

Town of Morehead City Hazard Mitigation Plan

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INTRODUCTION

General:

In 2000, Congress adopted its Disaster Mitigation Act (DMA2K), which requires all local governments to develop a hazard mitigation plan that describes actions to mitigate hazards, risks and vulnerabilities that impact the community and establish a strategy to implement those activities. The State of North Carolina responded by passing Senate Bill 300 which requires all local governments to have an approved Hazard Mitigation Plan in order to receive state public assistance funds (effective for state-declared disasters after November 1, 2004). According to the North Carolina Division of Emergency Management (NCDEM), the minimum requirements for local governments are as follows: enact and enforce building codes, zoning ordinances, and other measures to enhance their legal capability in an effort to protect life and property; make the public aware of hazards that present risks to people and property and measures they can take to reduce their risk and possible losses; and, comply with Federal and other regulations that are designed to reduce disaster costs as well as preserve and protect natural, historical and cultural resources. .

Community Profile and Hazards:

Morehead City is located in the heart of North Carolina's Crystal Coast. Although a beautiful place to live, work and play, it is prone to a variety of natural disasters. Hurricanes and flooding, by far, top the list of potential large-scale disasters. Thunderstorms, erosion, tornadoes, extreme heat, hailstorms and severe winter storms also have potential of striking.

Utilizing the Hazard Identification and Analysis methodology suggested by the Hazard Mitigation Section of the NCDEM, the seriousness of each hazard was ranked based on the likelihood of occurrence, intensity rating and the potential impact. The outcome of the analysis, which was performed by the Hazard Mitigation Planning Advisory Committee, ranks the identified hazards as follows:

1. Hurricane/Coastal Storm;
2. Flooding;
3. Drought/Heat Wave;
4. Winter Storm/Nor'easter;
5. Thunderstorm;
6. Tornado;
7. Wildfire;
8. Hazardous Materials;
9. Earthquake;
10. Landslide;
11. Tsunamis; and,
12. Dam/Levee Failure and Volcano.

(NOTE: Because landslides, dam/levee failures and volcanoes are not a threat to Morehead City based upon historical data, they will not be addressed further.)

The information on the hazards identified above was obtained from a variety of sources, including:

- North Carolina Division of Emergency Management (NCDEM)
- National Oceanic and Atmospheric Administration (NOAA)
- National Weather Service
- Federal Emergency Management Agency (FEMA)
- National Hurricane Center
- Federal Flood Insurance Rate Maps
- National Climatic Data Center
- United State Geological Survey (USGS) Landslide Data
- United State Geological Survey (USGS) Water Data
- Division of Soil and Water Conservation
- Carteret County's Hazard Mitigation Plan
- Carteret County News-Times*
- NC Forest Service
- State Climate Office of North Carolina
- The Weather Channel
- Southeast Regional Climate Center
- North Carolina Geological Survey
- University of Washington Geophysics Program
- Neighboring Local Governments
- Local Long-Term Residents

A more detailed description of the hazards, level of vulnerability, Morehead City's capability to address the hazards and the level of the community's acceptance of risk can be found in the appendices.

PURPOSE OF THE PLAN

- To facilitate the protection of the health, safety and economic security of residents, workers, visitors and property owners by mitigating the impacts of natural and manmade hazards.
- Influence decision making in both the public and private sectors.
- Fulfill statutory requirements of the Disaster Mitigation Act of 2000.
- Fulfill contractual obligations under the Hazard Mitigation Grant Program (HMGP).
- Receive credit under the Community Rating System (CRS).

PLANNING PROCESS

Planning Process Participants

Under the direction of the Morehead City Council, the Morehead City Planning Department spearheaded the update process of the City's Hazard Mitigation Plan in accordance with 44 CFR 201.6.

The first order of business was to establish a Hazard Mitigation Planning Advisory Committee that included:

- Morehead City Manager Randy Martin
- Morehead City Planning Director Linda Staab
- Morehead City Planner Sandi Watkins
- Morehead City Police Chief Wrenn Johnson
- Morehead City Police Major Richard Abell
- Morehead City Fire Chief Wes Lail
- Morehead City Fire Marshal Craig Forlines
- Morehead City Public Works Director David McCabe
- Morehead City Public Utilities Director Steve Hamilton
- Morehead City Parks and Recreation Director Louise Hughes
- Morehead City Building Inspector Rick Schulz
- Carteret County Emergency Services Director Jo Ann Smith
- Carteret County Planning Director Katrina Marshall

Hazard Mitigation Planning Advisory Committee members gathered information and forwarded it to the Planning Department for compilation into the plan. Planner Sandi Watkins, under the supervision of Planning Director Linda Staab, was tasked with the coordination of data from other committee members as well as gathering the remainder of the historical, statistical, and supplementary data. Planners Watkins and Staab alternated presentation of the document during public meetings.

Morehead City Fire Chief Wes Lail and Fire Marshal Craig Forlines provided information associated with hazardous materials storage, transportation of hazardous materials, statistical data related to wildfires, critical facilities and hazardous storage sites, tsunami information and other information relative to Fire Department operations. Morehead City Police Major Richard Abell provided the department's Disaster Response Plan (Appendix I) and information associated with Police Department operations. Finance Department Director Ellen Sewell provided information associated with the Town's fiscal capability (Appendix C). Public Utilities Director Steve Hamilton gathered information related to the location of water and sewer lines, lift stations, water wells and tanks, and other historical information related to the Public Utilities Department. Building Inspector Rick Schulz provided the department's Storm Reconstruction Policy (Appendix F) and information concerning Repetitive Loss Properties, flooding, and the building code.

Utilizing *Local Multi-Hazard Mitigation Planning Guidance* (prepared by FEMA), the Committee was able to develop a draft plan that adequately identifies potential hazards and offers a plan of action for reducing the impacts to the community and its citizens. The

Committee's meetings were open to the public and individual members were charged with gathering data and discussing local hazards and finding solutions to mitigate hazards. Public notice was given through postings in City buildings. A variety of organizations were contacted via personal invitations, including:

- Various citizens;
- NOAA representatives;
- Beaufort officials;
- Newport officials;
- Atlantic Beach officials;
- Progress Energy representatives;
- Carteret-Craven EMC (Electric Membership Corporation) representatives;
- Duke Marine Lab professors;
- Division of Coastal Management;
- Carteret County Schools;
- Carteret County Agricultural Extension office;
- Local business owners;
- Salvation Army;
- Marine Corps Air Station Cherry Point
- Downtown Morehead City Revitalization Association; and,
- Carteret Crossroads representatives.

Utilizing the information gathered by the individual members, existing planning documents and data collected from a variety of other sources, the Committee completed the first draft of the Hazard Mitigation Plan. The Committee met six times as a group; however, information was turned in to the Planning Department on a regular basis for inclusion in the plan. Public meetings to review the draft were held in April and May of 2009. These meetings were advertised through public notice in the newspaper, postings in City Hall and on the City's webpage.

Detailed Steps of the Planning Process

1. Identify Potential Natural Hazards:

Initially, the Committee was tasked with reviewing identified hazards, evaluating potential new hazards and gathering updated data on both. This information was obtained from a variety of sources, including local, State and Federal agencies; National Weather Service; various web sites; *Carteret County News-Times*; interviews with long time residents and business owners and Carteret County Emergency Management staff. Maps were presented which included topography, flood hazard areas, parcel information, repetitive loss properties, SLOSH (Sea, Lake and Overland Surges from Hurricanes) modeling; critical facilities locations and infrastructure information. Population statistics were also reviewed. Information gathered was used to analyze the natural hazards affecting Morehead City in terms of likelihood, magnitude and potential impact.

2. Assess Vulnerability:

The information collected in Step 1 identified the potential natural hazards that could impact Morehead City. Utilizing that information, the Committee identified

the locations within the community where each of the hazards is likely to occur as well as the potential for damage in each hazard-prone area of Morehead City. An analysis was completed that identified the hazardous areas in terms of existing development and future development to determine hazard exposure. The Committee decided that it would consider Morehead City as one “geographic planning area” for the purposes of conducting detailed analysis of who and what is at risk.

3. Assess Community Capability:

Next, the Committee looked at Morehead City’s current mitigation practices. Documentation was presented that outlined Morehead City’s current development regulations and City policies that could potentially have an impact on the creation of hazard mitigation policies or unintentionally hinder mitigation efforts.

4. Form Interim Conclusions (Acceptability Assessment):

Once the information on the impact of natural hazards to Morehead City and the tools that are available to address the hazards was collected and analyzed, the Committee concluded it was appropriate to move forward with the planning process.

The information was presented to the Planning Board and Town Council for review. Both meetings were open to the public and were advertised in the newspaper and on the City’s website. Although the public was present at both meetings, no public comments were received.

ADOPTION

The Morehead City Planning Board reviewed the draft plan during its April 21, 2009, meeting. It was forwarded to the Town Council, which reviewed the draft plan on May 12, 2009.

Upon receipt of comments received from NCDEM, changes were made and the revised draft plan was reviewed by the Planning Committee of the Town Council in August of 2009. The plan was then resubmitted to the NCDEM for comment.

Prior to final adoption, additional comments from NCDEM were incorporated and the Plan was reviewed by the Planning Board on November 17, 2009. Final adoption occurred on December 8, 2009. A copy of the resolution of adoption can be found in Appendix L.

MITIGATION GOALS

Generally:

- Identify and reduce potential hazards to Morehead City;
- Promote sound public policy to protect citizens, critical facilities, infrastructure and property;
- Prove eligibility for government aid and grant programs; and
- Form effective community-based partnerships for hazard mitigation purposes.

The following process was used to develop, review and update the goals of the Morehead City Hazard Mitigation Plan. The goals were established as a result of a review of various City documents and plans, including but not limited to, the 2007 Morehead City Core Land Use Plan, Unified Development Ordinance and Emergency Operations Plan. Input received from members of the Hazard Mitigation Planning Advisory Committee and the general public was also used to develop community goals.

The Hazard Mitigation Planning Advisory Committee determined that the goal statements contained in the previous mitigation plan continue to be applicable to the current hazard conditions in Morehead City, and adequately guide the community in its efforts to reduce and avoid long-term vulnerabilities.

The Committee also reviewed the goal of the 2007 North Carolina State Hazard Mitigation Plan and determined that the mitigation goals of Morehead City are consistent with the mitigation goal of the State of North Carolina.

MITIGATION STRATEGIES

The Hazard Mitigation Planning Advisory Committee has identified a number of mitigation actions and projects to reduce the effects of each of the identified hazards. Through consensus, the Committee developed a list of potential mitigation actions, emphasizing new and existing buildings and infrastructure and the future use of land that is currently undeveloped in hazard areas. In developing the mitigation strategies, the Committee considered the cost effectiveness, environmental soundness and technical feasibility of each strategy. All mitigation strategies have been determined to be:

- a. Cost effective: The return or savings produced by implementation of the action outweighs the cost of implementation;
- b. Environmentally sound: Actions were taken to protect environmentally sensitive areas such as wetlands that act as natural stormwater storage areas;
- c. Technically feasible: Most actions are to be undertaken by the City using current staff and local funding.

For larger projects, the City has identified a variety of funding sources.

The Committee also reviewed the mitigation actions contained in the 2007 North Carolina State Hazard Mitigation Plan and determined that the actions selected for the plan update are consistent with those of the State.

By goal, the mitigation strategies are as follows:

GOAL #1: Identify and reduce potential hazard vulnerability to Morehead City:

Application: All Hazards.

Description: After reviewing Morehead City's published existing policies, it became obvious that although Morehead City has addressed specific aspects of hazard mitigation, there was no general policy. The City decided to include this general statement as a goal.

Objective 1-1. Influence decision making in both the public and private sectors to minimize the community's vulnerability to hazards.

Application: All Hazards.

Description: Without the support of the key decision makers in both the public and private sectors, it is difficult to have an effective hazard mitigation plan. Morehead City will strive to educate both public officials and the private sector of the benefits of hazard mitigation.

Mitigation Strategies:

1. Sponsor/co-sponsor a hazard mitigation seminar or similar program for elected officials, interested citizens and business leaders which include educational information on natural hazards that affect Morehead City, the potential impact, and mitigation measures to reduce risk.
2. Maintain a current Emergency Operations Plan.
3. Review ordinances that are relevant to hazard mitigation to assure:
 - a. the effectiveness in reducing exposure to natural hazards; and
 - b. the effectiveness in protecting natural resources via best management practices, stormwater management, wetlands preservation, etc.
4. Maintain and update Morehead City's GIS system, as necessary.
5. Include a review of Morehead City's hazard mitigation efforts as part of the Land Use Plan update process.
6. Educate City employees on hazards that impact Morehead City and provide training on City policies related to hazards.
7. Familiarize local public officials with the principles and practices of emergency management and emergency operations.

Objective 1-2. Increase the public's awareness of hazards, both natural and manmade.

Application: All Hazards.

Description: Education is an important tool in mitigating hazards. By sharing knowledge with the general public (e.g., retrofitting existing structures), Morehead City can become more resilient to natural disasters.

Mitigation Strategies:

1. Include articles in the local newspapers explaining hazard mitigation and preparing for natural hazards.
2. Promote nationally recognized “awareness” weeks (e.g., hurricane preparedness, severe weather preparedness, etc.) through the local media.
3. Display U.S. and State Government printed brochures that discuss hazards relevant to Morehead City and make them available for distribution to the public.
4. Continue to provide relevant hazard mitigation links on the City’s website.
5. Develop public service announcements (PSAs) on natural hazard mitigation programs and activities to be used by local radio and television stations.
6. Conduct a natural hazard awareness program in the Morehead City schools.
7. Invite a recognized public authority to speak at a public meeting regarding potential hazards.

GOAL #2: Promote sound public policy to protect citizens, critical facilities, infrastructure and property.

Application: All Hazards.

Description: Protection of life, critical facilities, infrastructure and property is a key goal that Morehead City has been working on for a number of years. Plans and policies have been adopted that address this goal. These plans/policies need to be evaluated to assure that the goal is being met to the fullest extent.

Objective 2-1. Reduce the potential impact of flooding in Morehead City, and the number of repetitive loss properties to maximize credit received under FEMA’s Community Rating System (CRS) and continue participation in CRS.

Application: Flood Hazards.

Description: Reducing the potential number of repetitive loss properties and continued participation in FEMA’s Community Rating System will continue to make Morehead City more hazard resistant when it comes to flooding.

Mitigation Strategies:

1. Promote sound land use planning for developed and undeveloped properties through rezoning and other mechanisms taking into consideration known hazard locations and repetitive loss areas.
2. Continue participation in FEMA’s Community Rating System (CRS).
3. Continue to enforce Morehead City’s flood prevention ordinance and update as necessary.

Objective 2-2. Avoid costly repair and replacement of public and private investments.

Application: All Hazards.

Description: Morehead City will strive to assure that all public and private investment adheres to or exceeds the minimum standards set forth by the State and Federal Government to minimize the costs of repairs and the need for replacement. This goal continues the present practices in Morehead City.

Mitigation Strategies:

1. Maintain the Storm Reconstruction Policy that includes a procedure for issuance of building permits after a natural disaster. The current Storm Reconstruction Policy can be found in Appendix F.
2. Continue enforcement of the International Building Code.
3. Continue to monitor trees and vegetation on publicly owned property to assure that no property or utility damage will occur as a result of diseased or dying trees/vegetation.
4. The City will work with utility companies to identify potential problem areas and work to eliminate them where feasible.
5. Evaluate the location of water/sewer utility extensions related to hazard mitigation.
6. Locate and preplan targeted hazardous material risk areas.
7. Continue enforcement of the North Carolina State Building Codes.

Objective 2-3. Insure continued functionality of critical services and facilities after a hazard event.

Application: All Hazards.

Description: Morehead City understands the importance of continuing the critical services and keeping the facilities open and available to the public following a natural disaster.

Mitigation Strategies:

1. Evaluate current emergency operation practices to determine what areas need improvement.
2. Maintain the alternate Emergency Operation Center (EOC) in the event that the primary EOC cannot function.
3. Maintain backup generators for all critical public facilities. Evaluate the equipment on a regular basis to assure it continues to meet the needs of the operations occurring at each facility.
4. Inspect fire hydrants regularly.
5. Maintain the City's Hazardous Materials Action Plan (see Appendix G).

GOAL #3: Prove eligibility for government aid and grant programs.

Application: All Hazards.

Description: Through creation of a formal hazard mitigation plan, Morehead City will have documented its susceptibility to natural hazards. By having this information well documented, it should enhance Morehead City's eligibility for certain government aid and grant programs.

Objective 3-1. Seek funding opportunities to develop and implement Morehead City's hazard mitigation activities.

Mitigation Strategies:

1. Include discussion of natural hazard mitigation grant opportunities available to Morehead City during the annual budget process, and seek out new opportunities on a routine basis.

2. Establish local and regional partnerships to identify funding sources for natural hazard mitigation activities and seek to obtain such funding.

GOAL #4: Form effective community-based partnerships for hazard mitigation purposes.

Application: All Hazards.

Description: In order to form partnerships between different agencies, the private sector and the public, it is first necessary to have communication and build relationships. Through this process, Morehead City hopes to form relationships that will lead to community-based partnerships.

Objective 4-1. Maintain partnerships that have been formed as a result of the development of the Hazard Mitigation Plan.

Mitigation Strategies:

1. Maintain the hazard mitigation committee meetings to continue relationship building and keep updated on mitigation measures that are taking place throughout the community.
2. Identify all municipal, county and regional organizations with responsibilities for, or an interest in, natural hazard mitigation, and share the plan with local support organizations, such as the American Red Cross and Salvation Army, private businesses and other community partners.

Objective 4-2. Enhance coordination of emergency planning and operations between local governments.

Mitigation Strategies:

1. Maintain one E-911 dispatch center countywide and eliminate individual municipal dispatch centers.

IMPLEMENTATION OF MITIGATION STRATEGIES

The following process was used to assign implementation and administrative responsibilities for the actions identified for inclusion in the plan update: The Hazard Mitigation Planning Advisory Committee met on February 5, 2009, and reviewed the mitigation actions developed on October 8, 2008. With input from departmental staff, the Committee verified responsibilities, designated start and completion dates, identified funding or potential funding sources, and ranked the priority of each of the selected mitigation actions. Potential funding sources were identified by reviewing current local operating budgets, as well as outside sources of funding including FEMA and State pre- and post-disaster mitigation grant programs.

The “Mitigation Strategy” Table found on the following pages contains the selected mitigation actions along with the type of targeted hazard, the responsible party, start and completion dates, potential funding sources, and priority ranking.

The process for prioritizing the selected mitigation actions included discussions by the Hazard Mitigation Planning Advisory Committee about the advantages and drawbacks of each identified action carried over from the previously approved plan as well as new actions identified during the update process. The Committee sought input from Department Heads responsible for implementation of each action.

The Hazard Mitigation Planning Advisory Committee used the following criteria to prioritize the identified hazard mitigation actions as *High, Medium, or Low*:

- 1) Cost vs. Benefit: Actions with the highest benefits in relation to cost will receive higher priority.
- 2) Results of the Risk Assessment: Actions which address problems identified during the updated risk assessment will receive higher priority.
- 3) Results of the Community Capability Assessment: Actions which are within the existing capability of the jurisdiction, or which may become actionable with additional resources, will receive higher priority.
- 4) Technical Feasibility: Actions that provide a long-term solution to identified problems, with no or minimal negative secondary impacts, will receive higher priority.
- 5) Political Acceptability: Actions that have political support for implementation will receive higher priority.
- 6) Legality: Actions must comply with all relevant federal, state, and local statutes, regulations and ordinances.
- 7) Environmental Soundness: Actions with no or mitigateable negative environmental impacts will receive higher priority.
- 8) Compatibility with Local Goals: Actions that are effective in meeting hazard mitigation goals and other complimentary community goals will receive higher priority.

FEMA provides six mitigation policy categories for identifying mitigation strategies and measures. They are as follows:

1. Prevention (P): Preventive activities are intended to keep hazard problems from getting worse. They are particularly effective in reducing a community's future vulnerability, especially in areas where development has not occurred or capital improvements have not been substantial.
2. Property Protection (PP): Property protection measures protect existing structures by modifying the building to withstand hazardous events or removing structures from hazardous locations.
3. Natural Resource Protection (NR): Natural resource protection activities reduce the impacts of natural hazards by preserving or restoring natural areas and their mitigative functions. Such areas include floodplains, wetlands and dunes. Parks, recreation or conservation agencies and organizations often implement these measures.
4. Structural Projects (SP): Structural mitigation projects are intended to lessen the impact of a hazard by modifying the environment or natural progression of the hazard event. They are usually designed by engineers and managed or maintained by Public Works Staff.

5. Public Information (PI): Public information activities are used to advise residents, business owners, potential property owners and visitors about hazards, hazardous areas and mitigation techniques they can use to protect themselves and their property.
6. Emergency Services Measures (ES): Although not typically considered a mitigation technique, emergency service measures do minimize the impact of a hazard event on people and property. These are actions commonly taken immediately prior to, during, or in response to a hazard event.

The following table identifies the mitigation strategies and measures by the six mitigation policy categories provided by FEMA, a brief description of the action to be undertaken, the hazard the action addresses, relative priority, funding source, responsible party and target completion date.

MOREHEAD CITY MITIGATION ACTION PLAN

Mitigation Strategy	Targeted Hazard	Priority	Funding Source	Responsible Party	Start Date	Completion Date	Monitoring
Prevention							
Maintain and update Morehead City's GIS System	All	High	Local	Planning Dept	Continuous	Continuous	Annual
Review Morehead City's Hazard Mitigation Policies identified in the CAMA Land Use Plan	All	High	Local and DCM	Planning Dept	5 Yr. cycle (started 2005)	Every 5 years	Every 5 years
Sponsor/Co-sponsor a hazard mitigation seminar for elected officials and business leaders which includes educational information on natural hazards, potential impact and mitigation measures to reduce risk	All	Medium	Local	City/County Planning Dept	Every 4 years (began in 2007)	Every 4 years	Every 4 years
Continue to enforce Morehead City's Flood Prevention Ordinance and update as necessary	Flood	High	Local	Building Inspections Department	July 2004	Continuous	Daily
Continue participation in FEMA's Community Rating System	Flood	High	Local	Building Inspections Department	July 2004	Continuous	Annual
Provide links to relevant hazard mitigation websites via City's website	All	Medium	Local	Systems Administrator	2008	Continuous	Continuous
Maintain the Storm Reconstruction Policy that includes procedures for issuance of building permits after a natural disaster	All	Medium	Local	Building Inspections Department	2003	Continuous	Continuous
Evaluate the location of water/sewer utility extension related to hazard mitigation	All	Medium	Local	Public Utilities Department	July 2004	Continuous	Continuous
Apply for grant funding to enhance the City's hazard mitigation effort, as applicable	All	Medium	Varies	All City Departments	As grants open and local match is available	Varies	As available
Establish local and regional partnerships to identify funding sources for natural hazard mitigation activities and seek to obtain funding	All	Medium	Varies	All City Departments	Continuous	Varies	As Available
Maintain the Hazard Mitigation Planning Advisory Committee to continue relationship building and keep updated on mitigation measures taking place throughout the community	All	Medium	N/A	All City Departments	July 2004	Continuous	Continuous

MOREHEAD CITY MITIGATION ACTION PLAN

Mitigation Strategy	Targeted Hazard	Priority	Funding Source	Responsible Party	Start Date	Completion Date	Monitoring
Prevention							
Promote sound land use planning for developed and undeveloped properties through rezoning and other mechanisms taking into consideration known hazard locations and repetitive loss areas.	Flood	Medium	Local	Planning Dept	Continuous	Continuous	Annual
Invite a recognized authority to speak at a public meeting regarding potential hazards.	All	Medium	Varies	All City Departments	Continuous	Continuous	Annual

MOREHEAD CITY MITIGATION ACTION PLAN

Mitigation Strategy	Targeted Hazard	Priority	Funding Source	Responsible Party	Start Date	Completion Date	Monitoring
Property Protection							
Review ordinances that are relevant to hazard mitigation to assure: the effectiveness in reducing exposure to natural hazards and the effectiveness in protecting natural resources via best management practices, stormwater management, wetlands preservation, etc.	All	Medium	Local	All City Departments	July 2004	Continuous	Annually, or more frequently if necessary
Continue participation in FEMA's Community Rating System	Flooding	Medium	Local	Building Inspections Department	July 2004	Continuous	Review every 5 years
Continue to enforce Morehead City's flood prevention ordinance and update as necessary	Flooding	High	Local	Building Inspections Department	July 2004	Continuous	Review as necessary
Maintain the Storm Reconstruction Policy that includes procedures for issuance of building permits after a natural disaster	All	Medium	Local	Building Inspections Department	2003	Continuous	N/A
Monitor trees and vegetation on publicly owned property to assure that no property or utility damage will occur as a result of diseased or dying trees/vegetation.	High Winds, Hurricanes, Severe Thunderstorms	Low	Local	Public Works Department	Spring 2005	Continuous	Inspection to occur every Spring
The City will partner with Utility Companies to identify problem areas and work to eliminate them where feasible.	All	Low	Local and Private	Planning, Public Works, Public Utilities, and Building Inspections Departments	January 2005	Continuous	Review Annually
Evaluate the location of water/sewer utility extensions related to hazard mitigation	All	Low	Local	Public Utilities Department	July 2004	Continuous	Include as part of review when considering line extension locations

MOREHEAD CITY MITIGATION ACTION PLAN

Mitigation Strategy	Targeted Hazard	Priority	Funding Source	Responsible Party	Start Date	Completion Date	Monitoring
Property Protection							
Promote sound land use planning for developed and undeveloped properties through rezoning and other mechanisms taking into consideration known hazard locations and repetitive loss areas.	Flood	Medium	Local	Planning Dept	Continuous	Continuous	Annual

MOREHEAD CITY MITIGATION ACTION PLAN

Mitigation Strategy	Targeted Hazard	Priority	Funding Source	Responsible Party	Start Date	Completion Date	Monitoring
Natural Resources Protection							
Conduct a natural hazard awareness program in Morehead City Schools	All	Low	Local	Planning Department	2004-2005 School Year	Continuous	Annual
Prepare a Hazardous Material Action Plan that addresses proper containment of spills, etc.	All	Low	Local	Fire Department	2008	2008	Annual
Include discussion of natural hazard mitigation grant opportunities available to Morehead City during annual budget process	All	Medium	Varies	All City Departments	March 2005	Continuous	Annual during the budget process
Sponsor/Co-sponsor a hazard mitigation seminar for elected officials and business leaders which includes educational information on natural hazards, potential impact and mitigation measures to reduce risk	All	Medium	Local	City/County Planning Department	Every 4 years (began in 2007)	Every 4 years	Every 4 years
Establish local and regional partnerships to identify funding sources for natural hazard mitigation activities and seek to obtain such funding	All	Medium	Varies	All City Departments	July 2004	Continuous	Annual review of funding sources and partnership opportunities
Maintain the hazard mitigation committee to continue relationship building and keep updated on mitigation measures that are taking place throughout the community	All	High	Varies	All City Departments	July 2004	Continuous	Annual
Update identified municipal, county and regional organizations and share plan with local support organizations such as the Salvation Army, American Red Cross, etc.	All	High	Varies	All City Departments	Fall 2004	Continuous	Update organizational data annually

MOREHEAD CITY MITIGATION ACTION PLAN

Mitigation Strategy	Targeted Hazard	Priority	Funding Source	Responsible Party	Start Date	Completion Date	Monitoring
Structural Projects							
Contract to maintain backup generators for all critical public facilities. Evaluate the equipment on a regular basis to assure it continues to meet the needs of the operations occurring at each facility	All	High	Varies	Public Utilities Department	July 2004	Continuous	Spot checks of equipment at various intervals
Locate and preplan targeted risk areas	Hazardous Materials	High	Local	Fire Department	2008	2009	Annual
Continue enforcement of the North Carolina State Building Codes	ALL	High	Local	Building Inspections Department	2004	Continuous	Continuous
Fire Code Enforcement	Hazardous Materials, Wildfires	High	Local	Fire Department	2008	Continuous	Continuous

MOREHEAD CITY MITIGATION ACTION PLAN

Mitigation Strategy	Targeted Hazard	Priority	Funding Source	Responsible Party	Start Date	Completion Date	Monitoring
Public Information							
Sponsor/Co-sponsor a hazard mitigation seminar for elected officials and business leaders which includes educational information on natural hazards, potential impact and mitigation measures to reduce risk	All	Medium	Local	City/County Planning Department	Every 4 years (began in 2007)	Every 4 years	Every 4 years
Educate City employees on hazards that impact Morehead City and provide training on City policies relating to hazards	All	High	Varies	All City Departments	January 2005	Continuous	As required
Include articles in the City's newsletters explaining hazard mitigation and preparing for natural disasters	All	Medium	Local	All City Departments	Summer 2005	Continuous	Annual
Promote nationally recognized "awareness" weeks (e.g. hurricane preparedness, severe weather preparedness, etc.) through local media	All	Medium	Varies	Planning Department	July 2004	Continuous	Annual
Display U.S. Government brochures that discuss hazards relevant to Morehead City and make them available for distribution to the public	All	Medium	Varies	Planning Department	January 2005	Continuous	Continuous
Provide public links to relevant hazard mitigation websites	All	Low	Local	Planning Department	2008	Continuous	Annual
Develop public service announcements (PSAs) on natural hazard mitigation programs and activities to be used by local media	All	Low	Local	Planning Department	2009	Continuous	Annual

MOREHEAD CITY MITIGATION ACTION PLAN

Mitigation Strategy	Targeted Hazard	Priority	Funding Source	Responsible Party	Start Date	Completion Date	Monitoring
Emergency Services							
Maintain the hazard mitigation committee to continue relationship building and keep updated on mitigation measures that are taking place throughout the community	All	High	Varies	All City Departments	July 2004	Continuous	Annual
Identify all municipal, county and regional organizations and share plan with local support organizations such as the Salvation Army, American Red Cross, etc.	All	High	Varies	All City Departments	Fall 2004	January 2005	Update organizational data annually
Maintain current Emergency Operations Plan	All	High	Local	Fire Department	2009 July 2004	Continuous	Annual
Familiarize local public officials with the principles and practices of emergency management and emergency operations	All	Medium	Local	Administration	January 2005	Bi-annual following election	Biannual
Evaluate current emergency operation practices to determine what areas need improvement	All	Medium	Local	Police and Fire Departments	Fall 2004	Continuous	Annual
Maintain an alternate Emergency Operation Center (EOC) in the event that the primary EOC cannot function	All	High	Local	Police and Fire Departments	Fall 2004	Continuous	Continuous
Contract to maintain backup generators for all critical public facilities. Evaluate equipment on a regular basis to assure it continues to meet needs of operations occurring at each facility	All	High	Varies	Public Utilities Department	July 2004	Continuous	Spot checks of equipment at various intervals
Inspect fire hydrants regularly	Fire	Medium	Local	Fire Department	July 2004	Continuous	Annual
Prepare a Hazardous Material Action Plan that addresses proper containment of spills, etc.	All	Low	Local	Fire Department	2008	2009	Annual
Maintain one E-911 dispatch center countywide and eliminate individual municipal dispatch centers	All	High	Varies	County Emergency Services Department	2009	2010	Annual
Coordinate with Carteret County to obtain oblique imagery and incorporate into emergency response practices	All	High	Local	City Departments & County Tax Office	2009	As available	Biannual or Following a Hurricane

PLAN IMPLEMENTATION

Process:

The Morehead City Mitigation Plan will be implemented through the delegation of assignments as specified in the Hazard Mitigation Action Plan. Each implementation action includes the assignment of responsibility to specific City Departments along with the establishment of a target date for completion of the activity.

It will be the responsibility of the City Manager to ensure that these strategies are addressed by the target completion dates unless reasonable circumstances, e.g. lack of funding, prevent timely implementation. In the case where a target date is not met, the reason for such failure to complete the activity in a timely manner will be noted in the annual progress report.

Funding Sources:

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages; in the short-term each action will have an associated cost. The City will rely heavily on local funding sources; however, the City will also seek funds from interested State and Federal agencies for both pre- and post-disaster activities. A short description of major disaster assistance programs is included here.

Cities depend upon local property taxes as the primary source of revenue. Property taxes are typically used to finance services that must be available and delivered on a routine basis to the general public, e.g. emergency management services, etc. If local budgets allow, these funds can also be used for other purposes in the general public interest which would include programs to further hazard mitigation planning. Local funds are most effective when used as a local match for Federal and State grants.

Federal Programs

Pre-Disaster Mitigation Program – Federal Emergency Management Agency

The Disaster Mitigation Act of 2000 created a national program to provide a funding mechanism that is not dependent on a Presidential disaster declaration. The Pre-Disaster Mitigation (PDM) Program provides funding to states and communities for cost-effective hazard mitigation activities that complement a comprehensive mitigation program and reduce injuries, loss of life, and damage of property.

The funding is based on a 75% Federal share plus a 25% non-Federal share of costs. The non-Federal match can be fully in-kind or cash or a combination of the two. Special accommodations are made for small and impoverished communities who are eligible for 90% Federal share plus 10% non-Federal.

Flood Mitigation Assistance Program – Federal Emergency Management Agency

The Flood Mitigation Assistance Program (FMAP) was established by the National Flood Insurance Reform Act of 1994. This program provides grants for cost-effectiveness measure to reduce or eliminate the long-term risk of flood damage to

existing structures, with an emphasis on sites that historically have been subject to repetitive losses under the National Flood Insurance Program (NFIP). These grants are also available for planning assistance to identify flood risks and actions to reduce risk, to provide a process for approving flood mitigation plans, and to provide grants to implement measures to decrease flood losses.

Examples of projects that are eligible for grants under this program include elevating or flood proofing pre-FIRM structures, e.g. structures that were brought into the regulatory floodplain by a revision of the Flood Insurance Rate Maps, to acquire land or structures in flood hazard areas, to relocate or demolish existing structures, to construct detention or retention ponds to aid in the control of flood waters, to flood proof sewer systems, to modify drainage culverts and to obtain technical assistance, e.g. hiring a professional consultant.

Hazard Mitigation Grant Program (HMGP) – Federal Emergency Management Agency

The Hazard Mitigation Grant Program (HMGP) provides funding for mitigation measures following authorized Presidential disaster declarations. The HMGP is funded in most part by the Federal Government and administered by State Governments. FEMA can fund up to 75% of project costs and the State or local share can be cash or in-kind services.

HMGP funds can be used for projects such as acquisition or relocation of structures from hazard-prone areas, retrofitting of existing structures to protect them from future damages, and development of state or local mitigation standards designed to protect buildings from future damages, comprehensive state and local mitigation plans (up to 7% of total State grant), structural hazard control, and the purchase of equipment to improve preparedness and response.

Public Assistance (Infrastructure) Program – Federal Emergency Management Agency (Section 406)

The Public Assistance (PA) Program provides funding to local governments following a Presidential disaster declaration. Funds may be used for mitigation activities in conjunction with the repair of damaged public facilities and infrastructure. Mitigation activities must be related to eligible disaster-related damages and must directly reduce the potential of future disaster damages.

Projects are evaluated for cost-effectiveness, technical feasibility, and compliance with statutory, regulatory and executive order requirements. The evaluation must ensure that the mitigation measures do not negatively impact facility operation or risk from another hazard.

Small Business Administration Disaster Assistance Program – US Small Business Administration

The Small Business Administration (SBA) Disaster Assistance Program provides low-interest Physical Disaster Loans following various disaster declarations. The loans target the repair and replacement of uninsured and underinsured real estate, personal property, machinery and equipment, inventory and business assets.

Businesses of all sizes, homeowners, renters, and non-profit organizations are eligible. More than 1.9 million disaster loans have been granted for nearly \$47 billion since the creation of the program in 1953.

<http://www.sba.gov/services/disasterassistance/index.html>

Community Development Block Grants – US Department of Housing and Urban Development

The Community Development Block Grant (CDBG) program assists communities in rehabilitating substandard dwelling structures and in expanding economic opportunities, primarily for low to moderate income families. However, as a result of a Presidential disaster declaration, CDBG funds may be used for long-term needs such as acquisition, reconstruction and redevelopment of disaster-affected areas.

State Programs

Statewide Floodplain Mapping Initiative

The State of North Carolina, through the Federal Emergency Management Agency's Cooperating Technical Community Partnership Initiative, has been designated as a Cooperating Technical State (CTS). As a CTS, the State assumes primary ownership and responsibility for Flood Insurance Rate Maps (FIRMs) for all North Carolina communities. The Statewide Floodplain Mapping Initiative project includes conducting flood hazard analysis and producing updated, digital FIRMs (DFIRMs).

The State began acquiring raw elevation data for the Cape Fear, Lumber, Neuse, Pasquotank, Tar-Pamlico and White Oak river basins in December 2000. This first phase of mapping addressed these six river basins, which were the basins most impacted by Hurricane Floyd. These six river basins account for approximately one-half of the area of the State, impact 48 counties and 334 incorporated municipalities and encompass over 21,000 miles of streams and rivers.

The data being collected will be used to develop Digital Elevation Models (DEMs) and update flood hazard data and to produce Digital Flood Insurance Rate Maps (DFIRMs) for the affected counties and communities. To date, sixty-eight (68) counties within North Carolina have adopted DFIRMs, including Carteret County. It is anticipated that the State of North Carolina will have remapped the entire State by 2010, and will continue to follow a regular maintenance schedule of 2.5-3.5 years once complete.

This updated flood hazard data provides current, accurate information for communities and property owners to make sound location and design decisions when building new structures and infrastructure and when retrofitting existing structures. If consistently used by communities for floodplain management, this information should help to dramatically reduce future flood losses in North Carolina.

<http://www.ncfloodmaps.com/index.html>

Water and Sewer Grant Programs – NC Rural Economic Development Center, Inc.

The Rural Center administers programs that assist rural communities with development of public water and sewer systems needed to support local economic growth and to ensure a reliable supply of clean water. The programs are funded by appropriations from the NC General Assembly and through proceeds from Clean Water Bonds approved by voters in November 1998.

1. The Supplemental Grants Program enables local governments and qualified non-profit organizations to improve local public water and sewer systems. Projects may address public health, environmental and/or economic development critical needs. Rural Center funds must be used to match other project funds from local or other sources. The maximum grant amount is \$500,000.
2. The Planning Grants Program provides funding for local governments to undertake planning efforts that support strategic investments in public water and sewer facilities. Funds typically are used to prepare preliminary engineering reports, master water and sewer plans, capital improvement plans, water and sewer feasibility studies, rate studies and grant applications. The maximum grant amount is generally \$40,000.

<http://www.ncruralcenter.org/grants/water.htm>

Clean Water Management Trust Fund – CWMTF Board of Trustees

The Clean Water Management Trust Fund was created in 1996 for the purpose of making grants to local governments, state agencies, and conservation non-profit organizations to help finance projects that address water pollution. CWMTF will fund projects that 1) enhance or restore degraded waters; 2) protect unpolluted waters; and/or 3) contribute toward a network of riparian buffers and greenways for environmental, educational, and recreational benefits.

The program is funded annually through a portion of unreserved credit in balance in the NC General Fund for a minimum of \$30 million per year. The CWMTF Board of Trustees, an independent body of 18 members, has responsibility for allocation of fund revenues.

<http://www.cwmtf.net/>

CAMA (Coastal Area Management Act) Local Planning and Management Grants Program – NC Department of Environment and Natural Resources, Division of Coastal Management

The NC Division of Coastal Management assists local governments within the designated 20 coastal counties with local land use planning and management projects through the CAMA Local Planning and Management Grants Program.

Eligible projects include new or updated CAMA land use plans, implementation projects, land use ordinances, beach or waterfront access plans, stormwater management plans, hazard mitigation plans and capital facilities plans.

Water Resources Development Grant Program – NC Department of Environmental and Natural Resources, Division of Water Quality

The Water Resources Development Grant Program funds can be used as the non-federal share of water resources development projects. Eligible projects include: 1) general navigation projects; 2) recreational navigational projects; 3) flood control and water drainage projects; 4) stream restoration; 5) protection of privately owned beaches with public access; 6) land acquisition and facility development for water-based recreation; and 7) aquatic weed control projects.

Natural Heritage Trust Fund

The Natural Heritage Trust Fund was established in 1987 and is funded by 25% of the annual state deed excise stamp tax revenues and a portion of personalized license plate sales. The fund is managed by the Board of Trustees and the Natural Heritage Program in the Division of Parks and Recreation (DPR) in the Department of Environment and Natural Resources (DENR). Since 1987, the grant has taken part in conserving over 264,500 acres of land. Four hundred twenty projects have been supported through \$218 million in grant funding.

<http://www.ncnhtf.org/pages/fundedprojects.htm>

NC Parks and Recreation Trust Fund (NCPARTF)

The NC Parks and Recreation Trust Fund was established in 1994 and is funded by 75% of the annual state deed excise stamp tax revenues. State parks receive 65%; local parks, 30%; and beaches and waterfronts, 5%. Approximately \$22 million is available each year. The program is managed by the Board of Parks and Recreation Authority and the Division of Parks and Recreation (DPR) in DENR.

Since 1995, local governments have submitted 599 applications requesting over \$84 million for capital improvements and land acquisition. The Parks and Recreation Authority has approved 317 projects for a total of \$48.4 million. Over 1950 acres have been added to local parks. The Authority has approved 191 State Park land acquisition and facility projects for a total of \$104 million. PARTF has funded the addition of 13,554 acres to the State Park System.

http://www.ncparks.gov/About/grants/partf_main.php

<http://www.cwmtf.net/fundsum.htm>

Land and Water Conservation Fund (LWCF)

The Land and Water Conservation Fund was established in 1964 to provide for funding for federal land acquisition and to provide matching grants for State and local governments to acquire parkland. The Federal Government allocated \$522,201 to North Carolina for this program in fiscal year 2008/2009, with 60% being reserved for local governments and the remaining 40% for State government.

<http://www.nps.gov/ncrc/programs/lwcf/funding.html>
<http://ils.unc.edu/parkproject/lwcf/learn.html>

National Recreation Trails Program

The National Recreation Trails Program provides funds to Federal, State, and local governments and for non-profit organizations for the acquisition of land for trails and for the development and maintenance of a trail system. The State of North Carolina was allocated \$1.8 million in fiscal year 2008/2009 from this program which is managed by the US Department of Transportation.

<http://www.americantrails.org/resources/fedfund/index.html>

Million Acres Initiative

When the Million Acres Initiative began in January 1999, approximately 2.8 million acres – 9% of the state – were permanently protected in North Carolina. As of the end of the 2006 calendar year, the initiative has protected an additional 481,315 acres. Upon reaching the million acre goal, North Carolina will contain at least 3.8 million acres of land that are permanently protected through the federal, state and local governments, and private nonprofit groups. One of the stated objectives of protecting open space is to absorb water and reduce the height of floods.

<http://www.onencnaturally.org/pages/progress/reports.html>
<http://www.onencnaturally.org/pages/obj/r7.html>

Conservation Income Tax Credit

Established in 1983, the Conservation Income Tax Credit provides a 25% income tax credit for donations of land or easements for conservation purposes. The donor's tax filing must be accompanied by a Certificate of Conservation Benefit from the Department of Environment and Natural Resources (DENR). As of August 2001, approximately 400 individual land and corporate property owners had donated 82,000 acres of land for conservation easements worth an estimated \$165 million at a cost to the State of \$26 million. (<http://ncctc.enr.state.nc.us>)

North Carolina Farmland Preservation Program

The NC Farmland Preservation Program was established in 1986 and is funded by appropriations from the NC General Assembly. The program is managed by the NC Department of Agriculture and Consumer Services and contracted to the Conservation Trust for NC (CTNC). The General Assembly appropriated \$2.6 million in funding to the program between 1998 and 2003. These grants have leveraged over \$26 million from other private and public funding sources and donations of development rights from farm owners and have protected 4,412 acres of working farms.

http://www.ctnc.org/site/PageServer?pagename=prot_farmhigh

Conservation Grants Fund

The Conservation Grants Fund program was created in 1997 for the purpose of providing subsidies to non-profit land trusts to aid in transaction costs related to the donation of land, and to provide for staff and volunteer training. This program has never been funded.

<http://www.onencnaturally.org/pages/prog/non.html>

Non-Governmental Sources

Another potential but typically less available source of funds for implementing local hazard mitigation projects are monetary contributions from non-governmental organizations such as private sector companies, churches, charities, community relief funds, the Red Cross, hospitals, land trusts and other non-profit organizations interested in the environment or the plight of persons affected by disasters.

PLAN MAINTENANCE

Introduction

Periodic monitoring and reporting of progress is required to ensure that Plan goals and objectives are kept current and that local mitigation efforts are being accomplished. The Morehead City Hazard Mitigation Plan should be reviewed annually, or more often as the local situation may require following a disaster declaration, to ensure that progress is being made on achieving State goals and objectives. The Plan will also undergo periodic evaluation and update as required by FEMA and the State.

Annual Review/Progress Report:

The City Manager shall direct the Planning Director to take responsibility for conducting the annual review. Other interested parties, including Carteret County and its municipalities as well as the North Carolina Division of Emergency Management, will be notified of the annual review. The general public will be notified through a public notice process. The annual review shall include a meeting of representatives of all affected City departments. A progress report will be generated for submission to the Town Council.

A copy of the Plan and subsequent progress reports will be available for public review and comment in City Hall, located at 706 Arendell Street, at all times.

Periodic Plan Review and Update:

Annual evaluation and revision of the Plan will help ensure that local mitigation efforts include the latest and most effective mitigation techniques. These periodic revisions may also be necessary to keep the City Plan in compliance with Federal and State statutes and regulations. The Plan will need to be updated to reflect changes, such as new development in the area, implementation of mitigation efforts, revisions of mitigation processes and changes in Federal and State statutes and regulations.

In the context of a Federal disaster declaration, State and local governments are allowed to update or expand an existing plan to reflect circumstances arising out of the disaster. An updated plan in this circumstance might include a re-evaluation of the hazards and the jurisdiction's exposure to them, a re-assessment of existing mitigation capabilities and new or additional mitigation recommendations.

The Plan shall be reviewed at a minimum every five (5) years to determine if there have been any significant changes that would affect the Plan. Increased development, increased exposure to certain hazards, the development of new mitigation capabilities or techniques, and changes to Federal or State legislation may affect the appropriateness of the Plan.

Review of the Plan:

The procedure for reviewing and updating the Plan shall begin with a report prepared by the Planning Director and submitted to the Planning Board for consideration and recommendation to the Town Council. The report shall include a summary of progress on implementation of hazard mitigation strategies and a recommendation, as appropriate, for any changes or amendments to the Plan. Also, it shall include an evaluation of the effectiveness and appropriateness of the Plan.

If the Town Council determines that such report raises issues that warrant modification of the Plan, the Council may initiate an amendment in accordance with the procedure for amending the Plan.

Procedure for Amending the Plan:

An amendment to the Plan shall be initiated by the Town Council either at its own initiative or any other person or agency who demonstrates that an amendment should be considered.

Upon initiation of a text or map amendment, the Planning Director shall reconvene the Hazard Mitigation Planning Advisory Committee and notify other interested parties as described in the Annual Review/Progress Report subsection above. The team will consider any proposed amendment(s) which shall then be forwarded to the North Carolina Division of Emergency Management and the Federal Emergency Management Agency for a ninety (90) day review and comment period.

At the end of the comment period, the proposed amendment(s) shall be forwarded along with all review comments to the Town Council.

Upon receiving the proposed amendment, the Town Council shall hold a public hearing. The Council shall review the amendment and take one of the following actions:

1. Adopt the proposed amendment as presented or with modifications.
2. Deny proposed amendment.
3. Defer the amendment request for further consideration and/or hearing.

APPENDIX A: HAZARD IDENTIFICATION

Morehead City is located in the heart of North Carolina’s Crystal Coast. Although a beautiful place to live, work and play, it is prone to a variety of natural disasters. Hurricanes and flooding, by far, top the list of potential large-scale disasters. Thunderstorms, erosion, tornadoes, extreme heat, hailstorms and severe winter storms also have potential of striking.

Utilizing the Hazard Identification and Analysis methodology suggested by the Hazard Mitigation Selection of the North Carolina Department of Emergency Management, the seriousness of each hazard was ranked based on the likelihood of occurrence, intensity rating and the potential impact. The outcome of the analysis, which was performed by the Hazard Mitigation Planning Advisory Committee, ranks the identified hazards as follows:

1. Hurricane/Coastal Storm;
2. Flooding;
3. Drought/Heat Wave;
4. Winter Storm/Nor’easter;
5. Thunderstorm;
6. Tornado;
7. Wildfire;
8. Hazardous Materials;
9. Earthquake;
10. Landslide;
11. Tsunamis; and,
12. Dam/Levee Failure and Volcano.

(NOTE: Because landslides, dam/levee failures and volcanoes are not a threat to Morehead City based upon historical data, they will not be addressed further.)

Hazard Identification and Analysis

Type of Hazard & Associated Elements	Likelihood of Occurrence	Intensity Rating	Potential Impact	Conclusions
Hurricane/Coastal Storm	Likely	Saffir-Simpson Scale (1-5)	Catastrophic	1
Flooding	Likely	FEMA FIRM Maps	Critical	2
Drought/Heat wave	Likely	US Drought Monitor/ Heat Index	Critical	3
Nor’ Easter	Likely	Dolan-Davis Scale (1- 5)	Limited	4
Thunderstorm	Highly Likely	Occasionally Severe	Negligible	5

Type of Hazard & Associated Elements	Likelihood of Occurrence	Intensity Rating	Potential Impact	Conclusions
Tornado	Likely	Fujita Pearson Scale (F0 - F5)	Negligible	6
Wildfire	Possible	FEMA's Fire Hazard Severity Table/Moderate Hazard	Critical	7
Hazardous Materials	Possible	Class 1 - 9	Critical	8
Earthquake	Possible	Modified Mercalli Scale (I to II)	Negligible	9
Landslide	Unlikely	Low Hazard Potential	Negligible	10
Tsunami	Unlikely	Tsunami Warning System	Critical	11
Dam/Levee Failure or Volcano	Unlikely		Negligible	12

The information on the hazards identified above was obtained from a variety of sources, including:

- North Carolina Division of Emergency Management (NCDEM)
- National Oceanic and Atmospheric Administration (NOAA)
- National Weather Service
- Federal Emergency Management Agency (FEMA)
- National Hurricane Center
- Federal Flood Insurance Rate Maps
- National Climatic Data Center
- United State Geological Survey (USGS) Landslide Data
- United State Geological Survey (USGS) Water Data
- Division of Soil and Water Conservation
- Carteret County's Hazard Mitigation Plan
- Carteret County News-Times*
- NC Forest Service
- State Climate Office of North Carolina
- The Weather Channel
- Southeast Regional Climate Center
- North Carolina Geological Survey
- University of Washington Geophysics Program
- Neighboring Local Governments
- Local Long-Term Residents

Hurricanes:

A hurricane is a category of tropical cyclone characterized by thunderstorms and defined surface wind circulation. Hurricanes develop over warm waters and are caused by the atmospheric instability created by the collision of warm air with cooler air. Hurricane winds blow in a large spiral around a calm center called the eye, which can be 20-30 miles wide.

Because of its geographic location, hurricanes are considered to be Morehead City's most potentially destructive natural hazard. Historically, hurricanes have caused significant damage to the City and the threat occurs annually. Most recently, Morehead City has felt the impact of Hurricanes Fran, Bertha, Floyd, and Isabel. Due to the potential size and frequency as well as the individual components of a hurricane (e.g., tornadoes, flooding, severe thunderstorms, etc.), it was determined that hurricanes are the most serious natural hazard facing Morehead City. Morehead City has a "high" chance every year of experiencing a hurricane. The National Climatic Data Center assigned Morehead City to Climate Division 7 which also identifies hurricanes as "high" risk.

Hurricane intensity is measured using the Saffir-Simpson Scale, ranging from 1 (minimum) to 5 (catastrophic). The scale categorizes hurricane intensity linearly based upon maximum sustained winds, minimum barometric pressure and storm surge potential, which are combined to estimate the potential flooding and damage to property given a hurricane's estimated intensity. Hurricanes that have impacted Morehead City have ranged from 1 to 3 based on the Saffir-Simpson scale shown below.

Category	Winds	Effects
One	74-95 mph	No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal road flooding and minor pier damage.
Two	96-110	Some roofing material, door, and window damage to buildings. Considerable damage to vegetation, mobile homes, and piers. Coastal and low-lying escape routes flood 2-4 hours before arrival of center. Small craft in unprotected anchorages break moorings.
Three	111-130	Some structural damage to small residences and utility buildings with a minor amount of curtainwall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures with larger structures damaged by floating debris. Terrain continuously lower than 5 feet ASL (above sea level) may be flooded inland 8 miles or more.
Four	131-155	More extensive curtainwall failures with some complete roof structure failure on small residences. Major erosion of beach. Major damage to lower floors of structures near the shore. Terrain continuously lower than 10 feet ASL may be flooded requiring massive evacuation of residential areas inland as far as 6 miles.
Five	Greater than 155 mph	Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Major damage to lower floors of all structures located less than 15 feet ASL and within 500 yards of the shoreline. Massive evacuation of residential areas on low ground within 5 to 10 miles of the shoreline may be required.

During the past decade, the following hurricanes have directly or indirectly impacted Morehead City:

August, 2006: Ernesto, Tropical Storm, Total Property Damage \$1.2 million
 September 2005: Ophelia, Category 1, Total Property Damage \$42.2 million
 August 2004: Charley, Tropical Storm, Insignificant Damage, Total Damage \$7.6 million
 August 2004: Alex, Category 2, Insignificant Damage
 September, 2003: Isabel, Category 2, Insignificant Damage
 October, 1999: Irene, Category 2, Insignificant Damage
 September, 1999: Dennis, Tropical Storm, Insignificant Damage
 Countywide Damage Total \$21.3 million
 September, 1999: Floyd, Category 2, Extensive Property & Tree Damage
 Countywide Damage Total \$410 million
 August, 1998: Bonnie, Category 3, Moderate Property & Tree Damage,
 Countywide Damage Total \$21.3 million
 October, 1996: Josephine, Tropical Storm, Insignificant Damage
 September, 1996: Fran, Category 3, Extensive Property & Tree Damage,
 Countywide Damage Total \$792.2 million
 August, 1996: Eduoard, Category 3, Insignificant Damage
 July, 1996: Bertha, Category 3, Moderate Property & Extensive Tree
 Damage
 Countywide Damage Total \$140.3 million
 June, 1996: Arthur, Tropical Storm, Insignificant Damage
 August, 1995: Felix, Category 3, Insignificant Damage
 November, 1994: Gordon, Category 1, Insignificant Damage

The chart below identifies hurricane statistics for North Carolina from 1886 to 1996.

North Carolina Tropical Cyclone Statistics (1886-1996)		
	Direct Land falling Tropical Cyclones in NC	Tropical Cyclones that passed through NC
Numbers of Storms	28	82
Percentage of Storms	2.9	8.6
Average Number of years between storms	4	1.3
Average number of storms per year	0.25	0.74
Table 1. Number and Percentage of hurricanes and tropical storms to make direct landfall in North Carolina from 1886 through 1996. Number of years between storms (period) and number of storms per year (frequency) are also given. Data compiled from the State Climate Office of North Carolina.		

Carteret County is located in Climate 7 Division, which has been assigned a 'moderate' likelihood of getting a direct strike from a hurricane. Information on annual hurricane forecasting is available by visiting the following links:

<http://www.nc-climate.ncsu.edu/climate/hurricane.php>

<http://www.ncdc.noaa.gov/oa/ncdc.html>

Flooding:

A flood is a natural event for creeks, rivers, streams and coastal areas. Excess water from rainfall or storm surge accumulates and overflows onto the banks of the waterway and adjacent floodplains. Floodplains are lowlands, adjacent to water bodies that are subject to recurring floods. Most damage from flooding results from inundation by sediment-filled water or by debris in flood waters that acts as “battering rams”.

In the early 1960’s, a standard of evaluating flood risk throughout the United States was developed. The Federal Government chose to use the 100 year flood as the standard flood because it was a compromise between a major and a minor flood. Water surface elevations were combined with topographic mapping data to develop the Flood Insurance Rate Maps (FIRM). These maps show:

- a) Areas that are susceptible to 100-year flooding for which base flood elevations (BFEs) have been determined;
- b) Areas that are susceptible to 100-year flooding for which no base flood elevations have been determined;
- c) Floodway areas;
- d) Areas that are susceptible to 500-year flooding;
- e) Areas prone to 100-year flooding with average depths of less than one foot or with drainage areas less than 1 square mile;
- f) Areas that are determined to be outside the 100 and 500 year floodplains; and,
- g) Locations of cross sections used to develop the hydraulic model.

In Morehead City, a number of commercial and residential structures are located within the floodplain as identified by FEMA’s FIRM maps. Based upon the most recent FIRM flood maps (July 2003), approximately 25-30% of Morehead City’s planning area is located within a designated flood zone. The structure value for parcels located in the AE zone is \$464,605,941, for the Shaded X zone it is \$129,952,734 and for the VE zone it is \$60,755,450. The total tax value (excluding land) is \$655,314,125*. Flood maps are included in the appendices. Morehead City is located in Climate Division 7 as identified by the National Climatic Center. Localities in Climate Division 7 have a “high” risk of floods.

Floods fall into two main categories: flash flood and coastal floods.

- a) Flash flooding occurs within a few minutes or hours of heavy amounts of rainfall. Most flash flooding in Morehead City is caused by slow-moving thunderstorms or by heavy rains caused by hurricanes and tropical storms. Stormwater cannot run off into the surface waters due to impervious coverage, topography and inadequate drainage facilities.
- b) Coastal Flooding: This is typically the result of storm surge, wind-driven waves and heavy rainfall. These conditions are produced by hurricanes during the summer and fall and nor-easters and other large coastal storms during the winter and spring.

** Flood zone values were estimated based upon the tax value of primary structures located on parcels containing flood zones. In cases where more than one flood zone was present on a parcel, the structure value was included with the most intensive flood zone (i.e., VE: most intensive; Shaded X: least intensive). Setback distances were used to approximate whether a*

structure could potentially be located within the flood zone on a parcel. All primary structure values for properties containing VE flood areas were included in the estimate.

FEMA FLOOD ZONE DESIGNATIONS AND EXPLANATIONS

Annual Probability of Flooding of 1% or greater

A	Subject to 100-year flood. Base flood elevation undetermined.
AE or A1-A30	Both AE and A1 –A30 represent areas subject to 100-year flood with base flood elevation determined.
AH	Subject to 100-year shallow flooding (usually areas of poundings) with average depth of 1-3 feet. Base flood elevation determined.
AO	Subject to 100-year shallow flooding (usually sheet flow on sloping terrain) with average depth of 1-3 feet. Base flood elevation undetermined.
A99	Subject to 100-year flood, with federal flood protection system (levee/dam) under construction. Base flood elevation undetermined.
V	Subject to 100-year flood and additional velocity hazard (wave action). Base flood elevation undetermined.
VE or V1-V30	Both VE and V1-V30 represent areas subject to 100-year flood and additional velocity hazard (wave action). Base flood elevation determined.
In SFHA	Areas in a “Special Flood Hazard Area” (or 100-year flood plain). Subject to 1% annual chance flooding. No distinctions have been made between the different flood hazard zones that may be included within the SFHA.
Flood Prone Areas	An area designated as “Flood Prone Area” on a map prepared by USGS and the Federal Insurance Administration. This area has been delineated based on available information on past floods. This is an area inundated by 1% annual chance flooding for which no base flood elevations have been determined.

Annual Probability of Flooding 0.2% to 1%

B or X500	Both B and X500 represent areas between the limits of the 100-year and 500-year flood; or certain areas subject to 100-year flood with average depths of less than 1 foot or where the contributing drainage area is less than 1 square mile; or areas protected by levees from the 100-year flood.
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Annual Probability of Flooding of Less than 0.2%

C or X	Both C and X represent areas outside the 500-year flood plain with less than 0.2% annual probability of flooding.
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Significant flood events that occurred between 1994 and 2008 include:

October, 2005:	General Flooding, \$50,000 Damage (countywide)
August, 2004:	Flash Flood, No Damage
June, 2004:	Flash Flood, No Damage
October, 2002:	Flash Flood, No Damage

August, 2002:	Flash Flood, No Damage
July, 2002:	Flash Flood, No Damage
September, 1999:	Flash Flood, No Damage
August, 1999:	Flash Flood, No Damage
May, 1998:	Flash Flood, No Damage
January, 1995:	Coastal Flooding, No Damage
December, 1994:	General Flooding, No Damage

During hurricanes, thunderstorms and other storm events, there is localized flooding that occurs that has not been listed.

<http://www.ncdc.noaa.gov/oa/ncdc.html>

Repetitive Loss:

Morehead City is currently a repetitive loss community with 16 properties. Under the National Flood Insurance Reform Act of 1994, the definition of “repetitive loss structure” is a building covered by a contract for flood insurance that has incurred flood-related damages on two occasions during a 10-year period. The 10-year period ends on the date of the event for which a second claim is made, in which the cost of repairing the flood damage, on average, equaled or exceeded 25% of the market value of the building at the time of each such flood event. According to FEMA officials, 1,216,770 losses to NFIP (National Flood Insurance Program) insured buildings were paid between 1978 and 2007, totaling approximately \$33 billion. Since 1978, Morehead City has incurred 212 losses with \$1,224,344 in payments from FEMA. Specifically, FEMA has two critical goals:

- 1) To reduce the disaster relief expenditures to communities that are mired in a damage-repair, damage-repair cycle; and,
- 2) To reduce the flood insurance subsidy to the owners of structures that have experienced repetitive flood losses.

Thunderstorms:

Being located in North Carolina's coastal plain makes Morehead City a prime candidate for thunderstorms in any month of the year. Thunderstorms are the result of convection in the atmosphere. They are typically the by-product of atmospheric instability, which promotes the vigorous rising of air parcels that form cumulus and, eventually, the cumulonimbus (thunderhead) cloud. Instability can be caused either by surface heating or upper-tropospheric divergence of air. Generally, the former "air mass" thunderstorms form on warm season afternoons and are not severe. The latter "dynamically-driven" thunderstorms form in association with a cold front or other regional-scaled atmospheric disturbance.

These storms can become severe, producing strong winds, frequent lightning, hail, downbursts and even tornadoes. According to the National Weather Service, a severe thunderstorm is one that produces tornadoes, hail 0.75 inches or greater in diameter, or winds of 50 knots (58 mph) or higher. Thunderstorm winds can cause widespread damage and death. Thunderstorm "straight line" wind occurs when rain-cooled air descends with accompanying precipitation. 'Downbursts', excessive bursts of winds that are sometimes confused with tornadoes, can also occur. Downburst falls into one of two categories:

- a) Microburst: less than 2.5 miles wide at the surface, duration less than 5 minutes and winds up to 146 miles per hour (mph), or
- b) Macroburst: greater than 2.5 miles wide at the surface, duration of 5-30 minutes with wind speeds of up to 117 mph.

Thunderstorms are widely underrated in the damage, injury and death they can bring. Lightning always precedes thunder because lightning causes thunder. Damage to property from direct or indirect lightning can take the form of an explosion or a burn. Damage to property between 1959 and today is ever increasing.

Recent thunderstorm events include:

March, 2007:	Thunderstorm Winds, Speed 51 knots, no damage.
July, 2006:	Thunderstorm Winds, Speed 50 knots, no damage.
May, 2005:	Thunderstorm Winds, Speed 50 knots, no damage.
March, 2005:	Thunderstorm Winds, Speed 50 knots, \$10,000 damage.
September, 2004:	Thunderstorm Winds, Speed 50 knots, no damage.
April, 2004:	Thunderstorm Winds, Speed 52 knots, \$10,000 damage.
July, 2002:	Thunderstorm Winds, Speed 61-65 knots, no damage.
July, 2001:	Thunderstorm Winds, Speed 52 knots, no damage.
February, 2000:	Thunderstorm Winds, Speed 58 knots, no damage.
September, 1998:	Heavy rains, \$25,000 damage.
February, 1997:	Thunderstorm Winds, Speed 51 knots, no damage.
May, 1996:	Hail, 0.75 inches, no damage.
November, 1995:	Thunderstorm Winds, Speed n/a, \$5,000 damage.
June, 1995:	Thunderstorm Winds, Speed n/a, \$5,000 damage.
January, 1995:	Thunderstorm, no damage.

Additionally, between 1980 and 1994, a total of 22 thunderstorm events occurred in Carteret County with no damage costs reported.

<http://www.ncdc.noaa.gov/oa/ncdc.html>

Erosion:

Erosion occurs along Morehead City's sound and creek fronts. It is normally minor in nature but can be accelerated by storms and hurricanes. At its most basic, erosion represents the movement of sand and earth from one place to another as caused by wind and water. Rain, wind, storms, the tides and local water currents all affect the rate of erosion. Coastal erosion occurs as a result of hazardous events such as hurricanes, flooding, storm surge, etc. Humans can influence the erosion through dredging, shoreline hardening, and boat wakes. Coastal erosion is also characterized by a gradual wearing away of land.

Generally, Morehead City's erosion rate is nominal; however, a single storm event could have a large impact, especially along the bluff located along the Bogue Sound shoreline, specifically in the vicinity of Sound Drive and South Shore Drive.

There have been no major erosion events in Morehead City in the past 50 years.

Tornadoes/Water Spouts:

Tornadoes are violently rotating columns of air extending to the ground. Over water, a tornado is called a waterspout. The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 mph or higher. Tornadoes are considered to be one of the most unpredictable weather events. Generally, the tornado season runs from March to August, however, with the right weather conditions, they can occur at any time. Both thunderstorms and hurricanes spawn tornadoes. In North Carolina, the majority of tornadoes (71%) are considered weak and only one percent (1%) is considered violent. Tornadoes are measured using the Fujita-Pearson Tornado Scale (see below).

Scale	Wind Speed (mi/h)	Wind Speed (km/h)	Wind Speed (knots)	Possible Damage
F0	40-72	64-116	35-63	Minor roof, tree and sign damage.
F1	73-112	117-180	64-97	Roof damaged; barns torn apart; weak trailers flipped and torn apart; cars thrown from roads; sheet metal buildings destroyed.
F2	113-157	181-253	98-136	Strongly built schools, homes and businesses unroofed; concrete block buildings, weak homes and schools destroyed; trailers disintegrated.
F3	158-206	254-332	137-179	Strongly built schools, homes and businesses have outside walls blown away; weaker homes completely swept away.
F4	207-260	333-419	180-226	Strongly built homes have all interior and exterior walls blown away; cars thrown 300 yards or more in the air.
F5	261-318	420-512	227-277	Strongly built homes completely blown away.

Tornadoes do occur in Morehead City; however, most are considered low intensity (F0 to F2). The resulting damage is usually minor. The most recent tornado event occurred in July, 2003 and damage costs were estimated to be \$30,000. The following tornado events occurred between 1993 and 2008.

- May, 2008: F0, \$10,000 damage.
- May, 2008: F1, \$30,000 damage.
- August, 2006: F0, \$10,000 damage.
- June, 2006: F0, \$25,000 damage.
- April, 2004: F0, \$10,000 damage.
- August, 2003: F0, \$50,000 damage.
- April, 2001: F1, \$100,000 damage.
- April, 2000: F0, no damage reported.
- September, 1999: F0, no damage reported.
- October, 1997: F0, \$165,000 damage.
- September, 1993: F1, \$5 million damage.

August, 1993: Waterspout, no damage reported.

Prior to 1993, tornadoes/waterspouts were identified as county events. Between 1960 and 1992, there were 17 tornadoes with a countywide damage total of \$2.7 million. Of those 17 tornadoes, four were classed as F2, ten were F1 and the remaining three were F0.

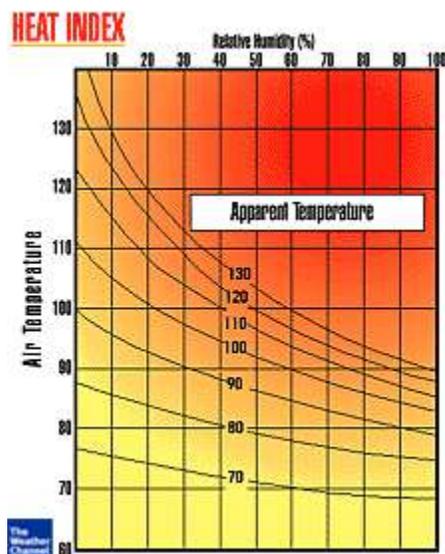
<http://www.ncdc.noaa.gov/oa/ncdc.html>

Extreme Heat/Drought:

a. Extreme Heat

Morehead City is located on a peninsula close to the Atlantic Ocean. This is the defining geographic feature that limits the number of extreme heat days Morehead City experiences. Extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature and last for several weeks.

The Heat Index Chart: The Heat Index is a function of temperature and relative humidity. A combination of the two results is an apparent temperature which gives an idea of what it would feel like under normal-to-low humidity conditions. The heat index also applies to shady, light wind conditions, so it feels even hotter than the heat index if a person is in direct sun. In the midst of a hot, dry wind, a person would also feel hotter than the heat index value due to the wind effects. Excessive and dangerous heat indices occur mostly during the summer months with the abundance of moisture and increased heat.



Apparent Temperature Readings

- i) Caution (85° to 94°F): physical activity may cause fatigue.
- ii) Extreme Caution (95° to 105°F): possible heat cramps and/or heat exhaustion with prolonged exposure.
- iii) Danger (Above 105°F): possible heat stroke with prolonged exposure; heat exhaustion and cramps likely.

NOTE: Information on heat index was taken from www.weather.com.

According to data from the Southeast Regional Climate Center, from 1948 to 2008, Morehead City averaged 14.9 days of extreme heat (days with temperatures greater than or equal to 90 degrees). July and August have the most days of extreme heat, with 5.7 days and 5.5 days, respectively. The other months that have experienced extreme heat are May

(0.2 days), June (2 days), September (1.5 days) and October (0.1 days). The highest temperatures recorded by month are:

April, 1985:	92 degrees;
May, 1953 & 1988:	96 degrees;
June, 1952:	107 degrees;
July, 1986:	100 degrees;
August, 1983:	98 degrees;
September, 1952:	94 degrees; and,
October, 1986:	95 degrees.

Morehead City has a moderate chance of experiencing extreme heat in the summer months. It also has the potential to have multiple days with dangerous heat indexes.

b. Drought

A drought is a period of abnormally dry weather which persists long enough to produce a serious hydrologic imbalance (for example crop damage, water supply shortage, etc.) The severity of a drought depends upon the degree of moisture deficiency, the duration and the size of the affected area.

There are four different ways that drought can be defined:

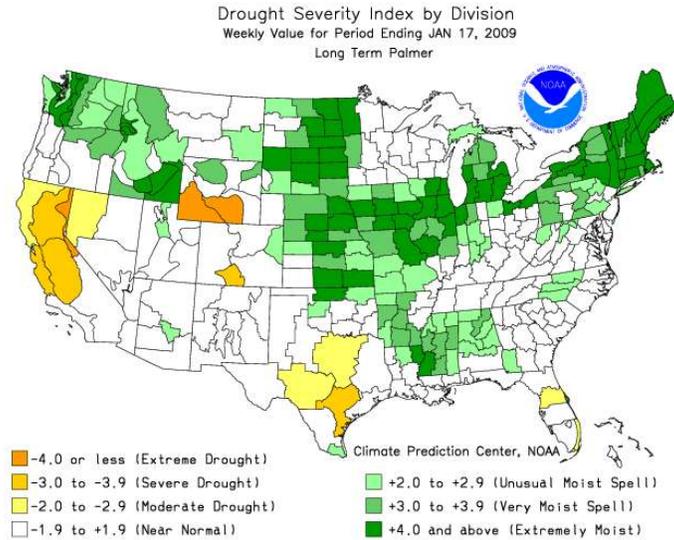
Meteorological: a measure of a departure of precipitation from normal. Due to climatic differences what is considered a drought in one location may not be a drought in another location.

Agricultural: refers to a situation when the amount of moisture in the soil no longer meets the needs of a particular crop.

Hydrological: occurs when surface and subsurface water supplies are below normal.

Socioeconomic: refers to the situation that occurs when physical water shortage begins to affect people.

Drought intensity is measured using the Palmer Hydraulic Drought Index. The Palmer Index was developed by Wayne Palmer in the 1960s and uses temperature and rainfall information in a formula to determine dryness. It has become the semi-official drought index. The Palmer Index is most effective in determining long-term drought – a matter of several months – and is not as good with short-term forecasts (a matter of weeks). It uses a 0 normal, and drought is shown in terms of minus numbers; for example, minus 2 is moderate drought, minus 3 is severe drought, and minus 4 is extreme drought.



*Image above obtained from NOAA's Drought Information System
(<http://www.drought.noaa.gov/>)*

Morehead City's average annual rainfall amount between 1948 and 2007 was approximately 55.08 inches. The lowest amounts of rainfall came in 2001 (35.04 inches), 1990 (38.77 inches), 1965 (38.72 inches), 1961 (36.24 inches), 1951 (38.69 inches), 1950 (37.4 inches) and 1948 (38.78 inches). Even with below average rainfall, Morehead City did not experience long-term drought conditions.

Nor'easters (Coastal Winter Storms):

Nor'easters are extra-tropical events that produce gale-force winds and precipitation in the form of heavy rain or snow. They can cause increase in tidal elevations (storm surge), wind speed and erosion. These cyclonic storms are called Nor'easters because of the direction of the storm winds. Nor'easters can last for several days and can be very large. Living in the coastal region, Nor'easters pose the greatest risk between October and April, when moisture and cold air are plentiful. Winter conditions make Nor'easters a normal occurrence, but only a few actually gather the force and power to cause problems in Morehead City.

Nor'easters are measured by the Dolan-Davis Nor'easter Intensity Scale created in 1993 and shown below:

Storm Class	Beach Erosion	Dune Erosion	Overwash	Property Damage
1 (Weak)	Minor Changes	None	No	No
2 (Moderate)	Modest; mostly to lower beach	Minor	No	Modest
3 (Significant)	Erosion extends across beach	Can be significant	No	Loss of many structures at local level
4 (Severe)	Severe beach erosion and recession	Severe dune erosion or destruction	On low beaches	Loss of structures at community-scale
5 (Extreme)	Extreme beach erosion	Dunes destroyed over extensive areas	Massive in sheets and channels	Extensive at regional-scale; millions of dollars

Analysis of Nor'easter frequency by researchers reveals fewer Nor'easters during the 1980s. However, the frequency of major Nor'easters (class 4 and 5 on the Dolan-Davis Scale) has increased in recent years. In the period 1987 to 1993, at least one class 4 or 5 storm occurred each year along the Atlantic seaboard of the United States, a situation duplicated only once in the last 50 years. Most Nor'easters that impact Morehead City are Class 1 or 2.

The coastal counties of North Carolina are most vulnerable to the impacts of Nor'easters. Since the storms often occur at night, they typically make landfall with less warning than hurricanes, catching residents at home and unprepared. On the other hand, nor'easters typically occur during the off-season when fewer non-residents are visiting the coast. As with hurricanes, vulnerability is proportional to structural strength, with mobile homes particularly vulnerable.

A number of notable nor'easters have impacted North Carolina in recent decades, including the Ash Wednesday Storm of March 1962, but they were typically only of local concern. One exception to this was the nor'easter of late October and early November 1990, which loosened a dredge barge that struck and destroyed approximately five roadway segments

of the Bonner Bridge in Dare County. Another Nor'easter struck the Outer Banks on Halloween 1991, causing substantial beach erosion.

Most recently, Morehead City has been impacted by Nor'easters/winter storms in:

May, 2005:	High Winds (69 knots), No Damage
December, 2004:	Winter Storm, No Damage
March, 2004:	High Winds (60 knots), \$29,000 Damage
February, 2004:	Winter Storm, No Damage
January, 2004:	Winter Storm, No Damage
January, 2003:	Winter Storm, No Damage
December, 2002:	High Winds (50 knots), No Damage
February, 2002:	High Winds (53 knots), No Damage
January, 2002:	High Winds (62 knots), No Damage
January, 2002:	Winter Storm, No Damage
December, 2000:	High Winds (62 knots), No Damage
December, 1998:	High Winds (84 knots), No Damage
March, 1998:	Extreme Cold, \$350K Damage to Crops (Countywide)
March, 1998:	Ice Pellets
February, 1998:	Winter Storm, \$25,000 Damage
February, 1998:	Winter Storm, \$22.2 million Damage
January, 1998:	Winter Storm, \$600,000 Damage
January, 1998:	Winter Storm, 2 deaths, 14 injuries
February, 1997:	Winter Storm, No Damage
February, 1996:	Winter Storm, 5 deaths, 165 injuries, \$310,000 Damage

Data on snowfall amounts is available from 1947 to 2007 from the Southeastern Regional Climate Center. The record single-snowfall event of 22 inches occurred in March, 1980. Sixteen (16) inches fell in February, 1973 and 6.5 inches fell in January, 2003 during one event. On average, Morehead City can expect 1.4 inches of snowfall annually.

<http://www.sercc.net/cgi-bin/sercc/cliMAIN.pl?nc5830>

Hazardous Materials:

Any area that manufactures materials, or contains transportation routes (roads, rail) that transports hazardous materials is at risk for a hazardous material event. Approximately 6,774 HAZMAT (hazardous materials) events occur each year. Nine hundred ninety-one (991) are railway events. Trucks are responsible for most of these events. The average distance for trip lengths for gasoline transport is twenty-eight (28) miles. Two hundred sixty (260) miles is the average length for chemical trucks. Even though trucks account for the most accidents, it is railway transport that is of the most concern. Collisions and derailments can cause very large spills as it is rare that a single car will tip over. Usually, many cars go over at once.

An average of two hundred eighty (280) HAZMAT spills occur at fixed sites each year. Natural disasters, such as floods and earthquakes can cause HAZMAT releases or disturb old HAZMAT release sites (Superfund sites). These same disasters can make it difficult to contain these events once they occur. Also, these same natural disasters can limit access to the spill, waterlines for fire suppression may be broken, and response personnel and resources may be limited. Flooding and high winds can quickly spread the contaminant, threatening agriculture, water supply and air, and can be adsorbed to air in soils.

HAZMAT releases pose short and long term threats to people, wildlife, vegetation, and the environment. HAZMAT materials can be absorbed through inhalation, ingestion, or direct contact with the skin, and can be adsorbed to air in soils.

Years ago, many wastes were dumped on the ground, in rivers, or left out in the open. As a result, thousands of uncontrolled or abandoned waste sites were created. Some common hazardous waste sites include abandoned warehouses, manufacturing facilities, processing plants and landfills. In response to growing concern over health and environmental risks posed by hazardous waste sites, Congress established the Superfund Program in 1980 to clean up these sites. The Superfund Program is administered by the U.S. Environmental Protection Agency (EPA) in cooperation with individual sites throughout the United States.

The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) is the official repository for site and non-site specific Superfund data in support of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). It contains information on hazardous waste site assessment and remediation from 1983 to the present.

North Carolina maintains its own list of hazardous waste sites. The North Carolina Inactive Hazardous Sites Response Act of 1987 (N.C. G.S. 130A-310 et seq) was enacted to establish a program to manage uncontrolled and unregulated hazardous waste sites. This Act is administered by the Inactive Hazardous Sites Branch (IHSB).

The IHSB can address any site where hazardous substance and/or hazardous waste contamination exists with the following exceptions: (1) RCRA permitted or interim status facilities; and (2) any site where the Environmental Management Commission, the Commissioner of Agriculture or the Pesticide Board has assumed jurisdiction.

IHSB has the authority to do the following:

- Provide leadership and approval in voluntary remedial actions.
- Enforce assessment and remediation orders at priority sites.
- Reduce public health threats.
- Administer the Registered Environmental Consultant (REC) Program.
- Record notices of contamination on property deeds.
- Compile, maintain and prioritize sites that require investigation.

A hazardous waste site may be on the NC Inactive Hazardous Site list but not on CERCLIS.

Additional Hazardous Waste data are contained in the Resources Conservation and Recovery Information System (RCRIS) in support of the Resource Conservation and Recovery Act (RCRA). RCRA requires that generators, transporters, treaters, storers, and disposers of hazardous waste provide information concerning their activities to State environmental agencies. These agencies then provide the information to regional and national U.S. Environmental Protection Agency (EPA) offices.

RCRIS is used by the EPA to support its implementation of RCRA, as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA). The system is primarily used to track handler permit or closure status, compliant with Federal and State regulations, and cleanup activities. Other uses of the data include program management, regulation development, waste handler inventory, corrective action tracking, regulation enforcement, facility management planning, and environmental program progress assessment*.

Morehead City is vulnerable to HAZMAT incidents due to the location of the NC State Port, one of North Carolina's two deep water ports, within its corporate limits. The State Port is a bulk cargo facility that handles a variety of commodities, including hazardous materials. On any given day, there are a number of trucks, rail cars and ships moving cargo to and from the Port. To date, there have been no known HAZMAT incidents within Morehead City's jurisdiction.

** HAZMAT information taken from Carteret County Hazard Mitigation Plan. Morehead City statistics provided by the Morehead City Fire Department.*

Earthquakes:

Earthquakes are caused by a sudden motion or trembling that is caused by a release of a strain accumulated within or along the edge of Earth’s tectonic plates. The severity of these effects is dependent on the amount of energy released from the fault or epicenter. Earthquakes usually occur without warning and can cause massive damage and extensive casualties within seconds.

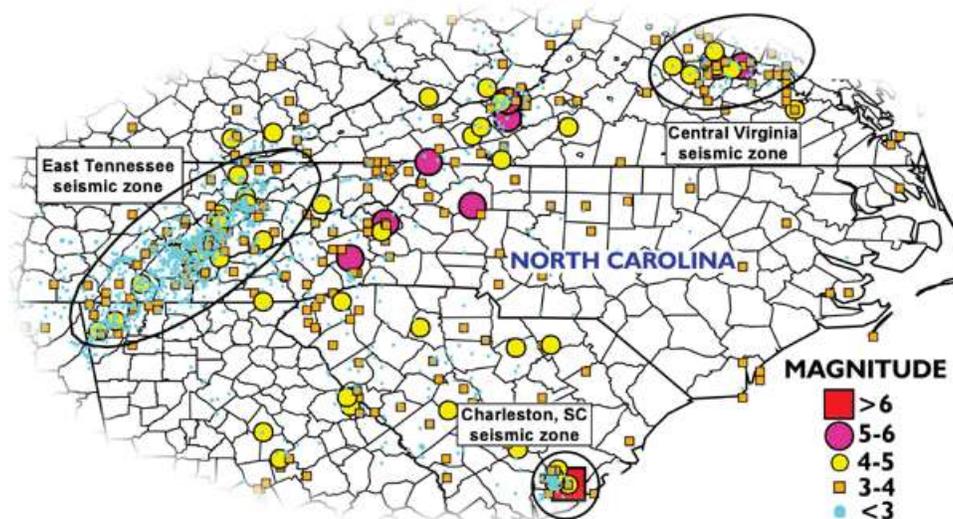
Earthquakes are measured in terms of their magnitude and intensity. Magnitude is measured using the Richter Scale while intensity is measured using the Modified Mercalli Intensity Scale.

Earthquakes are relatively rare in North Carolina, but they do occur. Morehead City is not located in a fault area and, therefore is not prone to significant earthquake damage. NOAA has identified North Carolina Climate Division 7, in which Morehead City is located, as having a low risk of earthquakes.

Recent Earthquake History in North Carolina

March 5, 1958 Wilmington, NC	Intensity: V (five) Magnitude: 0 Damage: Shocks transpired along the coast rolling people out of bed and shaking houses.
1987 North Carolina/Tennessee border	Magnitude 4.2 Largest to occur in the Southeast that year
June 14, 1997 Henderson County, NC	Magnitude 2.5, Small earthquake Damage: None reported
June 5, 1998 Boger City, NC	Magnitude 3.2, Small earthquake Damage: None reported

<http://www.csc.noaa.gov/products/nchaz/htm/hother.htm#four>



*Image above obtained from N.C. Geological Survey
(http://www.geology.enr.state.nc.us/Geologic_hazards_earthquakes/earthquakes.htm#Sources)*

Tsunamis

A tsunami is a wave train, or series of waves, of extremely long wavelength and long period generated in a body of water by an impulsive disturbance that vertically displaces the water such as an earthquake, volcanic eruption, landslide, and/or meteor impact. In the deep ocean, a tsunami is barely noticeable. As it approaches land and shallow water, it becomes a hazard to the coastline. In the shallow water, the waves slow down and compress which causes the wave height to increase. Tsunamis can reach heights of up to 100 feet.

Tsunamis are unlike hurricane or wind generated waves in that they are characterized as shallow-water waves, with long periods and wave lengths. A wind-generated swell that rhythmically rolls in, one wave after another, might have a period of about 10 seconds and a wave length of up to 500 feet. A tsunami, on the other hand, can have a wavelength of nearly 330,000 feet and last on the order of one hour. Capable of inundating or flooding hundreds of meters inland past the typical high-water level, a tsunami can crush homes and other coastal structures.

Tsunamis have been recorded to occur in all the major oceans of the world. However, this phenomenon is mainly restricted to the Pacific Basin, an area surrounded by volcanic island arcs, mountain chains and subduction zones, earning the nickname the “ring of fire”, as it is the most geologically active area on the planet. The amount of activity in this region makes it much more susceptible to submarine faulting and subsequent tsunami events, whereas the Indian and Atlantic Oceans are far less geologically active, with some exceptions, and therefore the occurrence of tsunamis is rare.

The Tsunami Warning System (TWS) in the Pacific, comprised of 26 participating international Member States, monitors seismological and tidal stations throughout the Pacific Basin. The System evaluates potentially tsunamigenic earthquakes and disseminates tsunami warning information. The Pacific Tsunami Warning Center (PTWC) is the operational center of the Pacific TWS. Located in Honolulu, Hawaii, PTWC provides tsunami warning information to national authorities in the Pacific Basin.

The threat risk for a tsunami striking Morehead City is low as evidenced by the fact that there has been no tsunami activity in recorded history. This is largely due to the fact of its location in a less active geological region than the Pacific Basin. This hazard would be handled in the same manner and response mode as a “Hurricane”.

University of Washington Geophysics Program
(<http://www.geophys.washington.edu/>)

Landslides:

Landslides are defined as downward movement of a slope and/or materials under the force of gravity. The term landslides includes a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Landslides can occur as a result of human activity or natural factors such as earthquakes or rainstorms.

The best predictor of future landslides is past landslides because they tend to occur in the same places. Existing or old landslides may be found in the following areas: 1) On or at the base of slopes; 2) in or at the base of minor drainage hollows; 3) at the base or top of an old fill slope; 4) at the base or top of a steep cut slope; or, 5) developed hillsides where leach field septic systems are used.

Morehead City has no history of landslides due to its relatively flat topography. For that reason, landslides will not be considered further in the hazard mitigation planning process.

Dam/Levee Failures:

There are about 80,000 dams in the United States today, the majority of which are privately owned. Other owners are State and local authorities, public utilities, and federal agencies. The benefits of dams are numerous: they provide water for drinking, navigation, and agricultural irrigation. Dams also provide hydroelectric power and create lakes for fishing and recreation. Most important, dams save lives by preventing or reducing floods.

If dams have many benefits, they also can pose a risk to communities if not designed, operated, and maintained properly. In the event of a dam failure, the energy of the water stored behind even a small dam is capable of causing loss of life and great property damage if there are people downstream of the dam. The National Dam Safety Program is dedicated to protecting the lives of American citizens and their property from the risks associated with the development, operation and maintenance of America's dams.

There is no risk to Morehead City relating to a dam or levee failure because there are no dams or levees located in the neighboring communities. For that reason, dam/levee failures will not be considered further in the hazard mitigation planning process.

Wildfire:

A wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures. They often begin unnoticed, spread quickly, and are usually signaled by dense smoke that fills the air for miles around. A wildland fire is a wildfire in an area in which development is essentially nonexistent, while an urban-wildland interface fire is a wildfire in a geographical area where structures and other human development meet or intermingle with vegetative fuels. The Fire Hazard Severity Table, shown below, is used to determine fire hazard severity in a community.

	<1/Day/Year			2 to 7 Days/Year			>8 Days/Year		
	Slope (%)			Slope (%)			Slope (%)		
	<40	41-60	>61	<40	41-60	>61	<40	41-60	>61
Light Fuel	M	M	M	M	M	M	M	M	H
Medium Fuel	M	M	H	H	H	H	E	E	E
Heavy Fuel	H	H	H	H	E	E	E	E	E

Source Urban Wildland Interface Code: 2000

M= Moderate hazard

H= High Hazard

E= Extreme Hazard

People start 80% of wildfires, usually as debris burns, arson or carelessness. Lightning strikes are the next leading cause of wildfires. North Carolina’s southern coastal plain is particularly vulnerable to the wildfire hazard. According to the 2007 North Carolina State Risk Assessment, Carteret County averages between 2.75 and 4 wildfires annually. The State also identified the potential of annual wildfire occurrence in Carteret County as “Highly Likely” with a potential loss estimate of \$24,850. There have been no wildfires greater than 1 acre in Morehead City’s planning area for the past 30 years.

Source: *NC State Hazard Mitigation Plan*

<http://www.nccrimecontrol.org/Index2.cfm?a=000003.000010.001623.000177.001563>

Volcano:

Volcanoes are mountains built by the accumulation of their own eruptive products – lava, bombs crusted over ash flows, and tephra (airborne ash and dust). It is most commonly a conical hill or mountain built around a vent that connects with reservoirs of molten rock below the surface of the Earth. The term volcano also refers to the opening or vent through which the molten rock and associated gasses are expelled. Molten rock below the surface of the Earth that rises in volcanic events is known as *magma*, but after it erupts from a volcano it is called *lava*. Upon cooling, the liquid magma may precipitate crystals of various minerals until solidification is complete to form an *igneous* or *magmatic* rock.

There are no volcanoes located in Morehead City or along the eastern seaboard of the United States. Therefore, volcanoes do not have any potential impact to the community and will not be discussed further.

APPENDIX B: VULNERABILITY ASSESSMENT

Community Description:

General:

Morehead City is located on North Carolina's Crystal Coast. Access is limited due to the fact that Morehead City and its planning area are bounded on three sides by water. The major highways leading to the City from the west are Highways 24 and 70. Highway 58 feeds into Morehead City from Bogue Banks, a developed barrier island to the south. There is no direct northern access, however, Highways 70 and 24, along with the NC Railroad, are corridors that provide access to and from the east. The Morehead City planning area consists of approximately 16 square miles.

Morehead City serves as the economic, cultural, medical and social hub of the County. Not only is it home to Carteret Community College, Carteret General Hospital and the North Carolina State Port at Morehead City, it also provides a base of operations for Carteret County's major shopping areas. As Morehead City's population grows and development increases, the impact of repetitive weather-related hazards and manmade hazards intensifies.

Physical Features:

Morehead City is bordered on the north by the Newport River and its tributaries, on the east by the Newport River and the Turning Basin, on the south by Bogue Sound and on the west by portions of unincorporated Carteret County as well as the Town of Newport. The topography is fairly flat with the land ranging from approximately 3 to 30 feet above sea level.

According to the Soil Survey of Carteret County, the two prominent soil types are Wando-Seabrook-Kureb and Altavista-Augusta-State. The Wando-Seabrook-Kureb soils run parallel to Bogue Sound and are characterized by nearly level to gentle sloping, well drained, moderately well drained and excessively drained sandy soils. The Altavista-Augusta-State soils are located along the Newport River shoreline and are characterized as being nearly level, moderately well drained, somewhat poorly drained, sandy and loamy soils on uplands.

Form of Government:

Morehead City has a council/manager form of government. All the seats are at-large with staggered terms. The general population elects the Mayor.

Population:

Over the past decades (1990-2000), population growth in Morehead City and its planning area has been high (27%). Much of the increase in the planning area's population is due to annexations and the expansion of the City's extraterritorial jurisdiction.

Based upon a review of the 2000 Decennial Census data, the total permanent population for Morehead City's planning jurisdiction was 14,846 in 2000. The seasonal population increases to 42,846, representing an almost 150% rise in permanent population. When

factoring in the number of visitors who are in Morehead City working or shopping for the day, the number elevates by another 26, 902 for a total population of 69,748 on a peak summer day.

Because Morehead City is located in the heart of Carteret County, it is the medical hub of Carteret County. There are three major nursing home/assisted living facilities located in the planning area. Harborview Health Care, located in the old Morehead City Hospital building, is the only facility located in a flood zone.

Another special population that is located in Morehead City is the Spanish-speaking residents. Over the past decade, the numbers in this group have escalated dramatically. The largest cluster of Spanish-speaking residents can be found in Pelican Point Mobile Home Park on North 20th Street.

Development:

Existing Development:

With the exception of Sugarloaf Island and the Newport River Marshes, Morehead City can be considered as developed. Single-family development with ½ acre lots dominates the Country Club Road, Crab Point, Mitchell Village and Highway 24 sound front residential areas. Downtown has higher residential densities because of its access to City water and sewer services. The Highway 70 and 24 corridors are primarily commercial, serving as the retail center for all of Carteret County. One of North Carolina's Ports is located in Morehead City, as well as the newly established Crystal Coast Business Park, both of which attract industrial development.

Growth Areas:

There are four main growth areas that have been identified on the Growth Area Map located in Appendix J: Crab Point, Radio Island, Country Club Run and the Business Drive corridor which also includes parcels located on the north side of Highway 70. The largest residential growth is expected to occur near the terminus of North 35th Street and in the Crab Point area. Industrial development is anticipated to occur in and around the Crystal Coast Business Park along the Business Drive corridor. Commercial development is expected in the western parts of the City along the Highway 70 and 24 corridors. Continued multi-family development, along with port industrial development is expected on Radio Island. As the revitalization of downtown continues, redevelopment of existing parcels is also expected to occur.

Housing:

Most of the housing in Morehead City is single-family residential, however, as the City grows, the number of multi-family housing units is increasing. The bulk of the apartments and condominiums are located outside the flood hazard zones, in the vicinity of Penny Lane, North 35th Street and Friendly Road.

A trend in the older residential neighborhoods has been to demolish the existing small residential structures and replace with larger single-family residences. This is primarily occurring in downtown waterfront neighborhoods. Although complaints have been received that it is changing the character of the neighborhood, a positive

is that structures are being removed that are below the base flood elevations and being replaced with structures that exceed base flood elevation because Morehead City has a one-foot freeboarding requirement.

Commercial and Industrial:

With the exception of the downtown Morehead City waterfront area, the bulk of the commercial and industrial development is located outside of the flood prone areas. These types of structures have potential to be impacted by hurricanes, winter storms, thunderstorms, tornadoes and heat waves.

Infrastructure:

Morehead City expects to continue its water and sewer lines north, west and east. The Country Club Road corridor currently has access to City water lines with limited sewer services. In the future, the City expects to extend sewer lines along the corridor as septic tanks fail and new development occurs. The Highway 70 and 24 corridors are also areas in which the City foresees the extension of water and sewer lines. Another potential area for both residential and industrial development is Radio Island, since water and sewer lines were recently extended across the Turning Basin. Infrastructure maps can be found in Appendix J.

Critical Facilities:

Located in the center of Carteret County, Morehead City contains a number of critical facilities that are significant not only to the City, but also Carteret County as a whole. By definition, “critical facilities” are places that are essential to the health, safety and viability of Morehead City. Generally the categories that have been classed as being critical include educational facilities, emergency shelters, utilities, public buildings, including those housing public safety agencies such as the 911 dispatch center, the Morehead City Police Department and the Highway Patrol Station, healthcare facilities, including Carteret General Hospital and the NC Port. The total value of all identified critical facilities is \$138,549,757. The table of critical facilities follows:

Owner	Tenant	Address	Type	Value
County Exempt	Camp Glenn Elementary	3316 Arendell Street	Emergency Shelter	\$2,565,821
County Exempt	Carteret General Hospital	302 Medical Park Court	Health & Safety	\$847,996
County Exempt	Carteret General Hospital	3500 Arendell Street	Health & Safety	\$13,856,492
County Exempt	Board of Education	113 Guthrie Drive	Education	\$71,369
County Exempt	Civic Center	3505 Arendell Street	Recreation	\$3,682,440
County Exempt	Community College	106 Banks Street	Education	\$84,923
County Exempt	Community College	108 College Circle	Education	\$9,506,226
County Exempt	Community College	115 Banks Street	Education	\$54,649
County Exempt	Community College	205 College Circle	Education	\$2,194,101
County Exempt	Community College	301 College Circle	Education	\$4,102
County Exempt	Community College	303 College Circle	Education	\$10,163,277
County Exempt	Community College	3505 Arendell Street	Education	\$2,893,150
County Exempt	Community College	3915 Arendell Street	Education	\$377,461
County Exempt	Health Department	3820 Bridges Street	Health & Safety	2,556,753
County Exempt	Leon Mann Center	3820 Galantis Drive	Emergency Shelter	\$1,103,674
Municipal Exempt	MC Fire Station #1	1404 Bridges Street	Health & Safety	\$1,155,233

Owner	Tenant	Address	Type	Value
Municipal Exempt	MC Fire Station #2	3314 Arendell Street	Health & Safety	\$193,474
Municipal Exempt	MC Fire Station #3/Wildwood	5291 Highway 70	Health & Safety	\$402,775
County Exempt	Morehead Middle School	400 Barbour Road	Education	\$5,508,064
County Exempt	West Carteret High School	4700 Country Club Road	Emergency Shelter	\$11,553,242
Federal Exempt	Army Reserve	405 Fisher Street	Health & Safety	\$548,335
Federal Exempt	Army Reserve	500 Bay Street	Health & Safety	\$407,999
Federal Exempt	Police Department	202 South 8 th Street	Health & Safety	\$615,391
Federal Exempt	US Post Office	3500 Bridges Street	Operational	\$710,915
Municipal Exempt	Recreation Center	1600 Bay Street	Recreation	\$966,073
Municipal Exempt	Town Hall	706 Arendell Street	Operational	\$240,533
Municipal Exempt	Waste Treatment Plant	1000 Treatment Plant Rd	Utility	\$346,859
Private	Carolina House	107 Bryan Street	Health & Safety	\$2,591,328
Private	Crystal Bluffs	4010 Bridges Street	Health & Safety	\$7,459,460
Private	Harborview	812 Shepard Street	Health & Safety	\$6,485,186
State Exempt	Highway Patrol	5347 Highway 70	Health & Safety	\$155,652
State Exempt	National Guard Armory	3407 Bridges Street	Health & Safety	\$887,023
State Exempt	NC Marine Fisheries	3411 Arendell Street	Health & Safety	\$4,349,763
State Exempt	NC State Port	105 Port Terminal Road	Transportation	\$2,197,059
State Exempt	NC State Port	107 Port Terminal Road	Transportation	\$19,905,710
State Exempt	NC State Port	121 Arendell Street	Transportation	\$21,469,969
State Exempt	NC State Port	Radio Island Road	Transportation	\$107,071
Utility Exempt	Carolina Telephone	1875 Sprookeys Road	Utility	\$183,388
Utility Exempt	Carolina Telephone	903 Arendell Street	Utility	\$201,039
Utility Exempt	CP&L	510 Maple Lane	Utility	\$67,389
Total				\$63,882,597

Current values were obtained from 2009 Carteret County Tax Parcel information.

Public Buildings/Critical Facilities:

There have been 17 public buildings/critical facilities identified in Morehead City's planning area, not including local government buildings. Three of the facilities, West Carteret High School, Camp Glenn Elementary School and the County Senior Citizen Center double as emergency shelters during storm events and disasters.

Local government buildings/critical facilities includes Morehead City Hall, the Municipal Building, City Garage, three Fire Stations, Sewer Plant and associated buildings, and various miscellaneous buildings. The total value of all municipally owned buildings is \$5,601,750, not including contents

In addition to the critical facilities identified in this section, the City maintains infrastructure associated with its water and sewer systems. The following table includes tank, well and lift station locations within Morehead City's jurisdiction:

Tanks:
State Port
Bridges Street & Bald Drive
Arthur Farm Road
Wells:
North 24 th Street & Fisher Street
North 5 th Street & Arendell Street
Bridges Street & Bald Drive
Tootle Road & North Gate Road
Arthur Farm Road
Lift Stations:
3405 Evans Street
400 South 18 th Street
813 Shepard Street
101 Arendell Street
305 North 9 th Street
409 North 16 th Street
803 North 20 th Street
910 Calamanda Court
2303 Emeline Place
2520 Ferabee Road
1013 Treatment Plant Road
1200 Woods Court
207 South Lockhart Street
4322 Arendell Street
117 Riverside Avenue
102 Salem Avenue
4319 Central Drive
204 Mansfield Parkway
406 Tennessee Avenue
5227-B Webb Court
152 Lands End Court
Blair Avenue
103 Willis Road
Applebee's Pump Station
109 Little Nine Drive
Wildwood Fire Department
261 Arthur Farm Road
140 Gloria Dawn Road
1600 Blair Farm Road
795 Country Club Road
505 Marine Drive
212 Old Causeway Road
Newport River Pier
1802 Oglesby Road
1306 Lantern Way

Hazardous Material Storage Sites:

There are 17 hazardous material storage sites according to the Morehead City Fire/EMS Department. The total value of all identified hazardous material storage sites is \$43,811,474 as identified on the table below:

List of Hazardous Material Storage Sites

Owner	Address	Value	Other	Total
AmericGas Propane	4218 Arendell St	\$87,202	\$35,6698	\$122,900
Army Reserve	405 Fisher St	\$548,335	\$9,113	\$557,448
Army Reserve	500 Bay St	\$407,999	\$834,181	\$1,242,180
Atlantic Shippers	Arendell Street	\$1,303,275	\$11,616	\$1,314,891
Bally Refrigeration	135 Little Nine Rd	\$3,203,902	\$773,273	\$3,977,175
Carteret Marine	4401 Arendell St	\$528,250	\$1,073,053	\$1,601,303
Coral Bay Marina	4531 Arendell St	\$391,517	\$996,678	\$1,388,195
Geer Oil Docks	613 Evans St	\$606,663	\$98,499	\$705,162
Harbor Master	4408 Central Dr	\$101,492	\$1,553,908	\$1,655,400
Jenkins Gas	250 Arthur Farm Rd	\$326,915	\$16,656	\$343,571
JM Davis	201 Arendell St	\$100,414	\$125,819	\$226,233
Jones Brothers	100 Bateau Blvd	\$895,221	\$0	\$895,221
National Guard Armory	3407 Brides St	\$742,434	\$8,438	\$750,872
NC State Port	Arendell St	\$19,905,710	\$5,819,857	\$25,725,567
NC State Port	Arendell St	\$2,197,059	\$216,067	\$2,413,126
NC State Port	Radio Island	\$128,305	\$113,044	\$241,349
Portside Marina	209 Arendell St	\$484,510	\$166,371	\$650,881
Total		\$31,959,203	\$11,852,271	\$43,811,474

Current values were obtained from 2009 Carteret County Tax Parcel information.

The Critical Facilities and Hazardous Material Storage Site maps are located in Appendix J.

Hazardous Locations/Areas:

As evidenced in Appendix A, Morehead City is prone to a number of hazards, most of which impact large areas of the planning area. For example, the most potentially destructive hazard is the hurricane. It has the potential to include flooding, high winds, thunderstorms and tornadoes. The Storm Surge Risk Maps (located in Appendix J) reflect the potential flooding impact based upon a fast and slow moving hurricane. According to past history, the most intense hurricane to strike the North Carolina coast has been a “3” based upon the Saffir-Simpson Scale. There have been several hurricanes that have impacted Morehead City in the past decade.

Severe thunderstorms also pose a threat to the entire planning area several times a year. Although tornadoes/waterspouts occur infrequently, there are many times throughout the spring, summer and fall that conditions are favorable for tornado/waterspout formation. Most tornadoes which occur within Morehead City are F0 or F1 on the Fujita-Pearson Tornado Scale and damage has traditionally been minimal.

Flooding impacts the low lying areas of the planning area, especially along the shoreline. The Morehead City Flood Zones map in Appendix J shows the identified FEMA flood zone areas.

Winter storms impact the Morehead City planning area on an infrequent basis, every 7 to 10 years. Although snow shuts down the City, it usually does not last more than one day.

All Hazards Map

The All Hazards Map displayed in Appendix J reflects the fact that most of the natural hazards that impact Morehead City have the potential to affect the entire planning area. The hazard research included in Appendix A shows that although Morehead City is prone to a number of natural hazards, the intensity of the hazards that would strike the planning area ranges from low to moderate, with the exception of flooding which has a high risk.

The table below illustrates the potential loss in dollars for each hazard event.

Storm Event	Potential Losses in \$
1. Hurricane/Coastal storm	\$1,610,340,827
2. Flooding	
a. AE Flood Zone	\$464,605,941
b. VE Flood Zone	\$60,755,450
c. Shaded X Flood Zone	\$655,314,125
3. Drought/ Heatwave	\$1,610,340,827
4. Nor'easter	\$1,610,340,827
5. Thunderstorm	\$1,610,340,827
6. Tornado	\$1,610,340,827
7. Wildfire	\$1,610,340,827
8. Hazardous Materials	\$1,610,340,827
9. Earthquake	n/a
10. Landslide	n/a
11. Tsunami	n/a
12. Dam/Levee Failure/Volcano	n/a
NOTE: Due to the unlikelihood of the hazards to occur and the lack of data for previous events, earthquakes, landslides, tsunamis, dam/levee failures and volcanoes do not include potential loss estimates.	
2009 Carteret County Tax Records were used to prepare potential loss estimates. Flood district totals were based upon properties which contain primary structures within each designated flood zone. The remaining data was based on Morehead City's entire planning area (see Current and Projected Future Conditions Based on Type of Development table in the Geographic Planning Area Defined section). The estimates do not include land values.	

Repetitive Loss Properties

A good indicator of the vulnerability level in a particular neighborhood is the number of repetitive loss structures located within it. These are structures that have suffered damage from repeated hazard events. Under FEMA's definition of repetitive loss property, not all structures repeatedly impacted by natural hazards will be listed as repetitive loss structures. This is because, according to the Community Rating System (CRS), administered through the National Flood Insurance Program (NFIP), a repetitive loss property is one for which two or more flood insurance claims of at least \$1,000 each have been paid within any 10-year period since 1978. If properties in the community are not covered through the NFIP, then, no repetitive loss structures would be listed, even if properties in the community have experienced repetitive damage from natural hazard events.

Repetitive loss in Morehead City results from the occurrence of extreme weather events in areas of low elevation near the sound, river, or creeks. Of the sixteen (16) repetitive loss properties within Morehead City, there are seven located along Bogue Sound, eight near Calico Creek, and one adjacent to the Newport River. Two of the properties identified as repetitive loss consist of commercial development and the remaining are residential. The total estimated dollar loss that could potentially be incurred as a result of repetitive loss properties is \$8,932,289*.

** The total potential dollar loss value was estimated by totaling the structure values (January 2009 Carteret County tax parcel data) of the repetitive loss properties identified by FEMA.*

Geographic Planning Area Defined:

Taking into consideration the size of the planning area, as well as the fact that most of the hazards that potentially impact Morehead City are not specific to only a portion of the planning area, Morehead City has created a single geographic planning area which includes Morehead City’s entire jurisdiction. Hurricanes, winter storms/Nor’easters, drought/heatwave and thunderstorms can affect the entire jurisdiction. When these events occur, the impact is large. Tornadoes are often part of larger storms, are more site specific, and randomly strike anywhere in Morehead City. Historically, flooding has been limited to the waterfront properties and adjacent low-lying areas.

The following tables outline the current and projected conditions based upon development type and critical facility for the geographic planning area.

Current and Projected Future Conditions Based on Type of Development:

	CURRENT CONDITIONS		PROJECTED CONDITIONS (5 YR)	
Type of Development	Number of Existing Buildings*	Current Value**	Projected Number of Buildings***	Projected Value***
Residential	6,787	\$1,181,065,220	7,398	\$1,287,361,090
Commercial	546	\$214,824,300	595	\$234,158,487
Industrial	96	\$98,355,742	106	\$108,191,316
Other	264	\$116,095,565	309	\$135,831,811
Subtotals:	7,693	\$1,610,340,827	8,409	\$1,765,542,704

* Land use locational data was primarily obtained from the 2007 Morehead City Core Land Use Plan.

** Current values were obtained from 2009 Carteret County Tax Parcel information. Current values include 1,169 townhouse, condominium, and duplex unit values as well as multi-family structures which house apartment units.

*** Projected numbers of buildings and values were calculated by adding half of the percentage increase from the past five-year period due to current economic conditions and decreased building permit activity.

Current and Projected Future Conditions based on critical facility:

	CURRENT CONDITIONS		PROJECTED CONDITIONS (5-YR)	
Type of Facility	Number of Public Buildings and Critical Facilities	Replacement Value*	Number of Public Buildings and Critical Facilities	Replacement Value**
Hospital	3	\$14,971,297	3	\$15,719,862
Carteret Community College	21	\$27,327,371	21	\$28,693,740
NC National Guard Armory	1	\$887,023	1	\$931,374
Morehead Primary School	1	\$14,777,436	1	\$15,516,308
Camp Glenn Elementary School	2	\$2,565,821	2	\$2,694,112
Morehead Middle School	1	\$5,508,064	1	\$5,783,467
West Carteret High School	6	\$11,553,242	6	\$12,130,904
Highway Patrol Station	1	\$155,652	1	\$163,435
County Senior Center	2	\$1,103,674	2	\$1,158,858
County Health Department	1	\$2,556,753	1	\$127,838
NC State Port	21	\$43,679,809	22	\$47,863,899
Subtotals:	60	\$125,380,612	61	\$130,783,797

* Current replacement values were obtained from 2009 Carteret County Tax Parcel information.

** Projected replacement values were calculated based upon a 5% increase due to rising prices in construction materials. The exception is the NC State Port which is shown with a greater value increase due to anticipated development in the near future.

Conclusion:

Since the majority of natural hazards that affect Morehead City have potential to impact the entire planning area, it is important to note that any development that occurs in the future should be constructed in such a way to be as disaster resistant as possible. Residential construction must withstand a 130 mile per hour (mph), three-second wind gust (equivalent to 110 mph sustained wind). Commercial construction must withstand a 130 to 140 mph (depending on location), three second wind gust (equivalent to 110-120 mph sustained wind). Prior to adoption of the 2002 International Code with North Carolina Amendments, wind speeds were based on sustained winds. They are now based on a three second gust.

The upward trend of Morehead City's population is expected to continue. As land becomes more valuable, it is anticipated that smaller pre-firm residential structures will continue to be replaced by newer structures built to current codes and FEMA standards. This will help reduce Morehead City's vulnerability.

APPENDIX C: COMMUNITY CAPABILITY ASSESSMENT

General:

Morehead City has made great strides in improving its capacity to address threats posed by natural hazards following recent disasters. As part of the community capability analysis and assessment, Morehead City will continue to explore existing policies, practices, programs, regulations and activities that improve or hinder the City's response to natural hazards. It will also include a list of departments and agencies with authority to improve and expand hazard mitigation strategies. The partnership between the various departments and agencies is paramount to the success of any mitigation efforts.

Legal Authority:

Local governments also have the legal responsibility to protect their citizens from natural hazards. Under NCGS 160A, Article 8 "Delegation and Exercise of the General Police Power", local governments are given the authority to develop and enforce ordinances that define, prohibit, regulate or abate conditions that are detrimental to the health, safety or welfare of its citizens. Additionally, each county in North Carolina is mandated to provide an emergency management office under the North Carolina General Statutes, Chapter 166A, NC Emergency Management Act. This office is responsible for providing emergency management planning, administration, coordination, training and support for the local governments within its jurisdiction. It also coordinates emergency management activities and services between the local governments and private sector.

Planning and Zoning:

The State allows local governments the authority to enact zoning and other land use regulations that could profoundly impact the community's level of risk from natural hazards. The exception to this authority is the Coastal Area Management Act which requires local governments in the 20 coastal counties to develop State-approved land use plans. Morehead City falls under this legislation. Its State-approved local land use plan includes many policies that both directly and indirectly impact hazard mitigation. A list of existing relevant policy statements is included in the following table.

TITLE	PURPOSE	DESCRIPTION
<p>2007 Core Land Use Plan</p>	<p>Natural Hazard Areas</p>	<p>It is the policy of the Town of Morehead City to conserve the natural resources and fragile environments that provide protection from such natural hazards as floods and storm surges.</p> <p>It is the policy of the Town of Morehead City to minimize the threat to life, property, and natural resources that may result from land use and development within or adjacent to identified natural hazard areas.</p> <p>The Town will avoid zoning areas located in V-flood zones for high density or intensive nonresidential use.</p> <p>Based upon the availability of federal and state grant funds, land acquisition programs will be utilized in the most hazardous areas to minimize future damage and loss of life.</p> <p>If any portion of the Town's public infrastructure is significantly damaged by a major storm, consideration will be given to the feasibility of relocating or modifying the affected facilities to prevent the reoccurrence of storm damage.</p>
	<p>Public Access to Public Trust Waters</p>	<p>Morehead City supports the state's shoreline access policies as set forth in NCAC Chapter 15A, Subchapter 7M and the goals and recommendations set forth in the town's Waterfront Access Plan. The town will conform to CAMA and other state and federal environmental regulations affecting development of estuarine access areas.</p>
	<p>Land Use Compatibility</p>	<p>It is the policy of the Town of Morehead City to ensure that land use and development activities provide a balance between economic development needs and protection of natural resources and fragile environments.</p> <p>Morehead City will support growth and development at the densities specified in the Future Land Use Map land classifications as delineated in Section 4.5 of this plan.</p> <p>The town will promote the continued low-density residential development character of areas located on the fringes of the extraterritorial jurisdiction and in locations adjacent to identified fragile areas.</p>
	<p>Infrastructure Carrying Capacity</p>	<p>It is the policy of the Town of Morehead City to ensure that public infrastructure systems are sized, located and managed in accordance with the need to protect or restore natural resources and fragile environments.</p> <p>Public water and sewer will be required for all new development occurring within the town's corporate limits in areas in which municipal sewer service is available or can be made readily available.</p>

TITLE	PURPOSE	DESCRIPTION
	<p align="center">Infrastructure Carrying Capacity (continued)</p>	<p>The town supports the use of water conservation practices and groundwater protection measures in order to prevent lowering the water table, to limit the quantity of wastewater generated, and to protect the quality of water.</p> <p>The town will encourage land development in areas that currently have the necessary support infrastructure (water, sewer, streets, etc.) or where these services can readily be made available. Land development will be guided to areas that have public water and sewer services and an adequate street system to accommodate increased land development.</p>
	<p align="center">Water Quality</p>	<p>It is the policy of the Town of Morehead City to establish land use and development policies to help ensure that water quality in coastal wetlands, rivers, streams and estuaries is maintained if not impaired and improved if impaired.</p> <p>Within the corporate limits, extension of water and sewer to areas in which poor soil conditions create septic field problems shall have the highest priority when the town undertakes system extensions.</p> <p>The Town encourages voluntary annexation requests to facilitate adequate wastewater disposal in order to prevent the installation of additional septic systems and to improve environmental conditions, particularly in areas with poor soil conditions for subsurface sewage disposal systems.</p> <p>Morehead City will promote the use of best available management practices to minimize the degradation of water quality resulting from stormwater runoff; examples of these practices include using pervious or semi-pervious materials for driveways or walks, retaining natural vegetation along marsh and waterfront areas, and allowing stormwater to percolate into the ground rather than discharging it directly to coastal waters.</p> <p>Morehead City will ensure that developments locating adjacent to coastal waters make every effort to mitigate any adverse effects on riverine and estuarine water quality and on primary nursery and fish habitat areas.</p> <p>The Town of Morehead City supports retaining existing vegetation, creating buffers, and limiting impervious surface areas in new commercial developments to assist with managing stormwater runoff.</p>
	<p align="center">Areas of Environmental Concern</p>	<p>The Town of Morehead City supports state and federal law regarding land use and development in AECs.</p> <p>Morehead City considers coastal wetland areas to be valuable passive recreation areas. These areas should be protected in their natural state. Only uses which are permitted by 15A NCAC 7H will be</p>

TITLE	PURPOSE	DESCRIPTION
	<p align="center">Areas of Environmental Concern (continued)</p>	<p align="center">allowed.</p> <p>Morehead City supports the use standards for estuarine and public trust areas as specified in 15A NCAC .0207.</p>
	<p align="center">Areas of Local Concern</p>	<p>Multi-family and higher density residential development will be encouraged at a moderate density range of six to sixteen dwelling units per acre. Such development will be guided to locations in which adequate water and sewer services and a sufficient street system are available. High-rise residential development will be encouraged only where emergency services can be adequately provided.</p> <p>Neighborhood-oriented commercial development will be encouraged only in areas where such use is compatible with existing surrounding and anticipated residential areas and where the street system is adequate to accommodate commercial vehicular traffic.</p> <p>Industrial development will be encouraged in those sections of town with adequate public water and sewer services and vehicular access to a major arterial highway.</p>
	<p align="center">Neighborhood-Specific Policies</p>	<p>The town will promote the enhancement of the North 20th Street corridor as a major thoroughfare to improve access to the residential areas located in the northern section of town.</p> <p>The Town recognizes the problem with the siltation of Calico Creek and supports dredging efforts outside the Primary Nursery Area to eliminate the adverse impacts of siltation on the productivity of the waterbody.</p> <p>The Town will strive to maintain Barbour Road as a local north-south collector street and will discourage abutting development that negatively impacts the functional capacity of the street.</p> <p>The town supports the policy of limiting curb cuts on Bridges Street Extension. New development will be encouraged to provide connecting and/or shared parking lots, if economically feasible, in order to reduce the number of curb cuts along the corridor.</p> <p>The town will evaluate the feasibility of improvements to Country Club Road and Friendly Road to improve traffic flow and will evaluate the need for a connector street west of Friendly Road to connect Bridges Street Extension and Country Club Road.</p> <p>New development, along the Highway 70 corridor, will be encouraged to provide connecting and/or shared parking lots, if economically feasible, in order to reduce the number of curb cuts along the corridor.</p>

TITLE	PURPOSE	DESCRIPTION	
	<p>Neighborhood-Specific Policies (continued)</p>	<p>The town will promote traffic improvements on Tootle Road and Mayberry Loop Road and through roadway realignments and through the installation of sidewalks and roadway improvements.</p> <p>Bridges Street Extension shall continue west to connect to Pond Drive/Business Drive.</p> <p>The town will encourage better interconnection between residential developments located along the NC Highway 24 corridor so that local residential vehicular traffic is not totally dependent on Highway 24 for access and circulation.</p> <p>The town will support the extension of Little Nine Road from its present terminus southward to NC Highway 24 in order to improve access between Highway 24 and Highway 70.</p>	
<p>Unified Development Ordinance</p>	<p>Relationship to Coastal Area Management Act (CAMA) Land Use Plan</p>	<p>It is the intention of the City Council that this ordinance implement the planning policies adopted by the City Council for the Town and its extraterritorial planning area, as reflected in the CAMA land use plan and other planning documents.</p>	<p>While the City Council reaffirms its commitment that this Ordinance and any amendment to it be in conformity with adopted planning policies, the City Council hereby expresses its intent that neither this Ordinance nor any amendment to it may be challenged on the basis of any alleged nonconformity with any planning document.</p>
	<p>Provisions for Flood Hazard Reduction – General Standards</p>	<p>Calls for developers to provide drainage easements with adequate width in new subdivisions.</p> <p>Identifies information to be depicted on subdivision plats.</p> <p>Addresses nonconforming structures and uses.</p>	

TITLE	PURPOSE	DESCRIPTION	NOTES
		<p>All new construction and substantial improvements shall be: anchored to prevent flotation, collapse, or lateral movement of the structure; constructed with materials and utility equipment resistant to flood damage; constructed by methods and practices that minimize flood damages; service facilities shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding; water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system; sanitary sewerage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges from the systems into floodwaters; on-site disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding; any work performed on a structure, which is in compliance with the provisions of this Ordinance, shall meet the requirements of “new construction” as contained in this Ordinance.</p>	
	<p>Provisions for Flood Hazard Reduction – Specific Standards</p>	<p>Nonconforming buildings or uses may not be enlarged, replaced or rebuilt unless the enlargement or reconstruction is accomplished in conformance with the provisions of this Ordinance.</p> <p>In all areas of special flood hazard where base flood elevation data has been provided as established by identification by the Federal Emergency Management Agency in its Flood Hazard Boundary Map or Flood Insurance Study and Flood Insurance Rate Map(s) for the Town there are specific requirements that must be met.</p>	<p><u>Residential construction:</u> new construction or substantial improvement of any residential structure (including manufactured homes) shall have the lowest floor, including basement, elevated no lower than one foot above the base flood elevation. Should solid foundation perimeter walls be used to elevate a structure, openings sufficient to facilitate the unimpeded movements of floodwaters shall be provided.</p> <p><u>Nonresidential construction:</u> new construction or substantial improvement of any commercial, industrial, or nonresidential structure shall have the lowest floor, including basement, no lower than one foot above the level of the base flood elevation. Structures located in A Zones may be flood proofed to the flood protection level in lieu of</p>

TITLE	PURPOSE	DESCRIPTION	NOTES
	Provisions for Hazard Reduction - Specific Standards (continued)		elevation provided that all areas of the structure below the required elevation are watertight with walls substantially impermeable to passage of water using structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied.
Disaster Response Plan	All Hazards	The Town Police Department has adopted this policy to provide for the expeditious response to natural manmade disasters, and other circumstances of an unusual nature.	Disasters include manmade (chemical spills, train derailments, aircraft crashes, etc.) and natural.

The City's CAMA Land Use Plan serves as the foundation for land use related decisions and ordinance development, including zoning. NCGS 160A-383 requires that zoning regulations be made in accordance with a comprehensive plan. The broad enabling authority for zoning is found in NCGS 160A-381. The City enacted citywide zoning in the early 1970's and updates its Unified Development Ordinance regularly. Included are regulations that limit the types of uses in specific areas and limit the amount of lot coverage. Specific guidelines for development within flood zones, buffer regulations and regulations addressing nonconforming situations are also included.

Morehead City also has authority to regulate the subdivision of land as evidenced by NCGS 160A-371. Subdivisions are defined by statute as all divisions of a tract of parcel of land into two or more lots and all divisions involving a new street unless otherwise stated (NCGS 160A-376). Morehead City's subdivision regulations are included in its Unified Development Ordinance.

North Carolina also empowers local governments the ability to acquire property for public purposes by gift, grant, devise, bequest, exchange, purchase, lease or eminent domain (NCGS 160A, Art. 11). Morehead City has used this power in the past to acquire properties like Sugarloaf Island, which would not be suitable for development. This has also been used to acquire and expand utility easements.

Building Codes and Building Inspections:

North Carolina has granted local governments the ability to conduct building inspections under NCGS 160A, Article 19, Part 5 by allowing the creation of inspection departments to enforce State and local regulations pertaining to new construction and renovations. Inspectors are State-licensed and enforce North Carolina's various building codes. Adherence to the construction guidelines outlined in the Building Codes assures citizens in Morehead City of safer building and better property values. Morehead City has three state-certified building inspectors, one of which has attained the highest level of certification.

National Flood Insurance Program (NFIP)

Morehead City participates in the National Flood Insurance Program which enables property owners to purchase insurance protection against losses from flooding. Participation is based upon an agreement between the NFIP and local communities that states that the Federal Government will make flood insurance available to a community if the community adopts and enforces a floodplain management ordinance to reduce future flood losses. As part of the NFIP, building inspectors are charged with enforcing Federal Emergency Management Agency (FEMA) flood regulations. Morehead City also participates in the NFIP Community Rating System (CRS) which allows local governments the opportunity to reduce the citizens' flood insurance premiums by expanding the minimum federal flood requirements. Morehead City's classification is an 8 which results in a 10% rate reduction of all flood insurance premiums issued in the City's planning area. One of the extra requirements that Morehead City has adopted is a one-foot freeboard which requires the minimum first floor elevation to be at least one foot above FEMA's base flood elevation.

Emergency Services and Shelters:

Most natural disasters occur with little to no warning. For that reason, the Morehead City Emergency Services Department, which includes the Police, Fire, and Rescue Departments, has policies in place to effectively and efficiently protect the lives and property of Morehead City citizens and visitors. A copy of the Disaster Response Plan can be found in Appendix I. Partnerships have been set up with neighboring towns and the military to provide mutual aid in the event of a disaster.

In the event of an evacuation, shelters are set up at various locations in Morehead City, including West Carteret High School, Leon Mann Enrichment Center, Morehead City Elementary School at Camp Glenn and Morehead City Recreation Center. With the exception of the Morehead City Recreation Center, which serves as the shelter for essential City employees, the Red Cross operates the shelters and staff is provided by the Carteret County Health Department and Carteret County Social Services. The shelter at the Leon Mann Enrichment Center is dedicated to evacuees with health issues due to its close proximity to Carteret General Hospital.

Morehead City has recently relocated its primary fire station which was located in the floodplain to a newly constructed station located outside of the floodplain. This new station includes a reinforced room which serves as the backup emergency operations center in the event of a catastrophic event.

The Police Department's main station is located within the floodplain; however, the City is exploring options of moving the Police Department to a better location. In the meantime, the City has taken steps to relocate the communications center to the second floor of the structure which is above the base flood elevation. In addition, the City has a portable dispatch center that can be moved to an alternate location if necessary.

In accordance with the North Carolina Emergency Management Act, Morehead City relies heavily on the Carteret County Emergency Management Office for moderate and large-scale emergencies. That office provides a link to the State as well as coordinates services and activities between the Carteret County municipalities and the private sector.

Public Works/Public Utilities:

Transportation is an essential component of hazard mitigation. The North Carolina Department of Transportation (NCDOT) and the Morehead City Public Works Department are responsible for the maintenance of the street system in Morehead City's planning jurisdiction. Included in the maintenance responsibility of both departments is the maintenance of the stormwater systems on public rights-of-way. Ditches that drain from the rights-of-way are generally the responsibility of private property owners, with the exception of major ditches. If the NCDOT or Morehead City Public Works Department deems a ditch to be a major ditch, then either they will send crews in to maintain the area or they will have Carteret County's Mosquito and Rabies Control Department arrange for the ditches to be maintained. It is essential that the stormwater drainage system be maintained to keep the roadways clear of flood waters during heavy rains. In recent years, one of the biggest problems with maintaining the drainage system has been beavers. The

US Department of Agriculture has been called in on numerous occasions to relocate beavers and destroy the beaver dams to allow the stormwater to flow.

The Morehead City Public Utilities Department is responsible for the installation and maintenance of all water and sewer lines within the City's planning area. This includes all water lines and appurtenances, wells, tanks, sewer lines and appurtenances, lift stations, and the wastewater treatment plant. In the past several years, the 12" emergency water supply interconnection with Newport was completed, generators were added at several lift stations, and a SCADA (Supervisory Control and Data Acquisition) system for remote control and monitoring of wells and lift stations was installed. The Public Utilities Department feels that these features along with policies, procedures, equipment, materials, supplies and manpower utilized by the department have allowed them to be prepared for identified emergency situations.

Fiscal Capability:

Morehead City is a fiscally strong community. With a 2008/2009 annual budget of \$19,212,849, the City employs one hundred forty-five (145) full-time employees, maintains 47.15 miles of streets, 76.95 miles of sanitary sewers and 78.82 miles of water lines in addition to operating thirteen (13) parks, nineteen (19) water access areas (some of which are also identified as parks), one library and providing emergency services. The total valuation of property for the purpose of taxation as of June 30, 2008, was \$2,204,386,057, which generates \$4.9 million dollars in tax revenue based upon the 2008/2009 tax rate of \$0.22. The remaining part of the budget is funded through fees, taxes (other than advalorem taxes), grants, donations and investment earnings. The City's 2008/2009 audit determined that the fund balance totals \$4.3 million as of June 30, 2008. This figure includes both reserved and unreserved funds. The fund balance of unreserved money totals \$3 million.

The State recommends municipalities have a minimum fund balance of eight percent of general fund expenditures. Understanding the impacts of the increased risks associated with being a coastal community, the Morehead City Town Council has taken a conservative approach and established a goal of keeping the minimum fund balance between 2 and 2.5 million. The percentage reserved varies annually based upon Morehead City's general fund activity. On June 30, 2008, the City's unreserved fund balance as a percentage of expenditures and transfers was 38%, or approximately \$3 million. Unreserved funds provide flexibility for Morehead City to take advantage of opportunities and handle emergencies when they arise.

City funds have been used in the past to renovate structures, relocate the fire department to a site out of the flood-prone area, match grants, and reserve Sugarloaf Island as a City park. More recently, City funds have been used to construct docks at Jaycee Park for transient boaters, plan and design a proposed combined police station/County E911 communications center, renovate the Webb Library, construct a new public works building, and improve various recreation facilities.*

** Information contained in the Fiscal Capability section of this plan was obtained from the "Comprehensive Annual Financial Report of the Town of Morehead City North Carolina for the Fiscal Year Ended June 30, 2008".*

Political Capability:

Morehead City operates under the council/manager form of government. Living in a coastal community, the five councilmen and the mayor understand the importance of mitigating natural hazards. Their actions show their willingness to make Morehead City a more resilient community when it comes to natural hazards. For example, Morehead City participates in FEMA's voluntary Community Rating System (CRS) program and has achieved a classification of 8 which results in a community-wide 10% rate reduction on flood insurance premiums. By participating in this program, Morehead City is obligated to educate its citizenry on the hazards of flooding. It also requires new construction to be elevated one foot above FEMA's designated base flood elevation. Morehead City also conducted its own survey of municipally owned facilities and carries flood insurance on properties that Staff deems to be at risk of flooding, even though the facility is not located within a designated flood zone.

The Council also authorized the purchase of a weather station, which is located on the roof of the East End Fire Station. The purpose of the station is to monitor local weather conditions in Morehead City. The City has contracted to maintain backup generators to assure that City services will continue to function in the event of a major disaster.

Administratively, the Council has authorized numerous ordinance amendments and studies that have both direct and indirect relationships with hazard mitigation. Based on its past performance, there is no reason to worry that hazard mitigation efforts in Morehead City will be hampered politically.

APPENDIX D: INTERIM CONCLUSIONS (ACCEPTIBILITY ASSESSMENT)

Statement of Vulnerability

The Town of Morehead City is most vulnerable to the following natural hazards:

- 1) Hurricanes;
- 2) Floods;
- 3) Drought/Heat Wave;
- 4) Winter Storm/Nor'easter;
- 5) Thunderstorm;
- 6) Tornado;

This conclusion is based upon the review of weather and environmental data over the past 50 years. The potentially most destructive natural hazard is a hurricane. Although hurricanes do not occur on a regular basis, they have potential to include floods, thunderstorms and tornadoes, three of the top six hazards to which Morehead City is susceptible.

Statement of Commitment

Politically, it is evident through its adopted plans and regulations that Morehead City realizes its exposure to natural hazards and has worked towards trying to mitigate impacts. Based upon past performance and the information contained in the assessments included in this document, it is reasonable to expect that the Morehead City Town Council will continue in its endeavor to lessen the impact of natural hazards.

Public Participation Documentation

Public participation has played an integral part of the development of this Plan. Members of the Hazard Mitigation Planning Advisory Committee contacted numerous residents and property owners during the preparation of the entire document, especially during the assessment of Morehead City's vulnerability to hazards. Additionally, the Planning Board holds regular meetings that are listed in the *Carteret County News-Times*, two local newspapers. It consists of seven (7) members that are appointed by the Town Council and the Carteret County Commissioners. Next, the Town Council reviewed the Plan during its meeting in May, 2009.

Following review by the North Carolina Department of Emergency Management, the Town Council adopted the final Plan during its December 8, 2009 meeting.

Continued Public Participation

The City shall conduct an annual review of the Hazard Mitigation Plan which will include a meeting of the representatives of all affected City Departments. The public will be invited through public notices in the paper as well as postings in the City buildings. In addition, the Plan and any subsequent amendments will be available for public review and comment during regular working hours in City Hall.

APPENDIX E: DOCUMENTATION OF PLAN PROGRESS

The Hazard Mitigation Planning Advisory Committee, with input from local government agencies, concerned citizens, and State and local officials, used the following process to give a comprehensive review and evaluation of each section of the Morehead City Hazard Mitigation Plan approved in 2004. The process included a review of the 2007 NC State Hazard Mitigation Plan to evaluate the consistency of the local Plan with the State Plan.

The Hazard Mitigation Planning Advisory Committee followed the process specified in the Plan Maintenance Section for monitoring, evaluating, and updating the Plan.

The Hazard Mitigation Planning Advisory Committee reviewed the Mitigation Strategies section of the previously approved Plan, and concluded that the goal statements continue to meet the mitigation needs of Morehead City. The goal statements of the Mitigation Plan Update appear in the Mitigation Goals Section of this document. All mitigation actions considered by the Committee during the 2008-2009 update process were considered and incorporated into the updated Hazard Mitigation Plan. Four mitigation goals and thirty-three mitigation strategies have been identified.

The Committee also reviewed the Mitigation Strategies Section of the previously approved Plan. The updated mitigation strategy actions, along with the date of completion, responsible party, funding source used, and outcome for mitigation, appear in the Mitigation Strategy Table.

Explanation of the progress of previously identified strategies and incorporation of new strategies is as follows:

GOAL #1: Identify and reduce potential hazard vulnerability to Morehead City:

Objective 1-1. Influence decision-making in both the public and private sectors to minimize the community's vulnerability to hazards.

Mitigation Strategies:

1. Sponsor/co-sponsor a hazard mitigation seminar for elected officials and business leaders which include educational information on natural hazards that affect Morehead City, the potential impact and mitigation measures to reduce risk: *In 2007, a county-wide City-supported hurricane conference was held for all interested individuals. This mitigation strategy will be included on the updated Mitigation Strategies Section, but will be revised to include interested citizens as potential attendees and other similar programs in addition to seminars. Similar seminars will be conducted more frequently as time and funding are available.*
2. Maintain a current Emergency Operations Plan: *The City's Fire Department has been working on developing an Emergency Operations Plan which is anticipated to be completed in 2009. This mitigation strategy will be included in the updated Mitigation Strategies Section.*
3. Review ordinances that are relevant to hazard mitigation to assure:
 - a. The effectiveness of reducing exposure to natural hazards; and

- b. The effectiveness in protecting natural resources via best management practices, stormwater management, wetlands preservation, etc.
City staff annually reviews its ordinances to assure compliance with various State and Federal statutes, regulations, and ordinances. The City will continue to review ordinances and make amendments when necessary to reduce hazard exposure and to ensure compliance with regulations. This mitigation strategy will be included in the updated Mitigation Strategies Section.
4. Maintain and update Morehead City's GIS system, as necessary: *Staff updates the GIS system on a monthly basis. This mitigation strategy will be included in the updated Mitigation Strategies Section.*
 5. Include a review of Morehead City's hazard mitigation efforts as part of the Land Use Plan update process: *Morehead City reviewed the hazard mitigation plan during the Land Use Plan update process. Relevant aspects were considered and incorporated into the September 28, 2007 Town of Morehead City Core Land Use Plan. This mitigation strategy will be included in the updated Mitigation Strategies Section.*
 6. Educate City employees on hazards that impact Morehead City and provide training on City policies related to hazards: *The City has and will continue to educate its employees on specific hazards, including: fire, hurricane, flood, and hazardous materials. In 2006, many City employees were required to take a FEMA National Incident Management System (NIMS) Introduction course which focused on emergency response and scene management including functioning within emergency operations centers. This mitigation strategy will be included in the updated Mitigation Strategies Section.*
 7. Familiarize local public officials with the principles and practices of emergency management and emergency operations: *Council members are briefed on the emergency response update process during goal-setting sessions. New Council members go through a New Councilmember Orientation process after elections. This mitigation strategy will be included in the updated Mitigation Strategies Section.*

Objective 1-2: Increase the public's awareness of hazards, both natural and manmade.

Mitigation Strategies:

1. Include articles in the City's newspaper explaining hazard mitigation and preparing for natural hazards: *This mitigation strategy was revised to specify that articles be included in the City's newsletter instead of newspaper. Information on various hazards, including flood and hurricane, has been included in the City's newsletter.*
2. Promote nationally recognized "awareness" weeks (e.g., hurricane preparedness, severe weather preparedness, etc.) through the local media: *The Fire Department annually participates in Fire Prevention Week activities with schools located in Morehead City's jurisdiction. Staff partnered with the Carteret County Emergency Management office in the National Hurricane Preparedness display at Lowes Hardware. This mitigation strategy will be included in the updated Mitigation Strategies Section.*
3. Display U.S. Government printed brochures that discuss hazards relevant to Morehead City and make them available for distribution to the public: *This*

- section has been revised in the updated Mitigation Strategies Section to include State Government brochures. Brochures are currently available for distribution to the public for various hazards, including flooding and hurricanes.*
4. Provide the public links to relevant hazard mitigation websites: *An “Emergency Preparedness Links” section has been included on the main page of the City’s website. This item will be revised to reflect maintenance of the links on the City’s website.*
 5. Develop public service announcements (PSAs) on natural hazard mitigation programs and activities to be used by local radio and television stations: *The Hazard Mitigation Planning Advisory Committee has suggested that the City partner with other municipalities and the county to meet this goal. This item will be included in the updated Mitigation Strategies Section.*
 6. Conduct a natural hazard awareness program in the Morehead City schools: *The City’s Fire Department participates in annual fire prevention week activities in schools located within Morehead City’s jurisdiction. The department also holds tornado awareness drills when requested. This mitigation strategy will be included in the updated Mitigation Strategies Section.*

GOAL #2: Promote sound public policy to protect citizens, critical facilities, infrastructure and property:

Objective 2-1. Reduce the potential impact of flooding in Morehead City and the number of repetitive loss properties to maximize credit received under FEMA’s Community Rating System (CRS) and continue participation in CRS.

Mitigation Strategies:

1. Continue participation in FEMA’s Community Rating System (CRS): *The City is an active participant in the CRS. The City received the results of the field verification findings in November of 2008. The results are based on a five-year cycle visit. The City maintained a Class 8 rating which provides a 10% discount to flood insurance policy holders. This mitigation strategy will be included in the updated Mitigation Strategies Section.*
2. Continue to enforce Morehead City’s flood prevention ordinance and update as necessary: *The flood ordinance is enforced as part of the permitting and inspections process. The Building Inspections Department maintains flood elevation certificates and verifies annual repetitive loss properties and flood elevation certificates for accuracy. The flood ordinance was last updated when required by the National Flood Insurance Program (NFIP). This mitigation strategy will be included in the updated Mitigation Strategies Section.*
3. Promote sound land use planning for developed and undeveloped properties through rezoning and other mechanisms taking into consideration known hazard locations and repetitive loss areas. *This mitigation strategy was added as part of the Plan update.*

Objective 2-2. Avoid costly repair and replacement of public and private investments.

Mitigation Strategies:

1. Establish a reconstruction policy that includes a procedure for issuance of building permits after a natural disaster: *This section has been revised to*

indicate maintenance of the existing reconstruction policy that was adopted in September of 2003.

2. Continue enforcement of the International Building Code: *The City continues to enforce the International Building Code with North Carolina Amendments. This mitigation strategy will be included in the updated Mitigation Strategies Section.*
3. Monitor trees and vegetation on publicly owned property to assure that no property or utility damage will occur as a result of diseased or dying trees/vegetation: *The Public Works Department routinely inspects and removes trees, limbs, shrubs, vines and other types of plant material abutting and/or overhanging publicly owned property deemed hazardous or a threat to the health and safety of the public. The inspections now include possible threats to the interruption of electrical, phone and CATV to public buildings and facilities. This mitigation strategy will be included in the updated Mitigation Strategies Section.*
4. The City will work with utility companies to identify potential problem areas and work to eliminate them where feasible: *This mitigation strategy is in progress. The City's Public Works Department has made contact regarding developing a survey with the electric service providers within the City to produce a report with recommendations that address the issues of disaster preparedness and communications with City officials during and immediately after a natural hazard event that results in loss of power. This mitigation strategy will be included in the updated Mitigation Strategies Section.*
5. Evaluate the location of water/sewer utility extensions related to hazard mitigation: *Public Utilities and Public Works is working together to hire a contractor to locate water/sewer utilities and drainage ditches via GPS (Global Positioning System). This mitigation strategy will be included in the updated Mitigation Strategies Section.*

Objective 2-3. Insure continued functionality of critical services and facilities after a hazard event.

Mitigation Strategies:

1. Evaluate current emergency operation practices to determine what areas need improvement: *City departments evaluate emergency operation practices annually. Written or verbal reports are submitted to Department Heads in the event of emergency-related incidents. Changes are discussed and policies are revised as necessary following incidents. This mitigation strategy will be included in the updated Mitigation Strategies Section.*
2. Establish an alternate Emergency Operations Center (EOC) in the event that the primary EOC cannot function: *Newport Elementary School has been identified as an alternate site for Carteret County and its municipalities. Meetings have been held there to assure the effective use of the facility as an alternate site. The portion of the school which would be used has been newly constructed and meets the most recent building code requirements. The building has ample space and all accommodations needed to serve as the EOC. This mitigation strategy will be revised to reflect maintenance of the EOC.*

3. Maintain backup generators for all critical public facilities. Evaluate the equipment on a regular basis to assure it continues to meet the needs of the operations occurring at each facility: *All of the City's sewage lift stations have on-site generators or are set up to be powered by one of the four portable generators. In addition, the City has made arrangements for portable pumps to be utilized should there be a problem with the generators. The Wastewater Treatment Plant has an on-site generator. The three main wells have on-site generators. In addition, the City is a member of State organizations which work with the Army, Marines and National Guard in emergency situations to make generators, pumps, portable water treatment systems, etc. available to local government agencies. This mitigation strategy will be included in the updated Mitigation Strategies Section.*
4. Inspect fire hydrants regularly: *The Fire Department performs annual hydrant maintenance and testing of all hydrants. A portion of the hydrants are inspected in April and the remainder are inspected in September. The department maintains flow records in the Fire Programs software system. This mitigation strategy will be included in the updated Mitigation Strategies Section.*
5. Prepare a hazardous material action plan that addresses spills, etc. *The Fire Department Chief prepared a Hazardous Materials Action Plan in November of 2008 (See Appendix G). The maintenance of this document will be included as a mitigation strategy in the updated Mitigation Strategies Section.*

GOAL #3: Prove eligibility for government aid and grant programs:

Objective 3-1. Seek funding opportunities to develop and implement Morehead City's hazard mitigation activities.

Mitigation Strategies:

1. Include discussion of natural hazard mitigation grant opportunities available to Morehead City during the annual budget process: *During the budget process, expenditure priorities are set and Department Heads are asked to research grant opportunities that may help offset the cost of activities, including those which are hazard mitigating, to citizens. Specific projects include the North 7th Street Public Water Access and the Newport River Beach Access. Both projects removed the possibility of these flood-prone properties being developed in the future. This mitigation strategy will be included in the updated Mitigation Strategies Section.*
2. Establish local and regional partnerships to identify funding sources for natural hazard mitigation activities and seek to obtain such funding: *The Police Department has mutual aid agreements with all law enforcement agencies within Carteret County as well as a number of agencies in Onslow and Craven Counties. In the event of a disaster, the department is able to provide or borrow equipment or manpower. This mitigation strategy will be included in the updated Mitigation Strategies Section.*

GOAL #4: Form effective community-based partnerships for hazard mitigation purposes.

Objective 4-1. Maintain partnerships that have been formed as a result of the development of the Hazard Mitigation Plan.

Mitigation Strategies:

1. Maintain the hazard mitigation committee meetings to continue relationship building and keep updated on mitigation measures that are taking place throughout the community: *Department Heads informally discussed hazard mitigation-related efforts periodically during monthly Department Head meetings. These meetings provided an opportunity for the City to implement many of the hazard mitigating activities identified in the Mitigation Strategies section. In the future, the City anticipates formal annual meetings of the full Hazard Mitigation Planning Advisory Committee to monitor and evaluate whether updates are necessary. This mitigation strategy will be included in the updated Mitigation Strategies Section.*
2. Identify all municipal, county and regional organizations with responsibilities for, or an interest in, natural hazard mitigation, and share the Plan with local support organizations, such as the American Red Cross and Salvation Army, private businesses and other community partners. *Carteret County indicated a desire to form partnerships in its Hazard Mitigation Plan. This mitigation strategy will be included in the updated Mitigation Strategies Section.*

Objective 4-2. Enhance coordination of emergency planning and operations between local governments.

Mitigation Strategies:

1. Maintain one E-911 dispatch center county-wide and eliminate individual municipal dispatch centers. *With the exception of Emerald Isle, the other public-safety answering points in Carteret County have agreed to consolidate into one centralized communication center. This new center will be placed upstairs in the new Morehead City Police Department building which will be constructed in the Charles Wallace Building within the next couple of years. A communications manager has been hired by the county to manage construction and setup of the new center. Likewise, an advisory board representative of all municipalities, the county, and all Fire-EMS agencies has been formed to serve as oversight to the communications manager. The center is anticipated to be completed in 2009 or 2010. This mitigation strategy will be included in the updated Mitigation Strategies Section.*

The Hazard Mitigation Planning Advisory Committee also reviewed information contained in other relevant progress reporting documents, including the results of the National Flood Insurance Program (NFIP) Community Rating System (CRS) Verification Report prepared by representatives of the NFIP on December 31, 2007. The results of the report are contained in Appendix H.

In addition, the Hazard Mitigation Planning Advisory Committee reviewed the risk assessment (Hazard Identification section) of the previously approved Plan. All hazards identified in the 2004 Hazard Mitigation Plan were maintained. Hazardous Materials was added as a new hazard as the Committee felt there was a substantial risk due to the location of the NC State Port within Morehead City's planning area. Tsunami was moved to its own category (previously combined with dam/levee failure and volcanoes) as the NC

State Risk Assessment mentioned the possibility for one to occur at some point in the future.

The following new plans, studies, reports, and technical information that have become available since the previously approved Plan was adopted were reviewed and incorporated into the Plan Update:

- 2007 CAMA Land Use Plan; and,
- Revised Unified Development Ordinance (UDO) sections.

The Hazard Mitigation Planning Advisory Committee reviewed the Vulnerability Assessment of the previously approved Plan and made adjustments accordingly. The Committee reviewed hazards in the State's Hazard Mitigation Plan and current technical data to rank hazards by potential impact (see revised Appendix A: Hazard Identification). The Committee also completed a review of critical facilities, hazardous storage sites, potential growth areas and repetitive loss properties within Morehead City's jurisdiction (see maps in Appendix J).

Based upon the findings of the Capability Assessment, the policies that are currently in place are such that will continue to foster hazard mitigating efforts. The City will utilize the funding sources identified in the Plan Implementaton section along with existing resources to continue to expand and improve existing mitigation tools and meet mitigation goals.

Public participation is an integral component to the mitigation planning process and will continue to be essential as the Town of Morehead City's Hazard Mitigation Plan evolves over time. The community has been involved with hazard mitigation planning through the incorporation of hazard mitigation aspects into the 2007 Core Land Use Plan and various ordinance amendments. Individuals may provide input regarding the Hazard Mitigation Plan at any time, including during various educational events, and the Plan is available for review or purchase at City Hall during normal business hours.

In the past, the public has been involved in the hazard mitigation process every five years and has been encouraged to participate in informal Hazard Mitigation Plan-related activities (as described in this section). The Town will advance community involvement efforts in the future by holding annual public meetings to discuss plan maintenance. Other efforts to involve the general community in the Plan maintenance, evaluation, and revision process will include:

- *Designating knowledgeable and willing members of the community to serve as official representatives on the Hazard Mitigation Planning Advisory Committee;*
- *Utilizing local media to update the community of any maintenance and/or periodic review taking place;*
- *Utilizing the Town of Morehead City website to advertise any maintenance and/or periodic review activities taking place; and,*
- *Keeping copies of any draft revisions available for public review.*

APPENDIX F: STORM RECONSTRUCTION POLICY

Adopted September 17, 2003

INTENT: Following a damaging storm, the reconstruction policy to allow rebuilding and reconstruction in an orderly manner in Morehead City shall be as follows. The City will control the issuance of building permits to manage location, timing and sequence of reconstruction and repair projects.

DEFINITIONS:

Destroyed Structure: A structure that is a total loss or damaged to such an extent that repairs are not technically or economically feasible, i.e., fifty (50) percent or more of replacement cost at the time of damage destruction.

Local Damage Assessment Team: A damage assessment team supervised by the Morehead City Building Inspector, required by the North Carolina Division of Emergency Management, whose function is to assess losses to property immediately after a storm. The assessment is used to determine if the area can qualify for federal or state disaster assistance.

Major Damaged Structure: A structure that can be made habitable with extensive repairs. Damage may include foundation, roof structure and major structural components. The indicator for this category is if the cost to repair is greater than ten (10) percent and less than fifty (50) percent of the replacement cost at the time of damage.

Minor Damaged Structure: A structure that can be made habitable in a short period of time with minimal repairs. Damage may include doors, windows, floors, furnaces, water heaters and other minor structural damage. An indicator for this category is if the cost to repair is ten (10) percent or less of the replacement cost at the time of damage.

Storm Event: Any natural weather event causing damage and destruction of property. A storm event shall include, but not be limited to, hurricanes, northeasters, tornadoes, fire, water spouts and ice/snow storms.

STORM RECONSTRUCTION

Determination of Damage: A primary task of the Local Damage Assessment Team is to identify structures which as a result of the storm have been damaged. The Local Damage Assessment Team will recommend to the building inspector those structures which have: 1) been destroyed; 2) received major damage; or 3) received minor damage. The building inspector will then inspect the damaged structures and place each structure in one of the above categories.

Post Storm Reconstruction Period: The initial period shall be conducted as follows:

State of Emergency: Upon the declaration of a State of Emergency, the initial post-storm no building permits shall be issued for the duration of the State of Emergency. This is

necessary for the protection of lives, safety and property or due to the inability of the City to maintain acceptable levels of public order and services.

Destroyed structures: No building permit shall be issued within fourteen (14) days following the expiration of State of Emergency for the replacement of any structure which has been destroyed. All replacement building shall be subject to meeting all the requirements of the Unified Development Ordinance and all applicable City Codes, prior to issuance of a building permit.

Major damaged structures: No building permit for repairs of a major damaged structure shall be issued for at least seven (7) days following the expiration of the State of Emergency. All repairs to a major damaged structure shall meet the requirements of the Unified Development Ordinance and all applicable City Codes, prior to the issuance of a building permit.

Minor damaged structure: Permits for the repair of minor damaged structures may be issued following the expiration of the State of Emergency. All repairs to minor damaged structures shall meet the requirements of the Unified Development Ordinance, all applicable City Codes, prior to the issuance of a building permit.

Outstanding building permits. All building permits which were issued prior to the storm event shall be placed on hold for a minimum of thirty (30) days, unless upon finding by the Chief Building Inspector on a case-by-case basis that sufficient inspection staff is available to adequately inspect the structures should construction begin or resume.

Emergency Repairs: While a State of Emergency is in effect, no construction or reconstruction activity may be undertaken, excepting only minor interior repairs and emergency repairs necessary to prevent injury, loss of life, imminent collapse or other substantial additional damage to the structure. For illustrative purposes only, an item that constitutes minor repairs includes temporary roof repairs.

APPENDIX G: HAZARDOUS MATERIALS ACTION PLAN

Adopted November 3, 2008

The Town of Morehead City *Hazardous Action Plan* is outlined in four distinct phases: 1) Mitigation 2) Preparedness 3) Response and 4) Recovery. The primary agency responsible for institution of this plan is the Town of Morehead City Fire-EMS Department (herein referred to as the *department*). Consultation with the City's Building Inspection staff as well with other departmental staff and outside local and state agencies will be done for effective implementation of this plan.

Mitigation

The department utilizes its staff, through the Prevention Bureau to conduct weekly business inspections and pre-plans. State-certified and city-sworn code enforcement officials (fire inspectors) conduct various levels of inspections according to the adopted state schedule. As part of code enforcement, business hazardous materials storage, handling, and identification is reviewed and approved according to the state fire code. Additionally, business emergency action plans are reviewed and approved depending on the number of employees and type of occupancy.

Another part of the inspection process involves non-certified code enforcement personnel preparing pre-incident surveys (pre-plans) of the businesses in the city and extra-territorial jurisdiction. These surveys identify all safety hazards (including hazardous materials) and mitigation resources needed or available prior to incidence.

By the coordination of the department's assistant chief/fire marshal, respective inspection/pre-plan districts are assigned for each shift and respective station. Additionally, reviews of findings are recorded via software and are available for all staff to become familiar with as part of the department's training component (phase 2 preparedness).

Preparedness

Departmental staff training and certification is large part of the preparedness phase of the hazardous material action plan. Departmental training and certification (in regards to hazardous materials and other hazard activities) is covered in the department's *Standard Operating Guidelines Chapter 11*. All fulltime personnel are required to be certified by the NC Fire & Rescue Commission as Hazardous Materials Level I Responder. Annual or upgrade training is provided to all fulltime staff along with periodic reviews of pre-plans and inspection reports as outlined in the mitigation section. Tours are scheduled periodically (especially in high-risk businesses) for personnel that were not originally involved in initial plans or inspections. This activity provides pre-incident awareness, knowledge and preparedness for all those potentially required to mitigate emergencies on behalf of the department.

Another part of the preparedness phase involves resources that are contained within the department and those outside of the department. The department trains and maintains at the *operational* level as recognized by the state. This means that the department will operate in the defensive mode for all hazardous materials incidents excluding carbon fuel

incidents involving fuel cells. Most of the activity concerning the defensive mode involves identification, notification and containment. This does not involve offensive operations (excluding carbon fuels explained earlier) or hazardous materials cleanup. The Cherry Point Hazardous Materials Technician Team will be requested for all hazardous materials incidents that exceed the operations level capabilities of the department. A list of licensed hazardous materials cleanup companies will be maintained and used for all hazardous materials releases that exceed threshold of reportable quantities established by 29CFR1910.120 and the SARA Title III Right to Know Act. Additionally, the Tier 2 reports filed each year by businesses with storage of reportable quantities are maintained and reviewed by the department as part of the preparedness phase. Spill containment materials are maintained at the department with additional materials available at Western Carteret Fire-EMS and Otway Fire-EMS. The *spiller* of the hazardous material is responsible for cleanup and all materials used for containment. The department does not take possession of any substance deemed as hazardous materials.

Response

The response phase, more or less culminates the first three phases into organized and controlled emergency response by the department. The response of the department to released hazardous materials is regulated by the department's *Standard Operating Guidelines Chapter 8*. These guidelines establish suggested parameters and procedures for the on-scene activities of the department. Included in these guidelines is the implementation of an incident command system as required by the *National Incident Management System*. Automatic and mutual aid agreements are in place that ensures that adequate personnel, apparatus, equipment and materials are available to eliminate the threat of hazardous material releases. As mentioned above, Cherry Point Hazardous Materials (Technician) Team will be requested by all emergency responses deemed to exceed the operational level certification of the department.

Recovery

The recovery phase of the hazardous material action plan focuses on returning the incident area involved in hazardous material releases back to normal or as close to normal status as possible. Most of the efforts by the department in this phase center on containment and eventual cleanup of product. As mentioned in the preparedness phase, a list of professional and licensed hazardous material spill companies will be maintained and used for spill/release cleanup. The spiller has the option to contact one of these or an equivalent spill cleanup company since the spiller is responsible for the costs of same. All notification to air quality, state, local, and federal agencies will be made as to exposures and contamination issues. The primary agency contacts will be those associated with the Environmental Protection Agency.

A final part of the recovery phase involves incident termination procedures. An incident critique will follow all related incidents and follow-up reports will be completed as needed to close each incident. Relevant training for responders and affected agencies will take place as deemed necessary to carry over into the mitigation and preparedness phases.

NOV 4 2008



FEMA

Gerald A. Jones, Jr.
Mayor of Morehead City
706 Arendell Street
Morehead City, North Carolina 28557

Dear Mayor Jones:

The purpose of this letter is to provide you with the results of the National Flood Insurance Program (NFIP) Community Rating System (CRS) field verification findings based on your five-year cycle application. I am pleased to inform you the Department of Homeland Security, Federal Emergency Management Agency (FEMA), has determined that your community will retain its current rating as a CRS Class 8 community in the National Flood Insurance Program (NFIP) Community Rating System (CRS). The floodplain management activities implemented by your community will continue to qualify flood insurance policy holders in your community for a 10 percent discount in the premium costs for NFIP policies issued or renewed in Special Flood Hazard Areas. I am enclosing the field verification report based on your five-year cycle application for your records. This savings is a tangible result of the flood mitigation activities your community implements to protect lives and reduce property damage.

Please note Preferred Risk Policies, applicable in Zones B, C, and X, are not eligible for the CRS discount. Standard rated flood insurance policies in Zones B, C, X, D, AR, and A99 are limited to a CRS discount of ten percent in Class 1-6 communities and five percent in Class 7-9 communities. The Standard Flood Insurance Policy rates for these zones already reflect significant premium reductions. The CRS discount is applied before the addition of the Federal Policy Fee.

If there are no NFIP noncompliance actions, the CRS rating for your community will automatically be renewed annually and a notification letter will not be sent to your community. This renewal will occur as long as your community continues to implement the CRS activities you certify each October. If no additional modifications or new CRS activities are added, the next verification visit for your community will be in accordance with its established five-year cycle or three-year cycle for CRS Class 3 or better communities. In the interim, FEMA will periodically send the "NFIP/CRS Update" newsletter and other notices to your CRS Coordinator to keep your community informed.

I commend you on your community actions and your determination to lead your community to be more disaster resistant. This commitment enhances public safety and property protection and protects the natural functions of floodplains as well as reduces flood insurance premiums.

If you have any questions or need additional information, please contact the FEMA Region IV Office, CRS Coordinator, Robert Durrin, by telephone at (770) 220-5428.

Sincerely,

A handwritten signature in cursive script that reads "Michael K. Buckley".

Michael K. Buckley
Acting Assistant Administrator
Mitigation Directorate

Enclosure

cc: Rick Schulz, CRS Coordinator

www.fema.gov



COMMUNITY
RATING
SYSTEM

VERIFICATION
REPORT

Town of Morehead City, NC

Verified Class 8

NFIP Number: 370048

Cycle

Date of Verification Visit: September 19, 2007

This Verification Report is provided to explain the recommendations of Insurance Services Office, Inc. (ISO) to DHS/FEMA concerning credits under the Community Rating System (CRS) for the above named community.

A total of 1204 credit points are verified which results in a recommendation that the community be classified as a CRS Class 8. The following is a summary of our findings with the total CRS credit points for each activity listed in parenthesis:

Activity 310 – Elevation Certificates: The Town of Morehead City's Inspection Department maintains elevation certificates for new and substantially improved buildings. (56 points)

Activity 320 – Map Information Service: Credit is provided for furnishing inquirers with flood zone information from the community's latest Flood Insurance Rate Map (FIRM), publicizing the service annually and maintaining records. (140 points)

Activity 330 – Outreach Projects: A community brochure is mailed to all properties in the community on an annual basis. An outreach brochure is mailed annually to all properties in the community's Special Flood Hazard Area (SFHA). The community also provides flood information through displays at public buildings. (212 points)

Activity 340 – Hazard Disclosure: Credit is provided for community and state regulations requiring disclosure of flood hazards. (10 points)

Activity 350 – Flood Protection Information: Documents relating to floodplain management are available in the reference section of the Webb Memorial Library. Credit is also provided for floodplain information displayed on the community's website. (56 points)

Activity 410 – Additional Flood Data: Credit is provided for a cooperating technical partnership agreement with FEMA and the State of North Carolina. (11 points)

Activity 420 – Open Space Preservation: Credit is provided for preserving approximately 22 acres in the SFHA as open space. Credit is also provided for open space land that is deed restricted. (48 points)

Activity 430 – Higher Regulatory Standards: Credit is provided for enforcing regulations that require freeboard for new and substantial improvement construction, protection of natural and beneficial functions and state mandated regulatory standards. Credit is also provided for adopting the International Building and Residential Codes. (165 points)

Activity 440 – Flood Data Maintenance: Credit is provided for maintaining and using GIS maps in the day to day management of the floodplain. (86 points)

Activity 450 – Stormwater Management: The community enforces regulations for soil and erosion control. (33 points)

Activity 510 – Floodplain Management Planning: Based on the updates made to the NFIP Report of Repetitive Losses as of July 31, 2007, the Town of Morehead City has 17 repetitive loss properties and is a Category C community for CRS purposes. All requirements for the 2007 cycle have been met. Credit is provided for the adoption and implementation of the Floodplain Management/Hazard Mitigation Plan. Since the Town of Morehead City is a Category C community with an approved Floodplain Management/Hazard Mitigation Plan, a progress report must be submitted on an annual basis. (99 points)

Activity 540 – Drainage System Maintenance: Portions of the community's drainage system are inspected regularly throughout the year and maintenance is performed as needed by the Town of Morehead City's Public Works Department. Records are being maintained for both inspections and required maintenance. The community also enforces a regulation prohibiting dumping in the drainage system. (170 points)

Activity 610 – Flood Warning Program: Credit is provided for a program that provides timely identification of impending flood threats, disseminates warnings to appropriate floodplain residents, and coordinates flood response activities. (60 points)

Activity 630 – Dam Safety: All North Carolina communities currently receive CRS credit for the state's dam safety program. (58 points)

Attached is the Community Calculations Worksheet that lists the verified credit points for the Community Rating System.

CEO Name / Address:

The Honorable Gerald A. Jones
Mayor, Town of Morehead City
706 Arendell Street
Morehead City, North Carolina 28557

CRS Coordinator Name / Address:

Richard W. Schulz
Chief Building Inspector
706 Arendell Street
Morehead City, North Carolina 28557
(252) 726-6848

Date Report Prepared: December 31, 2007

Community : Town of Morehead City, NC

NFIP Number : 370048

720 COMMUNITY CREDIT CALCULATIONS (Cycle):

CALCULATION SECTION:

Verified Activity Calculations:	Credit
c310 56	56
c320 140	140
c330 212	212
c340 10	10
c350 56	56
c360	
c410 10 x CGA 1.09 =	11
c420 44 x CGA 1.09 =	48
c430 151 x CGA 1.09 =	165
c440 79 x CGA 1.09 =	86
c450 30 x CGA 1.09 =	33
c510 99	99
c520	
c530	
c540 170	170
c610 60	60
c620	
c630 58	58

722 Community Classification Calculation:

cT = total of above	cT = <u>1204</u>
Community Classification (from Appendix C):	Class = <u>8</u>

CEO Name/Address:

The Honorable Gerald A. Jones
Mayor of Morehead City
706 Arendell Street
Morehead City, North Carolina 28557

CRS Coordinator Name/Address:

Richard W. Schulz
Chief Building Inspector
706 Arendell Street
Morehead City, North Carolina 28557
(252) 726-6848

Date Report Prepared: December 31, 2007

AW-720

APPENDIX I: DISASTER RESPONSE PLAN

Chapter 400

Operational Policy 426: Disaster Response Plan

Initial Date of Issue: January 1, 1997

Review date: February 06, 2009

Authorized by: Chief Wrenn Johnson

I. POLICY STATEMENT

The policy of the Department shall be to provide for the expeditious response to natural and manmade disasters, and other circumstances of an unusual nature.

II. COMMENTARY

The purpose of this directive is to establish policy and procedure regarding police response to disasters, and other related occurrences. During a natural disaster, major public accident, or other such catastrophic incident, the role of the police is, first, to protect lives and property and, second, to restore, and maintain order. In all instances, it will be necessary to work efficiently with other public safety organizations. The extreme variety of these situations precludes the capability to formulate specific plans that are applicable to all situations. It is also impractical to remove the discretion and flexibility which commanders must exercise in dealing with such incidents. For this reason, the following plan is presented as a general guide for the response by the Department, and a framework which will facilitate tactical decision-making and contribute to the resolution of any situation.

III. DEFINITIONS

- A. Disaster – An incident or situation, generally of an emergency nature, which results from catastrophes, both natural and manmade. Examples are hurricanes, chemical spills, and explosions.
- B. Disaster Response Plan – A strategy designed to provide rapid and adequate response to and management of natural and manmade disasters and other unusual occurrences.
- C. Incident Command System – A command system that is documented and used for managing available resources during an emergency situation. The system consists of procedures for controlling personnel, facilities, equipment, and communications.
- D. Incident Commander (IC) – The individual officer who assumes responsibility and is in charge of all police personnel and activities at the scene of an incident.
- E. Alert 1 – Involves a minor incident which can be managed by the on-duty personnel. Such alert may require redistribution of on-duty personnel.
- F. Alert 2 – A serious incident of such magnitude that assets usually available to on-duty personnel are inadequate to establish control and must be augmented by additional personnel. Such alerts require the partial mobilization of off-duty police personnel.
- G. Alert 3 – Involves a major incident which threatens the safety of the city to such an extent that the entire Department must be mobilized for the effective control of the situation. Such an alert requires the total mobilization of the Department's resources. All holidays, annual, and educational leaves are automatically canceled for the duration of the Alert.

IV. RULES

- A. Departmental Rule of Conduct 0202.9 Authority and Responsibility.
- B. Departmental Rule of Conduct 0301.18 Manner of Issuing Orders.
- C. N.C.G.S. 14-288.12, Powers of municipalities to enact ordinances to deal with states of emergency.
- D. City Ordinance of Morehead City, Chapter 10, Article I-III.

V. PROCEDURES

A. Organization and Administration

- 1. The objective of this directive is to prepare Department personnel to:
 - a. handle and control an incident and bring it to a safe conclusion.
 - b. facilitate the collection and appraisal of sufficient intelligence data to determine the magnitude of the incident.
 - c. provide for the orderly and efficient assembly of necessary manpower, supplies and equipment to ensure the proper and expeditious management of such incidents.
 - d. determine the needs for training and education within the Department, to include techniques and procedures necessary for the successful management of each incident.
 - e. provide for the orderly and efficient coordination of all other agencies, departments or organizations considered necessary and appropriate to the successful handling of such incidents.
 - f. provide the means whereby experience gained in the management of such incidents may be used in the prevention of future incidents.
- 2. All existing policies and procedures regarding the Departmental chain-of-command will apply during the response to and management of a disaster or similar incident.
- 3. During all Alert 2 and Alert 3 responses, all actions taken will be conducted through the office of the Major of Police. It shall be the Incident Commander's discretion to notify the Major of Police during Alert 1 response.

B. Manmade Disasters, Ie. Chemical Spills, Train Derailments, Aircraft Crashes, Etc.

- 1. Responsibilities of the first officer arriving on the scene of the incident is to:
 - a. assume control of the situation, secure and contain the scene, if possible.
 - b. inform a supervisor of the incident and request his immediate assistance at the scene.
 - c. advise the Communications Center of the following:
 - 1) location of the incident;
 - 2) nature of the incident;
 - 3) type and amount of assistance needed.
- 2. Responsibilities of Communications Center personnel include:
 - a. dispatch support units as requested;
 - b. confirm the nature of the incident and the need for support units with the first police supervisor on the scene; and
 - c. inform Departmental personnel that radio communication from individual officers shall be for emergency situations only.
- 3. Responsibilities of the first supervisor on the scene will be:

- a. assume command of all police activities at the incident;
 - b. verify the initial officer's assessment of the situation, and either confirm or revise the request for support units;
 - c. establish a temporary "Command Post" and inform the Communications Center of its locations;
 - d. establish an emergency response route;
 - e. complete the containment of the incident and ensure the security of persons and property in the area;
 - f. inform relief officers and command personnel of all developments in the incident; and
 - g. notify the command personnel of the nature of the incident.
4. Responsibilities of Command Personnel:
 - a. If deemed necessary, report to the scene of the incident and assume command;
 - b. Review all actions taken and make necessary adjustments to bring the situation to a swift and safe close; and
 - c. Notify the Chief of Police.
 5. Responsibilities of the Chief of Police:
 - a. If deemed necessary, report to the scene and assume command.
 - b. Review all action and make necessary adjustments to bring the situation to a swift and safe close; and
 - c. Notify the City Manager, if deemed in the best interest of the City.
 6. The Incident Commander (IC) will be the officer who assumes responsibility and is in charge of all police personnel and activities at the scene of the incident;
 - a. At the scene of any disaster or similar incident, the highest ranking officer will be the Incident Commander, unless he specifically delegates this responsibility to another officer.
 - b. At each change of the Incident Commander the current IC will verbally inform the oncoming Commander that the command of the situation is being passed to him.
 - c. The oncoming IC will verbally respond that he has assumed command of the situation.
 - d. This information will be disseminated to the field units through Communications.
 - e. Other key members of the Department will be assigned tasks and responsibilities as outlined in the Incident Command System by the IC.

C. Natural Disaster

Most disaster situations, by their nature, occur with little or no warning. There are circumstances where prior notification is possible, e.g. tropical storms, hurricanes, and winter related incidents. During these situations adequate personnel and equipment must be prepared. Because of their destructive nature, these disasters fall into the Alert 2 and 3 response designations.

1. Responses to Alert Stages
 - a. Alert 1 – Exists 48 hour prior to the predicted onset of the incident. At this point no additional personnel are notified.
 - b. Alert 2 – Exists 24 hours prior to the predicted onset of the incident. Off-duty personnel are contacted and placed on telephone or pager standby. Personnel

- advised to make arrangements for family and to have patrol vehicles and equipment ready to respond. Such notifications will be made at the directions of the Chief of Police by the Telecommunicator or other designee. At this point the Major of Police or a designee shall make arrangements to provide food and shelter for on-duty personnel for the duration of the incident.
- c. Alert 3 – Declared 12 hours prior to the predicted onset of the incident. At this stage all off-duty personnel are recalled and advised when to report to their assigned staging areas in the uniform of the day.
 - d. Distribution of Personnel
 - i. Mobilized personnel will be organized into east and west end units. The police department will serve as the staging area for the east end units. The west end satellite office will serve as the staging area for the west end units.
 - ii. A captain or watch commander will be assigned to the east and west ends with two squads each at their disposal.
 - iii. The Chief of Police and the Major of Police will, at their discretion, be either mobile or operate from the police department.
 - iv. The Major of Police will be responsible for relieving or reassigning personnel as circumstances dictate.
 - e. Responsibilities of the Major of Police during an Alert 3 response shall be to:
 - i. Assume control of the overall direction and deployment of police personnel necessary to restore order.
 - ii. Serve as the Incident Commander at the Command Post.
 - iii. Designate assignments to Watch Commanders for such responsibilities as:
 1. The operational staging area;
 2. The maintenance of a “duty log” on personnel assigned to the operation;
 3. News media liaison;
 4. Coordination of the investigation of offenses committed during or resulting from the incident; and
 5. Coordination of arrests and processing.
 - iv. Coordinate assignment of Communications personnel.
 - v. Maintain contact with Command Post in order to provide support field units.
 - vi. Establish and maintain communications with other public safety and emergency management personnel.
 - vii. Make arrangements for meals and similar services for field personnel as needed for the duration of the disaster response.
 - viii. Maintain information and data which will be utilized during the “Post-Incident Critique”.
2. Emergency Communications Procedures
- a. It is imperative that the Department maintain uninterrupted communications functions in the event of natural or man-made disaster or other unusual occurrences which adversely affect the normal electrical supply.
 - b. The Police radio antenna is located on the Sprint tower in the back of the Golden Corral Restaurant on Arendell Street. The backup generator engages automatically in the event of power interruption. The radio equipment located at the Police Department is equipped with an automatic generator to ensure uninterrupted communications.

- c. In the event of failure of the primary radio source, the duty telecommunicator will shift frequencies to one of the two alternate radio systems available to the Department.
3. News Media
 - a. News media briefings will be held as often as practical to:
 - i. Inform the public of imminent or present dangers;
 - ii. Provide casualty information;
 - iii. Provide property damage reports and estimates of damage;
 - iv. Provide warnings to potential looters and others involved in criminal acts; and
 - v. Provide a means to control rumors.
 - b. All news media releases will be in accordance with current policies and directives of the Department.
4. Other Law Enforcement Support
 - a. Mutual aid support from other law enforcement agencies will be requested as the need arises in accordance with Departmental policy. All reasonable efforts will be made to preserve unit integrity of individual agency personnel during the management of the incident; however, exercise of command and control over all civil law enforcement resources committed to the operation will be under the Incident Commander.
5. Military Support

Requests for assistance from the National Guard are to be made through authorized channels and only upon approval of the Chief of Police. Such support would be utilized to:

 - a. Assist local agencies with traffic control, evacuation, and stabilization;
 - b. Establish martial law;
 - c. Provide emergency communications;
 - d. Provide special equipment; and
 - e. Provide additional security.
6. Traffic Control and Security
 - a. Traffic control and security will be established at specific locations throughout the City.
 - b. The selection of such locations will be based upon the circumstances arising out of the incident.
7. Equipment Requirements
 - a. Special equipment and/or emergency supplies will be requested from available sources and distributed to individuals and units, based upon assignments and duties. The issuing official will be responsible for ensuring that such distribution is properly recorded.
 - b. Weapons and equipment designated for use in a disaster response or emergency situation will be inspected regularly for operational readiness by those personnel assigned specific responsibility for such equipment.
 - c. Detailed maps of the city will be kept at the police department and made accessible to the on-duty personnel in disaster response situations.
8. Transportation

All available Departmental vehicles will be utilized for transporting officers and equipment to the scene of an incident and for transportation from the scene.

9. Evacuation

Should circumstances of an incident require the evacuation of residents or other persons from a particular area, officers will conduct such action with the safety of the citizens uppermost in mind, while giving consideration to their personal needs and concerns, as well. Both Department vehicles and other City vehicles may be used for transporting persons during an evacuation. Temporary shelter sites will be established in the City for use during such evacuations. The Emergency Operations Manual will contain detailed plans for the evacuation of areas within the jurisdiction of the Department.

10. State of Emergency

- a. In the event of an existing or threatened state of emergency endangering the lives, safety, health or welfare of the people within the City, or threatening damage to or destruction of property, the mayor is authorized and empowered to issue a public proclamation declaring to all persons the existence of such a state of emergency, and, in order to more effectively protect the lives, safety, and property of people within the City, to define and impose a curfew applicable to all persons within the jurisdiction of the City.
- b. During a curfew, the following activities are prohibited:
 - i. To be or travel upon any public street, alley or roadway or upon public property, unless in search of medical assistance, food, or other commodity or service necessary to sustain the well-being of a person or his family or some other person.
 - ii. To possess off one's own premises, buy, sell, give away, or otherwise transfer or dispose of any explosive, firearms, ammunition, or dangerous weapon of any kind.
 - iii. To sell beer, wine, or alcoholic beverages of any kind; or to possess or consume the same off one's premises.
 - iv. To sell gasoline or any other similar petroleum products, or any other flammable substances except as expressly authorized by the provisions of the curfew imposed.
 - v. The mayor shall proclaim the end of a state of emergency and any curfew imposed there under as soon as circumstances warrant or when directed to do so by the City Council.

11. De-Escalation Procedures

The following actions will be taken to de-escalate adverse conditions that may have resulted from the disaster itself or the ensuing response and control by public safety agencies:

- a. Identify areas still affected by the disaster.
- b. Establish priorities for the restoration of services.
- c. Coordinate restoration activities with City and mutual aid agencies.
- d. Provide continued security to designated areas.
- e. Disengage officers as appropriate.
- f. Discontinue command post.

12. Post-Incident Duties

- a. Following the de-escalation of the Department's response, certain duties may be required for an additional time. Such duties may include:
 - i. Continuation of security and/or additional patrols in affected areas.
 - ii. Maintaining traffic checkpoints.
 - iii. Periodic news media briefings.
- b. A "Post-Incident Report" will be compiled by the Incident Commander. Such report will include the following information that is applicable to the particular incident being reported:
 - i. Date/time of initial notification of warning of disaster/incident;
 - ii. Establishment of field command post, including:
 - 1. Location
 - 2. Composition;
 - 3. Communications capabilities;
 - 4. Composition of liaison staff (to include other law enforcement personnel, military, City staff, etc.).
 - iii. Significant adverse events and corrective or reactive measures taken, to include:
 - 1. Deployment of personnel and equipment;
 - 2. Life-saving efforts;
 - 3. Evacuation and/or relocation efforts;
 - 4. Establishment of collection shelters;
 - 5. Restoration of utilities;
 - 6. Total casualty by figures;
 - 7. Property damage by location;
 - 8. Total property damage cost estimates.
 - iv. Recommendations for future responses.

13. Post-Incident Critique

A post incident critique will be required for all responses of an Alert 2 or Alert 3 classification. At the discretion of the Major of Police, a critique may be required for an Alert 1 response.

- a. A meeting will be held within two (2) weeks of the incident to critique procedures and actions taken. The logistics of the critique will be coordinated by the Major of Police.
- b. All Department commanders and supervisors will attend.
- c. Selected personnel from other involved agencies will be requested to attend.
- d. Minutes of the meeting will be recorded, and a written report compiled. The report will be provided to management of all affected agencies.

14. Emergency Operations Manual

- a. An Emergency Operations Manual will be developed and maintained by the Major of Police.
- b. The manual will provide specific instructions for establishing a Command Post, implementing methods of operation, and other information that would be useful to field personnel during a disaster response.
- c. Copies of the manual will be provided to the Department supervisors, commanders, and affected agencies.

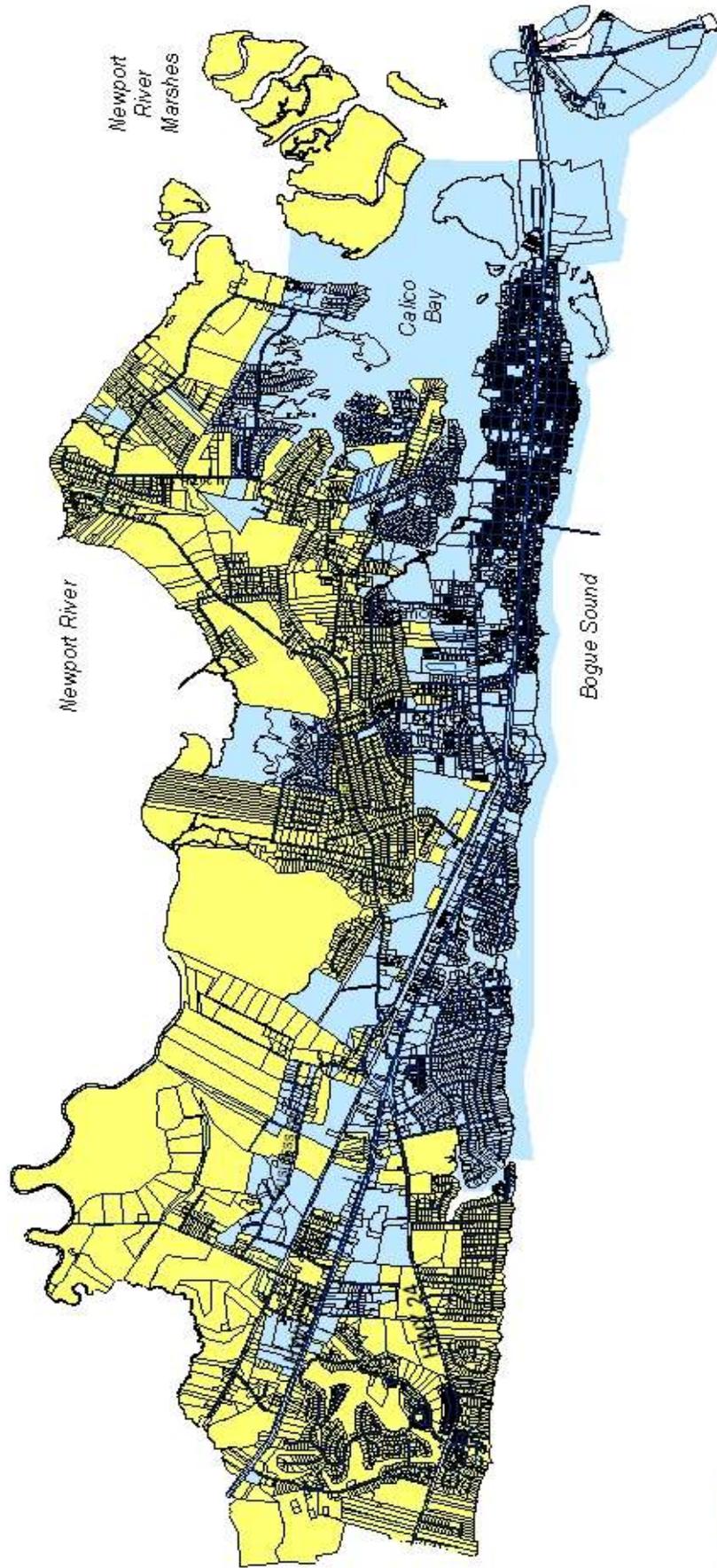
- d. Contingency plans for the various businesses and locations in the City will be maintained as appendixes to this manual, and will be made available to all supervisory and command personnel.
 - e. The manual will be reviewed on an as needed basis and updated, as needed.
15. Maintenance and Inspection of Plan
- a. The Major of Police is responsible for maintaining the Department's Disaster Response Plan, and for planning for response to disasters and related incidents.
 - b. The Disaster Response Plan will be reviewed and inspected annually, and adjusted as necessary. As part of such review and inspection, drills, exercises, and rehearsals may be conducted to assess the Department's operational readiness.
 - c. Upon such review, a report will be submitted to the Chief of Police regarding the Plan's adequacy and the Department's ability to implement its procedures.
 - d. The Major of Police will maintain liaison with other affected agencies to coordinate the Plan's contents.

16. Providing Aid to Other Agencies

In the event of a disaster or similar incident within another jurisdiction, the Department will provide assistance in accordance with existing law and policy.



Hazard Mitigation Base Map

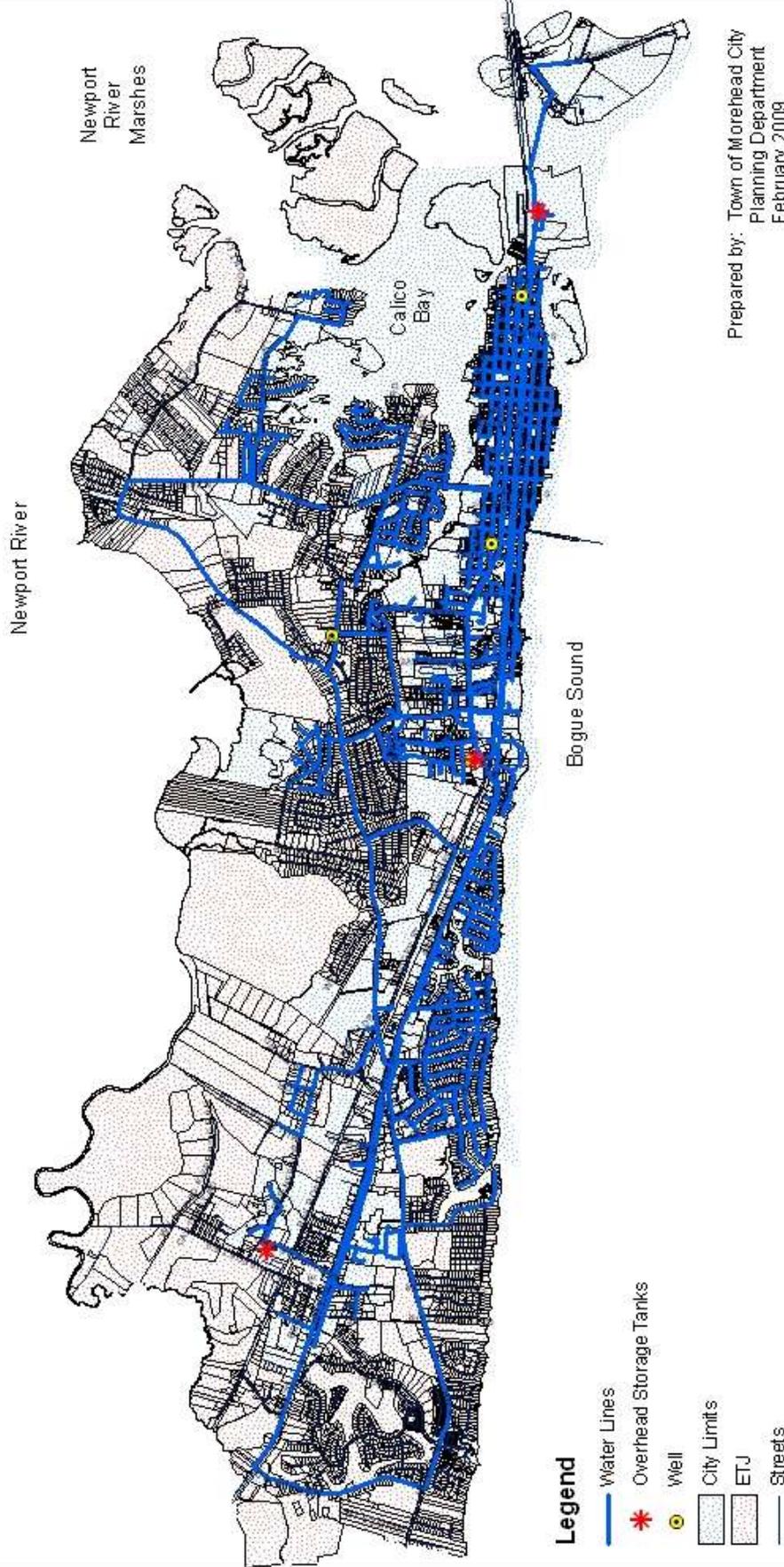


- Corporate Limits
- Extraterritorial Jurisdiction
- Streets

Prepared by: Town of Morehead City
Planning Department
February 2009

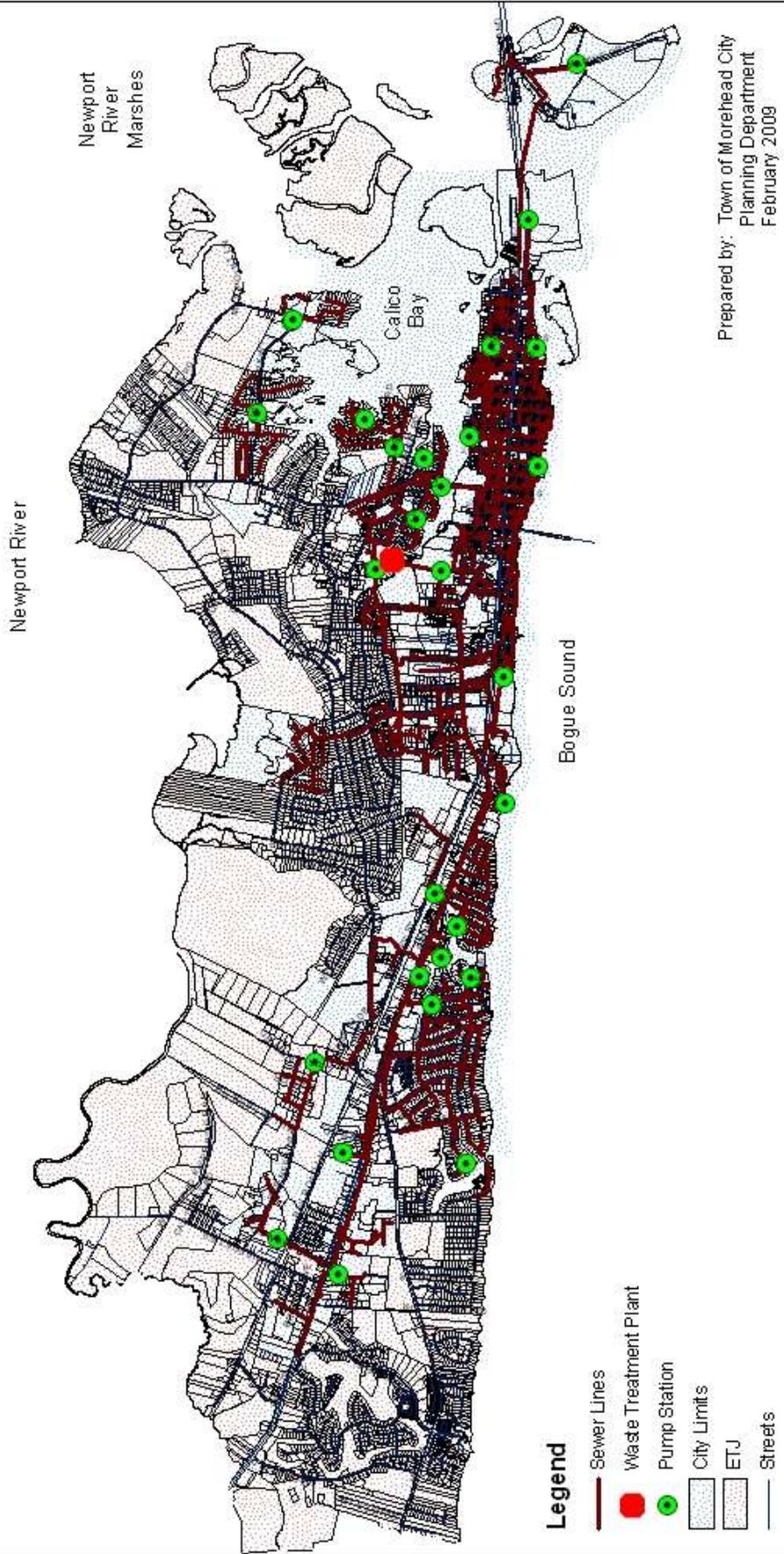


Morehead City Water System Map



Prepared by: Town of Morehead City
Planning Department
February 2009

Morehead City Sewer System Map





Hazard Mitigation Growth Area Map

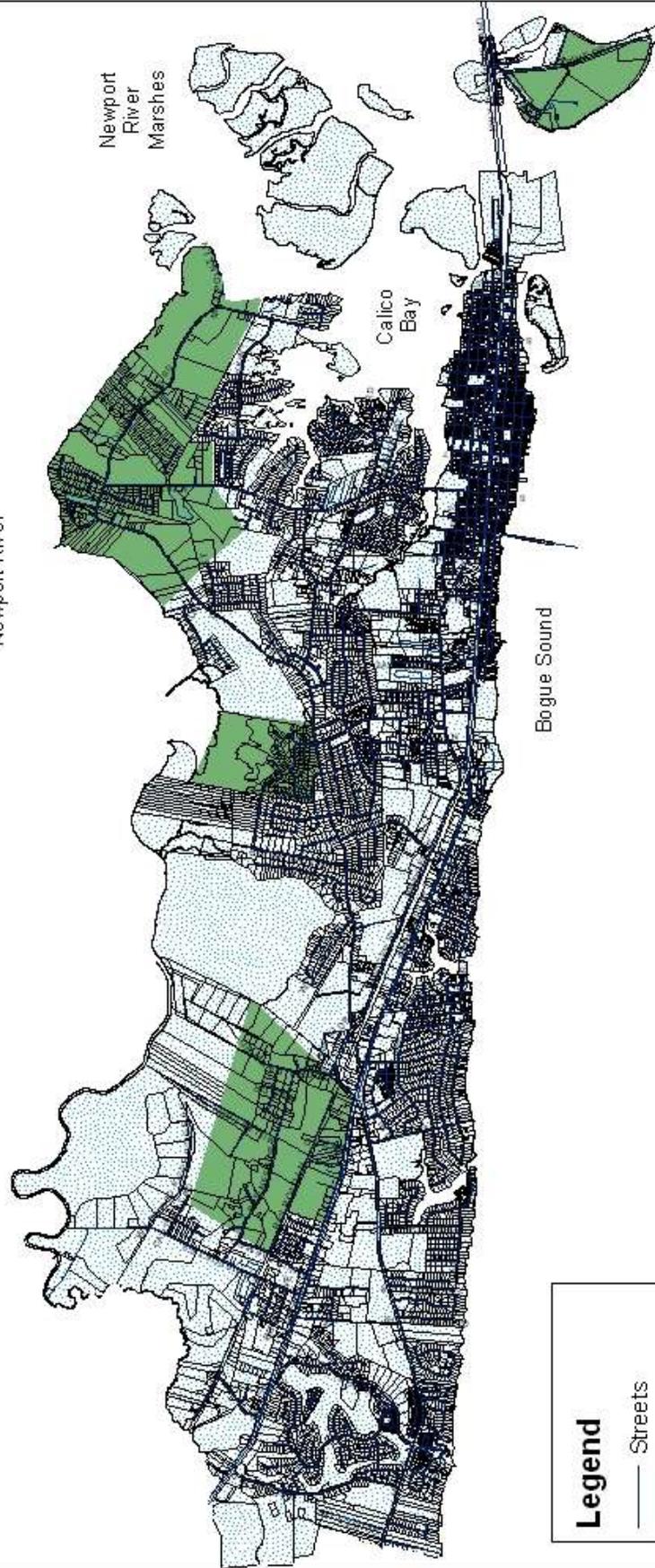


Newport River

Newport River Marshes

Callico Bay

Bogue Sound



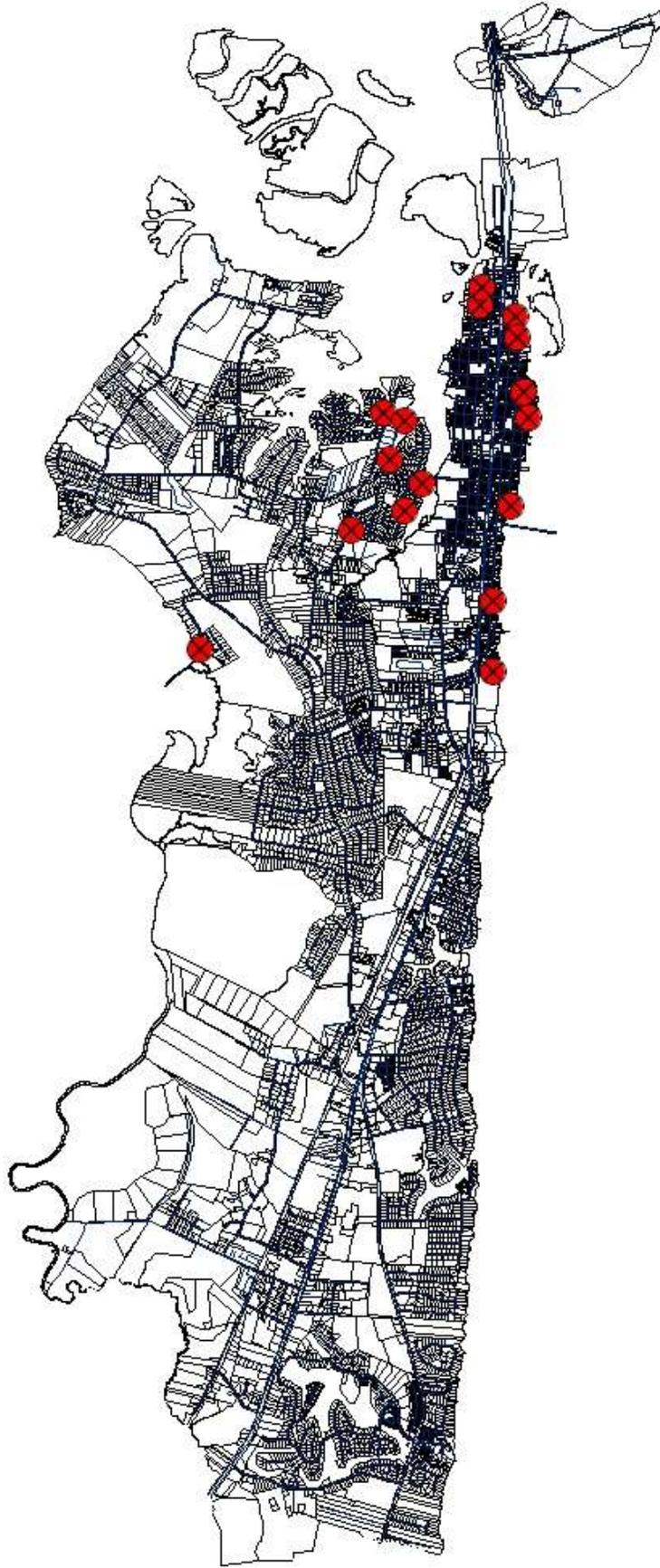
Legend

- Streets
- Growth Areas
- ▨ Planning Area

Prepared by: Town of Morehead City
Planning Department
February 2009



Repetitive Flood Loss Properties

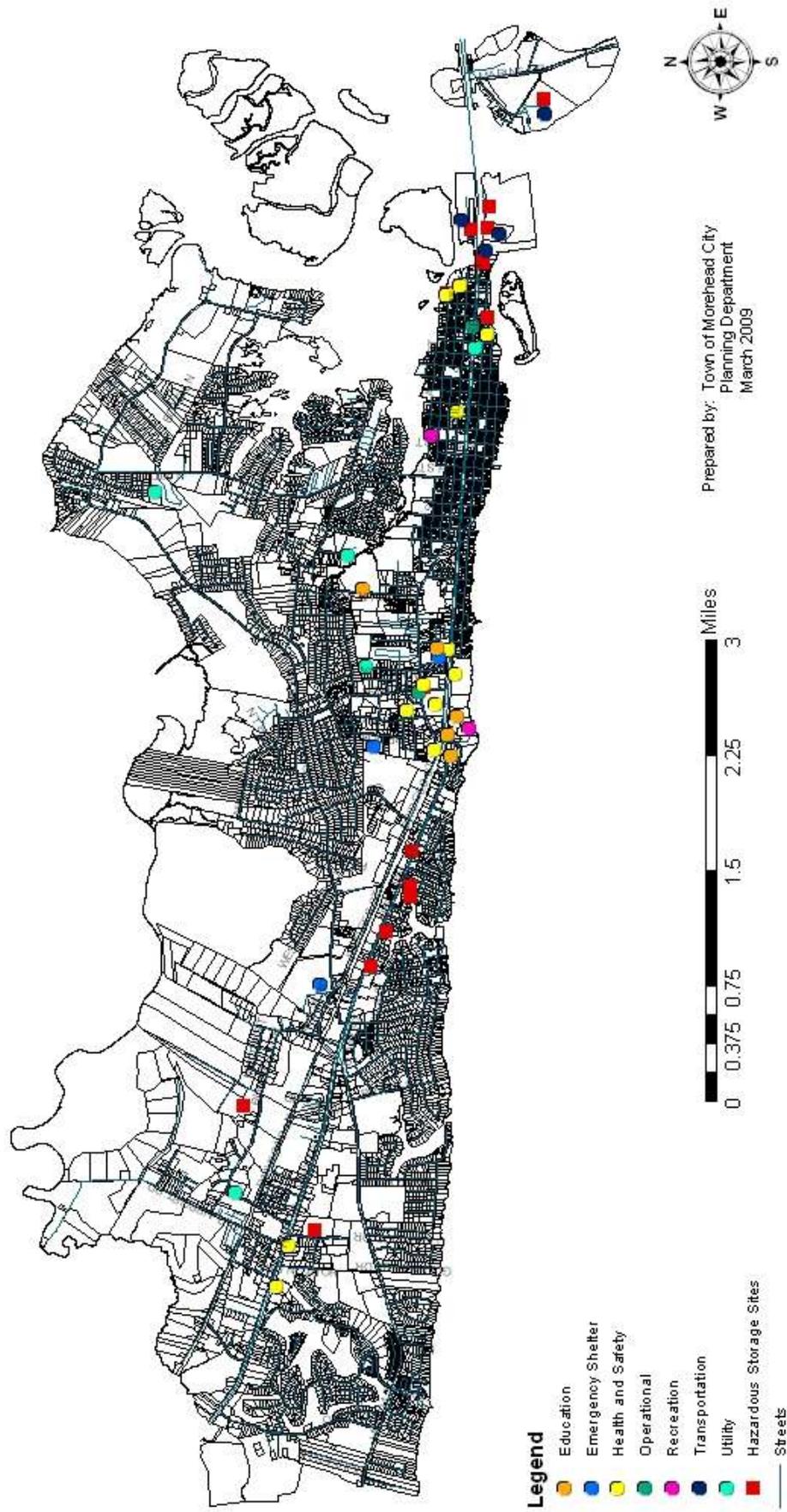


Legend

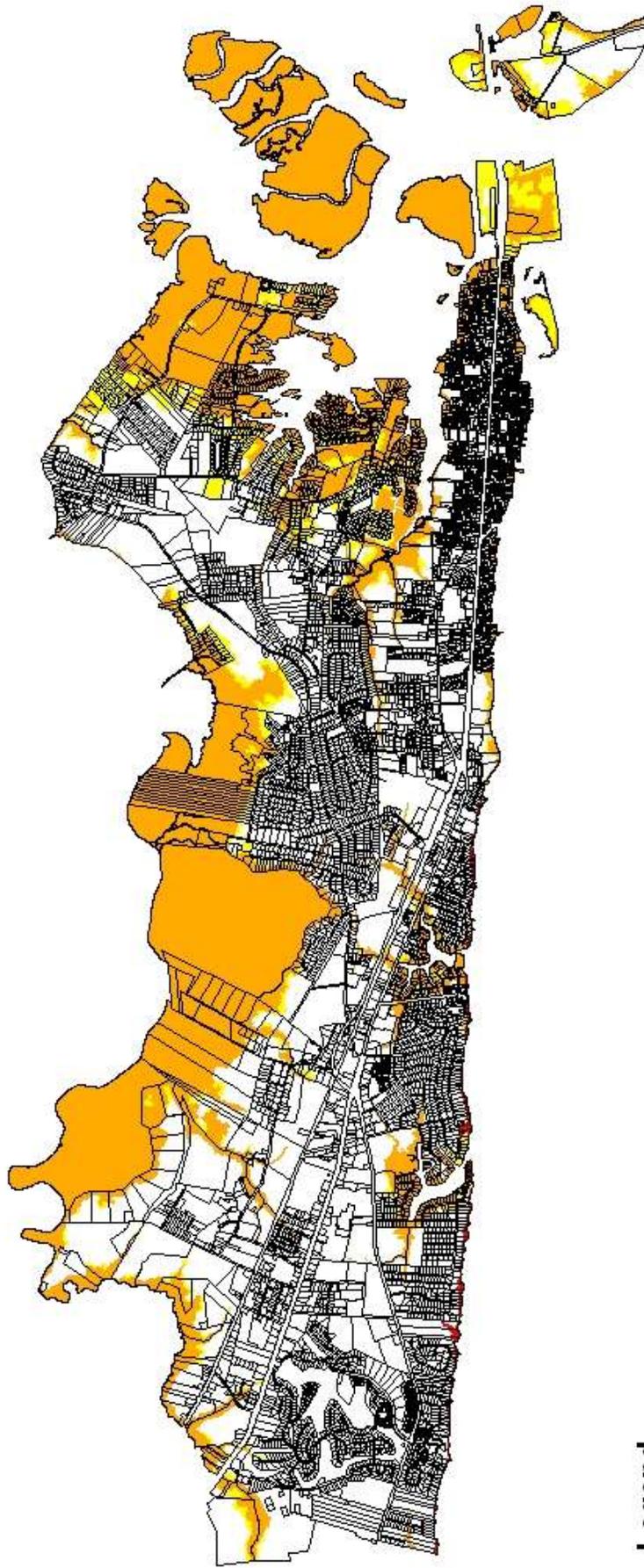
- Repetitive Loss Areas
- Streets

Prepared by: Town of Morehead City
Planning Department
February 2009

Critical Facilities & Hazardous Storage Sites



Morehead City Flood Zones



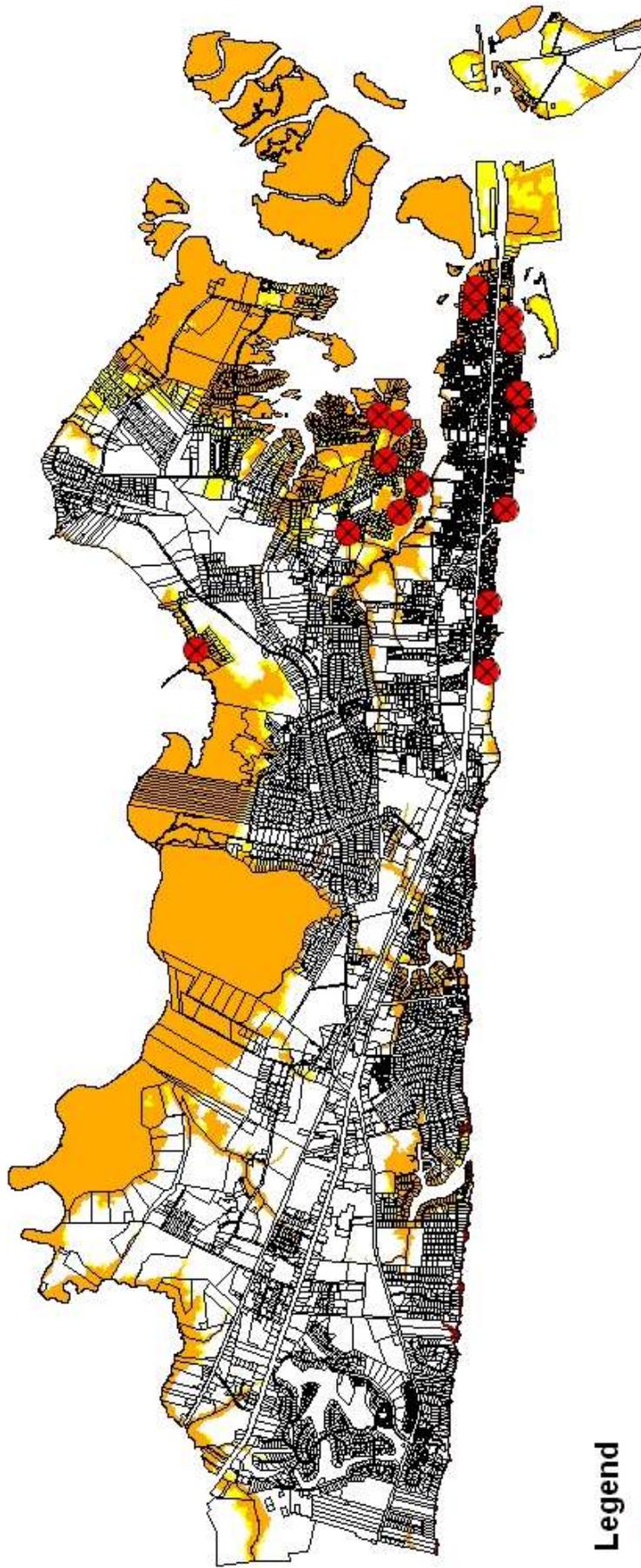
Legend

-  AE
-  Shaded X
-  VE

Flood Data Source: FIRM Maps

Prepared by: Town of Morehead City
Planning Department
February 2009

Morehead City Flood Zones and Repetitive Loss Properties



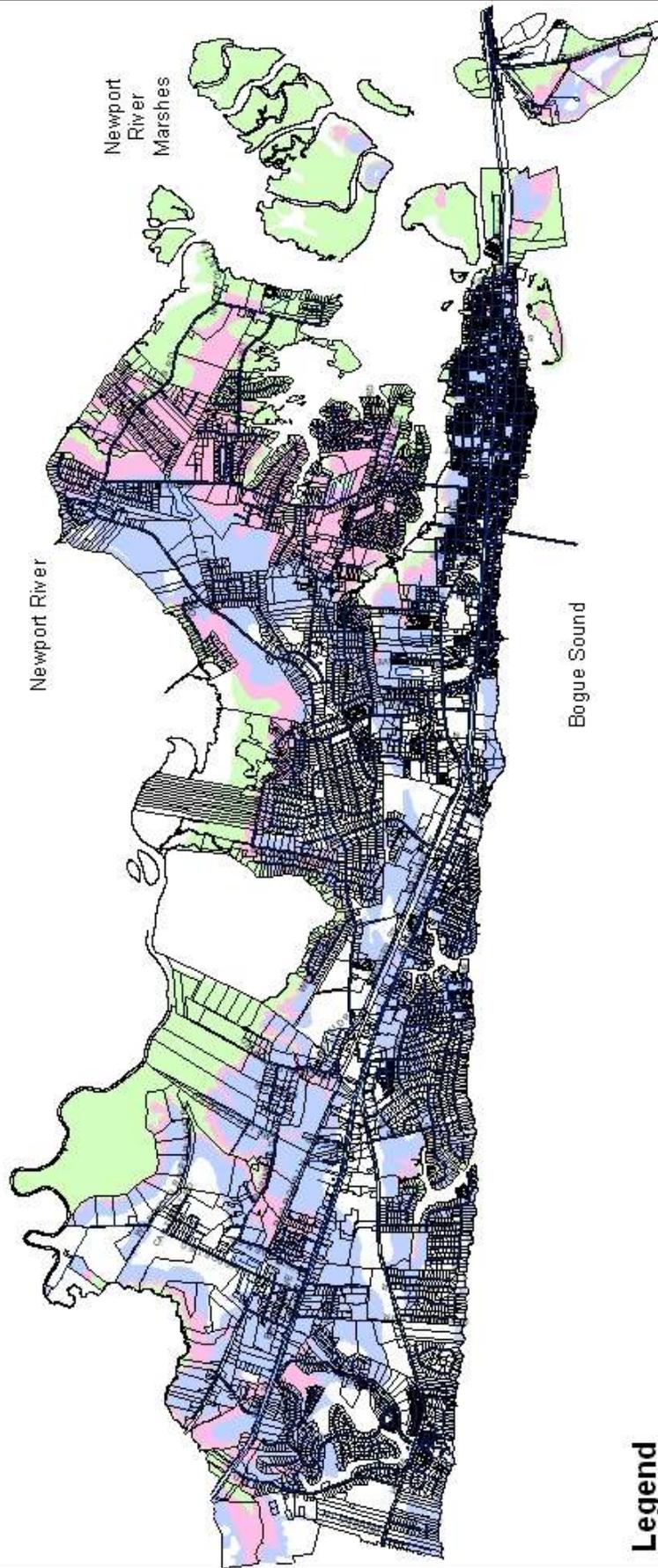
Legend

-  Repetitive Loss Areas
-  AE
-  Shaded X
-  VE

Flood Data Source: FIRM Maps

Prepared by: Town of Morehead City
Planning Department
February 2009

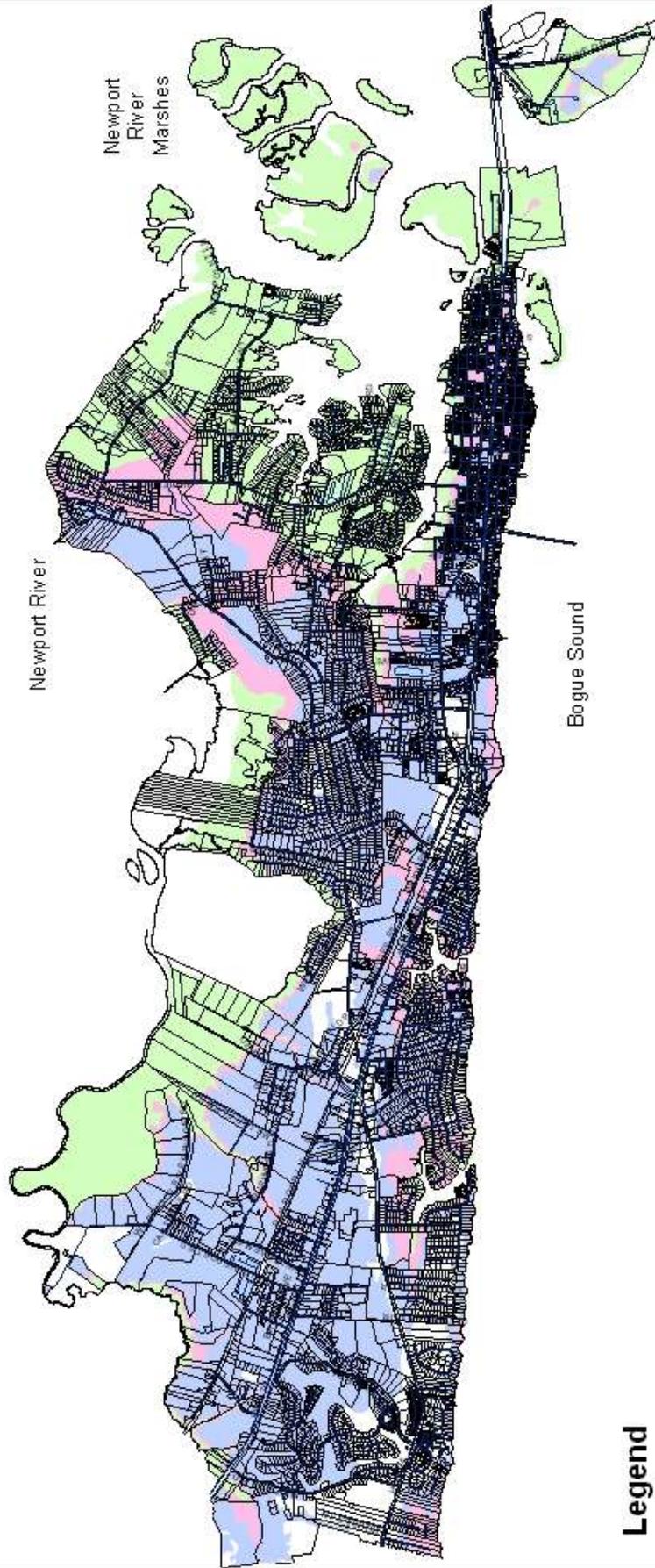
Storm Surge (Slow Moving Hurricane)



- Legend**
- Category 1 and 2
 - Category 3
 - Category 4 and 5
 - Streets

Prepared by: Town of Morehead City
Planning Department
February 2009

Storm Surge (Fast Moving Hurricane)



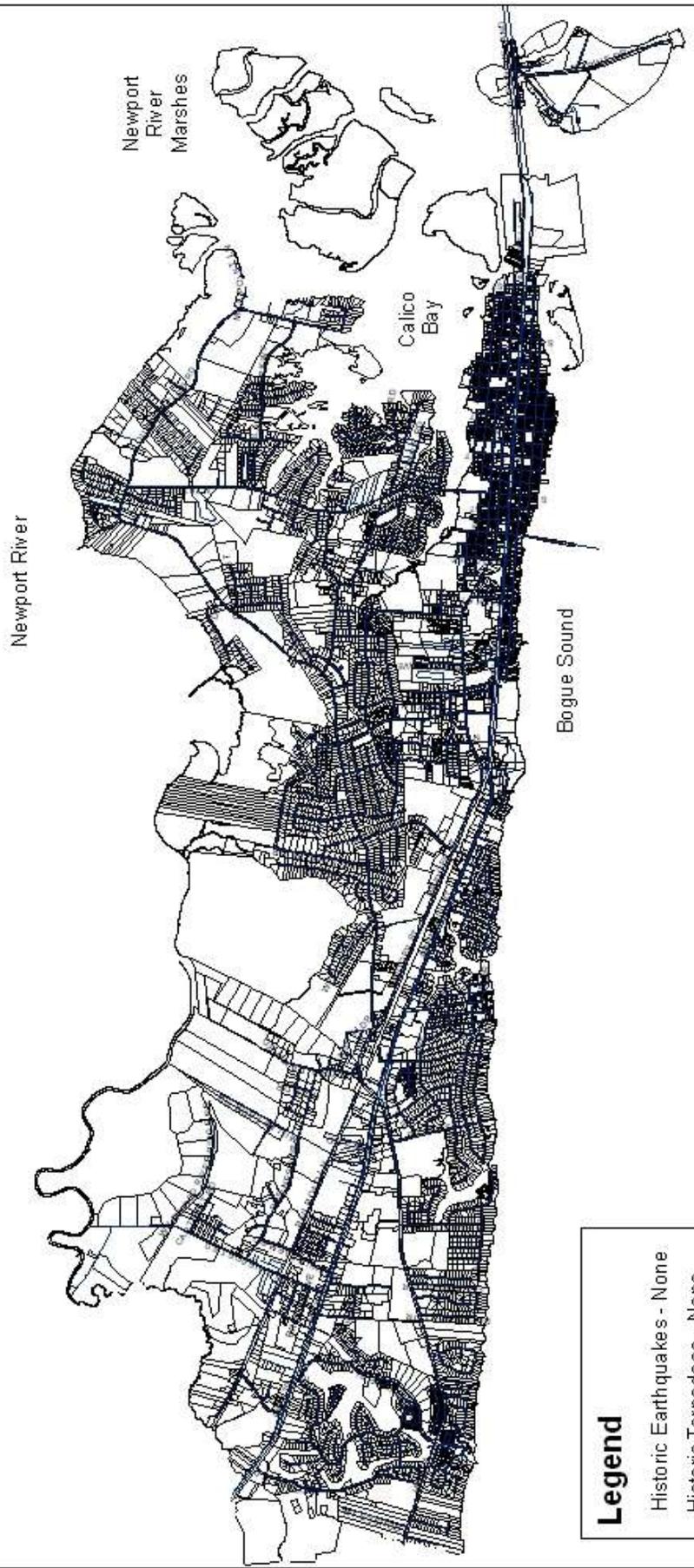
Legend

-  Category 1 and 2
-  Category 3
-  Category 4 and 5
-  Streets

Prepared by: Town of Morehead City
Planning Department
February 2009



Historic Earthquakes, Tornadoes, Wind & Hail Storms



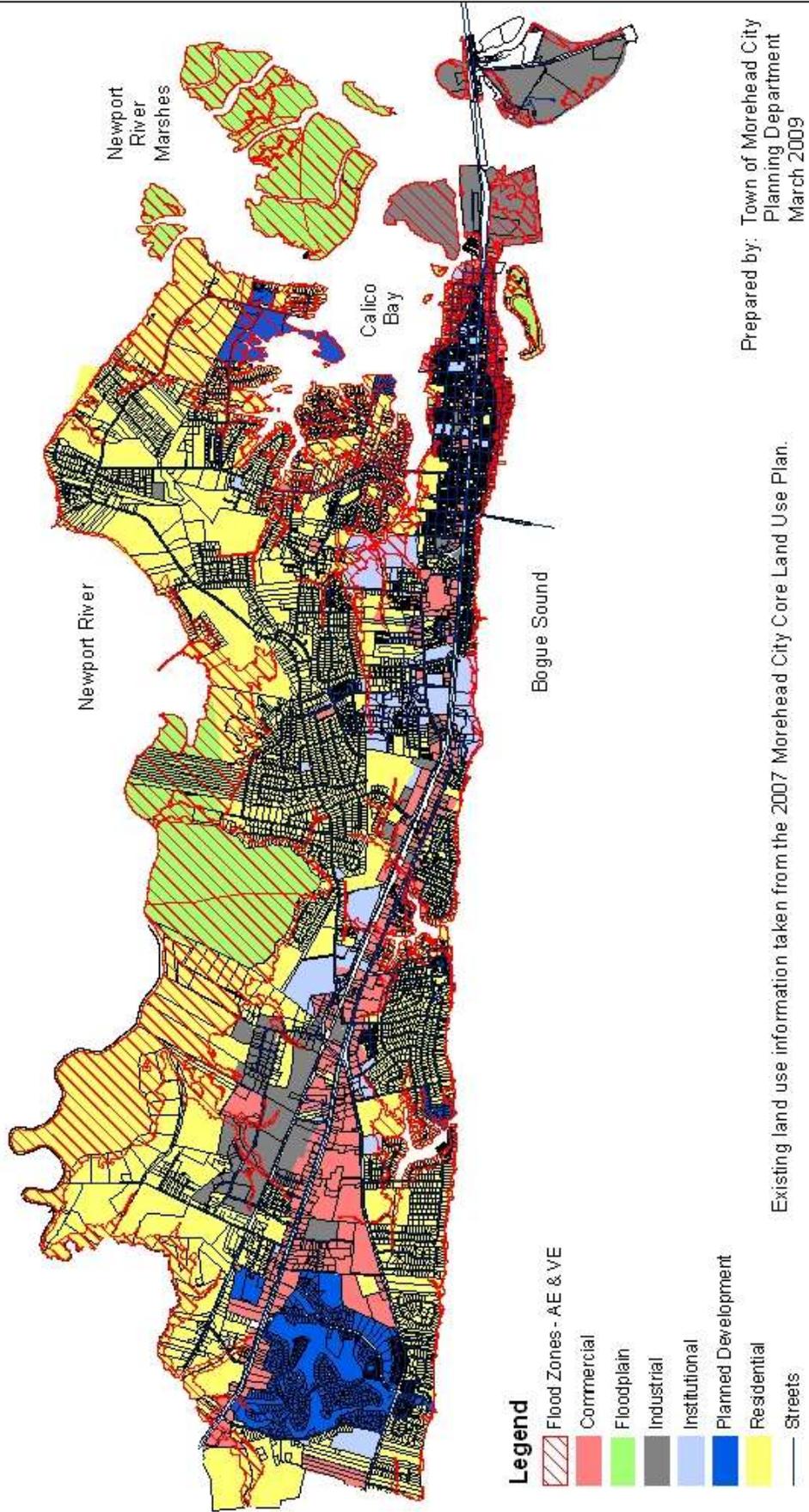
Legend

- Historic Earthquakes - None
- Historic Tornadoes - None
- Historic Wind Storms - None
- Historic Hail Storms - None

Prepared by: Town of Morehead City
Planning Department
March 2009



Flood Hazard Areas and Existing Land Use

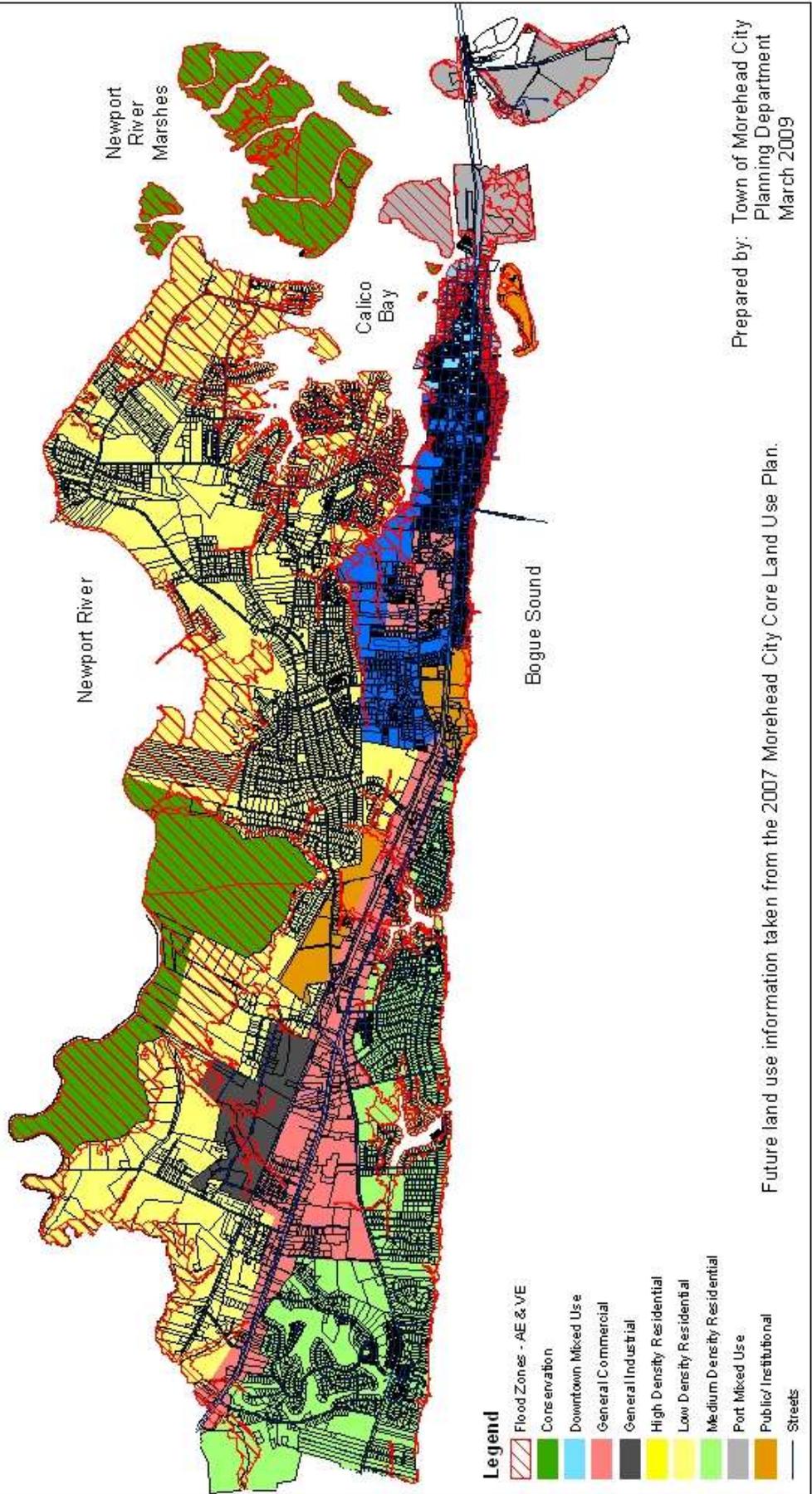


Existing land use information taken from the 2007 Morehead City Core Land Use Plan.

Prepared by: Town of Morehead City
Planning Department
March 2009



Flood Hazard Areas and Future Land Use

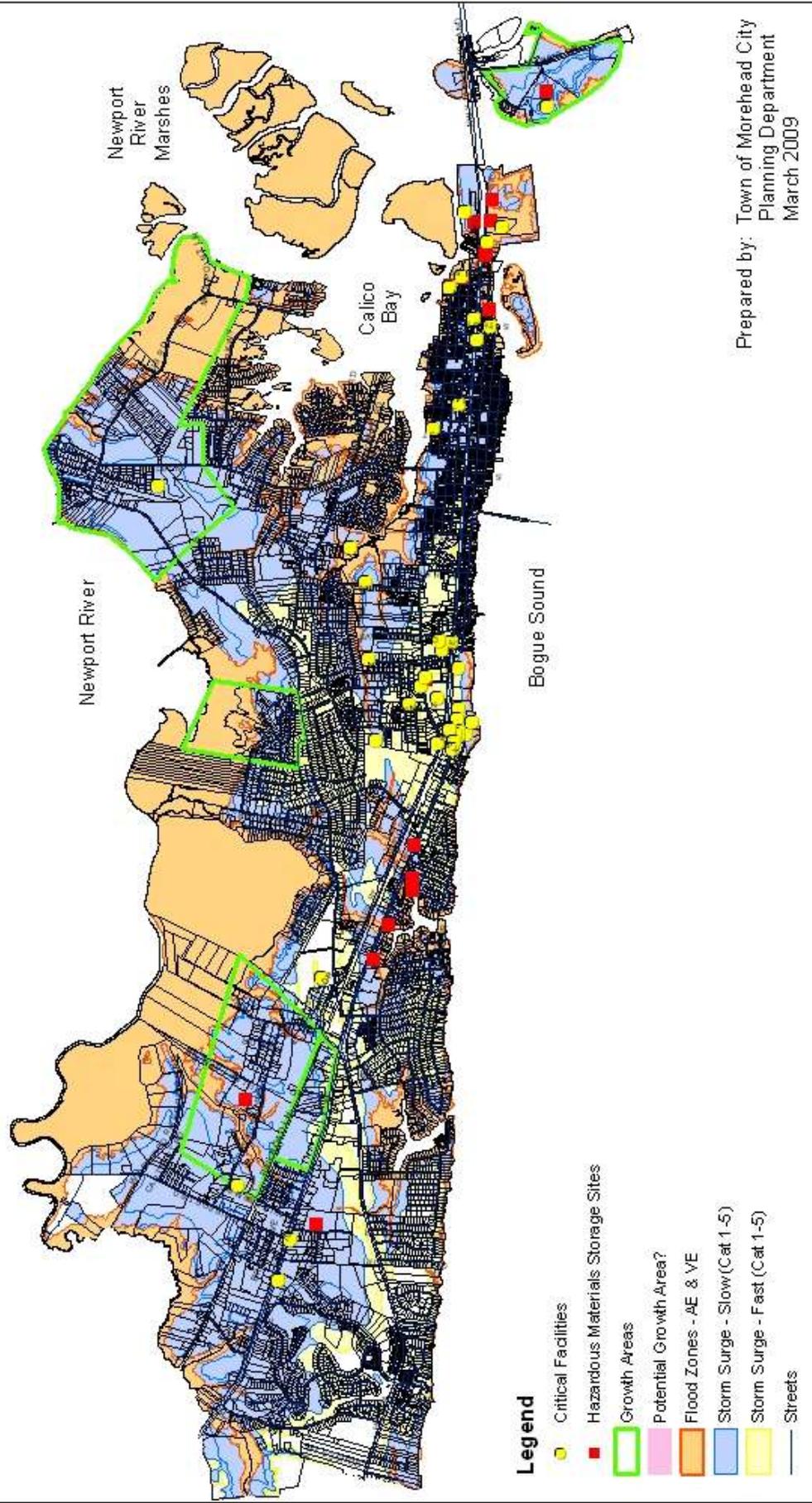


Future land use information taken from the 2007 Morehead City Core Land Use Plan.

Prepared by: Town of Morehead City
Planning Department
March 2009



All Hazards Map



Prepared by: Town of Morehead City
Planning Department
March 2009

APPENDIX K: COUNCIL AND PLANNING BOARD AGENDAS



AGENDA
Morehead City Planning Board
April 21, 2009
5:30 P.M.

I. CALL TO ORDER / INVOCATION / ROLL CALL

II. PLEDGE OF ALLEGIANCE

III. MINUTES: *March 17, 2009*

IV. BUSINESS:

A.) *Request from Best Ventures, LLC to rezone a portion of 222 Friendly Road from R20 (Single-Family Residential) to MA (Medical Arts).*

B.) *Request for preliminary approval of the 2009 Morehead City Draft Hazard Mitigation Plan Update.*

C.) *Withdrawal/Tabling Policy*

V. REQUESTS/COMMENTS

- A. Attendance Record
- B. Monthly Building Report (*February*)

VI. ADJOURNMENT

MOREHEAD CITY
NORTH CAROLINA

GERALD A. JONES, JR., Mayor

GEORGE W. BALLOU, Mayor Pro-Tem
Council
PAUL W. CORDOVA
DAVID HORTON
JOHN F. NELSON
DEMUS L. THOMPSON

706 Arendell Street
Morehead City, North Carolina 28557-4234
TEL (252) 726-6848
FAX (252) 726-2267
www.moreheadcity.nc.gov



R. RANDY MARTIN
City Manager

AGENDA
MOREHEAD CITY TOWN COUNCIL
Tuesday, May 12, 2009
5:30 p.m.

- I. Regular Meeting Call to Order, Invocation and Pledge of Allegiance
- II. Special Presentations: Tiller Benefit Regatta, May 23 & 24, 2009
Neal Littman, Morehead City Yacht Basin
Lynsey Plume, Executive Director, The Tiller School

Resolution of Retirement 2009-26 in Appreciation to
Kenneth R. "Rod" Bates upon his retirement from the
Public Works Department on May 1, 2009

Mayor's Proclamations:
Peace Officer's Memorial Day – May 14, 2009
National Police Week – May 10 to 16, 2009
Motorcycle Safety Awareness Month – May 2009
- III. Adoption of CONSENT AGENDA:
 - A. Approval of Minutes: Tuesday, April 14, 2009, Regular Meeting
Tuesday, April 28, 2009, Special Meeting/Work
Session
 - B. Approve Requests for Release of Overpayment of Ad Valorem Taxes for
April 2009, in the amount of \$948.01; and Accept the Tax Collector and
Finance Director Reports for April 2009
 - C. Adopt Resolution of Retirement 2009-26 in Appreciation to Kenneth R.
"Rod" Bates upon his Retirement from the Public Works Department on
May 1, 2009
 - D. Adopt Budget Ordinance Amendment 2009-12 Rural Center Project Grant
Project Fund Renamed Lift Station Improvements Grant Project Fund
 - E. Nominations for the Economic Development Council [EDC] Board of
Directors

ADA/EOE/P Equal Opportunity Employer Provider

- F. Approve Justification for Alternate Bid – Contract No. 65 – Renovation of Pump Stations 9 and 12
 - G. Approve Justification for Alternate Bid – Contract 60 – Water Treatment Plant No. #1; Contract 61 – Water Treatment Plant No. #2; and Contract 67 – Water Treatment Plant No. #3
- IV. Public Hearings:
- A. Voluntary Contiguous Annexation requested by Radio Island Development Company, LLC, for PIN #'s 6396-1961-2017, 6396-1961-2012, 6396-1960-2918, 6396-1960-2933 and 6396-1960-2838, located on Morgan Street, 0.72 acres; zoned County PI; (pending initial City zoning request to R5) – Adopt Ordinance 2009-06
 - B. Request from Radio Island Development Company to Initially Zone under the City's Jurisdiction Lots 17-21 Breakwater Spit (Tax PIN #s 6396-1961-2017, 6396-1961-2012, 6396-1960-2918, 6396-1960-2933, 6396-1960-2838) from its current zoning classification of County PI to R5 (Residential) District -- Adopt Ordinance 2009-11
 - C. Adopt Resolution 2009-27 in Support of a Coastal Area Management Act [CAMA] Public Beach and Coastal Waterfront Access Grant Application to Acquire Property located in the 700 Block of Evans/Shepard Streets [PIN #'s 6386-1970-4823 and 6386-1970-3860]
- V. New Business:
- A. Request for Preliminary Approval of the 2009 Morehead City Draft Hazard Mitigation Plan
 - B. Adopt Ordinance 2009-16 Amending the Code of Ordinances of the Town Of Morehead City, Chapter 15, Streets and Sidewalks, to Include Article VI. Street Performers and Amend THE FEE SCHEDULE to Include an Application Fee
- VI. Citizen Requests/Comments
- VII. City Manager's Report:
- A. Update on Proposed Operating Budget for FY2009/2010
 - B. Tattoo/Body Piercing Regulations Update
- VIII. Council Requests/Comments
- IX. CLOSED SESSION AS PER N.C.G.S 143-318.11[A][5] TO APPROVE THE CLOSED SESSION MINUTES OF TUESDAY, APRIL 14, 2009, TUESDAY, APRIL 28, 2009 AND WEDNESDAY, APRIL 29, 2009
- X. Adjourn



AGENDA
Morehead City Planning Board
November 17, 2009
5:30 P.M.

I. CALL TO ORDER / INVOCATION / ROLL CALL

II. PLEDGE OF ALLEGIANCE

III. MINUTES: *October 20, 2009*

IV. BUSINESS:

- A.) Request from Christopher Guilford to rezone 1013 Evans Street from CN (Commercial Neighborhood District) to R5S (Single-Family Residential District).*
- B.) Request for adoption of the 2009 Morehead City Hazard Mitigation Plan Update.*
- C.) Election of Officers*

V. REQUESTS/COMMENTS

- A. Attendance Record
- B. Monthly Building Report *(September)*
- C. Planning Committee Minutes *(September)*

VI. ADJOURNMENT

AGENDA
MOREHEAD CITY TOWN COUNCIL
BI-ANNUAL ORGANIZATIONAL MEETING
Tuesday, December 8, 2009
5:30 p.m.

- I. Regular Meeting Call to Order
- II. Invocation: Reverend Charles K. Royal, First Baptist Church, Morehead City
- III. Pledge of Allegiance
- IV. Special Presentation: Resolution of Retirement in Honor of
Lieutenant Johnny Overby, Morehead City Police
Department
- V. Certification of 2009 Municipal Election: Jeanne M. Giblin, City Clerk
- VI. Induction of Mayor and Councilmen: Honorable John E. Nobles, Judge,
Superior Court
 - A. Oath of Office: Mayor Gerald A. "Jerry" Jones, Jr.
 - B. Oath of Office: Councilman George W. Ballou
 - C. Oath of Office: Councilman Demus L. Thompson
- VII. Reception
- VIII. Organization of the New Council:
 - A. Election of Mayor Pro-Tempore
 - B. Council Committee Assignments
 - C. Designation of Eastern Carolina Council [ECC] Board of Directors
Representative
 - D. Designation of North Carolina Seafood Festival Board of Directors
Ex-Officio Representative
- IX. Presentation of the 2008/2009 Audit – Gary Ridgeway, McGladrey & Pullen

- X. Adoption of the CONSENT AGENDA:**
- A. Approval of Minutes: Tuesday, November 10 2009, Regular Meeting**
 - B. Approve the Requests for Release of Overpayment of Ad Valorem Taxes for October 2009, in the amount of \$1,733.91; and Accept the Tax Collector and Finance Director Reports for November 2009**
 - C. Adopt Resolution of Retirement 2009-51 in Honor of Lieutenant Johnny Overby and Resolution 2009-50 Declaring the Badge and Service Weapon carried by Lieutenant Johnny Overby as Surplus and Award to Him upon his Retirement**
 - D. Request for Contiguous Annexation for Flowers Development, 5112 Highway #70 and 111 Willis Road, PIN #'s 6356-1297-9008 and 6366-0906-0810, 7.25 acres, pending CH [Commercial Highway] District zoning – Adopt Resolution 2009-53 Requesting the Clerk to Investigate the Petition and Resolution 2009-54 Setting the date of the public hearing for Tuesday, January 12, 2010, at 5:30 p.m.**
 - E. Approve Annual Certification of Firemen for 2009 for the North Carolina State Firemen's Association**
 - F. Award the Contract for 2009 Water System Improvements, Contract No. 60, Water Treatment Phase No. 1 to the Low Bidder, Laughlin-Sutton Construction of Greensboro, N.C., for a Total Contract Amount not to Exceed \$2,385,400**
- XI. Public Hearings:**
- A. Request submitted by Christopher Guilford to Rezone PIN #6386-1951-9022, located at 1013 Evans Street, from CN [Commercial Neighborhood] District to R5S [Single-Family Residential] District – Adopt Ordinance 2009-51**
 - B. Request for Approval of the 2009 Morehead City Draft Hazard Mitigation Plan Update – Adopt Resolution 2009-52**
- XII. Citizen Requests/Comments:**
- XIII. City Manager's Report**
- XIV. Council Requests/Comments**
- XV. CLOSED SESSION AS PER G.S. 143.318.11[a][3][5][i] TO APPROVE THE CLOSED SESSION MINUTES OF TUESDAY, NOVEMBER 10, 2009**
- XVI. Adjourn**

APPENDIX L: RESOLUTION OF ADOPTION

GEORGE W. BALLOU, *Mayor Pro-Tem*
Council
PAUL W. CORDOVA
DAVID HORTON
JOHN F. NELSON
DEMUS L. THOMPSON

MOREHEAD CITY NORTH CAROLINA

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GERALD A. JONES, JR., *Mayor*



R. RANDY MARTIN
City Manager

Resolution #2009-52

RESOLUTION OF ADOPTION OF MOREHEAD CITY'S HAZARD MITIGATION PLAN UPDATE

WHEREAS, the citizens and property within Morehead City are subject to the effects of natural hazards and manmade hazard events that pose threats to lives and cause damages to property, and with the knowledge and experience that certain areas, e.g. flood hazards areas, are particularly susceptible to flood hazard events; and,

WHEREAS, Morehead City desires to seek ways to mitigate situations that may aggravate such circumstances; and,

WHEREAS, the Legislature of the State of North Carolina has in Part 6, Article 21 of Chapter 143; Parts 3, 5 and 8 of Article 19 of Chapter 160A; and Article 8 of Chapter 160A of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety and general welfare of its citizenry; and,

WHEREAS, the Legislature of the State of North Carolina has in Section 1 Part 166A of the North Carolina General Statutes (adopted in Session Law 2001-214 – Senate Bill 300 effective July 1, 2001), states in Item(A)(2) "For a state of disaster proclaimed pursuant to G.S. 166A-6(a) after August 1, 2002, the eligible entry shall have a hazard mitigation plan approved pursuant to the Stafford Act"; and,

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All Hazards Mitigation Plan in order to receive future Hazard Mitigation Grant Program Funds; and,

WHEREAS, it is the intent of the Morehead City Council to fulfill this obligation in order that the City will be eligible for Federal and State assistance in the event that a state of disaster is declared for a hazard event affecting the City.

NOW, THEREFORE, BE IT RESOLVED, that the Morehead City Council hereby:

1. Adopts the Morehead City Hazard Mitigation Plan Update;
2. Vests the Morehead City Manager with the responsibility, authority, and the means to:
 - a. Inform all concerned parties of this action.
 - b. Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain or flood-related erosion areas, and cooperate with neighboring communities with respect to management

ADA/EOE/P Equal Opportunity Employer Provider

of adjoining floodplain and/or flood-related erosion areas in order to prevent aggravation of existing hazards.

- c. Adjust the boundaries of County and municipal planning jurisdictions whenever a municipal annexation or extraterritorial jurisdiction expansion results in a change whereby Morehead City assumes or relinquishes the authority to adopt and enforce floodplain management regulations for a particular area in order that all Flood Hazard Boundary Maps (FHBMs) and Flood Insurance Rate Maps (FIRMs) accurately represent the planning jurisdiction boundaries. Provide notification of boundary revisions along with a map suitable for extraterritorial jurisdiction boundaries to all concerned parties.
3. Appoints the City Manager to assure that the Hazard Mitigation Plan is reviewed annually and in greater detail at least once every five years to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the Morehead City Council for consideration.
 4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

ADOPTED, this the 8th day of December, 2009.



Gerald A. Jones, Jr.
Mayor



Jeanne M. Giblin, City Clerk

