing of new and existing nonresidential buildings in the regulatory floodplain is permitted under State and FEMA regulations.

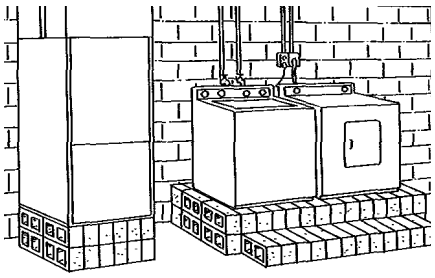
Dry floodproofing of existing residential buildings in the floodplain is also permitted as long as the building is not substantially damaged or being substantially improved. Owners of buildings located outside the regulatory floodplain can always use dry floodproofing techniques.



Dry floodproofed house

The alternative to dry floodproofing is *wet floodproofing:* water is let in and everything that could be damaged by a flood is removed or elevated above the flood level. Structural components below the flood level are replaced with materials that are not subject to water damage.

For example, concrete block walls are used instead of wooden studs and gypsum wallboard. The furnace, water heater, and laundry facilities are permanently relocated to a higher floor. Where the flooding is not deep, these appliances can be raised on blocks or platforms.



Wet floodproofed basement

FEMA

Wet floodproofing has one advantage over the other approaches: no matter how little is done, flood damage is reduced. Thousands of dollars in damage can be prevented by simply moving furniture and electrical appliances out of a basement.

Tornadoes and high winds: These retrofitting measures include constructing an underground shelter or "safe room" to protect the lives of the occupants. Their worth has been proven by recent tornadoes in Oklahoma, as shown in the photo to the right. They can be installed for approximately $3,000 for a single family home.

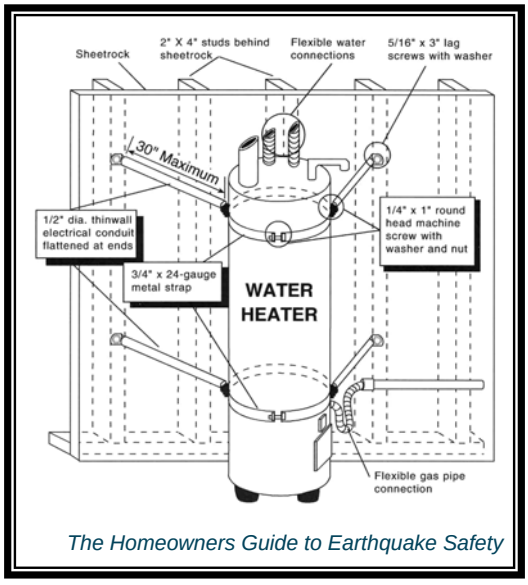
Interior rooms can be reinforced and retrofitted to be tornado "safe rooms"

FEMA

Another retrofitting approach for tornadoes and high winds is to secure the roof, walls and foundation with adequate fasteners or tie downs. These help hold the building together when the combination of high wind and pressure differences work to pull the building apart. They also strengthen the structure's ability to resist damage from shaking caused by an earthquake.

A third tornado and high wind protection modification is to strengthening garage doors, windows and other large openings. If winds break the building's "envelope," the pressures on the structure are greatly increased.

Earthquakes: Earthquake retrofitting measures include removing overhanging masonry features that will fall onto the street during shaking. Bracing the building provides structural stability, but can be very expensive.



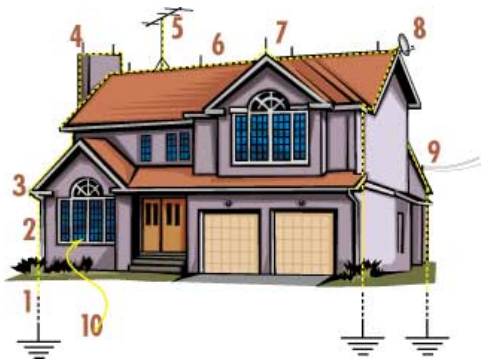
The Homeowners Guide to Earthquake Safety

Less expensive approaches may be more cost-effective for an area like Kankakee County that faces a relatively low earthquake threat. These include tying down appliances, water heaters, bookcases and fragile furniture so they won't fall over during a quake and installing flexible utility connections (as illustrated).

While these simple and inexpensive measures may be cost effective for a home or business, they may not be sufficient for protection of critical facilities. Fire stations need to be sure that they can open their doors and hospitals must be strong enough to protect vital contents and to continue operating during the shocks and aftershocks. They also need backup utilities in case their main service lines are damaged.

Winter storm: Retrofitting measures include improving insulation on older buildings and relocating water lines from outside walls to interior spaces. Windows can be sealed or covered with an extra layer of glass (storm windows) or plastic sheeting. Roofs can be retrofitted to shed heavy loads of snow and prevent ice dams that form when snow melts.

Thunderstorms: Retrofitting approaches to protect buildings from the effects of thunderstorms include storm shutters, lightning rods (illustrated to the right), and strengthening connections and tie-downs (similar to tornado retrofitting). Roofs could be replaced with materials less susceptible to damage by hail, such as modified asphalt, formed steel shingles, or other materials recognized as having a high level of impact resistance.



Lightning protection measures

State Farm Insurance

Utility lines: Burying utility lines is a retrofitting measure that addresses the winds from tornadoes and thunderstorms and the ice that accompanies winter storms. Surge suppressors protect delicate appliances during thunderstorms. Generators and backup power batteries can provide electricity to essential appliances, such as sump pumps. "Retrofitting" the trees that hang over power lines is discussed under urban forestry later in this chapter.

Wildfire: Buildings can be made more resistant to fire damage and can be modified to reduce the potential for starting or fueling a fire. For example, there are fire resistant roofing and wall materials that won't ignite when sparks land on them. A spark arrestor, or metal screen, can be placed over the chimney to prevent sparks from flying out. Firewood, downed limbs, fuel storage tanks and other flammables can be stored away from the structure.

Local implementation: Aqua Illinois's water treatment plant in Kankakee was saved from flood damage in 2002 by emergency sandbagging. As a permanent protection measure, the company covered the windows and walls of the lower part of the first floor with a waterproof stone wall. It is illustrated in the photo to the right.

Dry floodproofed Aqua Illinois plant

Kankakee County Planning Department

Since the adoption of the previous plan, Kankakee County has permitted the raising of seven floodplain dwellings. Of these dwellings, two were repetitive loss properties. In addition, one repetitive loss dwelling was demolished.

CRS credit: Credit for building elevation and floodproofing is provided. Retrofitting to protect a building for hazards other than flooding is not credited under the CRS.

6.4. Sewer Backup Protection

In areas where sanitary and storm sewers are combined, basement flooding can be caused by stormwater overloading the system and backing up into the basement through the sewer line. In areas where sanitary and storm waters are carried in separate pipes, the same problem can be caused by cross connections between the storm and sanitary sewers or infiltration or inflow into the lines.

Houses which have downspouts, footing drain tile, and/or the sump pump connected to the sanitary sewer service may be inundated when heavy rains overload the system. These should be disconnected. Rain and ground water should be directed out onto the ground, away from the building.

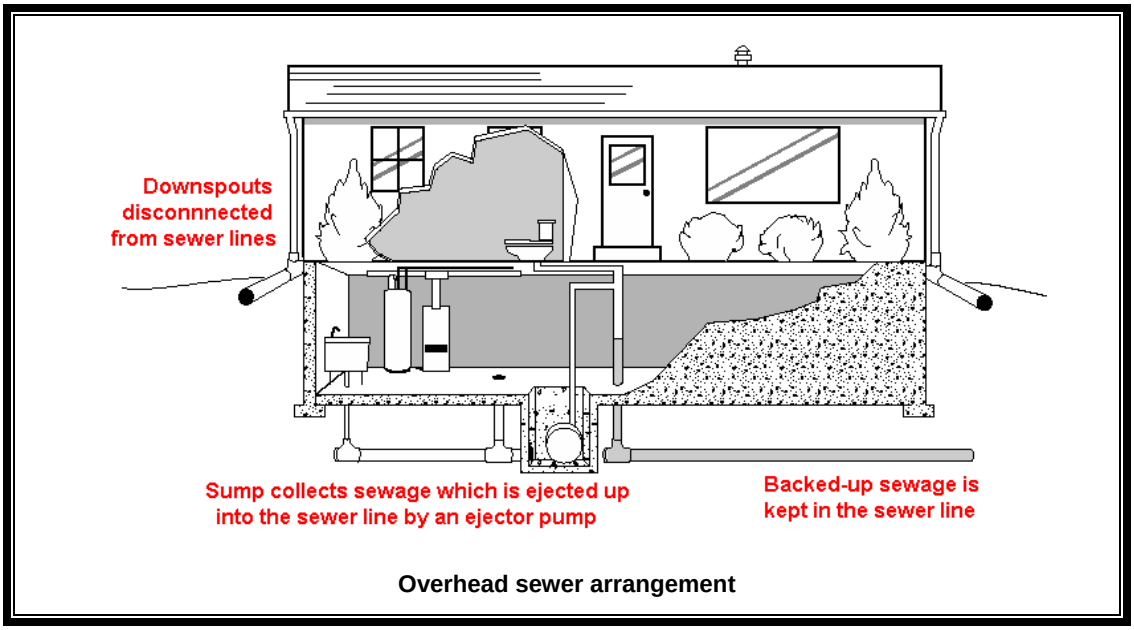
Four approaches may be used to protect a structure against sewer backup: floor drain plugs, floor drain stand-pipes, overhead sewers, and backflow protection valves. The first two devices keep water from flowing out of the lowest opening in the building, the floor drain. They cost less than $25. However, if water becomes deep enough in the sewer system, it can flow out of the next lowest opening, such as a toilet or tub, or it can overwhelm a drain plug by hydrostatic pressure and flow into the building through the floor drain.

Floor drain plug

The other two measures, overhead sewers (illustrated on the next page) and backflow protection valves keep water in the sewer line during a backup. These are more secure, but more expensive ($3,000-$4,000).

Local implementation: Several of the smaller communities in Kankakee County do not have sewers or do not have a sewer backup problem. Some communities reported that check valves and standpipes have been used successfully by their residents. Manteno requires overhead sewers in all new buildings with basements. Aroma Park has a pressurized sewer system because bedrock prevented construction of a deeper gravity system. Every house has its own pump with shut off valves, similar to an overhead sewer.

CRS credit: Credit for sewer backup protection measures is provided under the retrofitting credit.



Overhead sewer arrangement

6.5. Urban Forestry

Trees are the first victims of ice storms

The major damage caused by wind, ice and snow storms is to trees. Downed trees and branches break utility lines and damage buildings, parked vehicles and anything else that was under them. An urban forestry program can reduce the damage potential caused by trees.

The cities in central Illinois are prone to ice storms and have initiated programs that select species that are resistant to ice and storm damage. Urban foresters or arborists can select hardier trees which can better with-stand high wind and ice accumulation. Only trees that attain a height less than the utility lines should be allowed along the power and telephone line rights-of-way.

Just as important as planting the right trees is correct pruning after a storm. If not done right, the damaged tree will not heal properly, decay over the next few years, and cause a hazard in the future. A trained person should review every damaged tree to determine if it should be pruned or removed.

By having stronger trees, programs of proper pruning, and on-going evaluation of the trees, communities can prevent serious damage to their tree population. A properly written and enforced urban forestry plan can reduce liability, alleviate the extent of fallen trees and limbs caused by wind and ice build-up, and provide guidance on repairs and pruning after a storm. Such a plan helps a community qualify to be a Tree City USA.

A tree and brush maintenance program will also reduce the community's exposure to damage from wildfires. By clearing dead wood, downed limbs, bushes and plants, property owners can create the "defensible space" around their buildings discussed on page 6-3. A community arborist or tree board can remind people of the need to do this and even give notices or tickets to properties with inadequate tree care or too many sources of fuel too close to the structure.

Local implementation: Kankakee and Momence are Tree City USA communities. Kankakee employs an arborist. Momence has a Tree Board with technical support from a tree trimming contractor. The City makes sure that every tree cut down is replaced by one that is appropriate for the site (e.g., not too tall near power lines).

Buckingham and Herscher's staff identifies trees that need to be cut and contract for trimming once a year. Bonfield relies on its Garden Club for guidance and Aroma Park gets help from the Kankakee Valley Forest Preserve District. Chebanse has applied for funds to support a forestry program.

ComEd responds to calls from customers concerned about trees near their power lines. Its Private Property Tree Replacement Program removes selected trees growing directly under overhead lines and gives the owner a voucher to replace those trees with low growing trees or plants.

CRS credit: Being a part of the National Flood Insurance Program, the CRS recognizes only activities that affect flood damage. It does not provide credit for projects or programs that only affect damage from other types of hazards.

TREE CITY USA.

Tree City USA is a program sponsored by The National Arbor Day Foundation in cooperation with the USDA Forest Service and the National Association of State Foresters. These standards were established to ensure that every qualifying community would have a viable tree management plan and program. They were also designed so that no community would be excluded because of size.

To qualify for Tree City USA, a town or city must meet four standards:

1. A tree board or department – Someone must be legally responsible for the care and management of the community's trees. This may be a professional forester or arborist, an entire forestry department, or a volunteer tree board.
2. A tree care ordinance – The ordinance must designate the establishment of a tree board or forestry department and give this body the responsibility for writing and implementing an annual community forestry work plan.
3. A community forestry program with an annual budget of at least $2 per capita – A little investigation usually reveals that more than this amount is already being spent by the municipality on its trees.
4. An Arbor Day observance and proclamation

www.arborday.org/programs/treecityusa.html

6.6. Insurance

Technically speaking, insurance does not mitigate damage caused by a natural hazard. However, it does help the owner repair, rebuild and (hopefully) afford to incorporate some of the other mitigation measures in the process. Insurance has the advantage that, as long as the policy is in force, the property is protected and no human intervention is needed for the measure to work.

Homeowner's insurance: A standard homeowner's insurance policy will cover a property for the hazards of tornado, wind, hail, winter storms, and wildfire. Separate endorsements are usually needed for earth movement (e.g., earthquake) coverage. Farmers can purchase hail insurance for their crops.

Several insurance companies have sewer backup or sump pump failure coverage that can be added to a homeowner's insurance policy. Each company has different amounts of coverage, exclusions, deductibles, and arrangements. Most are riders that cost extra. Most exclude damage from surface flooding that would be covered by a National Flood Insurance policy.

Flood insurance: Although most homeowner's insurance policies do not cover a property for flood damage, an owner can insure a building for damage by surface flooding through the National Flood Insurance Program. Flood insurance coverage is provided for buildings and their contents damaged by a "general condition of surface flooding" in the area.

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. Renters can buy contents coverage, even if the owner does not buy structural coverage on the building. There is limited coverage for basements and the below grade floors of bilevels and trilevels.

Crop insurance: Being exposed to the elements, crops in the field are subject to damage by natural hazards. Farmers can purchase multi-peril crop insurance which has coverage for losses caused by adverse weather, fire, irrigation failure during term of insurance, and unavoidable damage from insects or disease. Hail insurance is sold separately. Sometimes, hail storms are so localized; the deductible is greater than the crop losses.

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 make up the difference. Under Section 406(d) of the Stafford Act.

> If an eligible insurable facility damaged by flooding is located in a [mapped floodplain] … 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. [Generally, the maximum amount of proceeds for a non-residential property is $500,000.]

[Communities] Need to:

- Identify all insurable facilities, and the type and amount of coverage (including deductibles and policy limits) for each. The anticipated insurance proceeds will be deducted from the total eligible damages to the facilities.
- Identify all facilities that have previously received Federal disaster assistance for which insurance was required. Determine if insurance has been maintained. *A failure to maintain the required insurance for the hazard that caused the disaster will render the facility ineligible for Public Assistance funding….*
- [Communities] *must* obtain and maintain insurance to cover [their] facility - buildings, equipment, contents, and vehicles - for the hazard that caused the damage in order to receive Public Assistance funding. Such coverage must, at a minimum, be in the amount of the eligible project costs. FEMA will not provide assistance for that facility in future disasters if the requirement to purchase insurance is not met. – FEMA Response and Recovery Directorate Policy No. 9580.3, August 23, 2000

In other words, the law expects public agencies to be fully insured as a condition of receiving Federal disaster assistance.

Local implementation: Data on private insurance policies are not available. Flood insurance has been available in Kankakee County communities since the 1970's. Current flood insurance coverage is shown in the table to the right. The right column shows the percentage of floodplain coverage. This is the number of floodplain policies divided by the number of buildings in the floodplain, as shown in the table on page 3-3. On the average, only one in five floodplain properties in Kankakee County are covered by flood insurance.

Flood Insurance Coverage

	Floodplain Buildings	Floodplain Policies	Percent Coverage
Aroma Park	96	19	20%
Bourbonnais	299	34	11%
Bradley	289	96	33%
Kankakee	499	86	17%
Manteno	10	2	20%
Momence	53	25	47%
Sun River Terrace	15	0	0%
Uninc. County	1,963	364	19%
Total	3,224	626	19%

* Not in the National Flood Insurance Program

Figures do not include flood insurance policies rated on properties outside the floodplain.

FEMA. Data as of March 2005

Twelve municipalities are enrolled in the Illinois Municipal League Risk Management Association:

Aroma Park	Buckingham	Herscher
Bonfield	Chebanse	Manteno
Bourbonnais	Essex	Momence
Bradley	Grant Park	Saint Anne

This organization provides risk management advice and coverage for all of the hazards covered in this plan, including flood and earthquake. The other municipalities have either no insurance or commercial policies.

Kankakee County has a commercial insurance policy on all properties that covers wind and hail, much like a homeowner's policy. It has a separate flood insurance policy on the

Highway Department office in the Kankakee River floodplain. It does not carry earthquake insurance. Kankakee Community College's private insurance policies cover fire, wind, earthquake, and flood.

CRS Credit: There is no credit for purchasing flood or basement 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.

6.7. The Government's Role

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 the County or a municipality can play in encouraging and supporting implementation of these measures.

Government facilities: One of the first duties of a local government is to protect its own facilities. Fire stations, wastewater treatment plants and other critical facilities should be a high priority for retrofitting projects and insurance coverage.

Often public agencies discover after the disaster that their "all-hazard" insurance policies do not cover the property for the type of damage incurred. Flood insurance is even more important as a mitigation measure because of the Stafford Act provisions discussed on page 6-10.

Public information: Providing basic information to property owners is the first step in supporting property protection measures. 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.

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 sewer backups, street flooding, and other problems that arise from an inadequate public sewer or public drainage system.

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 are explained on the next page. 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 flood protection project. Often, small amounts of money act as a catalyst to pique the owner's interest to get a self-protection project moving.

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. Many communities favor it because the owner handles all the design details, contracting, and payments before the community make a full commitment.

Community cost shares for retrofitting 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 project.

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

Rebates are 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.

Operation: A typical rebate operation follows these steps:

1. The community publicizes the program and invites applications.
2. An applicant talks to community staff, making sure the project will qualify.
3. The applicant selects a contractor that is licensed or otherwise on a list of contractors approved by the community.
4. The applicant or the contractor takes out the building permit.
5. The project is constructed.
6. The community inspects the completed project, ensuring that it meets all code requirements.
7. If the project passes the inspection, the applicant applies for the rebate.

Examples: Mount Prospect, Illinois, contributes 20% of the cost of a sewer backup protection project, up to a maximum of $1,000. It has funded 15 – 20 projects each year for an annual budget of only $15,000.

South Holland, Illinois, received national recognition for its rebate program to help property owners fund retrofitting projects to protect against surface and subsurface flooding. If a project is approved, installed, and inspected, the Village will reimburse the owner 25% of the cost up to $2,500. Over 450 floodproofing and sewer backup protection projects have been completed under this program. Perhaps not surprisingly, contractors have become some of the best agents to publicize this program.

The City of Guthrie, Oklahoma has a rebate program for installation of tornado shelters and safe rooms. The City provides up to $1,500 per house, which can cover the majority of the cost.

This floodwall in South Holland was installed after the owner attended a workshop on retrofitting. 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.

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. The more common sources are listed below. Unfortunately the first five are only available after a flood or disaster, not before, when damage could be prevented.

- Flood insurance claims
- The National Flood Insurance Program's Increased Cost of Compliance provision (which increases the claim payment to cover a flood protection project required by code as a condition to rebuild the flooded building)
- FEMA's disaster assistance (for public properties)
- Small Business Administration disaster loans (for non-governmental properties)
- FEMA's Hazard Mitigation Grant Program
- FEMA's Pre-Disaster Mitigation Program
- FEMA's Flood Mitigation Assistance Program
- Community Development Block Grant
- Environmental Protection Agency programs (for sewer backup problems)

Acquisition agent: The community can be the focal point in an acquisition project. Most funding programs require a local public agency to sponsor the project. The County or a municipality could process the funding application, work with the owners, and provide some or all, of the local share. In some cases, the local government would be the ultimate owner of the property, but in other cases the Forest Preserve District or other public agency could assume ownership and the attendant maintenance responsibilities.

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 floodplain. If the project is worth more than 50% of the value of the original building or increases the first floor area by more than 20%, it is considered a "substantial improvement." The building (or the addition) must then be elevated or otherwise brought up to current flood protection codes.

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 or the installation of separate ground fault interrupter circuits in the basement.

Local implementation: There are no financial assistance programs for property protection administered by a Kankakee County local government. There are some property improvement programs, such as the housing rehabilitation programs administered by the Kankakee Community Development Agency. Other than providing aid to protect people from unsafe and unsanitary housing or lead paint, they do not have a hazard mitigation component.

Mandates in the form of floodplain development regulations are discussed in Chapter 5. Public information programs are covered in Chapter 9.

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.

6.8. Repetitive Loss Properties

Section 3.4 explains the criteria for designation of the County's 16 repetitive loss areas. These properties deserve special attention because they are more prone to damage by natural hazards than any other properties in the County. Further, protecting repetitive loss buildings is a priority with FEMA and Illinois Emergency Management Agency mitigation funding programs.

A windshield survey of each area was conducted in May 2005. All of the properties are single-family homes or cottages. Data were recorded on the general conditions and foundation types of the majority of the buildings in the area. The summary data and tentative recommendations are shown in the table on the next page. Kankakee County's staff periodically surveys these properties when storm events occur and based on these surveys it has been determined that the same conditions exist that were in place in 2005.

The recommendations in the last column of the table are tentative and for planning purposes. Specific recommendations for any structure require an onsite and indoor

building inspection. Building elevations are needed to determine the benefits and costs of a project, a requirement for FEMA mitigation funding.

Property Protection For Repetitive Loss Areas

	No. of Bldgs	Condition[1]	Foundation[1]	Zone	Claim Dates[2]	Last Claim	Recommend-ation
1	1	Good	Basement	X Zone	2	2/85	Barrier
2	6	Good	Slab	Floodway	2	6/81	Dry Floodproof
3	31	Good	Slab	Floodway	4	1/05	Dry Floodproof
4	4	Good	Slab/crawl	Floodway	5	1/05	Elevate
5	1	Good	Slab	Fringe/X	2	2/85	Dry Floodproof
6	2	Good	Slab	Floodway	3	1/05	Dry Floodproof
7	3	Good	Slab	Floodway	2	1/99	Dry Floodproof
8	1	Good	Crawl	Floodway	2	2/85	Elevate
9	14	Good	Crawl	Floodway	12	1/05	Elevate
10	22	Good	Crawl	Fringe/FW	15	5/02	Elevate
11	1	Good	Crawl	X Zone	2	2/82	Elevate
12	3	Vacant	N/A	Fringe	2	6/81	Demolish
13	10	Good	Crawl	Floodway	2	6/81	Elevate
14	28	Good	Crawl	Floodway	5	2/85	Elevate
15	2	Dilapidated	N/A	Floodway	2	2/85	Demolish
16	13	Good	Crawl	Floodway	2	12/90	Elevate

Notes:

1. Information is for the general condition and foundation type of the majority of the buildings in the area
2. The Claim Dates column shows the number of different dates when claims have been filed. For example, in area 10, claims have been filed for one or more of the properties for 15 different flood incidents (see the table on page 3-9 for the actual dates).

FEMA claims data as of March 2005, field surveys by French & Associates

The following assumptions and criteria were used:

1. A building that has been vacant or dilapidated for some time should be demolished. If FEMA funds are used to acquire and clear the structure, the site must remain as publicly-owned open space. If FEMA funds are not used, a new building can be constructed on the site, provided it meets all flood protection codes. If there have only been two claims and the date of the last claim is more than 20 years ago, it is assumed that the owner is not interested in acquisition or relocation.

2. Short of moving it out of the floodplain, the best and most cost effective way to protect a building on a crawlspace is to elevate it above the flood level.

3. Buildings on slab and basement foundations are best protected from shallow flooding with a barrier. However, barriers are not permitted in the floodway as they will divert floodwaters onto other properties.

4. If a barrier is not feasible, the most cost effective protection measure for buildings on slab and basement foundations subject to shallow flooding is dry floodproofing.

Acquisition is typically the most desired solution to mitigate repetitive losses. However, such an action requires government funding with the following concerns:

- The County does not have a source of funding to acquire flooded properties.
- State and Federal programs require a non-Federal cost share.
- All of FEMA's mitigation programs require willing sellers
- During the field data collection, it was noticed that several of the properties on FEMA's list were for sale. If the County were to apply for funds to acquire them, it cannot be assured that these properties will still be on the market when funding is provided 1 – 2 years from now.

Accordingly, acquisition is not favored. FEMA programs will not fund barriers or dry floodproofing or residences. Besides, these approaches cost less and the owners may not need much financial assistance. If FEMA funds were applied for, it should be limited to:

- Acquiring the vacant and dilapidated structures
- Acquiring homes from willing sellers who are able to fund the cost-share
- Elevating homes where the owners are able to fund the cost-share

6.9. Conclusions

1. There are several ways to protect individual properties from damage by natural hazards. The advantages and disadvantages of each should be examined for each situation.

2. Property owners can implement some property protection measures at little cost, especially for sites in areas of low hazards (e.g., shallow flooding, sewer backup, earthquakes, thunderstorms and winter storms). For other measures, such as relocation, elevation and safe rooms, the owners may need financial assistance.

3. An urban forestry program can help prevent damage caused by high winds, winter storms, and wildfires, and can be implemented by the local governments at a relatively low cost.

4. Only 20% of the buildings in the County's floodplains are covered by flood insurance.

5. Local government agencies can promote and support property protection measures through several activities, ranging from public information to financial incentives to full funding.

6. It is unlikely that most government properties, including critical facilities, have any special measures to protect them from flooding, tornadoes, and other natural hazards.

7. The 16 municipalities in the risk management pools and Kankakee County should have adequate insurance coverage for the natural hazards. The other municipalities may or may not have sufficient insurance coverage.

8. Property protection measures can protect the most damage-prone buildings in the County: repetitive loss properties. General recommendations have been identified for each area, but some of the areas may not warrant much attention because they have not received a flood insurance claim for 20 years.

6.10. Recommendations

1. Property owners should be made aware of how they can retrofit, insure, or otherwise protect their properties from damage by natural hazards and should be advised of local examples of such measures. Recommended ways to convey these messages are covered in Chapter 9.

2. Each public entity should evaluate its own properties to determine if appropriate property protection measures would be physically and economically feasible. A storm shelter would benefit the Kankakee Community College west campus.

3. Because properties in floodplains will be damaged sometime and there are so many ways to protect floodprone property, a special effort should be made to provide information and advice to floodplain property owners. Special attention should be given to repetitive loss and high hazard areas.

4. Each municipality should become or maintain its status as a Tree City USA.

5. Communities should establish cost sharing programs, such as rebates, to encourage low cost (under $10,000) property protection measures on private property, such as:

   - Berms and regrading for shallow surface flooding,
   - Clearing defensible space and retrofitting buildings for wildfire protection
   - Sewer backup protection
   - Relocating furnaces and water heaters out of basements
   - Tornado safe rooms
   - Installing lightning rods

6. Priority repetitive loss areas for attention should be to those areas with dilapidated structures and those areas that have had the most floods, i.e., areas 9, 10, 12 and 15. All priority repetitive loss areas are in the unincorporated part of the County. The County should determine if owners in these areas are interested in implementing (and cost sharing on) a property protection project. If enough are interested, the County should pursue a mitigation project grant.

6.11. References

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2. *Flood Insurance Agent's Manual*, FEMA, 2000
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4. *The Homeowners Guide to Earthquake Safety*, California Seismic Safety Commission, 2000
5. *Homeowner's Guide to Retrofitting: Six Ways to Protect Your House from Flooding.* Federal Emergency Management Agency, FEMA-312, 1998.
6. *Ice Storm Mitigation*, FEMA –860-DR-Illinois, Illinois Emergency Management Agency, 1990.
7. Institute for Business and Home Safety website, www.ibhs.org
8. Discussions with municipal and county insurance offices, Spring 2005.
9. *Local Flood Proofing Programs*, U.S. Army Corps of Engineers, 2005.
10. Materials supplied by County offices and municipalities, Spring 2005.
11. State Farm Insurance website, www.statefarm.com/consumer/lightng.htm
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13. *Wildland/Urban Interface Fire Protection*, FEMA, 1989
14. Windshield surveys of repetitive loss areas conducted by French & Associates, Ltd., 2005.
15. *Windstorm Mitigation Manual for Light Frame Construction*, Illinois Emergency Management Agency, 1997.
16. Flood insurance data provided by FEMA, March 2005

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