

Chapter 6

Goal 3: Identify specific projects to mitigate damage that are cost-effective and affordable.

Natural resources are a big part of Mackinac County and should be protected as much as possible. Preserving, or in some cases restoring natural areas, are activities that enable the naturally beneficial functions of the land, such as, fields, floodplains or wetlands to be better realized.

Natural and beneficial functions of watersheds, floodplains and wetlands include the following:

- Reduction in runoff from rainwater and snow melt in pervious areas
- Infiltration that absorbs overland flood flow
- Removal and filtering of excess nutrients, pollutants, and sediments
- Storage of floodwaters
- Absorption of flood energy and reduction in flood scour
- Water quality improvement
- Groundwater recharge
- Habitat for flora and fauna
- Recreational and aesthetic opportunities

As development occurs, many of the above benefits can be achieved though regulatory steps for protecting natural areas or natural functions. Other measures include urban forestry, erosion and sedimentation control, best management practices, dumping regulations, farmland protection, wetland protection, and river restoration. These measures can be introduced or incorporated into communities' land use and comprehensive planning, as well as in zoning and building codes.

Objective: Adopt and enforce appropriate policies/zoning/building codes

The purpose of prevention is to protect new construction from hazards and see that future development does not increase potential losses. Building, zoning, planning, and/or code enforcement offices usually administer preventive measures. Some of the measures include the following:

- Building Codes
- Standards for Manufactured Homes
- Planning and Zoning
- Subdivision Regulations
- Open Space Preservation
- Stormwater Management

Building codes provide one of the best methods of addressing all the hazards in this plan. They are the prime measure to protect new property from damage by snow storms, lightning, high winds, and tornadoes. When properly designed and constructed according to code, the average building can withstand the impacts of most of these forces.

Hazard protection standards for all new and improved or repaired buildings can be incorporated into the local building code. Provisions that should be included are:

- Making sure roofing systems will handle high winds and expected snow loads,
- Providing special standards for tying the roof, walls and foundation together to resist the effects of wind,
- Including insulation standards that ensure protection from extreme heat and cold, as well as energy efficiency,
- Ensuring that foundations are strong enough for earth movement and that all structural elements are properly connected to the foundation

Mackinac County uses Michigan Residential Code, 2003. Its standards include 90 pound wind load and a 70 pound ground snow load. The energy code sets standards for insulation in sidewalls, floors or crawl space. Attached garages must drywall the wall between the house and garage. This small protective measure has proven it is worth taking when it allows enough time for responders to save a home from a garage fire. Mackinac County relies on local units of government for addressing the local zoning ordinances and enforcement. There are five building inspectors covering the County. Hudson and Newton Townships are the only townships within the County that do not have any zoning.

Code Administration: Just as important as the code standards is the enforcement of the code. Adequate inspections are needed during the course of construction to ensure that the builder understands the requirements and is following them. Making sure a structure is properly anchored or insulated requires site inspections at each step.

Manufactured Homes: Manufactured or “mobile” homes are usually not regulated by local building codes. They are built in a factory in another state and are shipped to a site. They do have to meet construction standards set by the US Department of Housing and Urban Development (HUD). All mobile type homes constructed after June 15, 1976 must comply with HUD’s National Manufactured Home Construction and Safety Standards. These standards apply uniformly across the country and it is illegal for a local unit of government to require additional construction requirements. Local jurisdictions may regulate the location to these structures and their on-site installation.

As is well known, the greatest mitigation concern with manufactured housing is protection from damage by wind. The key to local mitigation of wind damage to mobile homes is their installation and secure anchoring to a foundation. Another concern in Mackinac County is snow loads and HUD standards do not meet the State standards. However, once a cave-in occurs the reconstruction of the home has to meet the standards used by the local government.

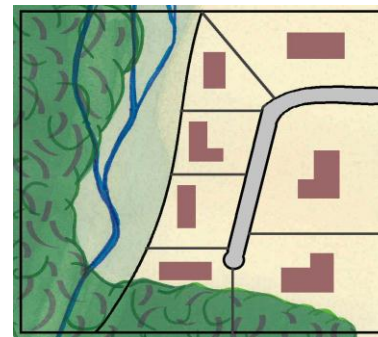
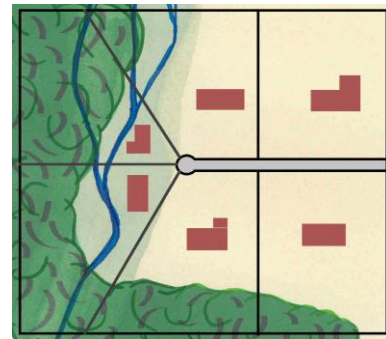
Planning and Zoning: Building codes provide guidance on how to build in hazardous areas. Planning and zoning activities direct development away from these areas, especially floodplains and wetlands. They do this by designating land uses that are more compatible to the natural conditions of the land, such as open space or recreation. They can also benefit by simply allowing developers more flexibility in arranging improvements on a parcel of land through the planned development approach.

Comprehensive Plans: These plans are the primary tools used by communities to address future development. They can reduce future flood related damages by indicating open space or low density development within floodplains and other hazardous areas. Unfortunately, natural hazards are not always emphasized or considered in the specific land use recommendations.

Zoning Regulations: A zoning ordinance regulates development by dividing a community into zones or districts and setting development criteria for each zone or district. Zoning codes are considered the primary tool to implement a comprehensive plan's guidelines for how land should be developed.

Zoning ordinances usually set minimum lot sizes for each zoning district. The ordinance and the community can allow flexibility in lot sizes and location so developers can avoid hazardous areas.

One way to encourage such flexibility is to use the planned unit development (PUD) approach. The PUD approach allows the developer to easily incorporate flood hazard mitigation measures into the project. Open space and/or floodplain preservation can be facilitated as site designs standards and land use densities can be adjusted, as in the pictorial example on the right. In the standard zoning approach top picture, the developer considers six equally-sized lots without regard for the flood hazard. Two properties are subject to flooding and the natural stream is disrupted. An alternative, flexible, approach is shown below. The floodplain is dedicated as public open space. There are seven smaller lots, but those abutting the floodplain have the advantage of a larger open area. Four lots have riverfront views instead of two. These amenities compensate for the smaller lot sizes, so the parcels are valued the same.



Capital Improvement Plans: A capital improvement plan guides a community's major public expenditures for the next 5 to 20 years. Capital expenditures may include acquisition of open space within the hazardous areas, or retrofitting existing public structures to withstand a hazard.

Appendix C lists the municipalities within Mackinac County with comprehensive or land use plans and zoning ordinances.

Subdivision Regulations: Subdivision regulations govern how land will be subdivided and sets construction standards. These standards generally address roads, sidewalks, utilities, storm sewers and drainageways. They can include the following hazard protection standards:

- Requiring that the final plat show all hazardous areas

- Road standards that allow passage of fire fighting equipment and snow plows

- Requiring power or phone lines to be buried

- Minimum water pressures adequate for fire fighting

Requiring that each lot's building site be situated above the flood level

Requiring that all roadways be at or above the flood elevation.

Open Space Preservation: Keeping the floodplain and other hazardous areas open and free from development is the best approach to preventing damage to new developments. Open space can be maintained in agricultural use or can serve as parks, greenway corridors and golf courses.

Capital improvement plans and comprehensive land use plans can identify areas to be preserved through any or all of the following means:

Acquisition,

Dedication by developers,

Dedicating or purchasing an easement to keep the land open, and

Specifying setbacks or buffer zones where development is not allowed.

Stormwater Management: Development in floodplains is development in harm's way. New construction in the floodplain increases the amount of development exposed to damage and can aggravate flooding on neighboring properties.

Development outside a floodplain can also contribute to flooding problems. Stormwater runoff is increased when natural ground cover is replaced by urban development. Development in the watershed that drains to a river can aggravate downstream flooding, overload the community's drainage system, cause erosion, and impair water quality.

Stormwater management encompasses two approaches to protecting new construction from damage by surface water:

Regulating development in the floodplain to ensure that it will be protected from flooding and that it won't divert floodwaters onto other properties, and

Regulating all development to ensure that the post-development peak runoff will not be greater than under pre-development conditions.

Most communities participate in the National Flood Insurance Program (NFIP). The NFIP and the Michigan Department of Environmental Quality set minimum requirements for regulating development in the floodplain. All new buildings must be protected from the base or 100-year flood and no development can cause an increase in flood heights or velocities.

Stormwater runoff regulations require developers to build retention or detention basins to minimize the increases in the runoff rate caused by impervious surfaces and new drainage systems. Generally, each development must not let stormwater leave at a rate higher than that under pre-development conditions.

Floodplains: A river, stream, lake, or drain may on occasion overflow its banks and inundate adjacent land areas. The land that is inundated by water is defined as a floodplain. In Michigan,

and nationally, the term floodplain has come to mean the land area that will be inundated by the overflow of water resulting from a 100-year flood (a flood which has a 1% chance of occurring any given year). It is estimated that about 6% of Michigan's land is flood-prone, including about 200,000 buildings.

Floods are a natural process which occur wherever there is a water body. However, the damage that results from a flood is dependent on what type of development has occurred in and near an area that is flood-prone. One of the goals of the Water Management Section of the Land and Water Management Division is to ensure that development which occurs within the 100-year floodplain is reasonably safe from flooding and does not increase flood damage potential.

The State of Michigan's Floodplain Regulatory Authority, found in [Part 31](#), Water Resources Protection, of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended, requires that a permit be obtained prior to any alteration or occupation of the 100-year floodplain of a river, stream or drain.

The floodplain is divided into two parts, the floodway which carries most of the flow during a flood event, and the floodway fringe which is an area of very slow moving water or "slack water". Floodways are the channel of a river or stream and those portions of the floodplain adjoining the channel which are reasonably required to carry and discharge the 100 year flood; these are high hazard areas of rapidly moving water during times of flood. The purpose of Part 31 is to assure that the flow carrying capacity of a watercourse is not harmfully obstructed, and that the floodway portion of the floodplain is not used for residential construction.

The Floodplain Regulatory Authority deals with the floodplains of rivers, streams, or drains which have a drainage area that is 2 square miles or greater. A permit is not required from the MDEQ, under Part 31, for alterations within the floodplains of the Great Lakes, inland lakes, or watercourses which have a drainage area less than 2 square miles.

Runoff: A stormwater ordinance sets requirements for managing runoff from new developments. It encourages site planning that reduces runoff and the impact of the development on the surrounding area. Examples include:

- Promoting the use of native vegetation within the runoff storage basins,
- Requiring buffers along streams, lakes, wetlands, etc., or
- Requiring retention or infiltration of the initial runoff.

Urban Forestry: 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 of trees. Communities can initiate programs that select species that are resistant to ice and storm damage.

Urban foresters or arborists can select hardier trees which can better withstand 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.

Erosion and Sedimentation Control: Farmlands and construction sites typically contain large areas of bare exposed soil. Surface water runoff can erode soil from these sites, sending sediment into downstream waterways. Erosion also occurs along streambanks and shorelines as the volume and velocity of flow or wave action destabilize and wash away the soil.

Sediment suspended in the water tends to settle out where flowing water slows down. It can clog storm sewers, drain tiles, culverts and ditches and reduce the water transport and storage capacity of river and stream channels, lakes and wetlands. When channels are constricted and flooding cannot deposit sediment in the bottomlands, even more is left in the channels. The result is either clogged streams or increased dredging costs.

Not only are the drainage channels less able to do their job, but the sediment in the water reduces light, oxygen, and water quality and often brings chemicals, heavy metals and other pollutants. Sediment has been identified by the US EPA as the nation's number one nonpoint source pollutant for aquatic life.

There are two principal strategies to address these problems: minimize erosion and control sedimentation. Techniques to minimize erosion include phased construction, minimal land clearing, and stabilizing bare ground as soon as possible with vegetation and other soil stabilizing practices.

If erosion occurs, other measures are used to capture sediment before it leaves the site. Silt fences, sediment traps and vegetated filter strips are commonly used to control sediment transport. Runoff from the site can be slowed down by terraces, contour strip farming, no-till farm practices, hay or straw bales, constructed wetlands, and impoundments (e.g., sediment basins and farm ponds). Slowing surface water runoff on the way to a drainage channel increases infiltration into the soil and reduces the volume of topsoil eroded from the site.

Erosion and sedimentation control regulations mandate that these types of practices be incorporated into construction plans. They are usually oriented toward construction sites rather than farms. The most common approach is to require applicants for permits to submit an erosion and sediment control plan for the construction project. This allows the applicant to determine the best practices for the site.

Best Management Practices: *Point source* pollutants come from pipes such as the outfall of a municipal wastewater treatment plant. They are regulated by the U.S. EPA and Michigan

Department of Environmental Quality, (MDEQ). The Water Division (WD), within the MDEQ, has responsibility for processing NPDES permits under the authority of the Federal Water Pollution Control Act, and Part 31 of the Natural Resources and Environmental Protection Act, 1994 Pa 451, as amended. The purpose of this permit is to control the discharge of pollutants into surface waters of the State to protect the environment. *Nonpoint source* pollutants come from non-specific locations and are harder to regulate.

Examples of nonpoint source pollutants are lawn fertilizers, pesticides, and other farm chemicals, animal wastes, oils from street surfaces and industrial areas and sediment from agriculture, construction, mining and forestry. These pollutants are washed off the ground's surface by stormwater and flushed into receiving storm sewers, ditches and streams.

The term "best management practices" (BMPs) refers to design, construction and maintenance practices and criteria that minimize the impact of stormwater runoff rates and volumes, prevent erosion, protect natural resources and capture nonpoint source pollutants (including sediment). They can prevent increases in downstream flooding by attenuating runoff and enhancing infiltration of stormwater. They also minimize water quality degradation, preserve beneficial natural features onsite, maintain natural base flows, minimize habitat loss, and provide multiple use of drainage and storage facilities.

Michigan's Nonpoint Source Program through the Department of Environmental Quality assists local units of government, non-profit entities, and numerous other state, federal, and local partners to reduce nonpoint source pollution statewide. The basis for the program is watershed management; most of the projects that are funded are to develop watershed management plans or to implement nonpoint source activities in these plans.

Dumping Regulations: BMPs usually address pollutants that are liquids or suspended in water that are washed into a lake or stream. Dumping regulations address solid matter, such as shopping carts, appliances and landscape waste that can be accidentally or intentionally thrown into channels or wetlands. Such materials may not pollute the water, but they can obstruct even low flows and reduce the channels' and wetlands' ability to convey or clean stormwater.

Many cities have nuisance ordinances that prohibit dumping garbage or other "objectionable waste" on public or private property. Waterway dumping regulations need to also apply to "nonobjectionable" materials, such as grass clippings or tree branches which can kill ground cover or cause obstructions in channels. Regular inspections to catch violations should be scheduled.

Many people do not realize the consequences of their actions. They may, for example, fill in the ditch in their front yard not realizing that it is needed to drain street runoff. They may not understand how regrading their yard, filling a wetland, or discarding leaves or branches in a watercourse can cause a problem to themselves and others. Therefore, a dumping enforcement program should include public information materials that explain the reasons for the rules as well as the penalties.

Objective: Utilize natural and man-made barriers/open spaces in prevention efforts

Farmland Protection: Farmland protection is quickly becoming an important piece of comprehensive planning and zoning throughout the United States. The purpose of farmland protection is to provide mechanisms for prime, unique, or important agricultural land to remain as such, and to be protected from conversion to nonagricultural uses.

Frequently, farm owners sell their land to residential or commercial developers and the property is converted to non-agricultural land uses. With development comes more buildings, roads and other infrastructure. Urban sprawl occurs, which can create additional stormwater runoff and emergency management difficulties. Farms on the edge of cities are often appraised based on the price they could be sold for to urban developers. This may drive farmers to sell to developers because their marginal farm operations cannot afford to be taxed as urban land. The Farmland Protection Program in the United States Department of Agriculture's 2002 Farm Bill (Part 519) allows for funds to go to state, tribal, local governments and to nonprofit organizations to help purchase easements on agricultural land to protect against the development of the land. Eligible land includes cropland, rangeland, grassland, pastureland, and forest land that is part of an agricultural operation. Certain lands with historical or archaeological resources are also included.

Some (hazard mitigation) benefits of farmland protection are:

- Farmland is preserved for future generations,
- Farmland in the floodplain keeps damageable structures out of harm's way,
- Farmland keeps more stormwater on site and lets less runoff downstream,
- Rural economic stability and development is sustained,
- Ecosystems are maintained, restored and/or enhanced, and
- The rural character and scenic beauty of the area is kept.

Wetland Protection: Wetlands are often found in floodplains and depressional areas of a watershed. Many wetlands receive and store floodwaters, thus slowing and reducing downstream flows. They also serve as a natural filter, which helps to improve water quality, and provide habitat for many species of fish, wildlife, and plants.

Michigan's wetland statute, Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, defines a wetland as "land characterized by the presence of water at a frequency and duration sufficient to support, and that under normal circumstances does support, wetland vegetation or aquatic life, and is commonly referred to as a bog, swamp, or marsh." The definition applies to public and private lands regardless of zoning or ownership. Most people are familiar with the cattail or lily pad wetland found in areas with standing water, but wetlands can also be grassy meadows, shrubby fields, or mature forests.

Wetland based hazard mitigation can include creation, restoration, enhancement or preservation of wetlands elsewhere. Wetland protection is often accomplished within the development site, however, preservation is allowed off-site and sometimes in another watershed.

Some developers and government agencies have accomplished the required preservation by buying into a wetland bank. Wetland banks are large wetlands created for the purpose of mitigation. The banks accept money to reimburse the owner for setting the land aside from development.

There are drawbacks to consider when a wetland is preserved at another site. First, it takes many years for a new wetland to approach the same quality as an existing one. Second, a new wetland in a different location (especially if it's in a different watershed) will not have the same flood damage reduction benefits as the original one did.

Although wetland protection regulations have slowed the rate of wetland losses, it is estimated by the U. S. Environmental Protection Agency (USEPA) that the United States still loses approximately 100,000 acres of wetlands annually. While the amount of wetlands lost each year in Michigan is unknown, it is widely accepted that the amount of wetlands continues to decline.

In addition to protecting our remaining wetlands, it has become evident that further steps are necessary to enhance our wetland resources. Beginning in the early 1990's, the U. S. Fish and Wildlife Service (USFWS) and the U. S. Department of Agriculture, Natural Resources Conservation Service (NRCS) began an effort to reverse the tide of wetland losses by establishing wetland restoration programs. These programs are designed to assist landowners who wish to voluntarily restore wetlands on their property. The Michigan Department of Natural Resources (MDNR) and several non-profit organizations have established similar wetland restoration programs.

Many wetland restoration projects involve simple techniques such as plugging agricultural ditches or breaking field tiles in order to restore the hydrology of an area. Wetland restoration projects are designed to put the "wet" back into drained wetlands. Once the water has been restored, wetland vegetation can reestablish. Wildlife of all types will then utilize the restored habitat.

Wetland restoration projects are not designed to create deep water ponds or alter existing natural wetlands. Depressions or other low areas that are generally difficult to farm or maintain are often good potential restoration sites.

Voluntary wetland restoration efforts on private lands reflect a proactive, non-regulatory approach to wetland protection and conservation. However, many areas that make ideal wetland restoration candidates may be protected under existing state laws. Floodplain areas, partially drained areas that are still considered wetlands, and agricultural drains that may be considered intermittent or seasonal streams are all examples of areas where restoration activities may require review and approval by the Department of Environmental Quality (DEQ).

River Restoration: There is a growing movement that has several names, such as "stream conservation," "bioengineering" or "riparian corridor restoration." The objective of these approaches is to return streams, streambanks and adjacent land to a more natural condition,

including the natural meanders. Another term is “ecological restoration” which restores native indigenous plants and animals to an area.

A key component of these efforts is to use appropriate native plantings along the banks that resist erosion. This may involve retrofitting the shoreline with willow cuttings, wetland plants, and/or rolls of landscape material covered with a natural fabric that decomposes after the banks are stabilized with plant roots.

In all, restoring the right vegetation to a stream has the following advantages:

Reduces the amount of sediment and pollutants entering the water

Enhances aquatic habitat by cooling water temperature

Provides food and shelter for both aquatic and terrestrial wildlife

Can reduce flood damage by slowing the velocity of water

Increases the beauty of the land and property value

Prevents property loss due to erosion

Provides recreational opportunities, such as hunting, fishing, and bird watching

Reduces long term maintenance costs

The last bullet deserves special attention. Studies have shown that after establishing the right vegetation, long term maintenance costs are lower than if the banks were concrete. The Natural Resources Conservation Service estimates that over a ten year period, the combined costs of installation and maintenance of a natural landscape may be one-fifth of the cost for conventional landscape maintenance, e.g., mowing turf grass.

The **Inland Lakes and Streams Program** through the MI DEQ is responsible for the protection of the natural resources and the public trust waters of the inland lakes and streams of the state. The program oversees activities including dredging, filling, constructing or placement of a structure on bottomlands, constructing or operating a marina, interfering with natural flow of water or connecting a ditch or canal to an inland lake or stream.

Great Lakes Shorelands Management Program: Part 323, Shorelands Protection and Management, of the Natural Resources and Environmental Protection Act, 1994 Public Act 451 (formerly known as 1970 PA 245) is the key state statute providing consumer protection from the natural hazards of coastal erosion and flooding as well as environmental protection of our fragile coastal areas. Part 323 is closely integrated with Part 325, the Great Lakes Submerged Lands program and the Coastal Management Program which includes Part 353, Sand Dunes Management, which provide grants to state and local units of government.

Sand Dune Protection: Michigan's most unique and fragile sand dunes are protected by minimizing the impacts of development within designated critical dune areas along the Great Lakes shoreline. Earthmoving, vegetation removal, and construction activities within a critical dune area are regulated through a permit program from MDEQ. Critical Dune areas protected by Part 353 represent the highest and most spectacular dunes extending along much of Lake Michigan's shoreline and the shores of Lake Superior, totaling about 80,000 acres in size. The

legislature has found that Critical Dune areas of the state are a unique, irreplaceable, and fragile resource that provide significant recreational, economic, scientific, geological, scenic, botanical, educational, agricultural, and ecological benefits to the people of Michigan.

Uses are prohibited without a variance, on slopes measuring greater than 33 percent and structures are prohibited on the first lakeward facing slope of a critical dune area. Environmental impact assessments are required for special use projects (subdivisions, site condominiums, etc.).

Objective: Develop specific site emergency plans as appropriate

Critical facilities are discussed in Chapter 1. Protecting critical facilities during a disaster is the responsibility of the facility owner or operator. However, if they are not prepared for an emergency, the rest of the community could be impacted. If a critical facility is damaged, workers and resources may be unnecessarily drawn away from other disaster response efforts. If the owner or operator adequately prepares such a facility, it will be better able to support the community's emergency response efforts.

Most critical facilities have full-time professional managers or staff who are responsible for the facility during a disaster. Some have their own emergency response plans. Many facilities would benefit from early warning, response planning, and coordination with community response efforts.

Objective: Utilize proven strategies that prevent loss of life and property

Firewise Communities: The Firewise Communities Program is designed to educate governmental officials and professionals in a wide variety of disciplines (i.e., planners, builders, engineers, architects, bankers, insurance representatives, emergency managers, land managers) on ways in which communities can be designed and built to minimize the threat from wildfires. The current focus of that educational effort is a series of Firewise Communities Workshops being held around the country. At the Workshops, participants use computerized mapping and wildfire simulations to learn how to recognize wildland / urban interface fire hazards, design Firewise homes and landscapes, deliver fire education, and integrate Firewise planning into existing and developing areas of communities. The Firewise Communities Program also produces and distributes guidance documents, videos, and software packages on wildland / urban interface fire issues.

The MDNR is a participant in the national “Firewise Communities” Program developed by the National Wildland / Urban Interface (WUI) Fire Protection Program. The WUI Fire Protection Program is sponsored by the nation’s major wildland fire agencies and the National Fire Protection Association (NFPA). In addition to the NFPA, other sponsors include: 1) USDA Forest Service; 2) USDI; 3) USDI National Park Service; 4) USDI Bureau of Land Management; 5) USDI Bureau of Indian Affairs; 6) USDI U.S. Fish and Wildlife Service; and 7) National Association of State Foresters. These member agencies have been promoting “Firewise” living since 1986.

Trail Identification Markers: Signage on the recreational trails and incorporation into the GIS database would assist emergency response teams in locating accidents in a timelier manner which could result in saving lives.

Conclusions

1. Building codes are the prime preventive measure for snow storms, high winds, extreme weather and tornadoes. The County relies on local units of government to adopt and enforce building codes that will provide some protection of future buildings from these hazards.
2. Although many municipalities do have comprehensive plans and zoning ordinances there are still areas (Newton Township and Hudson Township) within the County that do not.
3. HUD Standards for mobile or manufactured homes do not meet State standards and cannot guarantee that they will be adequately protected from snow loads or other hazards in the area.
4. Standards in subdivision regulations for public facilities should account for the hazards present at the site. New building sites, streets, and water systems should facilitate access and use by fire and emergency equipment.
5. Enforcement of the ordinances/codes is vital for mitigating potential hazards.
6. Preserving farmland in the floodplain and other hazardous areas will prevent damage to homes, businesses and other development.
7. A hazard mitigation program can utilize resource protection programs to support protecting areas and natural features that can mitigate the impacts of natural hazards.
8. The current regulations on wetland protection, erosion and sediment control, and best management practices, have effective standards.
9. There is not a countywide ordinance that prohibits dumping in wetlands or other parts of the drainage system.
10. An urban forestry program can be effective against damage and power losses from wind and ice storms.
11. Trail marker identification, safety/directional signage, strategically placed communication sources throughout the recreational trails to protect and assist users of the trails and emergency response team.
12. Critical facilities can be better prepared for and protected from a disaster with pre-planning, and practice drills.
13. Prevention and protection will only work if proven strategies are utilized.

Recommendations

1. The local units of government should adopt the most up-to-date series of codes that address requirements specific for this area that would help to mitigate damages from potential hazards such as weight of snow load.
2. Communities with comprehensive plans, land use plans and zoning ordinances should incorporate open space provisions that will protect properties from flooding and preserve wetlands and farmland.
3. The County should consider developing county-wide planning and zoning to ensure basic protection of all areas of the County.
4. Offices responsible for design, construction or permitting critical facilities should ensure that the design accounts for natural hazards and adjacent land uses.
5. The public, developers, builders, and decision makers should be informed about the hazard mitigation benefits of these preventive measures and the procedures that should be followed to ensure that new developments do not create new problems.
6. Communities should consider wetland protection, erosion and sediment control and best management practices and incorporate these measures into their planning and zoning.
7. The public and decision makers should be informed about the hazard mitigation benefits of restoring rivers, wetlands and other natural areas.
8. Each community should ensure that it has enforceable stream and wetland dumping regulations.
9. The public should be informed about the need to protect streams and wetlands from dumping and inappropriate development and the relevant codes and regulations.
10. A forestry program should be implemented throughout the County.
11. The County should work with critical facility operators in developing emergency plans.
12. Every effort should be made to use the programs in place that have proven strategies for mitigating hazards.

