

Chapter 8

General recommendations appear at the end of Chapters 4 – 7 for each of the goals set by Mackinac County. The Hazard Analysis Working Group using a determined set of evaluation criteria chose the mitigation programs and policies which best suited the County. The working group decided on the following evaluation criteria:

- The cost of the measure must be less than the cost of repetitive repairs that would be necessary if the measure was not implemented.
- The measure must be acceptable to those participating and/or primarily impacted.
- The measure must maintain equitable distribution of essential public services.
- The measure must be environmentally sound and not cause any permanent, significant environmental concerns.

The Hazard Analysis Working Group applied the criteria to the general recommendations and determined specific action items to take, which hazards this action would mitigate, which department or municipality would be responsible, identified costs and benefits, established a timeline to undertake the action and identified potential funding sources.

The next two chapters consist of Action Items that may be considered FEMA eligible or FEMA non-eligible projects. Chapter 8 lists those projects the Hazard Analysis Committee believes would be eligible for FEMA funding. Chapter 9 list the projects that the Hazard Analysis Committee would like to implement but may not be eligible for FEMA funding. All of the action items can be tied to the listed goals and guidelines and the recommendation(s) in Chapters 4 – 7. The recommendations and the discussions in the earlier chapters provide more background and direction on these action items.

The Action Items are not listed in any particular order but are ranked in priority by Low, Medium and High. High Priority items are those that action is needed to mitigate hazards that will benefit the community immediately with protection to people and property as well as reduction of costs in the long run. Medium Priority items are those that the action will mitigate the hazard but it is not as great a threat or a cost savings. Low Priority items are those that are wanted but may not be feasible for the near future due to funding limitations.

Several action items refer to a Hazard Planning Mitigation Committee. A plan is worthless if there is no instrument for ensuring that it is carried out. In Chapter 10 Administrative Action Items are identified with the creation of a permanent Hazard Planning Mitigation Coordinating Committee. The Committee's proposed responsibility would be to monitor the implementation of the *Plan*, report to the County Board and municipalities on its progress, and recommend revisions to this *Plan* as needed.

Program Action Items –

Eligible FEMA Funded Action Items/Projects

Action Item 1: Alert Warning Systems

Specific Vulnerable Areas: Mackinac Island, Bois Blanc Island, areas of Mackinac County lacking coverage.

Specific Hazard(s) Addressed: Wildfire, Extreme Temperatures, Flooding, Thunderstorms, High Wind.

Responsible Agencies: Mackinac County Office of Emergency Services, local municipalities

Cost: Consultant/Engineering fees, construction costs, material costs.

Benefits: Improved capabilities of warning public in emergency situations, improved confidence in government.

Anticipated Funding Source: FEMA – HMGP, Local

Timeline: December, 2006

Action Item 2: Water/Sewer Pipe replaced and buried deeper

Specific Vulnerable Areas: Second Street/ Portage Ave., St. Ignace

Specific Hazard(s) Addressed: Infrastructure Failure, Public Health Emergency, Extreme Temperatures

Responsible Agencies: City of St. Ignace DPW

Cost: Consultant/Engineering fees, construction costs, material costs.

Benefits: Elimination of yearly freezing problems, improved water and sewer services.

Anticipated Funding Source: FEMA – HMGP, PDMP, Local

Timeline: December, 2006

Action Item 3: Water Pipe replaced and buried deeper

Specific Vulnerable Areas: Antoine St., St. Ignace

Specific Hazard(s) Addressed: Infrastructure Failure, Public Health Emergency, Extreme Temperatures

Responsible Agencies: City of St. Ignace DPW

Cost: Consultant/Engineering fees, construction costs, material costs.

Benefits: Elimination of yearly freezing problems, improved water services, elimination of water waste, safety from environmental contamination.

Anticipated Funding Source: FEMA – HMGP, PDMP, Local

Timeline: December, 2006

Action Item 4: Sewer Pipe replaced and buried deeper

Specific Vulnerable Areas: Paro and Ferry Lane, St. Ignace

Specific Hazard(s) Addressed: Infrastructure Failure, Public Health Emergency, Extreme Temperatures

Responsible Agencies: City of St. Ignace DPW

Cost: Consultant/Engineering fees, construction costs, material costs.

Benefits: Elimination of yearly freezing problems, improved sewer services, safety from environmental contamination.

Anticipated Funding Source: FEMA – HMGP, PDMP, Local

Timeline: December, 2006

Action Item 5: Water Pipe connection and buried deeper

Specific Vulnerable Areas: Hillcrest and Deluca Dr., St. Ignace

Specific Hazard(s) Addressed: Infrastructure Failure, Public Health Emergency, Extreme Temperatures

Responsible Agencies: City of St. Ignace DPW

Cost: Consultant/Engineering fees, construction costs, material costs.

Benefits: Elimination of yearly freezing problems, improved water services, elimination of water waste.

Anticipated Funding Source: FEMA – HMGP, PDMP, Local

Timeline: December, 2006

Action Item 6: Water Pipe connection and buried deeper

Specific Vulnerable Areas: Sixth St. – Moran Township/City of St. Ignace

Specific Hazard(s) Addressed: Infrastructure Failure, Public Health Emergency, Extreme Temperatures

Responsible Agencies: Moran Township, City of St. Ignace DPW

Cost: Consultant/Engineering fees, construction costs, material costs.

Benefits: Elimination of yearly freezing problems, improved water services, elimination of water waste.

Anticipated Funding Source: FEMA – HMGP, PDMP, Local

Timeline: December, 2006

Action Item 7: Water Pipe connection and buried deeper

Specific Vulnerable Areas: County Rd., Moran Twp./St. Ignace

Specific Hazard(s) Addressed: Infrastructure Failure, Public Health Emergency, Extreme Temperatures

Responsible Agencies: Moran Township, City of St. Ignace DPW

Cost: Consultant/Engineering fees, construction costs, material costs.

Benefits: Elimination of yearly freezing problems, improved water services, elimination of water waste.

Anticipated Funding Source: FEMA – HMGP, PDMP, Local

Timeline: December, 2006

Action Item 8: Snow Fences for State/County Roads

Utilizing natural resources to create barriers that have proven to reduce blowing snow and ‘white-out conditions’ on major highways resulting in fewer accidents.

Specific Vulnerable Areas: Interstate I-75, Hwy. US-2 along Lake Michigan shoreline, M-134 along Lake Huron shoreline, Mackinac Trail, H-40.

Specific Hazard(s) Addressed: Severe Winter Weather, Land Transportation Accidents, Hazardous Materials Transportation Accidents

Responsible Agency: Mackinac Co. Office of Emergency Services, Road Commission, Local municipalities, MDOT

Cost: Staff time for planning. Consultant/engineering fees to determine best plantings for area. Purchase, planting and upkeep of trees and shrubs.

Benefits: Reduction of blowing snow drifts and ‘white-out conditions’ leading to a safer transportation network.

Anticipated Funding Source: Local; FEMA – HMGP, PDMP; MDOT Transportation Enhancement

Timeline: December, 2008

Action Item 9: Lightning Protection

Specific Vulnerable Areas: Mackinac Island, City of St. Ignace, Clark Township, Garfield Township, Portage Township, Moran Township

Specific Hazard(s) Addressed: Thunderstorms, Infrastructure Failure

Responsible Agencies: Critical facility owners, Mackinac Co. Office of Emergency Services, Local municipalities

Cost: Staff time, training, travel, studies/ engineers and consultants

Benefits: Provide protection measures to ensure operability and functionality during severe weather emergencies.

Anticipated Funding Source: Facility owners and operators, County general fund, FEMA – HMGP, PDMP

Timeline: December, 2008

Action Item 10: Bury Utility Lines

Specific Vulnerable Areas: County-wide

Specific Hazard(s) Addressed: Thunderstorms, Infrastructure Failure, High Winds, Severe Winter Weather

Responsible Agencies: Critical facility owners, Mackinac Co. Office of Emergency Services, Local municipalities

Cost: Staff time, training, travel, studies/ engineers and consultants

Benefits: Provide protection measures to ensure operability and functionality during severe weather emergencies.

Anticipated Funding Source: Facility owners and operators, County general fund, FEMA – HMGP, PDMP

Timeline: Ongoing

Action Item 11: Larger Storm Water Detention Basins

Specific Vulnerable Areas: Chamber St., Church St., High St., Airport Road, Truckey St. - City of St. Ignace

Specific Hazard(s) Addressed: Flooding, Environmental Contamination, Infrastructure Failure

Responsible Agency: Critical facility owners, Mackinac Co. Office of Emergency Services, Local municipality, MDOT

Cost: Engineer/Consultants, staff time, construction

Benefits: Reduce flooding/erosion of roads, more improved infrastructure.

Anticipated Funding Source: FEMA-HMGP, PDMP, Local, Private

Timeline: December, 2008

Action Item 12: Acquire Flood-prone NFIP Properties

Specific Vulnerable Areas: Clark Township, Hudson Township, Hendricks Township

Specific Hazard(s) Addressed: Flooding

Responsible Agencies: Mackinac Co. Office of Emergency Services, Local municipality

Cost: Engineer/Consultants, staff time, acquisition costs

Benefits: Reduce property damage caused by flooding.

Anticipated Funding Source: FEMA-HMGP, PDMP, Local, Private

Timeline: December, 2010

Action Item 13: Purchase generators for shelters/construct housing for generator

Specific Vulnerable Areas: Mackinac Island, Clark Township, City of St. Ignace, Moran Township

Benefits: This project would provide generators needed in the event of disruption of electrical power, and/or other vital services for shelters as well as provide a place for housing a larger generator in the City of St. Ignace that would keep the water and sewer infrastructure operating.

Specific Hazard(s) Addressed: Extreme Temperatures, Severe Winter Weather, High Winds, Tornadoes, and Thunderstorms

Responsible Agency: Mackinac Co. Office of Emergency Services, City of St. Ignace, Moran Twp., City of Mackinac Island, Clark Township

Cost: Staff time, equipment purchase, construction, engineer, materials, maintenance.

Benefits: Maximize utilization of existing resources. Improved maintenance of emergency equipment. Improved community confidence in government.

Anticipated Funding Source: Mackinac County Emergency Services funds, Local funds, FEMA – HMGP, PDMP

Timeline: December, 2007

Action Item 14: Research and pursue potential solutions to sewer back-up problems

Specific Vulnerable Areas: Clark Township

Specific Hazard(s) Addressed: Infrastructure Failure, Public Health Emergency, Extreme Temperatures

Responsible Agencies: Clark Township

Cost: Consultant/Engineering fees, staff time, planning, construction costs.

Benefits: This project would safeguard groundwater as well as prevent potential health hazards and costly cleanup for local residents.

Anticipated Funding Source: FEMA – HMGP, PDMP, Local

Timeline: December, 2007

Action Item 15: Ditching along US-2

Specific Vulnerable Areas: Moran Township

Specific Hazard(s) Addressed: Infrastructure Failure, High Wind, Shoreline Erosion, Flooding

Responsible Agencies: MDOT

Cost: Consultant/Engineering fees, staff time, planning, construction costs.

Benefits: This project would prevent sand/snow drifting across US-2 as well as improve run-off from rain and melting snow.

Anticipated Funding Source: FEMA – HMGP, PDMP, MDOT, Local

Timeline: December, 2006

Action Item 16: Purchase and Install Radio/Cell Phone Communication Equipment

Specific Vulnerable Areas: Radio/Cell phone service “dead-zone” along HWY. US-2, Lake Michigan shoreline

Specific Hazard(s) Addressed: Communication Infrastructure Failure, Land/Water/Transportation Accidents

Responsible Agencies: Mackinac County OES

Cost: Equipment costs, staff time, installation costs.

Benefits: This project would provide cellular communication in an area that currently does not have coverage.

Anticipated Funding Source: FEMA – HMGP, PDMP, Local

Timeline: December, 2006

Action Item 17: Warning Sensors for Rivers

Review the gauging network to determine if additional rain and stream gauges are necessary. Seek funding to purchase the best equipment available.

Specific Vulnerable Areas: Clark Township, Hudson Township, Hendricks Township, Portage Township, Moran Township, Garfield Township

Specific Hazard(s) Addressed: Riverine/Lake Flooding, Transportation Accidents, Infrastructure Failure

Responsible Agencies: Mackinac County Office of Emergency Services, Local Municipalities with rivers/lakes/streams, National Weather Service

Cost: Consultant/Engineering fees to determine equipment needed and best placement. Equipment purchase, installation, maintenance and recurring costs. Staff/Volunteer time for monitoring and training.

Benefits: Early warning of potential flooding to provide for possible evacuation of buildings and residences or traffic re-routing due to road closures caused by flooding.

Anticipated Funding Source: County general funds, Local funds, grant opportunities through FEMA – HMGP, PDMP

Timeline: December, 2008

Action Item 18: Update technology and equipment for electrical power service

Specific Vulnerable Areas: Mackinac Island, Bois Blanc Island Township

Specific Hazard(s) Addressed: Thunderstorms, Infrastructure Failure, High Winds, Severe Winter Weather

Responsible Agencies: Critical facility owners, Mackinac Co. Office of Emergency Services, Local municipalities

Cost: Engineers and consultants, equipment, installation, maintenance

Benefits: Provide protection measures to ensure operability and functionality during severe weather emergencies. Reduction of power failures and outages.

Anticipated Funding Source: Facility owners and operators, County general fund, FEMA – HMGP, PDMP

Timeline: December, 2007

