HAZARD MITIGATION GOALS AND OBJECTIVES

Goals are general guidelines that explain what the county wants to achieve. They are usually long-term and represent global visions such as “protect public health and safety”. Objectives define strategies or implementation steps to attain the identified goals. Objectives are more specific and measurable than goals, making them more likely to have a defined completion date. The development of clear goals and objectives helps clarify problems, issues, and opportunities in hazard mitigation as well as other areas. An important feature of developing them is raising community awareness of the relationship between community development practices and the level of hazard vulnerability and risk. Raising citizen awareness can also help gain support for ongoing mitigation planning efforts.

The following goals and objectives were established for hazard mitigation efforts in Newaygo County in the inaugural edition of the Newaygo County Hazard Management Plan (approved by FEMA in 2008). They were based on input from county officials, local media, emergency management officials, fire and police officials, local planning and zoning officials, elected officials, and critical facility managers as well as from LEPT members. For each plan revision, these goals have been reviewed by the Local Emergency Planning Team to determine if they remain valid.

For the 2026 updated edition of this plan, the inherited goals and objectives were again reviewed by the Newaygo County Hazard Mitigation Advisory Team. It was determined that the goals and objectives remain valid, as therefore no significant changes or additions were proposed during this review. The two foremost factors contributing to this conclusion were that: 1) conditions within the county have remained generally the same since the previous edition of this plan; and 2) the results of the hazards evaluation were comparable to the previous hazards evaluation.

The overall goal of hazard mitigation is to reduce or eliminate the long-term risk to human life and property from the full range of disasters.

Goal 1 – Protect public health and safety.

Objective 1.1 Assure that threat recognition (watches) and warning systems are adequate and appropriate and that they utilize the latest technology.

Objective 1.2 Protect infrastructure and services.

Objective 1.3 Build and support local capacity, commitment and partnerships to continuously become less vulnerable to hazards.

Objective 1.4 Enlist support of committed volunteers to safeguard the community before, during, and after a disaster.

Goal 2 – Protect existing and new properties.

Objective 2.1 Use the most cost-effective approaches to protect existing buildings and facilities from hazards.

Objective 2.2 Use the most cost-effective approaches to protect existing buildings and sites from hazards.

Objective 2.3 Maximize insurance coverage to provide financial protection against hazard events.

Objective 2.4 Maximize the resources for investment in hazard mitigation, including the use of outside sources of funding.

Goal 3 – Promote growth in a sustainable, hazard-free manner.

Objective 3.1 Incorporate hazard provisions in building code standards, ordinances, and procedures.

Objective 3.2 Incorporate hazard mitigation into land use and capital improvement planning and development activities.

Objective 3.3 Incorporate hazard mitigation into existing land use regulation mechanisms to ensure that development will not put people in danger or increase threats to existing properties.

Objective 3.4 Research, recommend, adopt and enforce other plans and ordinances that protect natural resources so that they can, in turn, provide hazard protection.

Goal 4 – Increase public understanding, support, and participation in hazard mitigation.

Objective 4.1 Heighten public awareness of the full range of existing natural and man-made hazards and actions they can take to prevent or reduce the risk to life or property from them.

Objective 4.2 Encourage local communities, agencies, organizations and businesses to participate in the hazard mitigation process.

Objective 4.3 Encourage cooperation and communication between planning and emergency management officials.

In order for the identified goals and objectives to succeed, they must be integrated into and compatible with other community goals. They must also be divided into attainable components, or actions, which can be prioritized so local officials can better focus their attention on developing alternatives.

The following sections guide and encourage concrete actions to be taken and contain alternatives which can be utilized by the county to accomplish hazard mitigation. In addition, the following sections explain how action items are selected from these alternatives and list the action items.

HAZARD MITIGATION ALTERNATIVES

The identification of risks and vulnerabilities, paired with established goals and objectives, should lead planners directly to consider various mitigation alternatives that might be applied to improve the safety and security of residents, property, the environment, the economy, and quality of life. A mitigation alternative is not the same as a project or action that will definitely be implemented. Rather, it is one in a set of potential actions or strategies that will be evaluated and compared.

It is important to recognize that "hazard mitigation" is often presented as something entirely distinct from "preparedness, response, and recovery," (known together as the four phases of emergency management). However, state planners in Michigan prefer to not place clear limits or distinctions around the mitigation alternatives, since all phases of emergency management share the same ultimate goals of protecting life and property, etc. Many of the mitigation alternatives discussed in this section may seem to include other aspects of emergency management. Alternatives for mitigating hazards can be organized into the following basic strategies:

Basic Hazard Mitigation Strategies

Mitigation Strategy	Description	Examples of Measures	Advantages / Limitations
MODIFYING THE HAZARD	Modifying the hazard itself (which involves removing or eliminating the hazard), reducing its size or amount, or controlling the rate of release of the hazard. In the right circumstances, this strategy can be successful but it is often difficult to do.	• Cloud seeding to modify precipitation • Slope planting to prevent erosion or collapse • Stream modification or widening to divert or improve water flow • Dredging to deepen water channel or body to improve water flow and capacity	• Can be cost-effective in many situations • Application is limited and therefore may not be as effective as other strategies • Does not always reduce or eliminate damage on a wide scale • Some hazards simply cannot be modified
SEGREGATING THE HAZARD	Attempts to "keep the hazard away from people." Primarily for flood hazards but also has applicability to other hazards. Measures are designed to redirect the impacts of a hazard away from people and development	• Dams • Dikes / Levees • Floodwalls • Flood drainage channels • Debris basins • Designated routes for hazardous transport • Buffer zones around hazard sites • Defensible space around development • Safe rooms (indoor shelter space) to protect building occupants from harm	• Can be effective for some hazard situations • Some measures can be expensive • Some measures may cause or exacerbate environmental problems • May protect one community but cause problems for adjacent communities • Economically marginal for many situations and locations
PREVENTING OR LIMITING DEVELOPMENT	Preventing or limiting development in locations where people and development would be at risk. This strategy is based on "keeping the people away from the hazard" and includes a variety of land use planning and development regulation tools. Attempts to reduce or eliminate community hazard vulnerability through wise and prudent land use and development decision-making.	• Comprehensive planning • Zoning ordinances • Building codes • Subdivision regulations • Floodplain management ordinances and other special area, use and design regulations • Capital improvements planning • Disclosure laws • Acquisition and relocation of hazard prone properties	• Can be highly effective in promoting safe, sustainable development • Widespread application (i.e., statewide, regional, local) • Proactive – seeks to prevent or reduce future vulnerabilities • Reduces future incident response / recovery costs • Administrative tools have minimal associated costs • May in some cases reduce future tax revenue if development does not occur
ALTERING DESIGN OR CONSTRUCTION	Altering the design or construction of development to make it less vulnerable (more resilient) to disaster damage. This strategy allows hazards to interact with human systems that have been designed and planned to withstand potentially destructive impacts. This strategy allows development in hazard prone areas, but requires that the development meet stringent disaster resistant performance criteria.	• Elevating flood-prone structures • Wet / dry flood proofing to improve flood damage resistance • Defensible space (vegetation buffer zones) in urban / wildland intermix areas • Wind bracing to improve wind damage resistance • Insulating water and sewer lines to prevent ground freeze damage	• Balances the dual needs of enhancing a community's economic base while at the same time reducing community hazard vulnerability • Can result in safe, sustainable development if done properly • Reduces future incident response / recovery costs • Allows for maximum land use potential • Resilient structures "rebound" better from incident impacts
EARLY WARNING AND PUBLIC EDUCATION	Seeks to ensure that the public is aware of the hazards it faces, and that proper warning and communication systems and practices are in place to save lives and protect property.	• Community hazard identification / analysis • Early warning systems (indoor and outdoor) • Tailored public awareness / education campaigns regarding hazards, warning systems and protective actions • Warning devices in congregate facilities • Special needs population warning systems	• Universal strategy – should be applied in all communities • Typically the last line of defense against serious disaster related injury, loss of life and property damage • Recognizes that some hazards cannot be prevented and therefore must be dealt with using proper safety precautions • Enhances community awareness of and support for emergency management efforts

Source: MSP/EMHSD Pub. 106a, Michigan Hazard Mitigation Success Stories, 2011

The remainder of this chapter considers a variety of mitigation alternatives for the county's top hazards. They are presented in one or more of the following groups: Preventative Measures, Corrective

Measures, Resource Protection, Emergency Services, and Public Education and Awareness. Much of the following narrative was either borrowed from, or supplemented by information compiled in the Michigan Hazard Mitigation Plan.

Updates conducted on this section in 2026 included review and revision of mitigation alternative descriptions, including how alternatives are being utilized within Newaygo County (the capabilities of the community). Other updates included a revised description of basic mitigation strategies (see table on previous page), and the inclusion of common mitigation funding sources. Appropriate information from the Michigan Hazard Mitigation Plan (MSP/EMHSD Publication 106) was included as well.

Preventive Measures

Preventive mitigation is desirable because it seeks to prevent future problems from occurring. Wise land use planning and building design, small-scale retrofitting, and early warning and public education fall under this category. Doing it right the first time is almost always preferable to going back and trying to correct recurring problems at a later date. Preventive mitigation is generally easier to implement than other types of mitigation because the administrative mechanisms that guide the land development process – planning and plan review, zoning, capital improvements programming, building codes and standards, etc. – are available to every local community and only require adoption and consistent application to be highly effective in reducing or eliminating hazard vulnerability. Prevention is also generally more flexible and cost-effective and can significantly reduce or eliminate future hazard vulnerability. Preventive mitigation can help ensure that, at the very least, responsible agencies do not contribute to the increasing severity of the problem through unwise decision-making.

Preventive measures protect new construction from hazards and assure that future development does not increase the potential for losses. They are particularly important where there is an abundance of undeveloped land, such as in Newaygo County. Planning, zoning, and code-enforcement officials usually administer preventive measures.

Building Codes

Building codes are designed to ensure that a structure will be constructed in such a manner as to be safe for occupancy and use. These codes also regulate health and sanitation requirements for water, ventilation, plumbing, electricity, mechanical equipment, and air conditioning, and contain minimum construction standards for natural hazard resistance. Building codes, used in concert with other available land use / development guidance measures, can be effective in reducing or eliminating damage caused by many natural hazards such as high winds, wildfire, and flooding. In communities where comprehensive planning is not done or not done properly, the building code may essentially be the only land use regulatory measure available.

Building codes provide one of the best methods of addressing the hazards in this plan, and are a prime measure to protect new construction from damage caused by natural hazards. Many times, minimum building code requirements make the difference between a structure that suffers minimal or no damage and one that suffers major damage or is a total loss. Hazard protection standards for all new and improved or repaired buildings can be incorporated into the local building code. Such standards may include:

- Making sure roofing systems will handle high winds and expected snow/ice/sleet/hail loads;

- Making sure windows, doors and siding can handle high winds;
- Providing special standards for tying the roof, walls and foundation together (crossbracing and anchoring walls to foundations, and roof rafters to walls) to resist the effects of wind;
- Requiring new buildings to have tornado “safe rooms”;
- Making sure electrical systems are grounded and fire walls and sprinklers are installed in attached structures;
- Including insulation standards that ensure protection from extreme heat and cold;
- Securing the “envelope” of a structure, to reduce water-related damage; and
- Mandating overhead sewers for all new basements to prevent sewer backup.

The Newaygo County Department of Building Safety & Permits is divided into several areas of code enforcement. Each area relates to various codes that the Department is responsible to enforce. The divisions are Permitting, Building, Electrical, Mechanical, and Plumbing. The Building Official is the executive officer of the Department’s enforcement. The following table is a list of communities covered by Newaygo County Inspection Services. The county Building Official and plan reviewer is also responsible for reviewing and approving all the FEMA and NFIP requests for substantial improvement costs for notices of determination.

Newaygo County Inspection Services

	Ashland T.	Barton T.	Beaver T.	Big Prairie T.	Bridgeton T.	Brooks T.	Croton T.	Dayton T.	Denver T.	Ensley T.	Everett T.	Garfield T.	Goodwell T.	Grant T.	Home T.	Lilley T.	Lincoln T.	Merrill T.	Monroe T.	Norwich T.	Sheridan T.	Sherman T.	Troy T.	Wilcox T.	Fremont	Grant	Newaygo	White Cloud	Hesperia
Building, Mechanical, Electrical & Plumbing	x		x	X	X	x	x		x				x	x	x			x	x	x			x	x	x	x			x
Mechanical & Plumbing	x	x	x	x	X	x	x		x	x			x	x	x			x	x	x			x		x				x
Not Serviced								x			x	x				x	x				x	x					x	x	

Services provided as of November 6, 2025 - Source: Newaygo County Building Inspector’s Office

Pursuant to 1972 PA 230, adopted November 5, 1974 and amended by 1999 PA 245, all communities in Michigan are subject to the State Construction Code, which establishes general minimum construction standards for buildings and structures in all Michigan municipalities. The State Construction Code is a compilation of the International Residential Code, the International Building Code, the International Mechanical Code, the International Plumbing Code published by the International Code Council, the National Electrical Code published by the National Fire Prevention Association, and the Michigan Uniform Energy Code with amendments, additions, or deletions as the Michigan Department of Energy, Labor and Economic Growth determines appropriate. The State Construction Code provides for statewide uniformity of application and implementation of rules governing the construction, use, and occupancy of buildings and structures.

The following is a list of State Construction Codes and their effective dates:

- 2021 Michigan Building Code (Effective April 2025)
- 2015 Michigan Residential Code (Effective February 2016)
- 2021 Michigan Rehabilitation Code (Effective April 2025)
- 2021 Michigan Mechanical Code (Effective March 2024)
- 2023 Michigan Part 9A. Mechanical Code Rules
- 2021 Michigan Plumbing Code (March 2024)
- 2023 Michigan Part 7. Plumbing Code Rules

- 2021 IMC and 2021 IPC (Effective March 2024)
- 2021 Michigan Energy Code (Effective Aprill 2025)
- Energy Code ASHRAE 90.1 (2013)
- 2023 National Electrical Code (NEC) (Effective March 2024)
  Note: Residential requirements are contained in the Michigan Residential Code
- 2023 Michigan Part 8. Electrical Code Rules
- State Construction Code Act 230 of 1972, Act 245 of 1999 and all subsequent amendments

Within Newaygo County the 2021 Building Code is in effect for the commercial construction and the 2015 Residential Code is still in use for the residential construction.

FEMA, the Insurance Institute for Business and Home Safety (IBHS), and Insurance Services Office (ISO) are three national organizations that conduct evaluations, and then suggest revisions for insufficient or inappropriate codes. For example, FEMA often utilizes a Building Performance Assistance Team (BPAT) to assess tornado damages to code-conforming structures. If building performance is deemed inadequate, the BPAT may then recommend revisions to the codes to protect structures from future hazard damage.

The IBHS is a non-profit insurance industry research center that is dedicated to maintaining specific building code standards to reduce deaths, injuries, property damage, economic losses and human suffering caused by natural disasters such as wildfire, tornadoes, freezing weather, and hail. Its "FORTIFIED for Safer Living" program is one component of the IBHS suite of "FORTIFIED" programs dedicated to improving the quality of residential and light commercial buildings. The "Safer Living" section specifies construction, design, and landscaping guidelines to increase a new home's resistance to disaster from the ground up. A bevy of FORTIFIED resources for governments, business owners, and homeowners are available on the IBHS website, https://fortifiedhome.org/.

The ISO administers the Building Code Effectiveness Grading Schedule (BCEGS), a program designed to foster better building code enforcement and thereby reduce natural hazard damage. Local building departments are "graded" on their building codes and how those codes are enforced, with special emphasis on mitigation of losses from natural hazards. Communities with good codes and code enforcement programs in place will receive a better grade than those communities that don't, and property owners in the higher-graded communities will be rewarded with homeowners' insurance premium credits. ISO began implementing the program in states with high exposure to wind (hurricane) hazards, then moved to states with high seismic exposure, and then continued through the rest of the country.

The BCEGS was developed after determining that much of the construction failure resulting from natural disasters was due, in large part, to construction not built to comply with codes. The insurance industry's experience has shown that communities with effective codes and code enforcement have a more favorable (lower) insurance loss experience because they have less disaster-related damage to structures. BCEGS is modeled after a similar and long-standing ISO fire-grading program, which assesses local fire departments and water supplies. It is similar to and acknowledged by the Community Rating System (CRS) of the National Flood Insurance Program (NFIP), which awards CRS credit according to BCEGS rating. The BCEGS and CRS operate under the assumption that communities with well-enforced, up-to-date codes will experience fewer damages. Homeowners within the participating communities can therefore receive lower insurance rates. This often provides communities with enough incentive to rigorously enforce their building codes.

Over 1,100 Michigan communities have received a BCEGS rating. Fire chiefs, chief building officials, and community chief administrative officials may request a single copy of the BCEGS free of charge. If a community has not yet received a BCEGS grading, or if the community has recently made improvements in its building code enforcement services, it may be eligible for a BCEGS survey.

Standards for Manufactured Homes

Manufactured or "mobile" homes are usually not regulated by local building codes since they are built in out-of-state factories and then shipped to sites. However, they must comply with the U.S. Department of Housing and Urban Development's National Manufactured Home Construction and Safety Standards (effective June 15, 1976) and meet local standards for on-site installation, both in terms of location and technique. The greatest mitigation concern with manufactured housing is protection from wind damage, which is best achieved through appropriate installation. FEMA's Building Performance Assistance Team (BPAT) found that newer manufactured housing, designed to better transmit wind up-lift and overturning forces to the foundation, performed better when anchored to permanent foundations. Unfortunately, they also found that building officials were often unaware of manufacturer's installation guidelines with respect to permanent foundations.

The Michigan Manufactured Housing Commission Act of 1987 (PA 96, as amended) and its implementing Administrative Rules provide regulation on the placement of manufactured homes and establishes construction criteria. Manufactured homes are prohibited from being placed within a floodway, as determined by the Department of Environmental Quality. In addition, manufactured homes sited within a floodplain must install an approved anchoring system to prevent the home from being moved from the site by floodwaters (or by high wind), and be elevated above the 100-year elevation. These provisions are highly effective when properly carried out and enforced.

According to the 2020 US Census Community Profiles, of the 24,781 housing units within Newaygo County, about 18.9% (4,692) are mobile homes. This is down from the 23.8% reported by the 2000 U.S. Census and 21% reported by the 2010-2010 American Community Survey 3 year estimates.

Planning, Zoning, and Capital Improvements

While 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 suitable to the natural conditions of the land, such as open space or recreation in a flood plain, or by simply allowing developers more flexibility in arranging structures on a parcel of land through the planned development approach.

Comprehensive Planning

The purpose of a comprehensive plan is to establish an orderly, convenient, efficient and enjoyable environment in a community, and to improve the quality of life for all its citizens. A comprehensive plan provides for future development or improvement of the land use pattern and public service program of the community. In Michigan, planning commissions are required to prepare and adopt a comprehensive plan if the community is enforcing a zoning ordinance. (The zoning ordinance must be based on an adopted comprehensive plan to be legally defensible and enforceable.) This is may be the most significant responsibility of the planning commission. Once adopted (by the planning commission and/or the community's legislative body), the comprehensive plan serves as the foundation document

for the preparation and subsequent implementation of other land use / development measures such as the zoning ordinance, capital improvements planning, subdivision regulations, and special area use or design regulations. All of these other measures can be used to implement hazard mitigation measures, so the importance of the comprehensive plan in relation to mitigation cannot be understated.

A Master Plan provides county and local decision makers with common guidelines for future development. Although the Master Plan promotes land use and development policy and proposes land use arrangements, it has no regulatory power. It must therefore be implemented by county and local decisions, public facility and infrastructure improvements, and the actions of private property owners. Newaygo County does not have a single "Master Plan" but rather a collection of plans managed at the city and township levels, with specific plans for county-wide issues like recreation and hazard management. For local land use guidance, citizens can refer to the master plans for individual communities like the City of Newaygo (adopted 2019) or Brooks Township (2022), which provide a framework for future development, or the White Cloud Master Plan (2017) which guides decisions for that specific city. The county also has a 5-year Recreation Plan (2023-2027) and a Hazard Management Plan that outlines mitigation strategies. All local governments in Newaygo County have adopted master plans, with exception of Goodwell, Lincoln, and Troy townships.

Zoning

A zoning ordinance is probably the most effective measure a community has for guiding and regulating development and the land use pattern, and it can be very effective in mitigating hazard risk and vulnerability. The zoning ordinance provides a mechanism for implementing the policy decisions articulated in the comprehensive plan concerning the desired locations of various land uses and public facilities. The zoning ordinance is based on the comprehensive plan and therefore is developed and adopted after the comprehensive plan has been formally adopted by the community. One major difference between the two mechanisms is the timeframe upon which they are based. Generally, the comprehensive plan is designed to guide development for the next 20-30 years, whereas the zoning ordinance will typically be adopted on the basis of a 7-10 year land use development need projection.

A zoning ordinance typically addresses three areas: 1) the use of land and structures and the height and bulk of structures; 2) the density of population and intensity of land and structural use; and 3) the provision for space around structures (i.e., requirements for side yards, rear yards, open space, building setback lines, etc.)

Some zoning ordinances may specifically address potential hazards to life and property, although there is no requirement to do this. The ordinance itself consists of a map or maps delineating the zoning districts in the community where various land uses will be allowed, and an accompanying set of administrative procedures, standards and methods for enforcing the zoning regulations. Zoning districts typically include various types of industrial, commercial, residential, agricultural, and public facility uses. Specific zoning districts are tailored to the particular needs of the community. For example, communities that have a significant amount of lakefront properties may have a special zoning district for residential development around lakes.

Through zoning, communities can also prohibit development in some areas; such as in flood plains, along shorelines, or in the hydraulic shadow of dams (where flooding would occur if a dam failed). Zoning ordinances usually set minimum lot sizes for each zoning district but communities can allow flexibility in lot sizes and location so that developers can avoid hazardous areas. One way to encourage such flexibility is to use the planned unit development (PUD) approach, which allows the developer to

easily incorporate flood hazard mitigation measures into the project. Open space and/or floodplain preservation can be accommodated with site design standards and adjusted land use densities. Granting larger minimum lot sizes, i.e., four or five acres, for areas next to water courses allows streams to run near lot lines, and gives developers flexibility to build on higher ground while still including floodplains in backyards.

Newaygo County does not oversee zoning; therefore all municipalities in the county are responsible for establishing their own ordinance. Each municipality has its own zoning official.

Capital Improvements

A Capital Improvements Plan (CIP) is the mechanism through which a community identifies, prioritizes, and establishes financing methods for needed public improvements such as new or improved public buildings, roads, bridges, treatment plants, water and sewer infrastructure, etc. Under Michigan law, planning commissions are required to annually prepare and adopt a CIP and recommend it to the legislative body for their use in considering public works projects. Generally, public improvements included in the CIP are those that require a substantial expenditure of public funds. (Each jurisdiction must decide what constitutes a substantial expenditure.) The CIP can be an effective implementing mechanism for the community's comprehensive plan and zoning ordinance because it dictates the nature and timing of public facility expenditures. Normally, the CIP is established for a six-year period. The first year of the CIP becomes the year's capital budget and is the basis for making appropriations for capital improvements. As a result, the annually approved items are the highest priority public improvements to be built in planned areas.

From a hazard mitigation perspective, the CIP, if coordinated with the community's comprehensive plan and zoning ordinance, can be an effective mechanism for creating a desirable, less vulnerable land use and development pattern. Planning commissions, because they create and adopt each of the three mechanisms, are instrumental in ensuring that public investment is done in such a way that it helps reduce or eliminate the community's risk and vulnerability to hazards. Capital expenditures may include acquisition of open space within hazardous areas; extension of public services into hazardous areas; installing or improving storm sewers and drainage ditches, culverts and spillways; increasing the depth of water lines; retrofitting existing public structures to withstand hazards; tree management; water detention and retention basins, debris detention basins, debris removal, bridge construction and modification, etc.

Subdivision Regulations

Subdivision regulations are the legally established standards of design and construction for dividing a land parcel into smaller ones for the purpose of selling or leasing the property**.** The Land Division Act (1967 PA 288, as amended by 1996 PA 591, 1997 PA 87, and 2004 PA 524) governs the subdivision of land in Michigan. The Act requires that the land being subdivided be suitable for building sites and public improvements, that there be adequate drainage and proper ingress and egress to lots, and that reviews be conducted at the local, county and state levels to ensure that the land being subdivided is suitable for development. The Act also requires conformance with all local planning codes. From a hazard mitigation standpoint, that point is important because it gives the local planning commission the authority to approve subdivision development in accordance with the local comprehensive plan and regulatory standards.

In terms of process, the subdivision of land has three major phases. The first involves a preliminary review of the engineering aspects of the project – roads, drainage, utilities, and other necessary services, by local and county reviewing agencies. The second phase involves a review of the proposal by the Michigan Department of Environmental Quality, the Michigan Department of Transportation, and the Michigan Department of Energy, Labor and Economic Growth to ensure compliance with state standards regarding location and engineering. At the end of this phase, the developer can obtain tentative approval from the local governing body of the jurisdiction in which the project is located. The final phase involves preparation of the final plat or map of the subdivision. Local and state reviewing agencies again review the final design to ensure compliance with local and state standards. Once approved, the plat is registered with the county register of deeds.

Subdivision regulations can be an effective tool in reducing risk and vulnerability to certain hazards, such as flooding and wildfires, if mitigation factors are incorporated into the subdivision process through mechanisms such as local planning codes. For example, a community may allow a subdivision to be placed in a heavily wooded area susceptible to wildfire if proper engineering measures are taken regarding lot size and ingress and egress, thereby providing a basic level of protection to developed home sites and the residents occupying those home sites.

From a flood hazards viewpoint, proposed subdivisions are typically reviewed by the County Drain Commissioner for proper drainage. Newaygo County elects a Drain Commissioner every four years. The Michigan Department of Environmental Quality / Land and Water Management Division reviews subdivisions for floodplain impacts. (Refer to the Riverine Flooding chapter of the Michigan Hazard Analysis section in the MHMP for specific MDEQ provisions that directly address flood mitigation.)

Like any regulation, the Land Division Act can be effective if it is enforced and coordinated with other land use / development mechanisms in an effort to reduce overall community risk and vulnerability to hazards.

The subdivision rules relating to flooding are implemented through a review process and use of restrictive deed covenants. However, the restrictive deed covenants that are filed under the Act are only effective if the local building official is aware of and enforces the restrictions. Continuing education for the local building officials is essential for effective implementation of the Act.

The rules currently allow the construction of basements below the 100-year flood elevation, but these basements must be flood proofed, or it must be demonstrated by an engineering analysis that the basement will not be adversely impacted by hydrostatic pressures exerted by floodwaters. The developer must also obtain a letter of map revision (LOMR) from FEMA, certifying that the property has been filled above the 100-year flood elevation and the soil has been properly compacted. The LOMR officially removes the property from the 100-year floodplain.

The design standards for a flood proofed basement are fairly involved. Unless the building official is aware of the restrictive deed covenants and the design standards, and is enforcing these requirements, there is considerable potential for flood damage to basements even in subdivisions platted under the current act. Thus, as noted earlier, continuing education is essential.

Other examples of hazard protection standards that may be addressed through subdivision regulation may include:

- Identification of all hazardous areas;

- Road standards that allow passage of firefighting equipment and snow plows and are no more than one foot below flood elevation;
- Buried power or phone lines;
- Minimum water pressures adequate for firefighting; and
- Lots with building sites above the flood level.

Open Space Preservation

The best approach to preventing damage to new developments is to limit, prevent, or remove development within flood plains and other hazard areas. 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; or
- Specifying setbacks or buffer zones where development is not allowed.

Additional examples of special area, use and design regulations include:

- Local floodplain management ordinances;
- Coastal zone management regulations;
- Watershed management regulations;
- Special infrastructure design standards and regulations;
- Drainage regulations;
- Housing regulations;
- Wetland protection regulations;
- Natural rivers protection regulations;
- Farmland and open space protection regulations;
- Endangered species / habitat regulations; and
- Historic preservation regulations (among many others).

These regulations (most of which are administered by a state or federal agency in cooperation with local officials) are designed to regulate a certain aspect of the natural or built environment to ensure protection of the public health, safety and welfare, or some significant or unique natural feature. Not surprisingly, most of the regulations have goals that are remarkably similar to those of hazard mitigation. They provide valuable mechanisms for achieving mitigation objectives. These regulations are discussed in greater detail in the following sections of this plan.

To be effective, the provisions of these special regulations must be fully integrated into the comprehensive planning process at the local level. Major provisions of pertinent regulations must be included or addressed in the comprehensive plan and primary implementing mechanisms such as the zoning ordinance, capital improvements plan, etc.Two programs administered by the State of Michigan provide good examples of special area / use measures that, while originally designed to accomplish something else, also contribute to a reduction in a community's risk and vulnerability to hazards (flooding and wildfires in these two instances):

Natural Rivers Program

This program, administered by the Michigan Department of Environmental Quality, seeks to establish a system of outstanding rivers in Michigan and to preserve, protect and enhance their wildlife, fisheries, scenic, historical, recreational and other values. Through the natural rivers designation process, a natural river district is established and a zoning ordinance is adopted. Within the natural river district, permits are required for building construction, land alteration, platting of lots, cutting of vegetation, and bridge construction. Not all of the zoning ordinances on the natural rivers have the same requirements, although they all have building setback requirements and vegetative strip requirements.

Although not specifically designed to reduce flood losses, the program nonetheless has flood hazard mitigation benefits by requiring building to be constructed away from the river and out of the floodplain. The program is very effective when administered as intended. Like any regulatory program, if the administrator and the variance board are aware of the requirements of the program and their duties, it is very effective.

The White River is the lone Newaygo County river currently included in the Michigan Natural Rivers Program. The county also has tributaries of another natural river, the Pere Marquette.

Farmland and Open Space Preservation Program
This program, administered by the Michigan Department of Agriculture and Rural Development, has the primary goal of preserving unique and beneficial open space. It does this by transferring development rights and acquiring easements. There are two categories of land eligible. The first category makes up historic, riverfront, and shoreland areas. The second category includes land that conserves natural or scenic resources, enhances recreational opportunities, promotes the conservation of soils, wetlands and beaches, or preserves historic sites and idle farmland.

The largest component of the program provides landowners with an opportunity to get a break on their property taxes for designating parcels of land that will remain undeveloped. Thus, this mechanism could be used to reduce risk and vulnerability to wildfires by preventing development in heavily forested areas. It could also reduce vulnerability to flooding by preventing development along rivers and in floodplains. However, the program does have a drawback in that the agreements are not in perpetuity and may be relinquished under certain circumstances. The land can be removed from the program under certain circumstances, with the payment of a penalty. Over the short-term, the program is very effective at slowing the development of the special open spaces. It does not, however, necessarily eliminate future development on the parcels and therefore should not be considered an effective long-term mitigation tool. However, there is also a Purchase of Development Rights program, which does purchase development rights in perpetuity. In addition, landowners may donate development rights to the State and to local conservation programs.

Stormwater Management

New construction in a 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 since stormwater runoff is increased when natural ground cover is replaced by development. Development in a 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.

The National Flood Insurance Program (NFIP) and the Michigan Department of Natural Resources (MDNR) set minimum requirements for regulating development in identified floodplains. All new buildings must be protected from base elevations or 100-year floodplains and no development may cause an increase in flood heights or velocities. As of November 2025, there were seventeen jurisdictions in Newaygo County participating in the NFIP, including: the cities of Fremont, Newaygo, and White Cloud; the Village of Hesperia; and the townships of Ashland, Bridgeton, Brooks, Croton, Dayton, Ensley, Everett, Garfield, Lilley, Lincoln, Sheridan Charter, Sherman, and Wilcox. This is up from the 13 jurisdictions participating in 2014.

The Michigan Drain Code (1956), administered by county drain commissioners, contains regulations regarding set-backs from the established drain channels to assure proper carrying capacity of the drains. The code officially "establishes laws relating to the laying out of drainage districts, the consolidation of drainage districts, the construction and maintenance of drains, sewers, pumping equipment, bridges, culverts, fords, and the structures and the mechanical devices to properly purify the flow of drains". It also "gives authority to provide for flood control projects, to provide for water management, water management districts and sub-districts, and for flood control and drainage projects within the districts".

Stormwater runoff regulations supplement other efforts to regulate development by requiring developers to build retention or detention basins to minimize the increases in the runoff rate caused by impervious surfaces and new drainage systems. In general, each development must not let stormwater leave at a rate higher than it did under pre-development conditions.

Stormwater ordinances set requirements for managing runoff from new developments and may require storage facilities based on the size of the development and capacity. The ordinance and proper site planning reduce 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.;
- Requiring retention or infiltration of the initial runoff; and
- Requiring existing depressional storage (areas not designated as floodplains) to be compensated for at a 1:1 ratio.

Stormwater ordinances may also provide for the development of watershed plans. Watershed plans examine the unique characteristics of each watershed and may adopt more or less stringent requirements. The ordinances can also provide for a fee, in lieu of site runoff storage, in the event a watershed plan recommends the use of a larger central basin.

Corrective Measures

Corrective mitigation can be expensive, resource intensive, time consuming, and sometimes only marginally effective. Structural protection measures, hazard modification, and large-scale retrofitting fall under this category. Attempting to go back and fix something that is problematic is almost always more difficult than doing it right the first time. However, when dealing with hazard prone property (i.e.,

structures in a floodway, floodplain or other hazard area), it is often necessary to go back and try to correct the problem in order to protect the affected community and individual property owners from future harm.

When structures and communities are located in hazardous areas, corrective measures are directed at working with current conditions. They are emphasized for areas that suffer recurring or particularly severe disaster damages and impacts or that offer unique mitigation opportunities that can be addressed with existing resources. Examples of the more common corrective measures include:

Modifications. Modifications to a site and/or to a structure. Examples include landscape grading, or retrofitting existing structures to be damage resistant (i.e. floodproofing existing buildings, adding structural braces to buildings to improve earthquake or wind resistance, etc.).

Relocation. Permanent evacuation of hazard-prone areas through movement of existing hazard-prone development and population to safer areas. The two common approaches to relocation are physical removal of buildings to a safer area with future use of the vacated area limited to permanent open space, and replacing existing land uses with others that are less vulnerable to the hazard.

Acquisition. Public acquisition and management of lands that are vulnerable to damage from local hazards. Following acquisition, land uses more appropriate to the degree of risk may be chosen. Public acquisition has been achieved by: a) purchase at full market value; b) purchase at less than full market value through such methods as foreclosure of tax delinquent property, bargain sales, purchase and lease back, etc.; c) donation, through reserved real estate, donation by will, donation and lease back; d) leases; and e) easements.

Modification measures are normally implemented by property owners and include actions to modify the site to keep the hazard from reaching the building; to modify the building/site, or retrofit it, so that it can withstand the impacts of the hazard; and to insure the property to provide financial relief after damage occurs. Relocation and acquisition measures can be implemented by property owners and/or governments through technical and financial assistance.

Site Modifications (Keeping the Hazard Away)

Natural hazards generally do not damage vacant areas but instead threaten people and improved property. In some cases, properties can be modified so the hazard does not reach the damage-prone improvements.

For example, a home may survive a wildfire because a “defensible space” was created and maintained between it and adjacent wild lands. This “defensible space” is similar in concept to that of “firebreaks”, wherein brush and other fuel are cleared away in areas of state and national forests. A clearing around homes for at least 30 feet on all sides will discourage wildfires from spreading directly to them. Proper maintenance of adjacent property including short grass, thinned trees, removal of low-hanging branches, selection of fire-resistant vegetation, etc. is also helpful in keeping wildfires away. The need for local homeowners to “fireproof” their properties is probably the county’s primary wildfire vulnerability.

Flooding is another hazard that can be kept away from a building. Four common methods to accomplish this include:

- Erect a barrier between the building and the source of flooding;
- Move the building out of the floodprone area;

- Elevate the building above the flood level; and
- Demolish the building.

A flood protection barrier can be built of dirt or soil (berm or levee), or concrete or steel (floodwall). Careful design is needed so as not to create flooding or drainage problems on neighboring properties. Depending on the porosity of the ground, if floodwaters stay up for more than an hour or two, the design must 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 remove the internal drainage over the barrier. Barriers can only be built so high and can therefore be overtopped by floods higher than expected. Berms can settle over time, and are susceptible to erosion from rain and floodwaters if not properly sloped, covered with grass, and maintained, lowering their protection level. Floodwalls can crack, weaken, and lose their watertight seals. Therefore, barriers need careful design and maintenance and should be insured in case of failure.

The surest and safest way to protect a building from flooding is to move it to higher ground. Almost any building can be moved but the cost climbs for heavier structures, such as those with exterior brick and stone walls, and for large or irregularly shaped buildings. In areas subject to flash flooding, deep waters, or other high hazard, relocation is often the only safe approach. Relocation is also preferred for large lots that include buildable areas outside the floodplain or where the owner has a new flood-free lot or portion of the existing lot available.

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. On the other hand, 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’ high crawlspace. If the building is raised 4’, 6’, or more; owners are often concerned about its appearance and may decline to implement an elevation project. 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 deter him or her from 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. A fourth problem is that access can be lost when floodwaters overtop local roads, driveways, and culverts or ditches. If this happens frequently and alternate access is not available, roadways might have to be elevated and crossing points improved.

Some buildings, especially heavily damaged or repetitively flooded ones (such as those in the floodways, the most dangerous portions of the floodplains that naturally carry the majority of fast moving waters), are not worth the expense to protect them from future damage (floodways have many code requirements for repair, expansion or replacement of structures). It is cheaper to demolish them and either replace them with new, flood-protected structures, or relocate the occupants to a safer site. In general, demolition projects are undertaken by a government agency so the cost is not borne by the property owner. The land may then be converted to public use, such as a park. 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 sometimes resulting from an acquisition and demolition project is a "checkerboard" pattern in which non-adjacent properties are acquired. This can occur when some owners, especially those who have and prefer a waterfront location, prove reluctant to relocate. Following the flooding of September 1986, Newaygo County experienced both an acquisition project and a relocation project. In Everett Township, a parcel was acquired and flood-damaged structures were demolished. In the City of Newaygo, a wastewater treatment plant was relocated out of the floodplain.

Building or Site Modification (Retrofitting)

An alternative to modifying the site to keep the hazard away is to modify or "retrofit" the site or building to minimize or even prevent damage. There are a variety of techniques to do this. This section looks at the measures that can be implemented to protect existing buildings from damage by wildfires, structural fires, floods, sewer backup, tornadoes, high winds, winter storms, hail, and extreme temperatures.

Modifications to prevent damages from wildfires not only include the creation of a "defensible space" but also a number of other very effective actions such as the use of fire-resistant siding and roofing materials as well as functional shutters and heavy fire-resistant drapes. Homeowners can sweep clean their roofs, decks and eaves to prevent blowing embers from igniting twigs and leaves. They can move woodpiles and combustibles away from buildings, enclose eaves and any openings under structures that would allow blown embers in, and clean up yard and house waste and flammable oils and spills, which are generally in garages and driveways. They can assure that driveways are wide, high, and level enough and bridges are strong enough for fire equipment to access the property particularly in hilly areas where space can be limited, and can clearly display their addresses so that fire fighters can identify them. Homeowners can also make sure that adequate water supply has been identified for fire-fighters.

The National Fire Protection Association administers the Firewise Communities Program which encourages local solutions for safety by involving homeowners in taking individual responsibility for preparing their homes from the risk of wildfire. Firewise is a key component of Fire Adapted Communities – a collaborative approach that connects all those who play a role in wildfire education, planning and action with comprehensive resources to help reduce risk. The program is co-sponsored by the USDA Forest Service, the US Department of the Interior, and the National Association of State Foresters.

The Firewise Communities/USA Recognition Program is a process that empowers neighbors to work together in reducing their wildfire risk. Communities may pursue this using a five-step process to develop an action plan that guides their residential risk reduction activities, while engaging and encouraging their neighbors to become active participants:

- Obtain a wildfire risk assessment as a written document from your state forestry agency or fire department.
- Form a board or committee, and create an action plan based on the assessment.
- Conduct a "Firewise Day" event.
- Invest a minimum of $2 per capita in local Firewise actions for the year.
- Submit an application to your state Firewise liaison.

Modifications to prevent damages from structural fires include: the safe installation and maintenance of electrical outlets and wiring; the installation of firewalls; and provision of equipment needed to inhibit fire dangers (such as sprinkler systems, smoke alarms, and fire extinguishers). In urban areas, the denser pattern of development may allow a fire in one structure to spread to one or more other structures. Appropriate firewall use in connected units or downtown commercial/pedestrian strips can help to protect property against the spread of fire. Older attached structures especially should be checked for safety and code compliance. Any special facility such as a nursing home, day care center, or health clinic should ensure that it has a workable fire plan and is equipped with the equipment needed to inhibit fire dangers, such as sprinkler systems, functioning smoke alarms, and usable fire extinguishers. In rural areas, proper education on and maintenance of non-utility heat sources will help allay this hazard. The National Fire Protection Association has information available for homeowners on how to prevent fires. Proper cleaning of chimneys, fire places and wood stoves, keeping objects away from heating sources to prevent malfunction or ignition, and proper installation and fueling of heaters are all important. Space heaters should be at least three feet from objects.

Flood retrofitting measures include dry floodproofing where all areas below the flood protection level are made watertight. Walls are coated with waterproofing compounds or plastic sheeting. Openings such as doors, windows, and vents are closed, either permanently, or with removable shields or sandbags. Sump pumps are used to remove any water that enters. Dry floodproofing of new and existing non-residential buildings in the regulatory floodplain is permitted under state, FEMA and local regulations. Dry floodproofing existing residential buildings in the floodplain is also permitted as long as the building is not substantially damaged or being substantially improved. Dry floodproofing is also a viable option for homes located outside the regulatory floodplain.

The alternative to dry floodproofing is wet floodproofing, where 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 or raised on blocks or platforms where the flooding is not deep. Simply moving furniture and electrical appliances out of a basement can prevent a great deal of damage.

A third flood protection modification addresses flooding caused by overloaded sanitary or combined sewers. 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 discharging out of the lowest opening into the building, the floor drain, and are inexpensive. 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. The other two measures, overhead sewers and backflow protection valves keep water in the sewer line during a backup. They are more secure but more expensive.

Other considerations for the minimization of flooding damages include: stronger anchoring requirements for propane tanks and hazardous materials in the floodplain/floodway; assurance of proper location, cleaning and maintenance of septic tanks; and back-up power for sump pumps. Critical facilities should have written flood response and recovery plans to identify the equipment and materials necessary to protect them. Cost-sharing programs, such as rebates, to encourage low cost (under $10,000) property protection measures on private property (surface and sub-surface drainage, sewer

back-up protections, berms and regrading, sewer back-up protection, furnace and water heater relocations, lightning rods, etc.) should be considered.

Tornado and severe wind retrofitting measures include constructing underground shelters or “safe rooms” in residences and constructing shelter areas for those who live in mobile homes or temporary, seasonal locations. Another retrofitting approach for tornadoes and high winds is to secure the roof, walls, and foundation with adequate fasteners or tie downs and cross-bracing. These devices help hold the building together when the combination of high wind and barometric pressure differences work to pull the building apart. A third tornado and high wind protection modification is to strengthen garage doors, windows and other large openings. If winds break the building’s “envelope”, the pressures on the structure are greatly increased. Trailers and mobile homes can be secured to foundations, functional wind shutters can be installed over windows, and yard items can be secured or brought inside to avoid damage. Inter-locking shingles on roofs can offer much additional protection against wind and hail damage. Workplaces, remote hunting lodges, campgrounds, fairgrounds, mobile homes, and other such facilities may still have vulnerabilities for proper warning and shelter. It is important to provide inhabitants with safe and accessible sheltering options before, during and after severe weather events.

Retrofitting approaches to protect buildings from the effects of thunderstorms include storm shutters, lightning rods, 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 or formed steel shingles. Loose materials and yard items should also be secured so that they can’t blow away.

Burying utility lines is a retrofitting measure that addresses the impacts of severe winds, tornadoes, and winter storms. Installing or incorporating backup power supplies minimizes the effects of power losses caused by downed lines. Surge suppressors protect delicate appliances from lightning damage. Another option is “Retrofitting” trees that hang over power lines, as mentioned later in the discussion on Urban Forestry.

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. Water and sewer lines can be buried below the frost line or insulated to protect against ground freeze. Roads can be protected from blowing snow by the installation of snow fences beside them, especially along highways and in residential developments with limited access. These may be “living” fences, composed of lines of trees.

Air conditioning is probably the most effective measure for mitigating the effects of extreme summer heat on people. Unfortunately, those most vulnerable to heat often do not live or work in air-conditioned environments. The use of fans to move air may help some, but recent research indicates that increased air movement may actually exacerbate heat stress in many individuals. However, air circulation is important and is limited for those unwilling to open windows because of security concerns. In these instances, inexpensive safety latches can be installed to allow windows to be opened far enough for air to circulate, while at the same time preventing them from being completely opened from the outside.

Insurance

Insurance does not mitigate damage caused by a natural hazard. However, it does help the owner repair, rebuild and afford to incorporate some of the other mitigation measures in the process. A

standard homeowner's insurance policy will cover a property for the hazards of tornado, wind, hail, and winter storms. Separate endorsements are usually needed for damages from sump pump failure, sewer back-up, and earth movement and can be added to a homeowner's insurance policy. Each company has different amounts of coverage, exclusions, deductibles, arrangements, and costs. Most exclude damage from surface flooding and owners must purchase such coverage through the National Flood Insurance Program, which is available if they live in communities participating in the program. Banks and mortgage companies require flood insurance when loans are for purchase or repair of properties located in flood plains if the loans are federally insured.

Critical facilities should be inventoried and proper insurance coverage should be reviewed and insured. Larger local governments can self-insure and absorb the cost of damage to one facility, but if many properties are exposed to damage, self-insurance can be a major drain on 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. In other words, the law expects public agencies to be fully insured as a condition of receiving federal disaster assistance.

Technical and Financial Assistance

Property protection measures are usually considered the responsibility of the property owner. However, there are various roles the county or a municipality can play in encouraging and supporting implementation of these measures.

One of the first duties of a local government is to protect its own facilities. 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 did 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 above.

Providing basic information to property owners is an important action that can be taken to support property protection measures. Another step is to help 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 (after a certain period of occupancy) loans and rebates. These approaches don't always fully fund the project but they either cost the community less or increase the owner's commitment to the retrofitting project. In addition, communities can assist residents with referrals to home repair programs and heating assistance programs.

The community can be the focal point of a project, such as floodplain property acquisition. 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/or provide some or the entire local share. In some cases, the local government would be the ultimate owner of the property, but in other cases a public agency could assume ownership and maintenance responsibilities. The West Michigan Land

Conservancy is an organization that can help by purchasing and holding certain lands until a government agency or other party can take possession.

Mandates are considered a last resort if information, funding, and incentives aren't enough to cause protective actions. Examples of retrofitting mandates are the requirements that downspouts be disconnected from sanitary sewer lines or that buildings in flood plains be elevated or brought up to current flood protection codes if "substantial" repair costs equal or exceed 50% of the value of the original building. Another possible mandate is to require less expensive hazard protection steps as a condition of approval for a home improvement project. For example, if a person were to apply for a permit for major rehabilitation, the community could require that the service box be moved above the base flood elevation or that separate ground fault interpreter circuits be installed in the basement. An extreme mandate would be to "Fill Your Basement With Water". If the mandate were issued in an NFIP community during flood conditions, under FEMA procedures, FEMA funds would later be made available to assist with repairs. However, those repairs would be less expensive since filling the basement would equalize pressure from saturated soils on building walls with water tight, near water tight, or pumped out basements. It would also facilitate clean-up because there is clean water instead of silt and sewage-laden muddy water in the structure.

Repetitive Loss properties deserve special attention because they are more prone to damage by natural hazards than other properties and protecting such buildings is a priority with FEMA and MSP-EMHSD mitigation funding programs. (As of October 2013, Newaygo County had experienced 14 repetitive losses: 3 in Ashland Township, 8 in Bridgeton Township, and 3 in Garfield Township.) Appropriate property protection measures are based on studies of flood and building conditions. General guidelines, which are not site specific, are as follows.

- Buildings in high hazard areas (in the floodway or where the 100-year flood is two or more feet over the first floor) or in less than good condition should be acquired and demolished.
- Buildings with basements and split level foundations in high hazard areas should be acquired and demolished. They are too difficult to elevate and the hydrostatic pressures on the walls from deeper flooding make them too risky to protect in place.
- Buildings subject to shallow flooding from local drainage should be protected through area-wide flood control or sewer improvement projects.
- Buildings in good condition on crawlspaces should be elevated or relocated.
- Buildings in good condition on slab, basement or split level foundations subject to shallow flooding (less than 2 feet) can be protected by barriers and dry floodproofing.

The most common sources for hazard mitigation assistance are listed in the table below. Unfortunately some are only available after a disaster, not before, when damage could be prevented. Following a disaster declaration, FEMA, the MSP Emergency Management and Homeland Security Division, and the Michigan DNR may provide guidance on how to qualify and apply for these funds.

Common Hazard Mitigation Sources

Program	Eligibility	Eligible Activities	Program Type / Cost Share
HAZARD MITIGATION GRANT PROGRAM (HMGP) HMGP grants are provided to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.	Eligible Subapplicants: · State agencies · Tribal governments · Local governments · Private nonprofit orgs	· Property acquisition / structure demolition or relocation · Structure elevation · Dry floodproofing of historic residential structures · Dry floodproofing of non-residential structures · Minor localized flood reduction projects · Structural / non-structural retrofitting · Safe room construction · Infrastructure retrofitting · Soil stabilization · Wildfire mitigation · Post-disaster code enforcement · Hazard mitigation planning	Disaster Based (Stafford Act Major Disaster Declaration Required) 75% Federal 25% Non-Federal
PRE-DISASTER MITIGATION PROGRAM (PDMP) PDMP funds are provided for hazard mitigation planning and the implementation of mitigation projects prior to a disaster. Funding these plans and projects reduces overall risks to the population and structures from future hazard events, while also reducing reliance on federal funding from future major disaster declarations.	Eligible Subapplicants: · State agencies · Tribal governments · Local governments · Universities	· Property acquisition / structure demolition or relocation · Structure elevation · Dry floodproofing of historic residential structures · Dry floodproofing of non-residential structures · Minor localized flood reduction projects · Structural / non-structural retrofitting · Safe room construction · Infrastructure retrofitting · Soil stabilization · Wildfire mitigation · Hazard mitigation planning	Annual Appropriation 75% Federal 25% Non-Federal 90% Federal 10% Non-Federal if subgrantee is a small impoverished community
FLOOD MITIGATION ASSISTANCE PROGRAM (FMAP) FMAP funds are provided to implement measures that reduce or eliminate the long term risk of flood damage to buildings, manufactured homes, and other structures insured under the National Flood Insurance Program (NFIP). The goal of the FMAP is to reduce or eliminate claims under the NFIP.	Eligible Subapplicants: · State agencies · Tribal governments · Local governments	· Property acquisition / structure demolition or relocation · Structure elevation · Dry floodproofing of historic residential structures · Dry floodproofing of non-residential structures · Minor localized flood reduction projects · Hazard mitigation planning	Annual Appropriation 75% Federal 25% Non-Federal
REPETITIVE FLOOD CLAIMS PROGRAM (RFCP) RFCP funds are provided to reduce flood damages to insured properties that have had one or more claims under the NFIP and that will result in the greatest savings to the National Flood Insurance Fund (NFIF) in the shortest period of time. (Note: RFCP funds are only available to sub- applicants who cannot meet the cost share requirements of the FMAP.)	Eligible Subapplicants: · State agencies · Tribal governments · Local governments	· Property acquisition / structure demolition or relocation · Structure elevation · Dry floodproofing of historic residential structures · Dry floodproofing of non-residential structures · Minor localized flood reduction projects	Annual Appropriation 100% Federal
SEVERE REPETITIVE LOSS PROGRAM (SRLP) SRLP funds are provided to reduce or eliminate the long-term risk of flood damage to severe repetitive loss (SRL) structures insured under the NFIP, and that will result in the greatest amount of savings to the NFIF in the shortest period of time.	Eligible Subapplicants: · State agencies · Tribal governments · Local governments	· Property acquisition / structure demolition or relocation · Structure elevation · Mitigation reconstruction · Dry floodproofing of historic residential structures · Minor localized flood reduction projects	Annual Appropriation 75% Federal 25% Non-Federal
*States, Territories and Indian Tribal Governments are eligible HMA applicants. Interested and eligible subapplicants must apply to the applicant for HMA funding consideration. Individuals and businesses are not eligible to apply for HMA funds; however, an eligible subapplicant may apply for funding to mitigate private structures.			

Source: MSP/EMHSD Pub. 106a, Michigan Hazard Mitigation Success Stories, 2011

Resource Protection

Resource protection activities are generally aimed at preserving (or in some cases restoring) natural areas as development occurs so that these areas can, in turn, provide hazard protection. For instance, watersheds, floodplains, and wetlands can reduce run-off from rainwater and snow melt in pervious areas; reduce overland flood flow and store floodwaters; remove and filter excess nutrients, pollutants and sediments; absorb flood energy and reduce flood scour; and recharge groundwater. These natural benefits can be preserved though regulatory steps for protecting natural areas or natural functions. General regulatory programs are discussed in the section on Preventive Measures. This section covers resource protection programs and standards, including the following:

- Wetland protection;
- Erosion and sedimentation control;
- River restoration;
- Best management practices;
- Dumping regulations;
- Urban forestry; and
- Farmland protection.

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 natural filters, helping to improve water quality. Wetlands that are part of the waters of the United States are regulated by the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency (U.S. EPA) under Section 404 of the Clean Water Act. Proposed development in these wetlands requires a "404" permit, which can't be issued until plans are reviewed and approved by several agencies including the Corps and the U.S. Fish and Wildlife Service. Small projects that meet certain criteria, as well as projects that are not in the Corps' wetlands, may proceed under nationwide permits instead of under individual permits and are regulated by local authorities (i.e. the Michigan Department of Environmental Quality (MDEQ).

Wetland mitigation, as defined in each issued permit, can include creation, restoration, enhancement or preservation of wetlands on the site or elsewhere – even in another watershed. It should be noted that, when a wetland is mitigated at another site, there are drawbacks to consider. 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 will not have the same flood damage reduction benefits as the original one did. Some developers and government agencies mitigate by buying into wetland banks, which are large wetlands created for the purpose of mitigation. The bank accepts money to reimburse the owner for setting the land aside from development.

River Restoration

Approaches such as "stream conservation", "bioengineering", and "riparian corridor restoration" aim to return streams, streambanks and adjacent lands to more natural conditions. "Ecological restoration" aims to restore native indigenous plants and animals to an area. Native plantings along banks; such as willow cuttings, wetland plants, and/or rolls of landscape material covered with natural fabric that decomposes after plants take root; resist erosion. Studies have shown that, after establishing appropriate vegetation on banks, long-term maintenance costs are lower than for maintenance of concrete banks or conventional landscape (e.g., mowing turf grass). These approaches are not required but are recommended by economics.

Another restoration option is to improve culverts. Restoring the natural flow of a watercourse through culvert improvements and streambank treatments around the culvert can have numerous benefits that may appeal to a variety of governmental and environmental groups. Potential benefits include: water quality improvement; coldwater tributary protection / restoration; fish habitat improvement; and decreased risk of culvert failure which may lead to flooding and washouts.

There are numerous watershed groups that include Newaygo County within their borders, including: Muskegon River Watershed Assembly, Pere Marquette River Watershed Council, and White River Watershed Partnership.

Best Management Practices

Point source pollutants are discharged from pipes such as the outfall of a municipal wastewater treatment plant and are regulated by the U.S. EPA and the MDEQ. *Non-point source* pollutants come from non-specific locations and are harder to regulate. Examples of non-point 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. The term "best management practices" (BMP's) refers to design, construction and maintenance practices and criteria that minimize the impact of stormwater runoff, prevent erosion, protect natural resources and capture non-point 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, maintain natural base flows, and provide multiple uses of drainage and storage facilities.

The Brooks Lake Improvement Board is one example of an organization that promotes BMP's in Newaygo County.

Dumping Regulations

BMP's usually address pollutants that are liquids or are suspended in water while 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. Nuisance ordinances can prohibit dumping garbage or other "objectionable waste" on public or private property. Waterway dumping regulations can prohibit "non-objectionable" waste (grass clippings or tree branches), which can kill ground cover or cause obstructions in channels. These regulations can be enforced with penalties but programs should have public information components since property owners might not be aware of the impact of their actions (i.e. re-grading their yards, discarding leaves or branches in a watercourse, etc.). Voluntary compliance by property owners and annual "clean-up" programs sponsored by local communities can be quite effective.

Urban Forestry

The major damage caused by winds and snow/ice/sleet storms is to trees. Downed trees and branches break utility lines and damage buildings, vehicles, and anything else under them. An urban forestry program, developed by a municipality, can reduce the damage potential of trees by addressing proper tree care prior to a storm and recommend actions for managing trees before, during, and after a storm. Urban foresters or arborists can select hardier trees that better withstand high wind and ice accumulation and trees that are shorter than utility lines for use in power and telephone line rights-of-way. They can review damaged trees to determine if they should be pruned or removed.

A properly written and enforced urban forestry plan can lessen the frequency of fallen trees and limbs caused by wind and ice build-up, reduce liability, assist in assuring that utility lines are not damaged, and provide guidance on repairs and pruning after a storm. Such a plan helps a community qualify to be a "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, to ensure that every qualifying community has a viable tree management plan and program. It provides direction, technical assistance, public attention, and national recognition for urban and community forestry programs. The City of Fremont is the only municipality in Newaygo County to achieve the "Tree City USA" endorsement.

In addition, utility companies are heavily involved in tree management. A recent Consumers Energy brochure states that; since the company is responsible for providing safe, reliable electricity; employees (and companies hired to help) "are sent out on a planned, rotating schedule to clear trees and bushes

from electric rights-of-way". Following guidelines from the American National Standards Institute (ANSI) and working under required permits, Consumers Energy promises the following actions.

- Trees next to distribution lines, which carry electricity from pole to pole, will be trimmed a safe, clear distance from lines.
- The safety of employees and the public, particularly children, may require removal of a tree. A tree may have to be removed because it is dead, dying, damaged, or subject to falling because of wind or a shallow root system-making it a safety and power outage threat. Some fast-growing trees can be a continuing hazard and may have to be removed.
- Trimming methods are aimed at helping the tree heal, decreasing future trimming needs, and directing future growth away from electric lines.

The need for these activities is eliminated when utility lines are buried. Burying the lines is recommended when they are being upgraded or installed for new developments.

Farmland Protection

The purpose of farmland protection is to provide planning and zoning mechanisms for preserving prime, unique, or important agricultural land from conversion to non-agricultural uses. Farm owners feel forced to sell their land to residential or commercial developers if it is taxed based on the value of the property if developed instead of farmed and the increased taxation can't be afforded. The ensuing development brings more buildings, roads, and other infrastructure that can create additional stormwater runoff and emergency management difficulties. To offset this situation, the Farmland Protection Program in the U.S. Department of Agriculture's 2002 Farm Bill (Part 519) allows for funds to go to states, tribes, local governments, and non-profit organizations to help purchase easements on agricultural land to protect against the development of the land. Eligible lands include cropland, range land, grass land, pasture land, and forestland that are part of an agricultural operation. Certain lands with historical or archaeological resources are also included. The hazard mitigation benefits of farmland protection are similar to those of open space preservation.

In addition to protecting farmland, efforts can be made to protect crops. These efforts can include the support of agricultural programs that promote soil health, preserve soil moisture, and monitor soil moisture levels to help minimize loss of crops and topsoil during drought conditions. They can also include recommendations for water supply infrastructure that is not vulnerable to drought and planting crops tolerant of low moisture levels. Drought ordinances can prioritize or control water use during drought conditions. Drought mitigation plans can be developed which include:

- Collection and analysis of drought-related information;
- Criteria for declaring drought emergencies and triggering various mitigation and response activities;
- Information flow between and within levels of government;
- Definition of the duties and responsibilities of all agencies with respect to drought;
- A current inventory of state and federal programs used in assessing and responding to drought emergencies;
- Identification of drought-prone areas and vulnerable economic sectors, individuals, or environments;
- Identification of mitigation actions to address vulnerabilities and reduce drought impacts; a mechanism to ensure timely and accurate assessment of drought's impacts on agriculture, industry, municipalities, wildlife, tourism and recreation, health, and other areas;

- Public information methods; and
- A strategy to remove obstacles to the equitable allocation of water during shortages and establish requirements or provide incentives to encourage water conservation.

Emergency Services

Emergency service measures protect people during and after a disaster. A good emergency management program addresses all hazards and involves all departments. At the state level, programs are coordinated by the Michigan State Police, Emergency Management and Homeland Security Division (MSP-EMHSD); while at the county level, programs are coordinated through Newaygo County Emergency Services in White Cloud. These measures can be divided into four stages:

- Threat Recognition (Watch);
- Warning;
- Response; and
- Post-Disaster Recovery and Mitigation.

Threat Recognition (Watch)

The first step in responding to a snowstorm, windstorm, tornado, flood, or other natural hazard is to know when weather conditions are such that an event could occur and issuing a “watch”. Proper and timely threat recognition systems allow for adequate warnings to be disseminated. Systems are described below for flooding, tornadoes and thunderstorms, and winter storms.

A flood threat recognition system predicts the time and height of the flood crest. This can be done by measuring rainfall, soil moisture, and stream flows upstream of the community and calculating the subsequent flood levels. On smaller rivers, local rainfall and river gauges are needed. In the absence of gauges, local personnel and/or volunteers monitor rainfall and stream conditions. While specific flood crests and times are not predicted, advance notice of potential local or flash flooding is provided. On larger rivers, measuring and calculating is done by the National Weather Service (NWS), which is in the U.S. Department of Commerce’s National Oceanic and Atmospheric Administration (NOAA), with support from cooperating state and local partners. Forecasts are made through the Advanced Hydrologic Prediction Service (AHPS), which utilizes river gauges for information. Newaygo County has two river monitoring stations located in Croton Township on the Muskegon River and the Little Muskegon River. There is also an electronic flood gauge at the Croton Dam, which can be accessed by telephone.

Flood threat predictions are broadcasted on the NOAA Weather Wire and Weather Radio, the official source for weather information, to those who have equipment to receive it (state police, 911 and dispatch centers, municipalities, and critical facilities). Weather radios can be tone-activated through the Emergency Alert Radio System (EARS). Predictions are also transmitted through social media, and by television, radio, and cable television through the Emergency Alert System (EAS), previously known as the Emergency Broadcast System.

The NWS is the prime agency for detecting meteorological threats, such as tornadoes and thunderstorms, and uses a transmitter located south of Hesperia to relay weather information to Newaygo County. Severe weather warnings are first transmitted through the NOAA Weather Radio System and then subsequently relayed through the Michigan State Police’s Law Enforcement

Information Network (LEIN). The network includes law enforcement agencies and emergency service providers such as "911" who then issue their own warnings. However, NWS coverage is done on a large scale and only considers if conditions are appropriate for formation of a tornado or thunderstorm. More site-specific and timely recognition is provided by sending out NWS trained spotters to watch and report on the weather when the NWS issues a watch or warning. Training for spotters is provided annually, generally in the spring, through cooperation of Newaygo County Emergency Services, fire departments, and NWS office in Grand Rapids.

The NWS is also the prime agency for predicting winter storms. Severe snowstorms can often be forecasted days in advance of the expected event, which allows time for warning and preparation. Though more difficult, the NWS can also forecast ice storms.

In summation, Newaygo County receives threat recognition information from NOAA weather radios or from the Michigan State Police who monitor the NOAA Weather Wire. The NWS also activates public notice though EAS when the hazard impacts a large area. The Michigan State Police disseminate weather threats through the LEIN system to 911 and other dispatch centers around the state. Police and fire stations, schools and other public facilities may also receive alerts from 911. When conditions are appropriate, Newaygo County Emergency Services and NWS use their formal organization of weather spotters.

Warning

When the NWS determines that a flood, tornado, thunderstorm, winter storm or other hazard has been observed or is coming, a warning is issued to take immediate action and the systems described above are again utilized to notify police, 911 and dispatch centers, municipalities, the public, and staff of other agencies and critical facilities. Early warning allows for a greater number of people to implement protection measures. More specific warnings may be issued by communities and are included on the following list, which contains methods already discussed as well as common and cutting edge methods.

- NOAA Weather Radio;
- The Weather Channel;
- Commercial or public radio or TV stations;
- Cable TV emergency news inserts;
- Tone activated receivers in key facilities;
- Outdoor warning sirens and fire department call-in sirens;
- Sirens on public safety vehicles;
- Mobile public address systems;
- E-mail notifications;
- Broadcast faxes;
- Pocket paging services for the hearing impaired;
- AT&T language line for those who speak a different language;
- Automated telephone notification services;
- Telephone trees/mass telephone notification;
- Mobile device text messages and apps;
- Social media outlets; and
- Door-to-door contact.

Warning systems need to be evaluated, updated to include new technologies, and expanded to include warnings to people with "special needs" continually and should include warnings for slow onset as well as fast onset hazards. Different warning systems are required for different hazards, some of which are location-specific and some of which are area-wide. In addition, any confusion over warnings needs to be eliminated. The public is often confused by fire station alarms and doesn't know if the alarm indicates a hazard, or if it is just calling in firefighters.

Multiple or redundant systems are most effective. If people do not hear one warning, they may still get the message from another. Also more effective are warnings that provide public information about the hazard and what to do. However, each method has advantages and disadvantages that are partially described below.

- Radio and television, when turned on, provide useful information.
- NOAA Weather Radio, where available, can provide short messages of any impending weather hazard or emergency and advise people to turn on their radios or televisions, or to access the internet.
- Outdoor warning sirens can quickly reach many people, particularly those who are outside, and trigger them to turn on a radio or television or to access the internet to find out what hazard is coming. They do not reach people in tightly insulated buildings or those surrounded by loud noise, such as in a factory, during a thunderstorm, or near an air conditioning unit.
- Automated telephone notification services are also fast, but can be expensive and do not work when phone lines are down or for unlisted numbers and calling screener services.
- Going door-to-door and conducting manual "telephone trees" can be effective but require a longer lead time.
- Social media alerts require individuals to be active on those networks and require access to the internet.
- Mobile device alerts are only effective if there is adequate cell phone service, and when devices are turned on.

The Newaygo County civil defense warning system includes nine sirens which are listed in the table below. All sirens may be operated by the fire districts themselves and four of them can also be activated by Newaygo County Central Dispatch. These locations include: Ashland-Grant Fire District (from 7:00 am to 2:00 pm only), Croton Township Fire Department, and Lilley Township Fire Department.

Newaygo County Warning Sirens

Fremont DPW	805 Oak Street, Fremont	Tornado Only
Newaygo (North)	40 Centerline Road	Tornado Only
Newaygo (South)	355 Clay Street	Tornado Only
Grant Fire Department	62 W State Street, Grant	Fire and Tornado
Croton Township	6464 S Croton-Hardy Drive, Newaygo	Fire and Tornado
Big Prairie Fire Department	2815 S Elm Street	Fire and Tornado
Lilley Fire Department	10730 N Prospect, Bitely	Fire and Tornado
Hesperia Village Hall	33 E Michigan Street, Hesperia	Tornado Only

Newaygo County utilizes and maintains a variety of available warning tools to alert and notify the general public of emergency events and/or hazardous situations. Warning tools include, but are not limited to, NOAA Weather Radios, Emergency Alert System (EAS), Tone Alert Monitors, Tornado Sirens, door-to-door notification, and other specialized systems including Nixle, websites, email, and

social media. Depending on the nature of the incident, emergency services personnel will reference established guidance within the Newaygo County Emergency Operations Plan to determine the appropriate warning tools to utilize. Regardless of the situation, the primary warning tool for Newaygo County is Nixle. Nixle connects public safety agencies to their community residents via text, web, and email to distribute out alert, advisories, and community messages. Alerts can be sent out to the entire area or a predefined contact list. Nixle is integrated into IPAWS and has the capability to automate NWS Rebroadcasts and link social media accounts together.

The NWS established the "StormReady" program to help local governments improve the timeliness and effectiveness of hazardous weather-related warnings for the public. Newaygo County received its StormReady certification on November 3, 2016 and renewed the certification on November 2019. A community must satisfy a set of guidelines to receive "StormReady" recognition. The guidelines are organized into six categories:

- Communications;
- NWS Information Reception;
- Hydrometeorological Monitoring;
- Local Warning Dissemination;
- Community Preparedness; and
- Administrative.

Certain requirements for each guideline may vary depending on the population of the community. More information on the program is available at http://www.stormready.noaa.gov/index.html.

NWS also established the Turn Around Don't Drown (TADD) campaign "to warn people of the hazards of walking or driving a vehicle through flood waters." One activity is to warn motorists of the dangers of flooded roads, particularly when there are barricades, since it is impossible to tell the depth of the water or the condition of the road under the water. Barricades are very definite warnings and should never be ignored. An additional and inexpensive warning technique is the use of PVC markers on roads prone to flooding which show the depth at which motorists should not attempt passage.

Response

The protection of life and property is the foremost task of emergency responders. A community should respond to hazards with threat recognition, warnings and actions that can prevent or reduce damage and injuries. Typical actions and responding parties in a flooding event include the following:

- Activating the emergency operations center (emergency management);
- Closing streets or bridges (police or public works);
- Shutting off power to threatened areas (utility company);
- Passing out sand and sandbags (public works);
- Ordering an evacuation (governor upon local recommendation);
- Holding children at school/releasing children from school (school district);
- Opening evacuation shelters (Red Cross);
- Activating volunteers to check on/assist vulnerable populations;
- Monitoring water levels (engineering); and
- Security and other protection measures (police).

Additional activities for different types of events include: advertising heating and cooling shelters when extreme temperatures occur; having volunteers check on those needing assistance when there are

infrastructure failures; sending vulnerable people (in parks, campgrounds, mobile home parks, shopping malls, and large public or private buildings) to tornado shelters when high winds are predicted; etc.

An emergency action plan ensures that all bases are covered and that response activities are appropriate for the expected threat. These plans can be developed for municipalities, critical facilities, SARA sites, businesses, etc. and should include coordination with all of the agencies, offices, first responders and service providers that are given various responsibilities. Emergency response plans should be updated annually to keep contact names and telephone numbers current and to make sure that supplies and equipment that will be needed are still available. They should be critiqued and revised after disasters and exercises to take advantage of the lessons learned and changing conditions. They should also consider the possibility of "mutual aid" and utilize volunteer groups such as Radio Amateur Civil Emergency Services (RACES) and the Medical Reserve Corps (MRC) of Newaygo County. The mission of the MRC is to be the catalyst for trained medical and supportive service volunteers to serve Newaygo County when disasters or emergencies strike. The MRC, consisting of medical, health-related and other professionals, is designed to supplement local emergency plans and resources already in place in Newaygo County.

Newaygo County utilizes and maintains an Emergency Operations Plan to for dealing with existing and potential emergency incidents within Newaygo County. In accordance with Michigan Public Act 390, this plan sets forth the emergency response organizational structure and management system under which Newaygo County will operate. It describes how different government and non-government entities will interact with each other to respond effectively during any disaster or emergency situation. In addition, this plan assigns various emergency objectives and responsibilities that may need to be performed when circumstances call for response and recovery measures outside the realm of normal operations. Newaygo County's Emergency Operations Plan meets planning guidance established by the Michigan State Police Emergency Management and Homeland Security Division. The introduction, program policy, and basic plan sections are pubic documents available online and the functional and hazard-specific annexes are secured documents containing checklists, attachments, forms, and guidance to mitigate, prevent, prepare for, respond to, and recover from incidents.

Planning is best done with adequate data. One of the best tools in a flooding event is a flood stage forecast map that shows what areas would be under water at various flood stages. Emergency management staff can identify the number of properties flooded, which roads will be under water, which critical facilities will be affected, etc. With this information, an advanced plan can be prepared that shows problem sites and determines what resources will be needed to respond to the predicted flood level.

A Geographic Information System (GIS) allows for this type of analysis as it works with computerized layers of mapped data. For instance, the locations of buildings can be overlaid with areas of concern for development (topography, infrastructure, land use, zoning, fire service areas, etc.) and areas of concern for flooding (floodplains, hydraulic shadows of dams, etc.). GIS can model the effects of different levels of flooding and be used for hydrologic monitoring and modeling of the effects of removing/raising bridges over rivers to remove constriction to the flow of floodwater. Newaygo County has a developed GIS program which has been integrated into Newaygo County operations, including Emergency Services.

Protecting critical facilities during a disaster is the responsibility of the facility owner or operator. Some critical facilities have their own emergency response plans. Michigan law requires hospitals, nursing homes, and other public health facilities to develop such plans. Many facilities would benefit from early warning, response planning, and coordination with community response efforts. If critical facilities are not prepared for an emergency and are damaged, workers and resources may be unnecessarily drawn away from other disaster response efforts. If the owner or operator adequately prepares them, the community's emergency response efforts will be better supported.

Recovery and Mitigation

After a disaster, communities should undertake activities to protect public health and safety, facilitate recovery, and help prepare people and property for the next disaster. Throughout the recovery phase, everyone wants to get “back to normal”. However, “normal” can’t mean the way things were before the disaster or there would again be the same exposure to future disasters. Here are some examples of potential recovery actions:

- Patrolling evacuated areas to prevent looting (police).
- Providing safe drinking water (public works).
- Monitoring for diseases (health department).
- Vaccinating residents for tetanus (health department).
- Clearing streets (road commission).
- Cleaning up debris and garbage (road commission).
- Providing referrals to recovery vendors for post-disaster goods and services (emergency services).
- Regulating reconstruction to ensure that it meets all code requirements (building inspectors).

Requiring permits for building repairs and conducting inspections are vital activities to ensure that damaged structures are safe for people to re-enter and repair. There is a special requirement to do this in identified floodplains, regardless of the type of disaster or cause of damage. The National Flood Insurance Program (NFIP) directs local officials to enforce the substantial damage regulations. These rules require that if the cost to repair a building in the mapped floodplain equals or exceeds 50% of the building’s market value, the building must be retrofitted to meet the standards of a new building in the floodplain. In most cases, this means that a substantially damaged building must be elevated above the base flood elevation. This requirement can be very difficult for understaffed and overworked offices after a disaster. If these activities are not carried out properly, not only does the community miss a tremendous opportunity to redevelop or clear out a hazardous area, it may be violating its obligations under the NFIP.

A chance is also available to assess the strength of buildings; the effectiveness of emergency action plans for communities, critical facilities, and businesses; and the readiness of responders. Should efforts be deemed inadequate, improvements can be recommended such as revisions to building codes, increased training for responders, and improvements to existing plans or creation of sample plans.

Reviews of emergency response plans and programs should focus on whether all involved communities had coordinators and liaisons, if all information was provided (flood plain map, critical facilities, etc.), if there were post-disaster procedures for public information, and if adequate warnings were provided. Model business disaster plans can include details on response such as evacuation plans; data protections, security, and recovery; property security; drills; and first-aid training and CPR. They could also include post-disaster mitigation actions such as facilities management, damage assessment,

relocation of both services and people, insurance, contractors, list of resources for assistance both public and private, and evaluation, testing and update plans. Reviews of building strengths should be similar to FEMA's, wherein a Building Performance Assessment Team (BPAT) may recommend revisions after a disaster. Other considerations for revisions could include the following.

- Did fire fighters have adequate detection and firefighting equipment?
- Did critical facilities have necessary back-up generators?
- Did electrical distribution systems have built-in redundancies to limit the impact of failures?
- Did the Road Commission have the equipment and personnel to be able to clear the roads?
- Was there a place to store personal property?
- Were there detention areas for debris disposal (snow, ice, branches, power/phone lines, etc.)?
- Were critical facilities protected with lightning rods and surge protection devices?
- Was the Health Department able to monitor threats and take the necessary steps to prevent or limit the scope and magnitude of threats?
- Were emergency responders sufficiently trained and able to communicate?

An assessment of damages is necessary and can be provided by state and federal officials, as is the case in flooding events, or by local emergency responders and emergency staff. Assessments can be facilitated by a GIS, which could detail damages, identify mitigation projects, establish environmental baselines, and monitor changes in land use. FEMA offers courses, free of charge, to emergency staff for evaluation training. In addition to identifying the amount of damage, communities can acquire substantially or repeatedly damaged properties from willing sellers, plan for long-term mitigation activities, and apply for post-disaster mitigation funds.

Public Education and Awareness

Public education and awareness programs are necessary to periodically inform the public (property owners, renters, businesses and local officials) about the county's hazards, the measures necessary to minimize potential damage and injury, and what actions are being taken. This information is primarily intended to precipitate appropriate actions. Information can be disseminated through the media (newspapers, newsletters, websites, television, radio, etc.) and at public forums and civic meetings. It can be distributed through schools and made available in public buildings or shopping areas. Brochures can be available at libraries and government offices, including building inspection offices. Special populations can be reached through direct mailings, workshops, and seminars. Signage along hazardous areas can also be effective.

Distribution of Existing Information

There is a great deal of information regarding hazards and hazard mitigation available to communities and the public on the national level. Both FEMA and American Red Cross present information on the Internet and in documents and brochures. The NWS makes information available through its "Storm Ready" and "Turn Around Don't Drown" programs, to name just a few.

Insurance companies and non-profit programs have been heavily involved in identifying and responding to hazards. The Institute for Business and Home Safety (IBHS) gives detailed information on how to increase a home, business, or new construction's resistance to disaster through its suite of FORTIFIED programs. The National Fire Protection Association (NFPA) provides information about co-existing with wildfire along with mitigation information through its Firewise Communities program. The NFPA also

has information available for homeowners on how to prevent fires. The National Arbor Day Federation provides direction on tree management.

Unfortunately, this information doesn't always reach the intended target audience; whether that audience is communities, the general public, or specific populations. Local efforts can be made to select pertinent information and get it to places and people where it is needed (such as wildfire hazard information to campers). Programs and web sites can be publicized. Brochures can be stockpiled and distributed. This information can be very helpful, although it is not specific to the community.

Distribution of Local Information

In addition to the national-level information discussed above, there is an abundance of information available locally to educate and warn the public of hazards. Local newspapers and television stations frequently update the public on hazards. Newaygo County Emergency Services is an excellent source of information on a variety of topics as varied as the location of shelters or financial assistance in hazard response and mitigation. Local building inspectors can provide advice regarding protection measures, property compliance, and required building permits. District health department reports may also prove to be valuable resources for local hazard information.

Mitigation efforts the county takes to protect its residents, including the creation and adoption of this plan to qualify itself (and local communities which participate in the planning process and adopt the plan) for federal disaster funding, can be publicized. The general public, or eligible target groups, can be notified when financial resources for hazard response and mitigation become available.

Technical Assistance

Communities often have information that can assist homeowners. If they have FEMA's Flood Insurance Rate Maps and Flood Insurance Studies available, they can provide information to residents and can assist them in submitting requests for map amendments and revisions (Letter of Map Revision, or LOMR) when a building is not in the flood plain but a part of the property is. Lenders will notify applicants for federally insured loans if the involved property is in the flood plain and require flood insurance as a condition of the loan.

Local building inspectors can provide advice regarding protection measures, property compliance and required building permits.

Emergency Management can recommend that residents develop Family Emergency Plans, including the preparation of Disaster Supply Kits, identification of emergency telephone numbers, and the preparation of pre-planned escape routes. The county can assist local communities through the provision of local information regarding hazards, risks and protections. For example, a GIS system could lay out the location of homes in floodplains so that mitigation measures can be considered. It can also assist communities in the development of the plans identified in this document by researching and providing model plans to them.

Existing Authorities, policies, programs, funding, and resources

The following table highlights what existing authorities, policies, programs, functions, and resources each participating jurisdictions have available to support local mitigation strategies. One of the primary sources for the information below was the various municipal websites.

Jurisdiction	Master Land Use Plan	Local Zoning Ordinances	State Construction Code	Parks and Recreation Plan	Stormwater Management Plan	Lake / River Watershed Mgt Plan Participant	NFIP Zoning	Capital Use Plan (Separate)	Full Time Staff
Newaygo Co.			✓	✓	✓	✓	✓	✓	✓
Ashland Twp	✓	✓	✓				✓		
Barton Twp	✓	✓	✓						
Beaver Twp		✓	✓						
Big Prairie Twp		✓	✓	✓		✓	✓		
Bridgeton Twp	✓	✓	✓	✓		✓	✓		
Brooks Twp	✓	✓	✓	✓	✓	✓	✓		
Croton Twp	✓	✓	✓	✓		✓	✓		
Dayton Twp	✓	✓	✓				✓		
Denver Twp		✓	✓						
Ensley Twp	✓	✓	✓	✓		✓	✓		
Everett Twp	✓	✓	✓		✓		✓		
Fremont City	✓	✓	✓	✓	✓	✓	✓		✓
Garfield Twp	✓	✓	✓		✓	✓	✓		
Goodwell Twp	✓	✓	✓						
Grant City	✓	✓	✓	✓	✓			✓	✓
Grant Twp	✓	✓	✓						
Hesperia Village	✓	✓	✓	✓	✓	✓	✓	✓	✓
Home Twp		✓	✓						
Lilley Twp	✓	✓	✓	✓			✓		
Lincoln Twp	✓	✓	✓			✓	✓		
Merrill Twp	✓	✓	✓						
Monroe Twp		✓	✓						
Newaygo City	✓	✓	✓	✓	✓	✓	✓	✓	✓
Norwich Twp	✓	✓	✓						
Sheridan Twp	✓	✓	✓				✓		
Sherman Twp	✓	✓	✓			✓	✓		
Troy Twp		✓	✓						
White Cloud City	✓	✓	✓				✓		✓
Wilcox Twp		✓	✓				✓		

POTENTIAL HAZARD MITIGATION ACTIONS

The previous chapter identified a multitude of alternatives for addressing hazard concerns; some of which may not be economically feasible or appropriate for a county with limited financial and professional resources, such as Newaygo. In addition, many of Newaygo County's top hazards are natural and weather-related and cannot be easily mitigated. Nothing can be done to eliminate severe winds or snow/ice/sleet storms or to alter their frequency, intensity or spatial distribution across the landscape. Mitigation actions associated with natural hazards must focus on limiting the impacts on the populations or structures that are being affected. For instance, power failures caused by severe winds and snow/sleet/ice storms can be reduced by several mitigation activities and the impacts on residents and properties from the power failures can be alleviated.

The potential actions in this section are presented because they may potentially help to save lives and protect communities and important agencies, rather than because they are considered pure "mitigation actions" distinct from other types of emergency management actions. However, in the final selection of strategies for any hazard mitigation plan, care should be taken to ensure the inclusion of at least some strategies that are clearly hazard mitigation. That is, a true hazard mitigation strategy is an effort to prevent hazard impacts, or to take advance, proactive steps toward the long-term reduction of the impacts of hazards on a community. If some of these take place during the response or recovery phases of a disaster, or happen to also increase an agency's preparedness, the existence of such overlap is primarily of academic interest so long as the community's safety is being served. On occasion, specific criteria for hazard mitigation must be met to satisfy the requirements of a given grant. Thus it is useful to be aware of both the distinctions and the overlap between hazard mitigation and other types of emergency management activities.

Identification of a possible mitigation measure does not necessarily mean that it can or even should be implemented. Implementation (and the desirability) of a mitigation measure is highly dependent on a number of factors – environmental, social, economic and political. Just because a measure may reduce or eliminate the effects of a hazard does not necessarily mean that it should be implemented. There may be extenuating factors or circumstances that could (or even should) preclude its implementation. Those decisions will be made in the local and state political arenas and in the land use / land development decision-making processes. Typically, mitigation measures will be implemented if they are able to balance environmental, social, economic and political factors, and are cost-effective. It does not make sense to implement a measure that will not be supported by state and/or local officials and the citizenry, or that cannot be economically justified. Although implementability cannot (and should not) always be the final litmus test for a potential mitigation measure, it certainly should be considered when identifying and developing measures. In general, those mitigation opportunities that could not pass this basic litmus test have been excluded from this plan.

The following potential actions are presented according to the county's hazard mitigation Goals and

Objectives. For each goal, there are several objectives; and under each objective, there are several potential action items. These potential action items are "snapshots" of some of the alternatives discussed in the previous chapter. From this set of potential actions, the highest priority action items are selected and presented as a "Recommended Action Agenda" in the Plan Implementation chapter.

For the updated edition of this plan, many of the potential action items remain the same. A few action items were added or removed, and other minor revisions were made to improve the readability of the action items. Care was taken to ensure that there are numerous potential action items presented to address each of the county's top priority hazards.

Goal 1.
Protect public health and safety.

Objective 1.1 Assure that threat recognition (watches) and warning systems are adequate and appropriate and that they utilize the latest technology.

Potential Action Items:

1) Regularly evaluate the effectiveness of the public warning system including the threat detection process, management system, communications links, and methods of dissemination.
2) Implement improvements to the warning system as deemed necessary for improving coverage and effectiveness.
3) Maintain a description of the public warning process and coordinate actions in a section of the Newaygo County Emergency Operations Plan (EOP).
4) Increase the coverage and use of NOAA All-Hazards radios and weather alert systems (Emergency Alert Radio System, etc.) to people and communities in need.
5) Encourage the MDNR, U. S. Geological Survey, National Weather Service, and U. S. Army Corps of Engineers to continue to operate and monitor stream gauging stations and groundwater monitoring wells and consider whether the exposure to flooding on smaller rivers and streams warrants additional Advanced Hydrologic Prediction Services (AHPS) or local rain and stream gauging and flood threat recognition systems.
6) Maintain adequate monitoring and surveillance capabilities by the District Health Department to monitor public health threats and take the necessary steps to prevent or limit the scope and magnitude of threats.
7) Utilize the NWS "Turn Around Don't Drown" system to warn motorists and pedestrians to not enter or cross flooded areas, and install PVC markers alongside roads to illustrate dangerous water levels.

Objective 1.2 Protect infrastructure and services.

Potential Action Items:

8) Encourage electrical utilities to place power lines underground wherever possible, but especially when upgrading lines or running power to new developments.

9) Recommend design of the electrical distribution system with built-in redundancies such that isolated failures do not lead to wide scale outages; recommend consideration of back-up generators powered with wind, sun, gasoline, or natural gas; and assess and improve, electric service system reliability as needed.

10) Install back-up generators, as needed for short-term relief from power failures, at critical facilities such as sewage pump stations, municipal wells, municipal buildings, road commissions, hospitals and medical centers, nursing home facilities, schools, and shelters.

11) Bury water/sewer lines below the frost line or insulate and maintain lines to protect against ground freeze.

12) Establish safe and appropriate locations for temporary debris disposal sites.

13) Assure the county has adequate personnel and equipment (road barriers, sand bags, portable lighting, snow plows, etc.) to respond to widespread weather events.

14) Continue to refine state, county and local road, bridge and culvert maintenance / vegetation management programs to maintain visibilities, provide for living snow fences, reduce erosion, slow stormwater runoff, and maintain the structural integrity of transportation infrastructure.

Objective 1.3 Build and support local capacity, commitment and partnerships to continuously become less vulnerable to hazards.

Potential Action Items:

15) Explore funding options for a Hazard Mitigation Coordinator position, either on a county or regional level, to facilitate the actions contained in this plan.

16) Develop and review coordinated response plans and programs across service providers, agencies and local governments, and assure both mutual aid and the ability to communicate during emergencies.

17) Refer emergency responders and emergency staff to FEMA and MSP/EMHSD training for conducting Damage Assessments and determining “Substantial Damage” for an efficient and accurate assessment of building damages.

18) Design and plan for water supply infrastructure systems that include a consideration of, and are more resistant to, drought events.

19) Continue to maintain, and acquire as necessary, firefighting and rescue equipment; including dry fire hydrants in rural areas and specialized equipment for water and ice rescue, limited access areas, and snow-blocked areas.

20) Construct and/or designate storm shelters/tornado shelters in parks, campgrounds, mobile home parks, and developments that do not have shelters. Consider retrofitting existing or constructing public buildings, industrial sites, and other large businesses or complexes to include shelters.

21) Coordinate with the Newaygo Conservation District, local watershed councils, and lake improvement boards to maintain healthy, free-flowing watercourses with minimal erosion and sedimentation, and to restore / preserve wetlands.

22) Adopt the recommendations and strategies of the "Firewise" program, which include encouraging all residents living in the wildland/urban interface area to become acquainted with Firewise mitigation strategies to protect their property from wildfire hazards and recommending to production companies and land owners that they employ Firewise principles of proper grounds maintenance, equipment storage, vegetation clearance, and other techniques.

23) Meet the criteria to become a NWS-approved "Storm Ready" community.

Objective 1.4 Enlist support of committed volunteers to safeguard the community before, during, and after a disaster.

Potential Action Items:

24) Utilize volunteer communication networks by amateur radio operators (RACES) to facilitate communication during emergencies.

25) Designate amateur radio operators to relay information on "immediately dangerous" weather situations and storm damage reports to the NWS, Central Dispatch, and/or Emergency Management.

26) Coordinate with local volunteer organizations such as Newaygo County Community Services' Medical Reserve Corps and local amateur radio operator groups to supplement local emergency plans; aid emergency responders; and also to address the needs of elderly, disabled, homebound, and other special-needs groups during and after severe weather conditions.

27) Utilize NWS-trained weather spotters to watch for developing storms, take flood water measurements, and monitor stream conditions.

28) Conduct an annual "clean-up" program when trash, limbs, barrels, shopping carts and other potential blockages are removed from drainage culverts, channels and adjacent lands.

Goal 2.
Protect existing and new properties.

Objective 2.1 Use the most cost-effective approaches to protect existing buildings and facilities from hazards.

Potential Action Items:

29) Assess the capacity of storm water systems to handle both storm waters and high water tables and make necessary improvements and expansions to assure the protection of property and infrastructure.

30) Raise or relocate buildings above the 100-year flood level, and/or acquire properties in flood and high-risk erosion areas for demolition and re-use of the land as open space.

31) Identify structural projects to channel water away from people and property (e.g. berms, dikes, levees, or floodwalls), or to improve drainage capabilities (e.g. culvert improvements, bridge modifications, spillways, relief drains, or floodgates).

32) Identify environmental restoration projects to lessen the impacts of flooding and improve water quality and wildlife habitat, such as erosion control techniques (streambank modification), dredging / clearance of sediment and debris from drainage channels, and protection / restoration of wetlands and natural water retention areas.

33) Employ Firewise principles of proper grounds maintenance, equipment storage, vegetation clearance, and other techniques.

34) Create firebreaks, wherein brush and other fuel is cleared away, in wildland areas.

35) Maintain the Newaygo County Community Wildfire Protection Plan (CWPP), and work to implement its recommendations.

Objective 2.2 Use the most cost-effective approaches to protect existing buildings and facilities from hazards.

Potential Action Items:

36) Encourage property owners and public facility operators to increase their property's resilience and resistance to hazards.

37) Adopt and enforce the Michigan Rehabilitation Code to hold repaired buildings to higher standards for protection against natural hazards, similar to the standards for newly constructed buildings.

38) Utilize mandates for upgrading homes, such as requiring upgraded electrical work for substantial rehabilitation of existing properties or for issuing "Fill Your Basement With Water" orders.

39) Review the energy efficiency, winter readiness, and electrical protection of critical facilities and government buildings in the community and consider replacing aged facilities and equipment.

40) Install lightning protection devices on the community's communications infrastructure and appropriate public facilities; and lightning grade surge protection devices on critical electronic components used by government, public service, and public safety facilities.

Objective 2.3 Maximize insurance coverage to provide financial protection against hazard events.

Potential Action Items:

41) Assure insurance coverage on properties and obtain additional insurance coverage as appropriate (sump pump failure, sewer back-up, wildfire, dam failure, etc.).

42) Encourage and assist municipalities that are at risk to flooding, or that have been exposed to flooding in the past, to join the National Flood Insurance Program (NFIP) so that residents can obtain flood insurance.

43) Encourage NFIP-participant municipalities to join the NFIP's Community Rating System (CRS), implement the CRS minimum standards, and implement additional flood loss reduction activities to reduce the cost of NFIP flood insurance.

44) Inventory critical facilities and assure proper insurance coverage, both type and amount, including deductibles and policy limits. Evaluate self-insurance coverage in light of its expense and NFIP policies.

Objective 2.4 Maximize the resources for investment in hazard mitigation, including the use of outside sources of funding.

Potential Action Items:

45) Utilize federal programs; such as but not limited to FEMA's Pre-Disaster Mitigation Program, Flood Mitigation Assistance Program, and Hazard Mitigation Grant Program; to address community needs for hazard mitigation.

46) Utilize, and assist those with special needs to utilize, available programs for assistance with home repairs, weatherization, and heating costs to address hazards for persons and properties.

47) Establish a voluntary floodway property acquisition and land re-use program, with corresponding changes in zoning, and purchase/transfer of development rights for properties.

48) Assess the need for and use of state and federal funding and technical assistance for dam / spillway repairs.

49) Investigate the availability of resources and need for creating firebreaks and the availability of resources for acquiring land as necessary to achieve continuity of needed firebreak areas.

Goal 3.
Promote growth in a sustainable, hazard-free manner.

Objective 3.1 Incorporate hazard provisions in building code standards, ordinances, and procedures.

Potential Action Items:

50) Review local building codes to determine if revisions are needed to improve structural ability to withstand greater wind velocities, snow weight, ice, and hail; to provide better protection against structural fires; and to provide better protection to occupants against extreme temperatures.

51) Contact Insurance Services Office (ISO) to request a copy of the community's Building Code Effectiveness Grading Scale (BCEGS), and work to improve the BCEGS rating through improvements to building codes and enforcement.

52) Utilize the Institute for Business and Home Safety (IBHS) guidelines provided through the "FORTIFIED" programs to guard new and existing structures against hazards, and consider incorporating them into existing codes.

53) Review code requirements for the installation of mobile homes and manufactured homes to assure protection against severe winds and tornadoes.

54) Assess the need to strengthen anchoring requirements for propane tanks and hazardous materials in the floodplain/floodway.

55) Assure proper location, installation, cleaning and maintenance of septic tanks, particularly in the floodplain/floodway and around lakes.

Objective 3.2 Incorporate hazard mitigation into land use and capital improvement planning and development activities.

Potential Action Items:

56) Incorporate mitigation provisions into comprehensive plans and land use plans; such as identification of acceptable land uses and densities based on consideration of flood-prone areas, soil types, topography, and etc.

57) Integrate hazard mitigation into the capital improvement planning process so that public infrastructure does not lead to development in hazard areas and so that possible set-asides for planned and engineered structural projects (berms, levees, floodwalls, detention and retention ponds, debris storage areas, culvert replacement, etc.) are considered.

Objective 3.3 Incorporate hazard mitigation into existing land use regulation mechanisms to ensure that development will not put people in danger or increase threats to existing properties.

Potential Action Items:

58) Incorporate hazard mitigation provisions and recommendations into local zoning ordinances and resolutions as they restrict or direct development; with consideration given to dams, floodplains, soil type and topography; and as they allow flexibility in lot sizes and locations, such as in Planned Unit Developments (PUD).

59) Enforce the existing Michigan Drain Code requirement for “set-back” from the drain channel, thereby assuring proper carrying capacity of the drain.

60) Enforce Michigan’s Part 91, Soil Erosion and Sedimentation Control, of the Natural Resources and Environmental Protection Act, regarding earth changes affecting an acre or more or within 500’ of a lake or stream, and consider adopting and enforcing more stringent local regulations.

61) Enforce Michigan’s Land Division Act as it furthers the orderly layout and use of land, provides for proper ingress and egress to lots and parcels, controls residential building development within floodplain areas, provides for reserving easements for utilities, and governs internal drainage.

62) Consider regulation of development in the hydraulic shadows of dams (where flooding would occur if there was a severe dam failure).

Objective 3.4 Research, recommend, adopt and enforce other plans and ordinances that protect natural resources so that they can, in turn, provide hazard protection.

Potential Action Items:

63) Develop a Stormwater Management Plan to identify best management practices (BMP’s), and to assess the efficacy of local stormwater ordinances and rules.

64) Develop, adopt, and enforce a Nuisance Ordinance to prevent dumping “objectionable” solid matter into channels and wetlands and Waterway Dumping Regulations to prevent dumping “non-objectionable” waste.

65) Develop and enact a Community Forestry Program to reduce the damage potential of trees by addressing proper tree care prior to a storm (pruning, maintenance, removal, and replacement) by communities and property owners and by managing trees before, during, and after a storm.

66) Develop policies or ordinances aimed at mitigating the impacts of drought conditions, such as: the promotion of planting crops tolerant of low moisture levels; partner with programs that promote soil health and monitor and preserve soil moisture; and prioritize or control water use during drought conditions.

Goal 4.
Increase public understanding, support, and participation in hazard mitigation.

Objective 4.1 Heighten public awareness of the full range of existing natural and man-made hazards and actions they can take to prevent or reduce the risk to life or property from them.

Potential Action Items:

67) Obtain and distribute available information on hazards and cost-effective mitigation actions individuals can implement (for example, Firewise pamphlets), and post-disaster repair and cleanup guidance.

68) Produce and distribute local emergency preparedness and safety information to the general public and/or targeted groups (seasonal populations, floodplain residents, developers and builders, farm owners and operators, decision makers, Spanish speaking, etc.). Include local resources for information such as fire stations, local radio stations and utilities.

69) Produce and distribute information on mitigation measures the county is taking/will take, as identified in this hazard mitigation plan, to local units of government and encourage them to participate in the plan and take mitigation actions.

70) Encourage residents to develop a Family Emergency Preparedness Plan; including the preparation of a Disaster Supply Kit, the posting of emergency telephone numbers, and pre-planned escape routes.

71) Promote public awareness on fire hazards such as recreational fires (especially in resort/vacation home areas), smoking, fireworks, campfires, wood stoves, and outdoor burning; and support safe disposal of yard and house waste rather than open burning.

72) Research availability of local and Michigan-based recovery “vendors” for post-disaster goods and services (e.g., cleaning, drying, pumps, repairs, construction supplies, portable refrigeration units, disaster recovery experts) to support disaster recovery efforts.

73) Identify and advertise a list of available heated and cooled shelters to the elderly and other special populations who may be at risk to extreme temperature events.

74) Provide local units of government and builders with information and guidance on methods of protecting new construction from wind damage. Encourage builders and contractors to design wind resistance into the construction of new homes and major home renovation projects.

75) Through coordination with the District Health Department, increase public awareness of the causes, symptoms and protective actions for disease outbreaks and other potential public health emergencies.

Objective 4.2 Encourage local communities, agencies, organizations and businesses to participate in the hazard mitigation process.

Potential Action Items:

76) Participate in programs such as NFIP, CRS, Firewise, Tree City USA, StormReady, etc. and respond to concerns regarding program requirements and obstacles to participation.

77) Develop model hazard mitigation and contingency plans and regulations (such as stormwater ordinance, nuisance ordinance, waterway dumping regulations, community forestry program, drought plan and ordinance, etc.) and provide them to interested communities.

78) Develop model business and critical facility disaster plans that include details on disaster response (evacuation plans; data protection, security, and recovery; property security; drills; first-aid training and CPR; and post disaster mitigation actions), facilities management, damage assessment, relocation of both services and people, insurance, contractors, list of resources for assistance, and evaluation, testing, and updating plans. Inform business owners about available disaster-recovery training programs.

79) Notify communities of hazard mitigation funds, as they become available, and assist them in applying for funds.

80) Encourage meetings between utility providers and local Public Works and Road Commission Departments to determine the resources and funding required to mitigate recurring infrastructure failures.

81) Support agricultural programs that promote soil health, preserve soil moisture, and monitor soil moisture levels to help to minimize loss of crops and topsoil during drought conditions and promote educational programming relating to water conservation, especially in irrigation and farming, during periods of drought.

Objective 4.3 Encourage cooperation and communication between planning and emergency management officials.

Potential Action Items:

82) Assist Newaygo County Emergency Services in its activities related to developing and continually revising Emergency Operations Plan (EOP) detailing coordinated response plans of emergency responders.

83) Strengthen the role of the LEPT in the land development process, with input into land use plans, comprehensive plans, and zoning ordinances.

84) Utilize the County Geographic Information System (GIS) capabilities to support pre-disaster planning (such as flood stage forecast maps, and maps showing the locations of secluded, gated, and seasonal homes), disaster response, and post-disaster recovery activities.

85) Coordinate with American Red Cross to ensure the county-wide availability of designated and accessible emergency shelters and assure facilities are inspected, certified, and have back-up power.

CRITERIA TO SELECT AND PRIORITZE ACTION ITEMS

The selection of appropriate evaluation criteria is intended to ensure that the recommended implementation action items reflect the values, policies, and desires of the community; and to communicate to governing officials which measures are the most meritorious and desirable.

Local input and planning principles were used to select action items for implementation from the list of potential actions presented in the previous chapter. Common mitigation criteria helped guide the selection process, and included evaluation of each action item's *economic justifiability, technical feasibility, social equitability,* and *environmental soundness*. If, for example, relocation of a structure is proposed, the following conditions must be met in order to satisfy the criteria:

- The cost of relocation must be less than the cost of the repetitive repairs that would be necessary (along with other costs from displacement, loss of services, etc.) if there were no relocation.
- The structures must be able to be moved from their present location to a suitable site.
- The relocation must be acceptable to those who are to participate.
- The relocation must be affordable to all it affects, and not discriminate against those who are unable to bear the cost of either moving the structure, or finding comparable housing.
- In the case of a public facility, such as a fire station, the relocation should not result in an inequitable distribution of fire protection services.
- The project must meet appropriate environmental regulations, and not cause any adverse effects.

Additional considerations used in selecting action items for implementation included: 1) ensuring an appropriate number of mitigation actions be selected to address each of the county's top-priority hazards; and 2) ensuring that an appropriate number of measures be selected to accomplish each of the four hazard mitigation goals established by this plan. Bonus consideration was given to action items that also addressed the goals of other community planning initiatives, and action items that provide clear and obvious solutions for hazard mitigation.

The next chapter presents a schedule of recommended action items for implementation. For each measure, the plan identifies basic details needed in order for it to be accomplished, including who will take the action and when it will be taken. Possible sources of technical or financial assistance are matched to the actions as well.

In some cases, a local government may be able to implement an action, while the county can only make recommendations. Therefore applicability of each action items is assigned to the appropriate governments in a table on the last page. As a result, objectives will work on multiple scales and can be overseen by several governments. The benefits of combining all of the objectives into one plan include: the ability to recognize contradictions in policy more easily; the ability to cooperate in shared objectives; the ability to eliminate or reduce redundancy in efforts; and the fact that local governments will have a local-level plan for adoption and implementation, qualifying those governments for hazard mitigation funding.

PLAN IMPLEMENTATION

This chapter contains a review of completed Action Items, Ongoing or In-Progress Action Items, and Pending Action Items. In addition, this chapter also contains the revised Action Agenda for this updated 2024 edition.

Revised Action Agenda for 2026 - 2031

The action items highlighted in this section were selected from the list of potential hazard mitigation actions presented in the chapter entitled “Potential Hazard Mitigation Actions” and are presented below as the Action Agenda for 2026-2031. All items on this revised Action Agenda are considered to be of the highest priority. Implementation of these action items may be appropriate on the county level and / or the local level. Each action item includes the following information to help facilitate implementation:

Review of Hazard Mitigation Progress

To identify any mitigation progress that had been made on the 2020 Action Agenda, discussions were held with county officials and the LEPT / Advisory Team during a scheduled meeting. Newaygo County Emergency Services, the LEPT / Advisory Team members, and the chief elected official of each township had an opportunity to review each action item and provide input on whether each item was *Complete*, *Ongoing or In-Progress*, *Action Pending*, *Incomplete or Unknown* within his or her jurisdiction. If a particular action item was incomplete, the respondent was encouraged to explain why.

Summary of Completed Hazard Mitigation Projects

Completed projects require no further action by the Newaygo County Emergency Services Department except for periodic scheduled review and revision or if significant change in conditions or capabilities occur requiring substantial updates or improvements. These projects are maintained and sustained through the Newaygo County Emergency Services Program routine services or through local municipal processes. In 2020, 19 Action Items were completed. For 2026, 40 Action Items have been completed, 19 of which are newly completed.

Action Item #1 Regularly evaluate the effectiveness of the public warning system including the threat detection process, management system, communications links, and methods of dissemination. Identified as a new item on the 2014 Action Agenda.

> Newaygo County Emergency Services in coordination with the local warning coordinator and the Local Emergency Planning Team evaluate the public warning system every 2 – 3 years or after an incident as a part of the After Action Report and Improvement Plan. Newaygo County utilizes a leveled warning system to allow officials to appropriately select and utilize available warning mechanisms to alert and notify targeted audiences of emergency conditions. The goal is to quickly make the information common knowledge and current. This system was evaluated again in February 2020. Newaygo County utilizes the following public warning systems:

NIXLE
Nixle connects public safety agencies to their community residents via text, web, and email to distribute out alert, advisories, and community messages. Qualifying agencies can use Nixle Connect Plus to author and send geographically targeted emergency messages via FEMA's Integrated Public Alert & Warning System (IPAWS). IPAWS encompasses multiple alert networks including the Wireless Emergency Alert (WEA) and the Emergency Alert System (EAS) to provide rapid, multi-channel distribution of your most critical messages.
TONE ALERT MONITORS (Public safety, vulnerable facilities, scanner monitors)
Activation of local public safety pagers (fire & ems), vulnerable facility alert monitors, and general public radio scanners by 9-1-1 or EOC notifies public safety and monitoring audience with audible tone and voice message. Highly effective for public safety personnel, of limited effectiveness for vulnerable entities and public
WARNING SIRENS (Entire populations within audible range of City sirens)
Activation of existing warning sirens for concentrated populations Alerts via high volume wail for up to 1 mile radius. Provides an attention getting signal to 1 mile radius of the targeted audience
PERSONAL NOTIFICATIONS (Affected hazard area)
Door to door visits or vehicle public address system notifications to area homes and businesses by emergency responders Notifies high percentage of population within a defined area or vulnerable audience with direct message. Highly effective in absence of other alerting systems or situations needing personal contact
NOAA WEATHER RADIO (County and regional monitors and systems tied into NOAA alerts)
Activation of NOAA Weather radio monitors & associated systems alerts monitors with audible tone and subsequent voice announcement as well as through various other services (i.e. website, weather systems). Is the recognized standard for all-hazards warning nationwide and is tied into multiple local, state, and regional warning services
EMERGENCY ALERT SYSTEM and/or BROADCAST MEDIA (TV & Radio audience)
Allows the activation of all or selected local television, cable, and radio broadcasters for issuance of a transcripted emergency message to all viewing/listening audiences. Utilized to broadcast information to all viewing/listening media audiences which provides a quick and comprehensive message to a large audience.
WIRELESS EMERGENCY ALERT SYSTEM
National system which allows customers who own an enabled mobile device to receive geographically-targeted, text-like messages alerting them of imminent threats to safety in their area.
OTHER AUXILIARY SYSTEMS (Audience Specific)
Utilization of auxiliary systems including broadcast fax, E-mail, L.E.I.N., WebEOC, and MIHAN can provide specialized alert and notification to target specific audiences via a variety of message formats. See specific mechanism for details.

Action Item #2 Implement improvements to the warning system as deemed necessary for improving coverage and effectiveness.

Newaygo County utilizes a three tiered warning system. Level I is targeted alerts, Level II is comprehensive alerts, and Level III are IPAWS alerts. The purpose is to quickly make the information common knowledge and current. Based on this system, no improvements have been deemed necessary at this time.

	LEVEL I - TARGETED	***LEVEL II - COMPREHENSIVE***	***LEVEL III - IPAWS***
Purpose	To alert and notify a local, defined location, or identified population of emergency events and/or hazardous situations	For rapid dissemination of alerts and public information to a variety of public warning systems to make the alert and information common knowledge.	For issuance of critical public alerts and warnings of severe urgency disseminated to all available warning systems and the widest range of audience.
Target Audience	• Response Agencies • Critical Officials • Reporting Authorities • Defined locations and or populations	• General public within Newaygo County and surrounding areas	• Mass population within Newaygo County and surrounding areas
Available Warning Systems	• Nixle Engage and call trees • Tone Alert Monitors • Sirens • Personal Notifications	• NOAA Weather Alert Radios • Nixle Engage • Facebook and Twitter rebroadcasts • TV, Radio, Print Media • 2-1-1	• Emergency Alert System • Wireless Emergency Alerts • NOAA Weather Alert Radios • Nixle Engage • TV, Radio, Print Media • Facebook and Twitter rebroadcasts
Warning Priority	Community Level or Advisory Level Messages	Advisory or Alert Level Messages	Highest Alert Level Message. Extreme urgency
Message Type	• Written messages through text, email, or phone • Audible alerts • Information can be generic or specific for a defined location and/or population	• Written message with be relayed to a variety of different systems for rebroadcast	• IPAWS message format required to enable common alerting protocols
Advantages	• Systems can reach a targeted audience • Systems are capable of delivering mass text messages and emails to a defined group containing specific information • Systems can be rapidly activated • At risk populations are familiar with these systems	• Rapid dissemination of alerts to a large audience • Systems are interconnected and will automatically rebroadcast information • Systems are monitored by Public Information Agencies which can continue to disseminate out the most accurate, and up to date information.	• High level warnings to alert the public about imminent, dangerous conditions • Activates all available warning systems, including non-local subscribers
Precautions	• Heavy reliance on cell phone and Internet infrastructure. • Systems are independent and must be activated separately • Personal notifications can be labor intensive	• Will reach a large audience regardless of location • If information is of Immediate and Severe urgency, an additional issuance of an IPAWS message via Nixle will be required. • Verbal challenge code is required	• Activates every available warning system and without isolation of systems • Less detailed, location specific information is communicated • Federal guidelines must be followed • Only authorized IPAWS users can send out a warning message • An IPAWS Password is required
Activation	• Local System users can activate the system • Tone Alert Monitors and Sirens can be activated through Central Dispatch	• System is activated through Grand Rapids NWS • See the Rapid Warning Protocol for additional info	• Newaygo County utilizes Nixle as its IPAWS aggregate. • Only Emergency Management staff are trained and authorized to send out an IPAWS message.
Notes:		Message needs to be verified	Requires IPAWS password

Action Item #3 Maintain a description of the public warning process and coordinate actions in a section of the Newaygo County Emergency Operations Plan (EOP).

The purpose of the Newaygo County Emergency Operations Plan is to save lives, minimize damage, and enhance emergency response operations during any incident within Newaygo County. This plan sets forth the emergency response organizational structure and management system under which Newaygo County will operate. It describes how different government and non-government entities will interact with each other to respond effectively during any disaster or emergency situation. In addition, this plan assigns various emergency objectives and responsibilities that may need to be performed when circumstances call for response and recovery measures outside the realm of normal operations.

The Newaygo County Emergency Operations Plan is organized into Functional Sections. These sections describe the actions required to respond to or recover from any emergency or crisis. One of these functional sections is Warning. This entire functional section is designed to direct the alert and notification of emergency events or hazardous situation to the public, response agencies, and critical officials by the utilization of warning systems. The plan is updated every 2 years and is scheduled to be re-authorized in January 2021.

Action Item #4 Increase the coverage and use of NOAA All-Hazards radios and weather alert systems (Emergency Alert Radio System, etc.) to people and communities in need.

As a part of the FY 2008 Homeland Security Grant, over 100 Midland WR300 NOAA Weather Radios and 50 Midland HH-50 NOAA Weather Radios were purchased and distributed to Commission on Aging clients, Campgrounds, schools, daycares, and government buildings within Newaygo County. This project ran from October of 2012 through January 2020.

Action Item #5 Encourage the MDNR, U. S. Geological Survey, National Weather Service, and U. S. Army Corps of Engineers to continue to operate and monitor stream gauging stations and groundwater monitoring wells and consider whether the exposure to flooding on smaller rivers and streams warrants additional Advanced Hydrologic Prediction Services (AHPS) or local rain and stream gauging and flood threat recognition systems.

Prior to 2011, the only stream gauging station on the Muskegon River in Newaygo County was located just below the Croton Dam USGS 04121970 MUSKEGON RIVER NEAR CROTON, MI. This stream gauge was originally located in Newaygo and was moved to its current location in 1994. This stream gauge is funded by Consumers Energy Hydro Generation Program.

In coordination with the US National Weather Service Hydrologist in Grand Rapids, Michigan, and the Michigan Department of Natural Resources, 4 manual staff gauges were placed on the Muskegon River at DNR river access sites located at High Rollaway (Thornapple Ave), Newaygo Bridge (Sarrell Street), Anderson Flats (Felch Ave), and Maple Island Bridge (Main Street). The purpose of these manual staff gauges was to provide better monitoring downstream from Croton

of water levels. Although valuable for routine monitoring, these staff gauges proved difficult to access during flooding conditions and in some cases were overtopped by flood waters.

In 2016, Newaygo County received a Hazard Mitigation Grant to implement a new flood warning system for approximately 35 miles of the Muskegon River in Newaygo County utilizing the United States Geological Survey (USGS) Flood Inundation Mapper System. Through this implementation, two additional streamgages were added on the Muskegon River in 2017: USGS 04122001 MUSKEGON RIVER AT BRIDGE STREET AT NEWAYGO, MI and USGS 04122025 MUSKEGON RIVER AT BRIDGETON, MI. Purchase of these USGS stream gauges were made possible by the Fremont Area Community Foundation. Annual operating and maintenance expenses were funded by Consumers Energy Foundation, USGS Collaborative Funding, and County of Newaygo from 2017 – 2020. Consumers Energy Hydro Generation Program are not committed to funding these USGS Stream gauges from 2020 – 2025.

The USGS Flood Inundation Mapping (FIM) Program helps communities protect lives and property by providing tools and information to help them understand their local flood risks and make cost-effective mitigation decisions. The USGS Flood Inundation Mapping Program has two main functions. First, the USGS partners with local communities to develop a flood inundation map library. This library contains a set of maps that shows where flooding may occur over a range of water levels in the community's local stream or river. This information can be utilized for preparedness, timely response, recovery, mitigation and planning, and environmental and ecological assessments.

The second function of the Flood Inundation Mapping program is to provide online access to flood inundation maps along with real-time streamflow data, flood forecasts, and potential loss estimates. Once a community's map library is complete, it is uploaded to the USGS FIM Mapper, an online public mapping application. The FIM Mapper allows users to explore the full set of inundation maps that shows where flooding would occur given a selected stream condition. Users can also access historical flood information and potential loss estimates based on the severity of the flood. The FIM Mapper helps communities visualize potential flooding scenarios, identify areas and resources that may be at risk, and enhance their local response effort during a flooding event.

Newaygo County's Flood Inundation Map Library is expected to be published in October of 2020.

Action Item #6 Maintain adequate monitoring and surveillance capabilities by the District Health Department to monitor public health threats and take the necessary steps to prevent or limit the scope and magnitude of threats.

The District Health Department currently utilizes the Michigan Disease Surveillance System (MDSS), which is an online statewide database to assist with disease surveillance, outbreak management, syringe service programs (SSP), and disease trend reporting. This tool is currently assisting in Michigan's Response to the COVID-19 Outbreak. The Outbreak Management

System tool within MDSS is assisting with case identification, contract tracing, and monitoring data. Data from this system can then be extracted by State and Local Health Departments to communicate the status of the situation to the general public as deemed necessary. IE: https://www.michigan.gov/coronavirus/ and https://www.dhd10.org/coronavirus/

Action Item #10 (newly completed) Install back-up generators, as needed for short-term relief from power failures, at critical facilities such as sewage pump stations, municipal wells, municipal buildings, road commissions, hospitals and medical centers, nursing home facilities, schools, and shelters. This item was identified on the 2014 Action Agenda.

During the renovations and expansion of the Newaygo County Jail in 2009-2010, the existing generator located at the jail was relocated to the Newaygo County Administration Building in order to provide backup generation for all the information and technology infrastructure on the Newaygo County Campus. As a part of the renovations and expansions a new generator was placed at the Newaygo County Jail.

Utilizing funding from the American rescue Plan Act (ARPA), standby generators and/or transfer switches to connect standby generators were installed at the following critical infrastructure:

- Newaygo County Emergency Operations Center
- Newaygo County Commission on Aging (Red Cross Shelter Site)
- Newaygo County Courthouse
- Grant Community Center
- Big Prairie Township Hall
- Brooks Township Hall
- Dayton Township Hall
- Denver Township Hall
- Garfield Township Hall
- Grant Township Hall
- Lincoln Township Hall (Fall 2025)
- Merrill Township Hall
- Sheridan Township Hall
- Sherman Township Hall
- City of Fremont Hall
- City of White Cloud Hall

A full listing of generated facilities and critical infrastructure is contained in the Newaygo County Emergency Operations Plan Hazard Specific Annex for Long Term Power Outages dated November 2024.

Action Item #12 Establish safe and appropriate locations for temporary debris disposal sites.

As a component of the Newaygo County Emergency Operations Plan, within the Public Works Functional Section, Attachment 7 outlines the Debris Management Plan for Newaygo County and identifies locations, resources, and requirements for removal of debris from private property and public property.

Action Item #13 Assure the county has adequate personnel and equipment (road barriers, sand bags, portable lighting, snow plows, etc.) to respond to widespread weather events.

As a component of the Newaygo County Emergency Operations Plan, within the Public Works Functional Section, Attachment 2 identifies local public works resource capabilities to respond to widespread weather events within Newaygo County. In addition to local resources, Newaygo County Road Commission is a part of the West Michigan Public Works Mutual Aid agreement with over 10 counties. Finally, Newaygo County is a part of the MDOT Grand Region and can obtain additional state resources is needed to respond to widespread weather events.

Action Item #15 (newly completed) Explore funding options for a Hazard Mitigation Coordinator position, either on a county or regional level, to facilitate the actions contained in this plan.

In FY 2024, the Newaygo County Emergency Services Department added a Full Time Deputy Director position. This position is responsible for managing and coordinating key programs identified within the Hazard Mitigation Plan. Specifically this includes management of physical mitigation projects such as the wildfire fuels reduction and other wildfire prevention projects identified in the Newaygo County Community Wildfire Protection Plan.

Action Item #16 (newly completed) Develop and review coordinated response plans and programs across service providers, agencies and local governments, and assure both mutual aid and the ability to communicate during emergencies.

A component of Newaygo County Board of Commissioners Resolution #01-005-15 Establishing Emergency Management and Homeland Security Policy and Organization for Newaygo County, the Newaygo County Emergency Services Department is charged with ensuring all emergency plans are maintained in accordance with current standard of the County Emergency Operations Plan. In addition, the Emergency Services Department is charged with maintaining and progressing capabilities to implement assigned emergency responsibilities as identified with the County Emergency Operations Plan, which is updated every 4 years.

In June 2025, the Newaygo County Board of Commissioners adopted the Sixth District Regional Mutual Aid Agreement. The purpose of this agreement is to establish a formal, written agreement to assist signatory jurisdictions within Region 6 (the Counties of Clare, Ionia, Isabella, Kent, Lake, Mason, Mecosta, Montcalm, Muskegon, Newaygo, Oceana, Osceola, and Ottawa, the City of Grand Rapids and the Saginaw Chippewa Indian Tribe) during an emergency or disaster. Requests for assistance include personnel, equipment, and materials and supplies under the control of the assisting jurisdiction. It is the duty of the assisting jurisdiction to assess the availability of resources before rendering aid. In all cases, the Party receiving assistance shall be responsible for the costs incurred by any assisting Party rendering aid under this Agreement.

In addition, the following mutual aid agreements are also in place:

- Newaygo County Fire Chiefs Association agreement
- Newaygo County Law Enforcement agreement
- Mason, Mecosta, Lake, Oceana, and Newaygo Emergency Response Team agreement
- West Michigan Public Works Mutual Aid agreement

Potential Action Item #17 (newly completed) Refer emergency responders and emergency staff to FEMA and MSP/EMHSD training for conducting Damage Assessments and determining “Substantial Damage” for an efficient and accurate assessment of building damages.

Newaygo County Emergency Services Department is responsible for the Damage Assessment Functional Section of the County’s Emergency Operations Plan. As a part of this process, the Newaygo County Community Emergency Response Team and Medical Reserve Corps volunteers are routinely provided training for personnel responsible for implementing critical tasks, such as damage assessment. The Newaygo County Emergency Operations Plan Damage Assessment Functional Section outlines the required damage assessment processes as identified by the State of Michigan and FEMA. Training is held at least annually in this area. In addition, independent study courses through the National Disaster and Emergency Management University and State of Michigan.

Action Item #22 - Adopt the recommendations and strategies of the "Firewise” program, which include encouraging all residents living in the wildland/urban interface area to become acquainted with Firewise mitigation strategies to protect their property from wildfire hazards and recommending to production companies and land owners that they employ Firewise principles of proper grounds maintenance, equipment storage, vegetation clearance, and other techniques.

The following are completed projects under this action item:

Lilley Township: Houseman Lake Road Access Project, September 2011 ($9,340.00)
The purpose of this project was to create safer ingress and egress to 24 properties around Houseman Lake by creating more open roadways through the removal of hazardous trees and brush. Project was completed by funding obtained through the Michigan Department of Natural Resources.

Before

After

Brooks Township: Oak Road Fuels Reduction Project, September 2012 ($44,920.00)
June 2016 and September 2016 additional work was completed ($24,100.00)

The purpose of this project was to reduce hazardous fuels surrounding the area east and west of Oak Ave north of East Croton Drive in Brooks Township by physically removing Scotch pine around 14 properties. The project treated approximately 137 acres. An additional 16 acres was treated in June of 2016 that was unable to be completed during the initial project. In addition, all previously treated material was chipped and hauled off site. Funding was through the U.S. Department of Agriculture Forest Service Secure Rural Schools and Community Self Determination Act of 2000 Title III.

Before

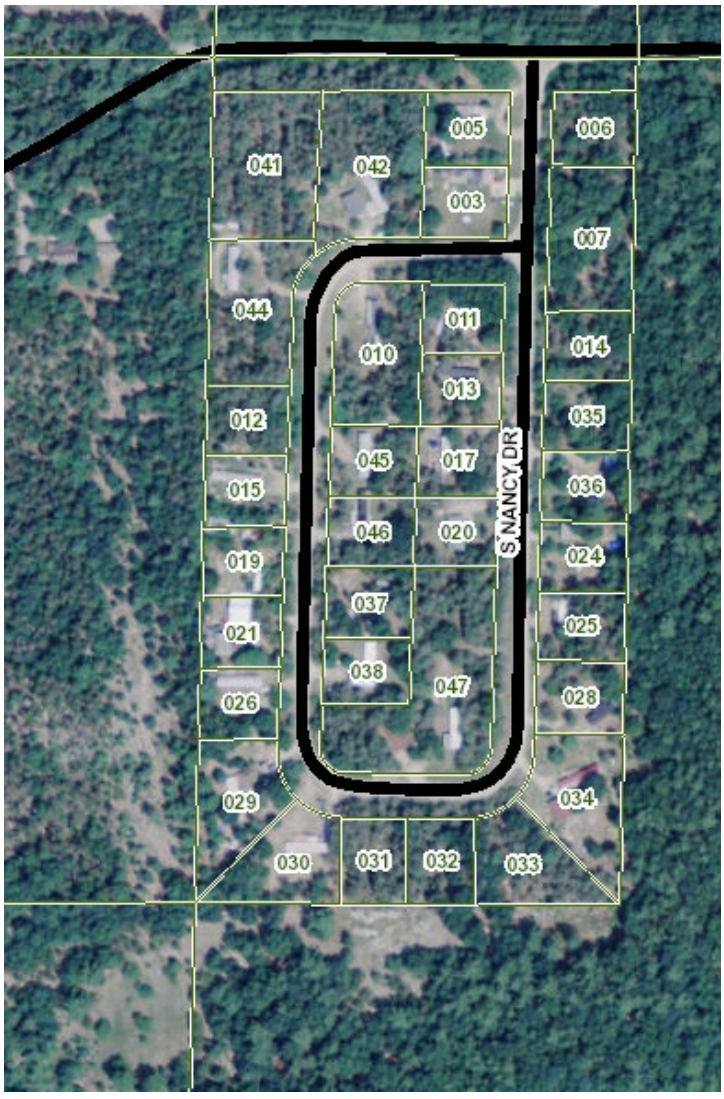
After

Big Prairie Township: Hardy Pines Fuels Reduction Project, September 2012 ($14,130)

The purpose of this project was to create a fuel break surrounding the Hardy Pines Subdivision on 4th Street in Big Prairie Township by physically removing Scotch pine surrounding the subdivision. The project treated approximately 20 acres surrounding 34 lots. Funding was through the U.S. Department of Agriculture Forest Service Secure Rural Schools and Community Self Determination Act of 2000 Title III.

Before

After



Croton Township: Chestnut Ave Fuels Reduction Project, May 2014 ($98,300) and June 2016 ($22,000)

The purpose of this project was to create a fuel break and defendable spaces around homes near the Chestnut Ave area in Croton Township by physically removing Scotch pine and establishing an old fire lane. The initial project treated 20 parcels. In 2016, an additional 10 acres was treated in this project area. Funding was through the U.S. Department of Agriculture Forest Service Secure Rural Schools and Community Self Determination Act of 2000 Title III and the FY2015 Cooperative Forestry Assistance Act of 1978 Grant Funding.

Before

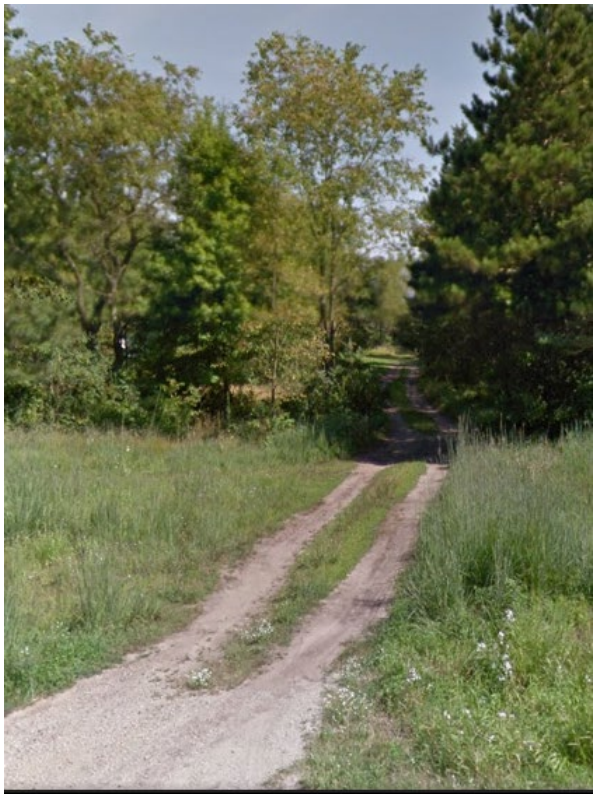
After

Croton Township: Margaret Ave Fuels Reduction Project, May 2014 ($14,950)

The purpose of this project was to create a fuel break and defendable spaces around homes on S Margaret Ave in Croton Township by physically removing Scotch pine and establishing a fuel break. The project treated 7 parcels. Funding was through the U.S. Department of Agriculture Forest Service Secure Rural Schools and Community Self Determination Act of 2000 Title III and the FY2015 Cooperative Forestry Assistance Act of 1978 Grant Funding.

Before

After



Brooks Township: Barberry Ave Fuels Reduction Project, June 2016 ($27,600)
March 2017 ($59,000)

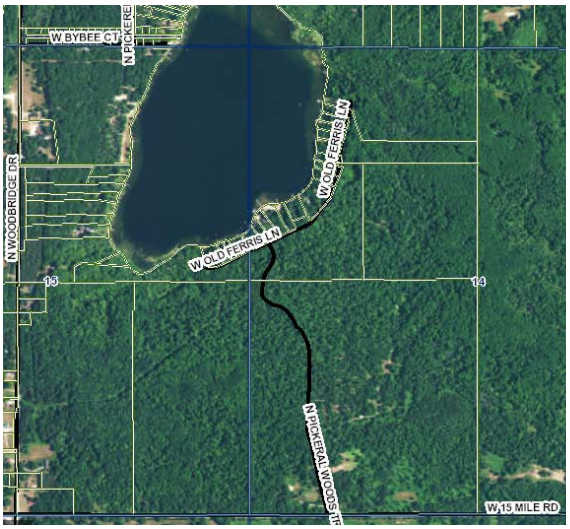
The purpose of this project was to create a fuel break and defendable spaces around homes on Barberry Ave in Brooks Township by physically removing Scotch pine on approximately 30 acres. After the initial project, a second project was completed in 2017 treating 5 parcels and approximately 46 acres on the north east side of Barberry Ave. Funding was through the FY2015 Cooperative Forestry Assistance Act of 1978 Grant Funding.

Before

After

Lilley Township: Pickerel Woods Association Fuels Reduction Project, September 2018 ($100,650) July 2020 ($48,000)

The purpose of this project was to reduce hazardous fuels by removing a large concentration of Jack Pine along 15 Mile Road and Pickeral Woods Trail and creating a safe ingress and egress by removing restricting obstacles within 5 feet of either side of Pickeral Woods Trail. The area treated was approximately 238 acres impacting 20 residents on a one lane roadway. After the initial project, a second project was completed in 2020 by treating 9 parcels and approximately 10 acres on Old Ferris L. Funding was through the FY2015 Cooperative Forestry Assistance Act of 1978 Grant Funding and the U.S. Department of Agriculture Forest Service Secure Rural Schools and Community Self Determination Act of 2000 Title III.



Before

After

Brooks Township: Poplar Ave Fuels Reduction Project, June 2023 ($72,400.00)

The purpose of this project was to reduce hazardous fuels by removing a large concentration of Jack and Scotch Pine. The area treated was approximately 56 acres impacting 5 parcels. Funding was provided through the Cooperative Forestry Assistance Act of 1978 FY 2019 Grant Funding and the U.S. Department of Agriculture Forest Service Secure Rural Schools and Community Self Determination Act of 2000 Title III.

Poplar Ave Before

Poplar Ave After

Brooks Township: Oak Ave and Thornapple Ave Fuels Reduction Project, August 2022 ($131,500.00)

The purpose of this project was to reduce hazardous fuels by removing a large concentration of Jack and Scotch Pine in two project areas, Oak Ave south of M-82 and Thornapple Ave at 88th Street. Oak Ave Project consisted of five property owners in addition to Consumers Energy. The structures in this area were located within a mix of Scotch, jack, and white pine with hardwood species. Approximately 28.27 acres was treated by removing hazardous fuels and creating defendable spaces around homes. The second project group was Thornapple Ave and 88th Street. Thornapple project area consisted of eight property owners and treated approximately 66.71 acres. This area was treated by removing hazardous fuels and creating defendable spaces around homes. Funding was provided through the Cooperative Forestry Assistance Act of 1978 FY 2019 Grant Funding and the U.S. Department of Agriculture Forest Service Secure Rural Schools and Community Self Determination Act of 2000 Title III.

Oak Ave Before

Oak Ave After

Thornapple Ave Before

Thornapple Ave After

Everett Township: Oak Ave and 40th St Fuels Reduction Project, October 2025 ($277,500.00)
Projects focus investments in high priority areas in the wildland urban interface (WUI) to protect communities where planned hazard reduction activities on National Forest Service Lands have the potential to place such communities at risk. This project focused on the treatment of five parcels and approximately 56 acres. Funding was provided through the Cooperative Forestry Assistance Act of 1978 FY 2022 Grant Funding and the U.S. Department of Agriculture Forest Service Secure Rural Schools and Community Self Determination Act of 2000 Title III.

Before

Action Item #23 Meet the criteria to become a NWS-approved "Storm Ready" community.

The NWS established the "StormReady" program to help local governments improve the timeliness and effectiveness of hazardous weather-related warnings for the public. Newaygo County received its StormReady certification on November 3, 2016 and renewed the certification in November 2019 and again in April 2024. The certification is valid for a four-year period. Renewal will be due April 2028. A community must satisfy a set of guidelines to receive "StormReady" recognition. The guidelines are organized into six categories:

- Communications;
- NWS Information Reception;
- Hydrometeorological Monitoring;
- Local Warning Dissemination;
- Community Preparedness; and
- Administrative.

Certain requirements for each guideline may vary depending on the population of the community. More information on the program is available at http://www.stormready.noaa.gov/index.html.

Action Item #25 Designate amateur radio operators to relay information on "immediately dangerous" weather situations and storm damage reports to the NWS, Central Dispatch, and/or Emergency Management.

As a part of the Newaygo County "StormReady" program and the Newaygo County Emergency Operations Plan Severe Weather Hazard Specific Annex, Newaygo County has a designated Skywarn Coordinator who communicates information from amateur radio operators to the US National Weather Service Office in Grand Rapids, Michigan, Newaygo County Central Dispatch, and the Newaygo County Emergency Services Department.

Action Item #28 (newly completed) Conduct an annual "clean-up" program when trash, limbs, barrels, shopping carts and other potential blockages are removed from drainage culverts, channels and adjacent lands.

The Muskegon River Clean-up Company, LLC in partnership with the Muskegon River Watershed Assembly holds an annual Muskegon River Cleanup the first Saturday in August. In 2025, this event celebrated its 14th year. The event typically starts at the Bridgeton Township Launch Site on Warner Ave and cumulates at the Maple Island Launch Site on Main Street. This event usually draws between 300 and 500 people.

In addition to this event, Newaygo County Board of Public Works obtains funding through private donors, corporate donations, funding from the County of Newaygo, in addition to grants through Michigan Department of Environmental Great Lakes, and Energy (EGLE) Household Hazardous Waste Program to hold an annual Household Hazardous Waste Clean-up. This one-day event takes place annually at the Newaygo County Road Commission in White Cloud. Household

hazardous waste (HHW) includes products that we purchase and use every day in our homes that can harm us or the environment if they are not handled properly. This includes materials such as paint, used oil, antifreeze, batteries, pesticides, cleaners, sharps, old TV monitors, and tires are collected and disposed of properly. The annual collection, typically held in May, averages about 10,000 pounds of household hazardous waste.

The Board of Public Works also sponsors a yearly event for citizens of Newaygo County to dispose of tires in an environmentally safe way. Thousands of car and truck tires are collected at this event each year. The tires are then recycled and used to make items such as rubberized asphalt, playground flooring, welcome mats, anti-fatigue mats, vehicle mud guards, and miscellaneous others. All collections are disposed of in a safe manner by a company specifically licensed to haul tires. The tire collection is usually held in June.

Action Item #33 (newly completed) Employ Firewise principles of proper grounds maintenance, equipment storage, vegetation clearance, and other techniques.

Since 2011, Newaygo County has expended $894,390 in various sources of State and Federal Funds to conduct over a dozen Wildfire Fuels Reduction Projects treating over 850 acres within Big Prairie Township, Croton Township, Brooks Township, Everett Township, and Lilley Township. In 2018, Newaygo County received the highest national recognition for the communities efforts in wildfire mitigation, The Wildfire Mitigation Awards are sponsored by the National Association of State Foresters, the International Association of Fire Chiefs, the National Fire Protection Association, and the USDA Forest Service.

Newaygo County will continue these fuels reduction projects into the future as grant opportunities become available. Previous projects were able to leverage funds from Cooperative Forestry Assistance Grant and additional funds from U.S. Department of Agriculture Forest Service Secure Rural Schools and Community Self Determination Act of 2000 Title III.

Action Item #34 (newly completed) Create firebreaks, wherein brush and other fuel is cleared away, in wildland areas.

See progress descriptors under Action Items 22 and 33 for details.

Action Item #35 Maintain the Newaygo County Community Wildfire Protection Plan (CWPP), and work to implement its recommendations. This item was identified on the 2014 Action Agenda.

A Community Wildfire Protection Plan is a planning and prioritization process that helps communities establish local priorities to protect property and critical infrastructure from the risk of wildfire. Community Wildfire Protection Plans can take a variety of forms, based on the needs of the community involved in their development. They may address issues such as wildfire response, hazard mitigation, community preparedness, or structure protection—or all of the above. The 2010 Edition of the Newaygo County Community Wildfire Protection Plan covered hazard mitigation and community preparedness. The 2017 Edition of the Newaygo County Community Wildfire Protection plan has been updated to now include wildfire response and structure protection.

The benefits of having a Community Wildfire Protection Plan include access to funding resources such as the National Fire Plan, which provides millions of dollars annually to help states and communities with community fire planning, hazardous fuels reduction, and wildfire prevention across the nation. In addition, the United States Forest Service and the Bureau of Land Management may be able to expedite the implementation of fuel treatments identified in a Community Wildfire Protection Plan though alternative environmental compliance options offered under the Health Forests Restoration Act.

This plan is required to be updated every 5 years and is in the final process of being completed for 2026.

Action Item #36 (newly completed) Encourage property owners and public facility operators to increase their property's resilience and resistance to hazards.

During threat and risk assessments or field damage assessments, Newaygo County Emergency Services actively communicates with property owners and public facility operators on various hazards which may impact their properties and suggestions on how to mitigate those hazards. The following is an example from a private structure along the Muskegon River in Ashland Township. The before photo was taken during a flooding event in April of 2011. This structure was substantially damaged in a flood in 2013. The after photo was taken during a flood in 2014 post mitigation.

Before

After

Action Item #37 Adopt and enforce the Michigan Rehabilitation Code to hold repaired buildings to higher standards for protection against natural hazards, similar to the standards for newly constructed buildings.

Pursuant to 1972 PA 230, adopted November 5, 1974 and amended by 1999 PA 245, all communities in Michigan are subject to the State Construction Code, which establishes general minimum construction standards for buildings and structures in all Michigan municipalities. The State Construction Code is a compilation of the International Residential Code, the International Building Code, the International Mechanical Code, the International Plumbing Code published by the International Code Council, the National Electrical Code published by the National Fire Prevention Association, and the Michigan Uniform Energy Code with amendments, additions, or deletions as the Michigan Department of Energy, Labor and Economic Growth determines appropriate. The State Construction Code provides for statewide uniformity of application and implementation of rules governing the construction, use, and occupancy of buildings and structures.

The following is a list of State Construction Codes and their effective dates:

- 2021 Michigan Building Code (Effective April 2025)
- 2015 Michigan Residential Code (Effective February 2016)
- 2021 Michigan Rehabilitation Code (Effective April 2025)
- 2021 Michigan Mechanical Code (Effective March 2024)
- 2023 Michigan Part 9A. Mechanical Code Rules
- 2021 Michigan Plumbing Code (March 2024)
- 2023 Michigan Part 7. Plumbing Code Rules
- 2021 IMC and 2021 IPC (Effective March 2024)
- 2021 Michigan Energy Code (Effective Aprill 2025)
- Energy Code ASHRAE 90.1 (2013)
- 2023 National Electrical Code (NEC) (Effective March 2024)
  Note: Residential requirements are contained in the Michigan Residential Code
- 2023 Michigan Part 8. Electrical Code Rules
- State Construction Code Act 230 of 1972, Act 245 of 1999 and all subsequent amendments

The Newaygo County Department of Building Safety & Permits is divided into several areas of code enforcement, with the Building Official identified as the executive officer of the Department's enforcement. The following table is a list of communities covered by Newaygo County Inspection Services. Within Newaygo County 2021 Building Code is in effect for the commercial construction and the 2015 Residential Code is still in use for the residential construction.

Newaygo County Inspection Services

	Ashland T.	Barton T.	Beaver T.	Big Prairie T.	Bridgeton T.	Brooks T.	Croton T.	Dayton T.	Denver T.	Ensley T.	Everett T.	Garfield T.	Goodwell T.	Grant T.	Home T.	Lilley T.	Lincoln T.	Merrill T.	Monroe T.	Norwich T.	Sheridan T.	Sherman T.	Troy T.	Wilcox T.	Fremont	Grant	Newaygo	White Cloud	Hesperia
Building, Mechanical, Electrical & Plumbing	x		x	X	x	x	x		x				x	x	x			x	x	x			X	x	x	x			x
Mechanical & Plumbing	x	x	x	x	x	x	x		x	x			x	x	x			x	x	x			X		x				x
Not Serviced								x			x	x				x	x				x	x					x	x	

Services provided as of November 6, 2025 - Source: Newaygo County Building Inspector's Office

Action Item #38 Utilize mandates for upgrading homes, such as requiring upgraded electrical work for substantial rehabilitation of existing properties or for issuing "Fill Your Basement With Water" orders.

See progress descriptions under Action Item 37 for details.

Action Item #40 Install lightning protection devices on the community's communications infrastructure and appropriate public facilities; and lightning grade surge protection devices on critical electronic components used by government, public service, and public safety facilities.

Newaygo County's original VHF communications infrastructure for Newaygo County Central Dispatch was located at two separate towers, the Jail Tower located at 1035 E James Street, White Cloud, MI 49349 FCC Registration Number 1239150 and Sports Park Tower located at 4684 S Evergreen Ave, Newaygo, MI 49337 FCC Registration Number 1212219. These towers did not meet existing structural standards. As a result, equipment located on these towers were removed and relocated. The Jail Tower was dismantled in February of 2010. The Sports Park tower is still standing currently with no active repeaters.

In 2015, as a part of a Public Safety Answering Point (PSAP) grant, Newaygo County Central Dispatch constructed a new communications tower located at 1018 E Newell Street, White Cloud MI 49349 FCC registration number 1293862. This lattice tower is 48.7 meters (132 Feet) tall and meets all grounding and structural standards. This tower supports the EMS Tac Repeater, now designated First Responders, a microwave data connection linking Newaygo County 911 with Mason/Oceana County 911, the VFIRE 800MHz radio patch, Consumers Energy, Fire North, South, West and East, Life EMS and Schools Emergency base stations and 6 MPSCS 800 MHz base stations.

In 2017, all communications infrastructure was removed from the Sports Park Tower and relocated to a private tower owned by T&W Electronics in Grand Rapids, Michigan. This tower is located at Centerline Road in Newaygo, Michigan, 49337 FCC Registration Number 1060514. This guyed tower was constructed in December of 1990 and is 127.4 meters (418 Feet) tall. This tower meets all of the grounding and structural standards. In addition it meets the painting and lighting specifications in FCC paragraphs 1, 3, 12, and 21.

Action Item #42 Encourage and assist municipalities that are at risk to flooding, or that have been exposed to flooding in the past, to join the National Flood Insurance Program (NFIP) so that residents can obtain flood insurance. This item was identified on the 2014 Action Agenda.

As of March 2025, the following information was provided by the State of Michigan National Flood Insurance Program Coordinator for Newaygo County the following communities are not participating in the National Flood Insurance Program:

CID	Community Name	Init FHBM Identified	Init FIRM Identified	Current Eff. Map Date	Reg Emer Date
	Barton Township				
	Beaver Township				
	Denver Township				
	Goodwell Township				
	Grant Township				
	Home Township				
	Merrill Township				
	Monroe Township				
	Norwich Township				
	Troy Township				
	City of Grant				

The following communities are participating in the National Flood Insurance Program:

CID	Jurisdiction	Total premium	Policies	Rep. Losses	Total Coverage	Claims since 1978	Total Paid since 1978
	Newaygo County	**$ 73,667**	**68**	**43**	**$ 14,409,000**	**133**	**$2,970,623**
260694	Ashland Township	$ 20,138	11	6	$ 1,904,000	31	$742,825
260465	Big Prairie Township		0	0			
260466	Bridgeton Township	$ 17,047	17	21	$ 3,616,000	43	$776,295
260467	Brooks Township	$ 11,707	14	2	$ 3,367,000	19	$710,140
260468	Croton Township	$ 2,123	1	0	$ 1,050,000	1	$0
261402	Dayton Township	$ 3,846	7	0	$ 1,405,000	2	$116,369
261042	Ensley Township		0	0			
261404	Everett Township		0	0			
260167	City of Fremont	$ 1,699	2	0	$ 560,000		
260469	Garfield Township	$ 7,519	6	8	$ 1,222,000	25	$439,693
260485	Village of Hesperia	$ 843	1	0	$ 44,000	2	$12,904
261379	Lilley Township		0	0			
260828	Lincoln Township	$ 4,396	3	0	$ 615,000	0	$0
260340	City of Newaygo	$ 1,759	2	6	$ 317,000	10	$172,397

261899	Sheridan Township	$ 605	1	0	$ 280,000	0	$0
261384	Sherman Township		0	0			
260470	City of White Cloud	$ 3,684	3	0	$ 553,000	0	$0
261013	Wilcox Township		0	0			

Action Item #43 Encourage NFIP-participant municipalities to join the NFIP's Community Rating System (CRS), implement the CRS minimum standards, and implement additional flood loss reduction activities to reduce the cost of NFIP flood insurance.

Since 2011 Brooks Township has participated in the National Flood Insurance Program Community Rating System. At that time, they met the criteria for a CRS Class 8 rating. The floodplain management activities implemented by their community quality residents for a 10 percent discount in the premium cost of flood insurance for NFIP policies issued or renewed in Special Flood Hazard areas. This savings is a tangible result of the flood mitigation activities Brooks Township implements to protect lives and reduce property damage. Each year, the community must verify that it is continuing to perform the activities that are being credited by the CRS by submitting an annual recertification. In addition, a community can continue to improve its Class rating by undertaking new mitigation and floodplain management activities that earn even more points. Brooks Township continues to renew CRS rating, which currently remains at a Class 8.

Action Item #44 Inventory critical facilities and assure proper insurance coverage, both type and amount, including deductibles and policy limits. Evaluate self-insurance coverage in light of its expense and NFIP policies.

During threat and risk assessments or field damage assessments, Newaygo County Emergency Services actively communicates with property owners and public facility operators on various hazards which may impact their properties and suggestions on additional insurance riders they may want to consider adding to protect their property. Luckily, no critical facilities are located within the Muskegon River or White River Floodplains and all are located in an area of minimal risk. The only risk for these facilities is for urban flooding, wide-area flooding, or flooding as a result of dam failure.

Action Item #45 (newly completed) Utilize federal programs; such as but not limited to FEMA's Pre-Disaster Mitigation Program, Flood Mitigation Assistance Program, and Hazard Mitigation Grant Program; to address community needs for hazard mitigation. This item was identified on the 2014 Action Agenda.

Newaygo County has leveraged the following federal programs for mitigation projects:

- Post 1986 floods, Garfield Township participated in a mitigation grant to buyout 14 properties destroyed during the flood. These properties were located in a high risk flood area in Section 35 of Garfield Township and is known as Old Womens Bend and Anderson Flats.
- FY 2004, FY2011, FY 2018 Pre-Disaster Hazard Mitigation Programs to create, update, and maintain the Newaygo County Hazard Management Plan.

- FY 2015 Hazard Mitigation Grant Program for the Newaygo County Flood Warning Project.
- FY 2019 Hazard Mitigation Grant Program for the Hindes Drain Project. This project was cancelled due to the increased cost of materials and labor from time of application to time of award.

This item has been moved to completed as FEMA announced the cancellation of the Building Resilient Infrastructure and Communities (BRIC) program and the removal of Flood Mitigation Assistance (FMA) funding for 2025. BRIC and FMA are the federal government's largest and second-largest programs focused on hazard mitigation. In addition, many of the recent presidential disaster declarations have denied Hazard Mitigation Grants. As these federal programs are in transition and may no longer be available, Newaygo County will focus on other sources of potential funds to assist with mitigation projects locally,

Action Item #46 (newly completed) Utilize, and assist those with special needs to utilize, available programs for assistance with home repairs, weatherization, and heating costs to address hazards for persons and properties.

Within Newaygo County the following programs are available to assist those with special needs with home repairs, weatherization, and heating costs to address hazards for persons and properties:

TrueNorth Community Services has a long history of serving the residents of Newaygo County, Michigan. Organized in 1949 under the name of Newaygo County Community Services, the original intent was to provide the youth of Newaygo County with various educational opportunities. A fund was established to provide low-interest loans for needy and deserving young people to further their education, the re-payment of which was designated for future loans.

In recent years, state funders have been moving toward funding larger geographic regions. This trend has impacted Newaygo County Community Services' work to provide programs and services to Newaygo County. Today, such cross-collaborations, partnerships and alliances are more important than ever to secure funding to address complex public issues that spill over traditional geographic boundaries.

To address the changing environment, in March 2011 Newaygo County Community Services became TrueNorth Community Services. Capitalizing on the combined energies of local people and strong collaborations with other community organizations, TrueNorth Community Services focuses on four core competencies: addressing rural poverty, ensuring our youth thrive, building vibrant rural communities, and providing innovative rural nonprofit leadership. Assistance programs run under TrueNorth include the Center for Non-profit housing, food and medical programs, heat and energy, housing assistance, and others.

Another program available for emergency home repairs of hot water equipment, furnace/HVAC equipment, plumbing, siding, roofing, etc is the Newaygo County Community Development Block Grant CHILL Program. This program was re-established in 2025 for homeowners on limited incomes needing assistance with repairs.

Action Item #49 (newly completed) Investigate the availability of resources and need for creating firebreaks and the availability of resources for acquiring land as necessary to achieve continuity of needed firebreak areas.

See progress descriptors under Action Items 22 and 33 for details.

Action Item #50 (newly completed) Review local building codes to determine if revisions are needed to improve structural ability to withstand greater wind velocities, snow weight, ice, and hail; to provide better protection against structural fires; and to provide better protection to occupants against extreme temperatures.

See progress descriptions under Action Item 37 for details.

Action Item #53 (newly completed) Review code requirements for the installation of mobile homes and manufactured homes to assure protection against severe winds and tornadoes.

See progress descriptions under Action Item 37 for details.

Action Item #59 (newly completed) Enforce the existing Michigan Drain Code requirement for “set-back” from the drain channel, thereby assuring proper carrying capacity of the drain.

The Newaygo County Drain Commission Office is dedicated in providing for the health, safety and welfare of Newaygo County citizens and the protection of surface water and the environment and to promote the long term environment and economic sustainability of Newaygo County by providing storm water management, flood control, development review and water quality programs. Duties include construction and maintenance of over 300 legally established county drains within the county, holding public hearings, boards of determination meetings, determining drainage districts, hearings of apportionment, apportioning costs of drains among property owners, receiving bids and awarding contracts.

The Drain Commissioner works with State and Federal agencies to enforce floodplain and pollution laws, assisting in coordinating regional flood control and water quality plans. The Drain Commissioner, by statute, reviews and must approve all plats and subdivisions to ensure that storm water management concerns have been properly addressed and that the installation of the required facilities have been properly installed and functioning.

Action Item #60 (newly completed) Enforce Michigan’s Part 91, Soil Erosion and Sedimentation Control, of the Natural Resources and Environmental Protection Act, regarding earth changes affecting an acre or more or within 500’ of a lake or stream, and consider adopting and enforcing more stringent local regulations.

The County of Newaygo maintains a Soil, Erosion, and Sedimentation Control program through the Newaygo County Drain Commission Office in partnership with the Michigan Department of Environment, Great Lakes, and Energy. The Newaygo County Drain Commissioner is the enforcing agent for the program.

Action Item #63 (newly completed) Develop a Stormwater Management Plan to identify best management practices (BMP's), and to assess the efficacy of local stormwater ordinances and rules.

The Drain Commissioner is responsible for review and approval of storm water management systems in private developments under the Michigan Land Division Act and in response to local governments' development review procedures. The following municipal jurisdictions have a local Stormwater Management Plan in place:

Jurisdiction	Stormwater Management Plan
Newaygo Co.	✓
Brooks Twp	✓
Everett Twp	✓
Fremont City	✓
Garfield Twp	✓
Grant City	✓
Hesperia Village	✓
Newaygo City	✓

Action Item #64 (newly completed) Develop, adopt, and enforce a Nuisance Ordinance to prevent dumping "objectionable" solid matter into channels and wetlands and Waterway Dumping Regulations to prevent dumping "non-objectionable" waste.

Jurisdiction	Master Land Use Plan	Local Zoning Ordinances
Newaygo Co.		
Ashland Twp	✓	✓
Barton Twp	✓	✓
Beaver Twp		✓
Big Prairie Twp		✓
Bridgeton Twp	✓	✓
Brooks Twp	✓	✓
Croton Twp	✓	✓
Dayton Twp	✓	✓
Denver Twp		✓
Ensley Twp	✓	✓
Everett Twp	✓	✓
Fremont City	✓	✓
Garfield Twp	✓	✓
Goodwell Twp	✓	✓
Grant City	✓	✓
Grant Twp	✓	✓
Hesperia Village	✓	✓
Home Twp		✓
Lilley Twp	✓	✓
Lincoln Twp	✓	✓
Merrill Twp	✓	✓
Monroe Twp		✓
Newaygo City	✓	✓
Norwich Twp	✓	✓
Sheridan Twp	✓	✓
Sherman Twp	✓	✓
Troy Twp		✓
White Cloud City	✓	✓
Wilcox Twp		✓

Action Item #67 (newly completed) Obtain and distribute available information on hazards and cost-effective mitigation actions individuals can implement (for example, Firewise pamphlets), and post-disaster repair and cleanup guidance. This item was identified on the 2014 Action Agenda.

Previously, Newaygo County Emergency Services utilized FEMA Distribution Center for obtaining free publications and resources for Ready.gov materials and the National Flood Insurance Program. These materials are distributed at annual community events throughout the year including Family Health and Safety Day (May), Newaygo County Kids Day (June), National Baby Food Festival (July), Newaygo County Fair Kids Day (August), and White Cloud Kids Day (August). In addition, these materials are distributed out to homeowners post flooding event during the damage assessment process or at the Multi Agency Resource Center (MARC).

Firewise materials and fire safety educational materials were also obtained through the National Fire Protection Association. These materials were directly distributed to homeowners in Wildland Urban Interface Areas when wildfire mitigation projects are being developed. These materials were also available for distribution during annual community events.

This item has been moved to complete as many of the publications have not been updated and now have restricted quantities allowed for order or are on backorder.

Action Item #68 (newly completed) Produce and distribute local emergency preparedness and safety information to the general public and/or targeted groups (seasonal populations, floodplain residents, developers and builders, farm owners and operators, decision makers, Spanish speaking, etc.). Include local resources for information such as fire stations, local radio stations and utilities. This item was identified on the 2014 Action Agenda.

Since 2011, 5 community meetings have been held with floodplain residents on the Muskegon River. These Community Meetings have been staffed with representatives from various local, state, and federal agencies who have provided the most current information about flood monitoring and communications resources, flood warning, flood response, and mitigation resources. These meetings were held on May 23, 2011, March 8, 2012, April 25, 2013, March 20, 2014 and March 15, 2018.

In February 2018 Newaygo County was able to develop, print, and distribute a Flood Warning System Brochure. 2,500 copies were printed from funds allocated under the FY 2015 Hazard Mitigation Grant Newaygo County Flood Inundation Mapper Warning System Project. This information was distributed at the March 15, 2018 community meeting.

In 2024, Newaygo County partnered with the HOSA – Future Healthcare Professionals Chapter from Plymouth Canton Salem High School to develop infographics and flyers on various preparedness topics for distribution. The following is a highlight from that project:

Action Item #76 Participate in programs such as NFIP, CRS, Firewise, Tree City USA, StormReady, etc. and respond to concerns regarding program requirements and obstacles to participation.

- City of Fremont, Michigan is recognized as a Tree City USA community
- 19 out of 30 municipal jurisdictions participate in the National Flood Insurance Program (NFIP).
- 1 jurisdiction participates in the Community Rating System (Brooks Township)
- 7 jurisdictions are identified as Wildland Urban Interface Communities and actively participate in Newaygo County's Wildfire Mitigation Program.
- Sixty-one percent of Newaygo County's 537 thousand acres of land is forested (MSU Extension 2006). Of this, 62% is in private ownership, almost all owned by small, non-industrial owners. Of the 38% in public ownership, the vast majority is part of the Manistee National Forest managed by the US Forest Service.
- Newaygo County received its StormReady certification on November 3, 2016 and renewed the certification on November 2019 and again in April 2024.

Potential Item #82 Assist Newaygo County Emergency Services in its activities related to developing and continually revising Emergency Operations Plan (EOP) detailing coordinated response plans of emergency responders.

The Newaygo County Local Emergency Planning Team was established in 2007 by the Newaygo County Board of Commissioners via Resolution 04-012-07 as the permanent Emergency Management advisory body serving the functions of the Homeland Security Local Planning Team (LPT), SARA Title III Hazardous Materials Local Emergency Planning

Committee (LEPC), Citizen Corps Council, and Hazard Mitigation Planning Council to provide a forum for representatives of local government, private businesses, and public organizations to participate in community emergency planning and preparedness activities. This provides for a consistent approach to activities by an established team of officials involved in all aspects of emergency management.

The Local Emergency Planning Team (L.E.P.T.) is composed of community agency officials assigned key roles in the jurisdictions emergency plan and chaired by the Emergency Services Director, is a primary component of the jurisdiction's multi-disciplined, community approach to emergency management. This group meets regularly, as needed, and/or at the request of the CEO or Director to develop procedures for mitigation, preparedness, response and recovery from emergencies or disasters. At a minimum, the Local Emergency Planning Team meets bi-monthly to specifically review the EOP and ensure that it is current and operationally ready. The team also directs training and exercising (testing) of the plan.

Action Item #85 Coordinate with American Red Cross to ensure the county-wide availability of designated and accessible emergency shelters and assure facilities are inspected, certified, and have back-up power. This item was identified on the 2014 Action Agenda.

Utilizing funding from the American rescue Plan Act (ARPA), standby generators and/or transfer switches to connect standby generators were installed at the following critical infrastructure:

- Newaygo County Emergency Operations Center
- Newaygo County Commission on Aging (Red Cross Shelter Site)
- Newaygo County Courthouse
- Grant Community Center
- Big Prairie Township Hall
- Brooks Township Hall
- Dayton Township Hall
- Denver Township Hall
- Garfield Township Hall
- Grant Township Hall
- Lincoln Township Hall (Fall 2025)
- Merrill Township Hall
- Sheridan Township Hall
- Sherman Township Hall
- City of Fremont Hall
- City of White Cloud Hall

A full listing of generated facilities and critical infrastructure is contained in the Newaygo County Emergency Operations Plan Hazard Specific Annex for Long Term Power Outages dated November 2024.

Summary of In-Progress or On-Going Hazard Mitigation Projects

For 2020, 32 Action Items were considered in-progress or on-going by the Newaygo County Emergency Services Department. These projects require active facilitation, incorporation, and coordination or are being continuously implemented by the communities within Newaygo County. For 2026, 20 Action Items are now considered in-progress or on-going by the Newaygo County Emergency Services Department. These projects are priority to continue as a part of the 2026 Action Agenda.

Action Item #7 Utilize the NWS "Turn Around Don't Drown" system to warn motorists and pedestrians to not enter or cross flooded areas, and install PVC markers alongside roads to illustrate dangerous water levels.

> As of 2017, Newaygo County Emergency Services has incorporated the NWS "Turn Around Don't Drown" message into all public information and warning messages as it relates to flooding. In addition, some areas have been identified for the potential to add roadside markers but have not been installed yet.

Action Item #14 Continue to refine state, county and local road, bridge and culvert maintenance / vegetation management programs to maintain visibilities, provide for living snow fences, reduce erosion, slow stormwater runoff, and maintain the structural integrity of transportation infrastructure. This item was identified on the 2014 Action Agenda.

> Strong coordination and collaboration between the Newaygo County Road Commission, Newaygo County Drain Commission, local Townships, and cities ensure maintenance and prevention projects are incorporated into road improvement projects.

Action Item #19 Continue to maintain, and acquire as necessary, firefighting and rescue equipment; including dry fire hydrants in rural areas and specialized equipment for water and ice rescue, limited access areas, and snow-blocked areas. This item was identified on the 2014 Action Agenda.

> Within the Newaygo County Emergency Operations Plan Fire Services Functional Section, Attachment 3 describes the fire services capabilities (including personnel, equipment, apparatus, and specialty resources) located locally within Newaygo County. All 9 departments serving Newaygo County actively participate in the Newaygo County Fire Chiefs Association and Firefighter Training Committee. The purpose of this group is to create and maintain relationships and cooperation between all emergency services fields within Newaygo County and to provide education and resource opportunities to its members to improve fire service and firefighting operations. Through this association in addition to local departmental budgets, Newaygo County is able to acquire and maintain and necessary capabilities for fire and rescue.

Action Item #20 Construct and/or designate storm shelters/tornado shelters in parks, campgrounds, mobile home parks, and developments that do not have shelters. Consider retrofitting existing or constructing public buildings, industrial sites, and other large businesses or complexes to include shelters. This item was identified on the 2014 Action Agenda.

In 2011, Newaygo County Emergency Services began coordinating with local campgrounds to develop campground emergency plans including designated storm shelters, notification methods, and evacuation routes. This program was expanded to vulnerable sites including schools, churches, and the Newaygo County fairgrounds and is encompassed in the County's Threat and Risk Assessment Review Team process.

Action Item #24 Utilize volunteer communication networks by amateur radio operators (RACES) to facilitate communication during emergencies.

A component of Newaygo County Board of Commissioners Resolution #01-005-15 Establishing Emergency Management and Homeland Security Policy and Organization for Newaygo County, the Newaygo County Emergency Services Department is charged with ensuring the development, coordination, and maintenance of a self-sufficient Community Emergency Response Team (CERT) and Medical Reserve Corps (MRC) programs in Newaygo County. Through this volunteer program, interested team members are crossed trained as Amateur Radio Operators and encouraged to obtain the required training, competencies, and screening processes needed to become communications operations within the Emergency Operations Center. This is an ongoing effort.

Action Item #26 Coordinate with local volunteer organizations such as Newaygo County Community Services' Medical Reserve Corps and local amateur radio operator groups to supplement local emergency plans; aid emergency responders; and also to address the needs of elderly, disabled, homebound, and other special-needs groups during and after severe weather conditions.

A component of Newaygo County Board of Commissioners Resolution #01-005-15 Establishing Emergency Management and Homeland Security Policy and Organization for Newaygo County, the Newaygo County Emergency Services Department is charged with ensuring the development, coordination, and maintenance of a self-sufficient Community Emergency Response Team (CERT) and Medical Reserve Corps (MRC) programs in Newaygo County. Under the direction of the Newaygo County Emergency Services Department, the Community Emergency Response Team (CERT) and Medical Reserve Corps (MRC) programs trains volunteer team members in basic response skills. Team members also help with non-emergency projects that help improve the safety of the community. All volunteers are respected members of the team and an integral part of the county's Emergency Management System. Newaygo County maintains an open roster for up to a 40 person team with an average of 32 participating volunteers. This is an ongoing effort.

Action Item #27 Utilize NWS-trained weather spotters to watch for developing storms, take flood water measurements, and monitor stream conditions.

As a part of the Newaygo County "StormReady" program and the Newaygo County Emergency Operations Plan Severe Weather Hazard Specific Annex, Newaygo County has a designated Skywarn Coordinator who communicates information from amateur radio operators to the US National Weather Service Office in Grand Rapids, Michigan, Newaygo County Central Dispatch,

and the Newaygo County Emergency Services Department. In addition, the Skywarn Coordinator works with the US National Weather Service Office in Grand Rapids, Michigan to deliver Skywarn Training annually in order to train new weather spotters or refresh training for existing spotters. Many of the Newaygo County Community Emergency Response Team (CERT) and Medical Reserve Corps (MRC) volunteers participate in this training and are certified Skywarn spotters. This is an ongoing effort.

Action Item #31 (newly in-progress) Identify structural projects to channel water away from people and property (e.g. berms, dikes, levees, or floodwalls), or to improve drainage capabilities (e.g. culvert improvements, bridge modifications, spillways, relief drains, or floodgates). This item was identified on the 2014 Action Agenda.

Newaygo County Drain Commission has a drainage project had a project approved under the FY 2019 Hazard Mitigation Grant Program to improve storm water drainage capabilities by increasing the Hindes Drain Tile pipe from 12" to 36" in order to channel water away from people and property to assure to the protection of property and infrastructure. Thie undersized drain tile cannot handle current storm precipitation amounts, causing water to back up, blocking Croswell Ave, a local bituminous (paved) roadway, and flood the adjacent 16 parcels. Unfortunately, Newaygo County had to turn down the grant award due to an increased cost of materials and labor between the time the grant was written to when it was awarded. Instead, the Newaygo County Road Commission did a joint collaborative project with the Drain Commission office to elevate a portion of Croswell Ave. By elevating the roadway, water is now diverted away from the roadway and properties and into the open farm field instead reducing flood damages. Other projects similar to this are now being explored.

Action Item #41 Assure insurance coverage on properties and obtain additional insurance coverage as appropriate (sump pump failure, sewer back-up, wildfire, dam failure, etc.).

During threat and risk assessments or field damage assessments, Newaygo County Emergency Services actively communicates with property owners and public facility operators on various hazards which may impact their properties and suggestions on additional insurance riders they may want to consider adding to protect their property. As an example, in 2014 Dayton Township was not a participating in the National Flood Insurance Program. The township joined the program in 2015. As most property owners were unaware of their flooding risk, many did not sign up for coverage until after the 2019 March Flooding Event, when 9 property owners joined the program.

Action Item #48 (newly in-progress) Assess the need for and use of state and federal funding and technical assistance for dam / spillway repairs.

Four dam projects are currently in process within Newaygo County. First, in partnership with the Michigan Environment, Great Lakes, and Energy (EGLE) Dam Safety Division the Muskegon River Watershed Assembly (MRWA) has been seeking resources to eliminate the Rowe Manufacturing Hydro and Penoyer Creek Dams (set of three dams). Two of the dams overtopped and partially failed during the 2019 flood. Since, Rowe 2 (the upper most dam) is ranked in unsatisfactory condition and has been under an impoundment drawdown. Rowe 1 (the middle dam) is ranked in poor condition.

In May 2025, MRWA was notified by EGLE they will be financially support property assessment and design and engineering to eliminate the underground culverts and impoundment and return Penoyer Creek to the surface. Award amount is approximately $250,000 to address permitting for the removal or Rowe 2 and allow MRWA time to raise the funds for construction. Engineering on Rowe #1 is expected to wrap up in Quarter 1 of 2026, and drawing down the impoundment prior to removal of the dam is being considered by not assured.

The third structure, Rowe Manufacturing Hydro (lower most dam) is currently not on Michigan's Dam Safety inventory as it does not meet the size requirements to be regulated under Part 315, it is still considered a dam – just unregulated. However, it has been determined as still eligible for the DRRGP State funding. The goal is to remove, or by pass, all three structures in order to restore the creek to its natural state. The MRWA is working with the property owner to contract engineering and expect to have a signed contract in quarter 4 of 2025.

The final dam project is for the White Cloud Dam owned and operated by the City of White Cloud. The City of White Cloud owns and operates the White Cloud Dam (the Dam) on the White River in White Cloud, Michigan. The Dam is classified as a High Hazard dam by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Dam Safety and currently has a poor condition rating.

In 2018, the auxiliary spill gate was overtopped causing water to flow over the emergency spillway resulting in a collapse of the dam embankment. Emergency repairs were completed costing $99,000. Funds for repairs were obtained from the Section 19 state disaster assistance fund. This funding source is not an ongoing opportunity but was provided by the State of Michigan under a Governor's Disaster Declaration in response to severe flooding in the County of Newaygo. When authorized under a Governors Disaster Declaration, Section 19 funding may reimburse eligible local units of government (Cities, Villages, Townships, and Counties) for eligible recovery efforts post disaster. This includes but is not limited to repair for damages to public facilities or roadways caused by the disaster.

Below is a brief breakdown of the funding White Cloud has received through the Dam Risk Reduction Grant Program. This information was provided by EGLE's Dam Safety Unit:

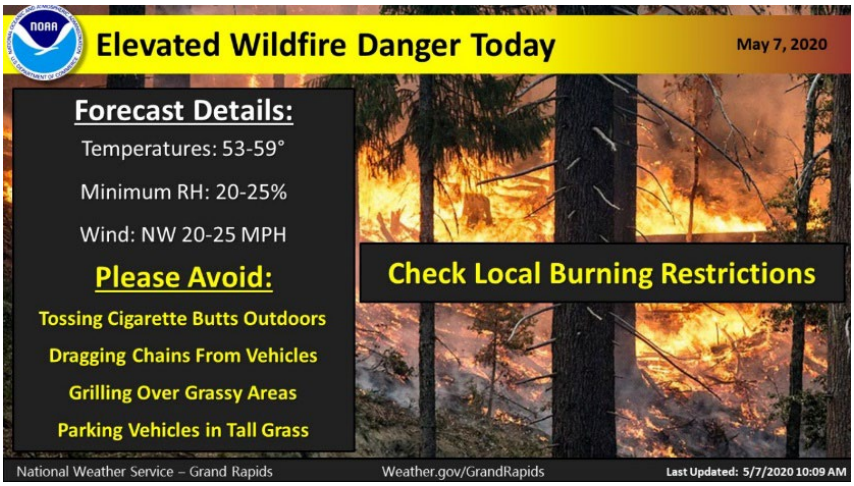
- 2022-2023 Brief Scope: Due to inadequate spillway capacity, the White Cloud Dam is considered to be in poor condition. The city proposes to complete concrete and metal work that addresses a portion of the deficiencies. The grant award will also fund a dam disposition feasibility study. This study will help the city make informed decisions on the future of the dam and will consider dam removal situations.
    - Grant Amount: $222,712.75, Match: $39,302.25, Period of Performance: 6/1/2023 – 9/30/2026, Grant Closed: 3/17/2025
- 2023-2024 Grant Amendment Scope: Based on the findings of the initial feasibility study, additional structural and geotechnical data collection at the White Cloud Dam is necessary to perform reliable stability modeling of the existing conditions of the dam. In addition, given the near overtopping events of the dam, additional hydraulic modeling is needed to inform the City of White Cloud of the best operational measures for the dam to reduce the overtopping risk.
    - Amendment Amount: $68,425, Match: $12,075, Period of Performance: 6/1/2023 – 9/30/2026, Grant Closed: 3/17/2025
    - 2nd Grant Amendment: During the structural field investigation, it was discovered that there is significant deterioration of structural steel beams associated with the road bridge over the primary spillway. The amendment request amends to scope of work to include the installation of emergency repairs by installing two layers of 12-foot-long steel road plates to span over the bridge. No additional grant funds were awarded as part of this amendment.

In total, the City of White Cloud was awarded $291,137.75 in grant funds and contributed $51,377.25 in match dollars. However, due to several project elements coming in under budget, there was a balance $10,722.85 of unused grant funds that were returned to the State after completion of the above-mentioned scope elements and project closeout.

Action Item #69 Produce and distribute information on mitigation measures the county is taking/will take, as identified in this hazard mitigation plan, to local units of government and encourage them to participate in the plan and take mitigation actions.

Newaygo County Emergency Services utilizes the Newaygo County Website, email distribution, direct communications, and regular presentation updates to the Newaygo County Board of Commissioners and Local Emergency Planning Team to encourage participation in mitigation planning and actions.

Action Item #70 Encourage residents to develop a Family Emergency Preparedness Plan; including the preparation of a Disaster Supply Kit, the posting of emergency telephone numbers, and pre-planned escape routes.



Newaygo County Emergency Services utilizes FEMA Distribution Center for obtaining free publications and resources for Ready.gov materials and the National Flood Insurance Program. These materials are distributed at annual community events throughout the year including Family Health and Safety Day (May), Newaygo County Kids Day (June), National Baby Food Festival (July), Newaygo County Fair Kids Day (August), and White Cloud Kids Day (August). In addition, these materials are distributed out to homeowners post flooding event during the damage assessment process or at the Multi Agency Resource Center (MARC).

Action Item #71 Promote public awareness on fire hazards such as recreational fires (especially in resort/vacation home areas), smoking, fireworks, campfires, wood stoves, and outdoor burning; and support safe disposal of yard and house waste rather than open burning.

Firewise materials and fire safety educational materials are obtained through the National Fire Protection Association. These materials are directly distributed to homeowners in Wildland Urban Interface Areas when wildfire mitigation projects are being developed. These materials are also available for distribution during annual community events.

In addition, during Newaygo County Emergency Services coordinates with the local Department of Natural Resources Fire Services Officer and the US National Weather Service Grand Rapids on elevated wildfire danger days. Fire risk, burning restrictions, what to avoid, and safety tips are communicated out to the public via Nixle.

Action Item #72 Research availability of local and Michigan-based recovery "vendors" for post-disaster goods and services (e.g., cleaning, drying, pumps, repairs, construction supplies, portable refrigeration units, disaster recovery experts) to support disaster recovery efforts.

Within the Newaygo County Emergency Operations Plan, a multitude of public and private response and recovery resources are identified in various sections of the functional annexes and hazard specific annexes. This resource information also includes contact information and resource ordering information. This information is continuously changing as capabilities and needs change. Resource information is updated on a routine basis both pre and post incident.

Action Item #73 Identify and advertise a list of available heated and cooled shelters to the elderly and other special populations who may be at risk to extreme temperature events.

Within Newaygo County, heating and cooling centers are managed locally by the individual municipality, facility, or church. These locations are not pre-designated and are identified based on need and capability during an incident. Due to limited resource capabilities and regionalization, the American Red Cross and Salvation Army do not sponsor or run these centers. If a municipality, facility, or church chooses to open a heating or cooling center and notifies Newaygo County Emergency Services, the information can be shared Countywide with the public utilizing Nixle. These locations are managed in accordance with the Newaygo County Mass Care Standard Operating Procedures adopted February 2024 by the Newaygo County Board of Commissioners.

Action Item #75 Through coordination with the District Health Department, increase public awareness of the causes, symptoms and protective actions for disease outbreaks and other potential public health emergencies.

Utilizing Nixle, Newaygo County Emergency Services is able to distribute information from the District Health Department to the public within Newaygo County. This information is disseminated when a virus or disease, which has the capability for human to human spread or animal to human spread, is identified in or near Newaygo County. Information shared can range based on the needs to the incident and information the public should be aware and educated on.

An example of this coordination was the information sharing that took place in September 2019 for Eastern Equine Encephalitis (EEE). Information was shared via Nixle from the Michigan Department of Health and Human Services (MDHHS) on EEE to residents within Ensley Township, where a case was identified within a horse. This was the first case of EEE in a horse in Newaygo County in over 10 years and the second since 1942. Facts on EEE and the risk in humans was shared. In addition, when the Michigan Department of Health and Human Services (MDHHS) chose to conduct aerial spraying to combat the mosquito-borne disease, additional information was shared via Nixle and door-to-door informational flyers in the areas to be impacted.

Another example of this coordination is the ongoing initiatives that started in March 2020 for Coronavirus Disease COVID-19. To date 30 informational messages have been disseminated through Nixle including information on signs and symptoms, how to limit the spread, how to get tested, protective actions, resources and services available, current status of case counts in addition to a variety of other information. The goal of this dissemination is to create common understanding of the disease, its risks, and how to limit spread.

Action Item #78 Develop model business and critical facility disaster plans that include details on disaster response (evacuation plans; data protection, security, and recovery; property security; drills; first-aid training and CPR; and post disaster mitigation actions), facilities management, damage assessment, relocation of both services and people, insurance, contractors, list of resources for assistance, and evaluation, testing, and updating plans. Inform business owners about available disaster-recovery training programs.

Action Item #79 Notify communities of hazard mitigation funds, as they become available, and assist them in applying for funds. This item was identified on the 2014 Action Agenda.

Newaygo County Emergency Services maintains an email distribution list of all municipal city managers, township clerks, and township supervisors. When Emergency Services is notified of available Hazard Mitigation Funding opportunities the email is shared with this distribution group. This notification typically takes place one or twice a year, depending on what funding opportunities become available.

Action Item #80 Encourage meetings between utility providers and local Public Works and Road Commission Departments to determine the resources and funding required to mitigate recurring infrastructure failures.

Consumers Energy has a Public Safety Outreach Program in addition to a Community Affairs Program. The Public Safety Outreach team works with public safety officials to ensure coordination and effective emergency response during utility related emergencies. This coordination can include providing an Incident Command System (ICS) trained liaison to the local Emergency Operations Center to align on priorities and ensure effective communications. The Community Affairs Team are company ambassadors, community advocates, and facilitators. They inform, listen, volunteer, coach, and facilitate. They act as liaisons for the company and the communities they operate in. Other utility providers have similar programs. Newaygo County Road Commission and local Public Works Departments are actively tied into these programs to help foster collaboration and coordination between operations.

Action Item #84 Utilize the County Geographic Information System (GIS) capabilities to support pre-disaster planning (such as flood stage forecast maps, and maps showing the locations of secluded, gated, and seasonal homes), disaster response, and post-disaster recovery activities.

Newaygo County has a designated GIS coordinator within the Information and Technology Department. Since the late 90's, GIS has become an integral part of county functions. The Newaygo County GIS office started out with the conversion of paper parcel maps into

applications that are used by a wide range of township, city, county, state, and federal agencies and departments. The County's GIS data is made available to the public, free of charge, in our online County Map Viewer.

Within Newaygo County Emergency Services, the GIS coordinator has created a variety of different map overlays to assist with pre-planning, response, and recovery operations. A separate, secured online database has been created for access to these overlays which include Damage Assessment Disaster Surveys data from the Newaygo County Vulnerable Populations guide such as adult foster care homes, apartments, camps and campgrounds, churches, day care centers, hotels, mobile home communities, schools, skilled nursing facilities, etc, in addition to specific hazard layers for the Muskegon River Flooding and Dam Failure.

Summary of Pending Hazard Mitigation Projects

Potential Action Item #21 Coordinate with the Newaygo Conservation District, local watershed councils, and lake improvement boards to maintain healthy, free-flowing watercourses with minimal erosion and sedimentation, and to restore / preserve wetlands.

Potential Action Item #29 Assess the capacity of storm water systems to handle both storm waters and high water tables and make necessary improvements and expansions to assure the protection of property and infrastructure.

Potential Action Item #30 Raise or relocate buildings above the 100-year flood level, and/or acquire properties in flood and high-risk erosion areas for demolition and re-use of the land as open space.

Potential Action Item #32 Identify environmental restoration projects to lessen the impacts of flooding and improve water quality and wildlife habitat, such as erosion control techniques (streambank modification), dredging / clearance of sediment and debris from drainage channels, and protection / restoration of wetlands and natural water retention areas.

Summary of Incomplete or Unknown Status of Hazard Mitigation Projects

Due to change in administrative leadership, transition of elected officials, and a lack of available documentation, the status of the following Hazard Mitigation potential projects is unknown. In review of these projects by the County's Local Emergency Planning Committee and County Administration, the projects are considered still relevant, but it is unknown if any municipal jurisdiction(s) took any action on these items and what their status is. Therefore, these 21 potential projects remain in the plan as incomplete or unknown.

Potential Action Item #8 Encourage electrical utilities to place power lines underground wherever possible, but especially when upgrading lines or running power to new developments.

Potential Action Item #9 Recommend design of the electrical distribution system with built-in redundancies such that isolated failures do not lead to wide scale outages; recommend consideration

of back-up generators powered with wind, sun, gasoline, or natural gas; and assess and improve, electric service system reliability as needed.

Potential Action Item #11 Bury water/sewer lines below the frost line or insulate and maintain lines to protect against ground freeze.

Potential Action Item #18 Design and plan for water supply infrastructure systems that include a consideration of, and are more resistant to, drought events.

Potential Action Item #39 Review the energy efficiency, winter readiness, and electrical protection of critical facilities and government buildings in the community and consider replacing aged facilities and equipment.

Potential Action Item #47 Establish a voluntary floodway property acquisition and land re-use program, with corresponding changes in zoning, and purchase/transfer of development rights for properties.

Potential Action Item #51 Contact Insurance Services Office (ISO) to request a copy of the community's Building Code Effectiveness Grading Scale (BCEGS), and work to improve the BCEGS rating through improvements to building codes and enforcement. This item was identified on the 2014 Action Agenda.

> A free copy of a community's BCEGS report is available upon the request of a community's chief elected official or building official. This information can be used to identify deficiencies in existing building codes and enforcement. Addressing those deficiencies can enhance the resiliency of new and rehabilitated structures.

Potential Action Item #52 Utilize the Institute for Business and Home Safety (IBHS) guidelines provided through the "FORTIFIED" programs to guard new and existing structures against hazards, and consider incorporating them into existing codes.

Potential Action Item #54 Assess the need to strengthen anchoring requirements for propane tanks and hazardous materials in the floodplain/floodway.

Potential Action Item #55 Assure proper location, installation, cleaning and maintenance of septic tanks, particularly in the floodplain/floodway and around lakes.

Potential Action Item #56 Incorporate mitigation provisions into comprehensive plans and land use plans; such as identification of acceptable land uses and densities based on consideration of flood-prone areas, soil types, topography, and etc. This item was identified on the 2014 Action Agenda.

> Land use planning helps provide rationale for local rules and policies, so it is important to integrate principals of hazard mitigation into this process. Following adoption of this plan, local units of government and the county will be encouraged to consider the contents of this hazard mitigation plan when writing or updating local plans. State law in Michigan requires that master plans must be reviewed, and updated if necessary, every five years.

Potential Action Item #57 Integrate hazard mitigation into the capital improvement planning process so that public infrastructure does not lead to development in hazard areas and so that possible set-asides for planned and engineered structural projects (berms, levees, floodwalls, detention and retention ponds, debris storage areas, culvert replacement, etc.) are considered.

Potential Action Item #58 Incorporate hazard mitigation provisions and recommendations into local zoning ordinances and resolutions as they restrict or direct development; with consideration given to dams, floodplains, soil type and topography; and as they allow flexibility in lot sizes and locations, such as in Planned Unit Developments (PUD). This item was identified on the 2014 Action Agenda.

> Following adoption of this plan, local units of government and the county will be encouraged to consider the contents of this plan when writing or updating local ordinances. Zoning is an effective tool for mitigating hazards because it can be used to direct new development away from known hazardous areas, such as floodplains. Resources such as the IBHS suite of FORTIFIED programs can provide additional guidance for increasing the resistance of new and existing structures to hazards.

Potential Action Item #61 Enforce Michigan's Land Division Act as it furthers the orderly layout and use of land, provides for proper ingress and egress to lots and parcels, controls residential building development within floodplain areas, provides for reserving easements for utilities, and governs internal drainage.

Potential Action Item #62 Consider regulation of development in the hydraulic shadows of dams (where flooding would occur if there was a severe dam failure).

Potential Action Item #65 Develop and enact a Community Forestry Program to reduce the damage potential of trees by addressing proper tree care prior to a storm (pruning, maintenance, removal, and replacement) by communities and property owners and by managing trees before, during, and after a storm.

Potential Action Item #66 Develop policies or ordinances aimed at mitigating the impacts of drought conditions, such as: the promotion of planting crops tolerant of low moisture levels; partner with programs that promote soil health and monitor and preserve soil moisture; and prioritize or control water use during drought conditions.

Potential Action Item #74 Provide local units of government and builders with information and guidance on methods of protecting new construction from wind damage. Encourage builders and contractors to design wind resistance into the construction of new homes and major home renovation projects.

Potential Action Item #77 Develop model hazard mitigation and contingency plans and regulations (such as stormwater ordinance, nuisance ordinance, waterway dumping regulations, community forestry program, drought plan and ordinance, etc.) and provide them to interested communities.

Potential Action Item #81 Support agricultural programs that promote soil health, preserve soil moisture, and monitor soil moisture levels to help to minimize loss of crops and topsoil during drought conditions and promote educational programming relating to water conservation, especially in irrigation and farming, during periods of drought.

Potential Action Item #83 Strengthen the role of the LEPT in the land development process, with input into land use plans, comprehensive plans, and zoning ordinances.

ACTION AGENDA 2026 – 2031

The action items highlighted in this section were selected from the list of potential hazard mitigation actions presented in the chapter entitled "Potential Hazard Mitigation Actions" and are presented below as the Action Agenda for 2026-2031. The selection process was guided by criteria described in the chapter entitled "Evaluation Criteria to Select and Prioritize Action Items." All items on this revised Action Agenda are considered to be of the highest priority. Implementation of these action items may be appropriate on the county level and / or the local level. The "List of Hazard Mitigation Actions Applicable to Governmental Units" at the end of the chapter assigns action items to appropriate jurisdictions within Newaygo County. Each action item includes the following information to help facilitate implementation:

Priority Level

All identified action items are considered priorities within this Hazard Mitigation Plan. In order to help structure implementation of the Plan, a further prioritization of high, medium, or low is assigned to each measure. This is intended to convey a sense of importance relative to the other action items from a countywide perspective.

Timeframe

Generally identifies when an action item might begin. Where appropriate, prerequisite activities are discussed.

Applicable Governmental Unit(s) / Responsible Person (s)

Identifies key players for initiating and implementing each action. Often the work will be shared by a number of individuals and agencies.

Action Plan Caveats

• When identifying the primary agency or jurisdiction(s) responsible for implementing and administering each action, if a specific agency or jurisdiction is not identified and it states "All Municipalities" the responsibility falls to the Office of the Jurisdiction. This includes but is not limited to the Board of Commissioners, County Administration, City Council, City Manager, Village Council, and Township Board of the jurisdiction.

• The Muskegon County Hazard Mitigation Plan considers all of the objectives in the Action Plan as important. As part of its official guidance, FEMA additional requires that the plan further evaluate the objectives to prioritize some implementation actions over others. The Muskegon County Local Emergency Planning Committee therefore selected some objectives as being of "highest priority" (as opposed to standard priority) after holding a special meeting on the topic on March 12, 2024. Objectives that achieved a consensus were selected, with those that aligned with the prioritized hazards contained in the Hazard Analysis portion of this document, being an especially important factor. The following **8** implementation actions were ultimately chosen as being of the highest priority: 1, 48, 60, 50, 58, 66, 83, and 47.

• Funding for Action Plan related activities, where program specific, are noted in the following pages.

• Details on how the Action Plan will be monitored in order to track progress is include in the Planning Process section (starting on page 12) and in the Plan Implementation section (starting on page 460).

	Target Date	Goal 1: Protect public health and safety Objective / Implementation Action	Primary Hazard Addressed	Primary Jurisdiction(s)
1.1		Assure that threat recognition (watches) and warning systems are adequate and appropriate and that they utilize the latest technology		
	ONG	7. Utilize the NWS "Turn Around Don't Drown" system to warn motorists and pedestrians to not enter or cross flooded areas, and install PVC markers alongside roads to illustrate dangerous water levels.	Flooding and Dam Failure	Emergency Services and All municipalities
1.2		Protect infrastructure and services		
	ONG	14. Continue to refine state, county and local road, bridge and culvert maintenance / vegetation management programs to maintain visibilities, provide for living snow fences, reduce erosion, slow stormwater runoff, and maintain the structural integrity of transportation infrastructure	All Hazards	All municipalities
1.3		Build and support local capacity, commitment and partnerships to continuously become less vulnerable to hazards.		
	ONG	19. Continue to maintain, and acquire as necessary, firefighting and rescue equipment; including dry fire hydrants in rural areas and specialized equipment for water and ice rescue, limited access areas, and snow-blocked areas.	All Hazards	All municipalities
	ONG	20. Construct and/or designate storm shelters/tornado shelters in parks, campgrounds, mobile home parks, and developments that do not have shelters. Consider retrofitting existing or constructing public buildings, industrial sites, and other large businesses or complexes to include shelters.	Thunderstorm Tornado Winds	All municipalities
	2026	21. Coordinate with the Newaygo Conservation District, local watershed councils, and lake improvement boards to maintain healthy, free-flowing watercourses with minimal erosion and sedimentation, and to restore / preserve wetlands.	Flooding and Dam Failure	Newaygo County Drain Commission
1.4		Enlist support of committed volunteers to safeguard the community before, during, and after a disaster.		
	ONG	24. Utilize volunteer communication networks by amateur radio operators (RACES) to facilitate communication during emergencies.	All Hazards	Emergency Services
	ONG	26. Coordinate with local volunteer organizations such as Newaygo County Community Services' Medical Reserve Corps and local amateur radio operator groups to supplement local emergency plans; aid emergency responders; and also to address the needs of elderly, disabled, homebound, and other special-needs groups during and after severe weather conditions.	All Hazards	Emergency Services
	ONG	27. Utilize NWS-trained weather spotters to watch for developing storms, take flood water measurements, and monitor stream conditions.	Thunderstorm Tornado Flooding Dam Failure	Emergency Services

Objective	Target Date	Goal 2: Protect existing and new properties. Objective / Implementation Action	Primary Hazard Addressed	Primary Jurisdiction(s)
2.1		Use the most cost-effective approaches to keep hazards away from existing buildings and facilities		
	2027	29. Assess the capacity of storm water systems to handle both storm waters and high water tables and make necessary improvements and expansions to assure the protection of property and infrastructure.	Flooding and Dam Failure	All municipalities Road Commission Drain Commission
	2030	30. Raise or relocate buildings above the 100-year flood level, and/or acquire properties in flood and high-risk erosion areas for demolition and re-use of the land as open space.	Flooding and Dam Failure	All municipalities Emergency Services
	ONG	31. Identify structural projects to channel water away from people and property (e.g. berms, dikes, levees, or floodwalls), or to improve drainage capabilities (e.g. culvert improvements, bridge modifications, spillways, relief drains, or floodgates).	Flooding and Dam Failure	All municipalities Road Commission Drain Commission
	2028	32. Identify environmental restoration projects to lessen the impacts of flooding and improve water quality and wildlife habitat, such as erosion control techniques (streambank modification), dredging / clearance of sediment and debris from drainage channels, and protection / restoration of wetlands and natural water retention areas.	Flooding and Dam Failure	All municipalities Road Commission Drain Commission
2.2		Use the most cost-effective approaches to keep hazards away from existing buildings and facilities		
2.3		Maximize insurance coverage to provide financial protection against hazard events.		
	ONG	41. Assure insurance coverage on properties and obtain additional insurance coverage as appropriate (sump pump failure, sewer back-up, wildfire, dam failure, etc.).	All Hazards	All municipalities Road Commission Drain Commission Emergency Services
2.4		Maximize the resources for investment in hazard mitigation, including the use of outside sources of funding.		
	ONG	53.Assess the need for and use of state and federal funding and technical assistance for dam / spillway repairs.	Flooding and Dam Failure	City of White Cloud Village of Hesperia Emergency Services Drain Commissioner

Objective	Target Date	Goal 3: Promote growth in a sustainable, hazard free manner Objective / Implementation Action	Primary Hazard Addressed	Primary Jurisdiction(s)
3.1		Incorporate hazard provisions in building code standards, ordinances, and procedures.		
	2026	54. Assess the need to strengthen anchoring requirements for propane tanks and hazardous materials in the floodplain/floodway.	Flooding / Dam Failure Hazmat	Building Inspector All municipalities
	2027	55. Assure proper location, installation, cleaning and maintenance of septic tanks, particularly in the floodplain/floodway and around lakes.	Flooding / Dam Failure	Public Health - Environmental
3.2		I Incorporate hazard mitigation into land use and capital improvement planning and development activities.		
3.3		Incorporate hazard mitigation into existing land use regulation mechanisms to ensure that development will not put people in danger or increase threats to existing properties.		
3.4		Research, recommend, adopt and enforce other plans and ordinances that protect natural resources so that they can, in turn, provide hazard protection.		
Objective	Target Date	Goal 4: Increase public understanding, support, and participation in hazard mitigation. Objective / Implementation Action	Primary Hazard Addressed	Primary Jurisdiction(s)
4.1		Heighten public awareness of the full range of existing natural and man-made hazards and actions they can take to prevent or reduce the risk to life or property from them.		
	2026	69. Produce and distribute information on mitigation measures the county is taking/will take, as identified in this hazard mitigation plan, to local units of government and encourage them to participate in the plan and take mitigation actions.	All Hazards	Emergency Services All municipalities
	ONG	70. Encourage residents to develop a Family Emergency Preparedness Plan; including the preparation of a Disaster Supply Kit, the posting of emergency telephone numbers, and pre-planned escape routes.	All Hazards	Emergency Services
	ONG	71. Promote public awareness on fire hazards such as recreational fires (especially in resort/vacation home areas), smoking, fireworks, campfires, wood stoves, and outdoor burning; and support safe disposal of yard and house waste rather than open burning.	Fires Wildfires	Emergency Services All municipalities
	ONG	72. Research availability of local and Michigan-based recovery “vendors” for post-disaster goods and services (e.g., cleaning, drying, pumps, repairs, construction supplies, portable refrigeration units, disaster recovery experts) to support disaster recovery efforts.	All Hazards	All municipalities
	ONG	73. Identify and advertise a list of available heated and cooled shelters to the elderly and other special populations who may be at risk to extreme temperature events.	All Hazards	Emergency Services

	ONG	75. Through coordination with the District Health Department, increase public awareness of the causes, symptoms and protective actions for disease outbreaks and other potential public health emergencies	Public Health	All municipalities Public Health Emergency Services
4.2		Encourage local communities, agencies, organizations and businesses to participate in the hazard mitigation process.		
	ONG	78. Develop model business and critical facility disaster plans that include details on disaster response (evacuation plans; data protection, security, and recovery; property security; drills; first-aid training and CPR; and post disaster mitigation actions), facilities management, damage assessment, relocation of both services and people, insurance, contractors, list of resources for assistance, and evaluation, testing, and updating plans. Inform business owners about available disaster-recovery training programs.	All Hazards	Emergency Services All municipalities
	ONG	79. Notify communities of hazard mitigation funds, as they become available, and assist them in applying for funds.	All Hazards	Emergency Services
	ONG	80. Encourage meetings between utility providers and local Public Works and Road Commission Departments to determine the resources and funding required to mitigate recurring infrastructure failures.	All Hazards	All Municipalities
4.3		Incorporate hazard mitigation into existing land use regulation mechanisms to ensure that development will not put people in danger or increase threats to existing properties.		
	ONG	84. Utilize the County Geographic Information System (GIS) capabilities to support pre-disaster planning (such as flood stage forecast maps, and maps showing the locations of secluded, gated, and seasonal homes), disaster response, and post-disaster recovery activities.	All Hazards	Emergency Services

Action Agenda 2026-2031

List of Hazard Mitigation Actions Applicable to Governmental Units

ACTION AGENDA	Action Item	Turn Around	Water Runoff	Rescue Equip	Tornado Shelters	Stormwater	Floodplain Elevation	Berns / Dikes / Levees / Culverts	Wetland Restoration	Insurance	Floodway	Mitigation Actions	Wildfire Mitigation	Recovery Vendors	Public Health	Plan	Public Works Coordination
	Action Item #	7	14	19	20	29	30	31	32	41	54	69	71	72	75	78	80
APPLICABLE LOCAL GOVERNMENT	**Newaygo County**	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Fremont City	•	•	•	•	•		•	•	•		•		•	•	•	•
	Grant City	•	•	•	•	•		•		•		•		•	•	•	•
	Newaygo City	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	White Cloud City	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•
	Hesperia Village	•	•	•	•	•		•	•	•	•	•		•	•	•	•
	Ashland Twp.	•	•	•		•	•	•	•	•	•	•		•	•	•	
	Barton Twp.	•	•					•		•		•		•	•	•	
	Beaver Twp.	•	•					•		•		•		•	•	•	
	Big Prairie Twp.	•	•	•	•	•	•	•	•	•		•	•	•	•	•	
	Bridgeton Twp.	•	•		•	•	•	•	•	•	•	•		•	•	•	
	Brooks Twp.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
	Croton Twp.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
	Dayton Twp.	•	•					•	•	•		•		•	•	•	
	Denver Twp.	•	•					•	•	•	•	•		•	•	•	
	Ensley Twp.	•	•	•				•	•	•		•		•	•	•	
	Everett Twp.	•	•				•	•	•	•	•	•	•	•	•	•	
	Garfield Twp.	•	•				•	•	•	•	•	•		•	•	•	
	Goodwell Twp.	•	•	•				•		•		•		•	•	•	
	Grant Twp.	•	•					•	•	•		•		•	•	•	
	Home Twp.	•	•					•		•		•		•	•	•	
	Lilley Twp.	•	•	•	•			•	•	•		•	•	•	•	•	
	Lincoln Twp.	•	•				•	•	•	•	•	•		•	•	•	
	Merrill Twp.	•	•		•	•		•	•	•		•	•	•	•	•	
	Monroe Twp.	•	•					•		•		•		•	•	•	
	Norwich Twp.	•	•					•		•		•		•	•	•	
	Sheridan Twp.	•	•					•	•	•		•		•	•	•	
	Sherman Twp.	•	•					•	•	•		•		•	•	•	
	Troy Twp.	•	•					•		•		•		•	•	•	
	Wilcox Twp.	•	•			•		•	•	•		•	•	•	•	•	