Disaster Vulnerability Assessment: St. Pauls, NC

This paper represents work done by a UNC-Chapel Hill undergraduate student team. It is not a formal report of the Institute for the Environment, nor is it the work of UNC-Chapel Hill faculty.
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Acknowledgements

The St. Pauls capstone team would like to acknowledge Stuart Turille (St. Pauls Town Manager), Elizabeth Shay (capstone faculty advisor), Maire Dekle (capstone graduate advisor), and John Cooper (from MDC Inc.) for their help and assistance with the capstone project.
Executive Summary

The purpose of this capstone is to perform a hazard vulnerability assessment of both natural and man-made hazards in the Town of St. Pauls, North Carolina, specifically as they relate to socially and physically vulnerable populations. St. Pauls is located in southeastern North Carolina, in the coastal plain. The town sits on the northeastern edge of Robeson County, the largest county in North Carolina with an area of about 1000 square miles. St. Pauls is located approximately twenty miles away from the county seat of Lumberton. The town itself has a population of about 2,205 and an area of about 1.3 square miles.

In analyzing possible threats to St. Pauls, we used a hazard vulnerability assessment tool created by researchers at MDC Inc. (Durham NC) and the Center for Sustainable Community Design (UNC-Chapel Hill), with funding from the Federal Emergency Management Agency (FEMA). This document, called Community-Based Vulnerability Assessment, was developed after the disastrous impacts of Hurricane Isabel on North Carolina’s Outer Banks in 2003. This tool may be used to enhance hazard mitigation plans to effectively identify and address vulnerable populations and groups within the plan’s scope and reduce the community’s risk in the event of a disaster. A vulnerability assessment typically includes at-risk populations, critical facilities, major employment centers, and communication networks. Most vulnerability assessments tend to focus on physical vulnerabilities, defined as:

“People who are more likely to be affected by disasters due to remote location, physical disability, or other condition that will significantly limit mobility and the ability to react to potential threats or disasters” (MDC Inc.).

These physical vulnerabilities include factors such as risk to storm events, the vulnerability of housing structures or other infrastructure, and location. The tool developed by MDC Inc. is unique because it focuses more specifically on social vulnerability, which is defined as:

“People who are more likely to be affected by disasters due to poverty, race, disability, language barriers or age. A social vulnerability assessment recognizes that not everyone has the resources to prepare for, cope with, and recover from disasters” (MDC Inc.).

Social vulnerabilities can include populations such as non-English speakers, elderly or disabled, and the poor. The goal of this particular vulnerability assessment is to analyze both the physical and social vulnerabilities within a community so that a comprehensive hazard mitigation plan can be revised to incorporate new material, to improve the response in the event of a disaster.

This report analyzes current disaster plans for the Town of St. Pauls, and how those plans function in conjunction with the findings obtained from carrying out the processes defined by the Community-Based Vulnerability Assessment developed by MDC Inc.
The assessment tool outlines nine key steps for identifying physical and social vulnerabilities within a community. These include:

1) Getting started—team organization and planning
2) Identifying and ranking hazards
3) Identifying and mapping areas of greatest risk
4) Inventorying and mapping physical vulnerabilities
5) Inventorying and mapping social vulnerabilities
6) Inventorying and mapping employment centers
7) Inventorying and mapping environmental threats
8) Community ground-truthing
9) Putting it all together—compiling and analyzing data

These are the steps used throughout the semester to complete the assessment, using worksheets provided in the MDC, Inc. assessment tool, key informant interviews, and a public meeting. From the results, the team produced a presentation, this report, and attached worksheets and community lesson plan designed for elementary school children, which discusses various disasters and how families can prepare for them. The lesson plan also includes a take-home document for students to give to parents, and is available in both English and Spanish.

We found, in our research, that there were serious disconnects in emergency response between Robeson County and St. Pauls. In analyzing current disaster plans, we found that the Robeson County Hazard Mitigation Plan only briefly addresses St. Pauls, and that it does not outline any specific plans to be carried out in a disaster. In addition, the team found out very late in the semester that St. Pauls also has a disaster plan, but it is accessible to a very limited group of people (perhaps only one) in the town. We also found that St. Pauls has some major infrastructural vulnerabilities with their drainage system that results in flooding of downtown areas during heavy rains. Furthermore, St. Pauls has socially vulnerable populations including large elderly and non-English speaking populations.
Introduction

The UNC-Chapel Hill Environmental Capstone is a semester-long project that a team of undergraduate students undertakes for a client. It is a requirement for all Environmental Studies and Environmental Science majors, and is typically done in their third or fourth year of study. The teams may also include some non-majors who elect to take the course, especially non-majors with minors in the environmental or sustainability curricula. Generally, the course centers around a team of five to eight students working together throughout the semester to achieve goals based on the project, to develop a report and presentation on what they found and, with the information gathered, to create some sort of final product or deliverable for the client.

This capstone project utilized the disaster vulnerability assessment tool (*Community-Based Vulnerability Assessment*) that MDC Inc. (Durham NC) and the Center for Sustainable Community Design (UNC-Chapel Hill) developed as part of a FEMA-funded demonstration project to identify socially and physically vulnerable populations and assess the level of threat they face from natural and technological disasters. The assessment tool has been used over several different semesters in communities who have volunteered to participate in the project. In this case, the community partners were Wilson City and County, NC and the Town of St. Pauls, NC. Before using the tool, the team met with one of the authors, Dr. John Cooper of MDC, Inc., to learn how to properly use the document and to learn the basics of emergency planning and response, particularly why it is important to include both physically and socially vulnerable populations and areas within a community in the assessment. Main components of this project, described later in the Methods, include data gathering, mapping of vulnerabilities, key informant interviews, and ground-truthing via a public meeting.
Methods

Performing a hazard vulnerability assessment is a complex task, and requires dedicated involvement, participation, and organization from all team members. A faculty advisor guided the team throughout the assessment process, making initial contact with the study communities and recruiting communities interested in working with the capstone program. The first step for the capstone team was to divide into two sub-teams, one for Wilson City and Wilson County, and one for St. Pauls. This step took into consideration both personal interest and the estimated amount of effort needed for each project. After the team was divided into the larger Wilson sub-team and the smaller St. Pauls sub-team, the next step for the St. Pauls team was to organize the logistics of the project. All tasks involved in the project were then divided up and assigned to a team member based on his or her strengths.

Main tasks included collecting and analyzing specific information, including geographic data for mapping, demographic data from the census, and historical data; communicating with town officials; and managing meetings both during class time and outside of class. One team member was assigned the task of communicator, and was responsible for communicating with the Town Administrator. Another team member was assigned the task of creating maps and analyzing geographic data using GIS software. In addition, one team member also had the role of facilitator, and along with a team member from the Wilson sub-team, worked to lead the bi-weekly meetings in an organized and timely fashion. All team members were assigned the tasks of collecting demographic, economic, and existing policy data from the census, town website, existing plans, and other resources. Much of this data collection was guided by the eleven worksheets provided in the FEMA and MDC hazard vulnerability assessment tool.

Demographic and economic data were collected in a number of ways, but most were gathered through the U.S. Census Bureau’s website via the American FactFinder tool. Most of the information came from either the 2000 census, or the 2005 American Community Survey. These data provided a foundation for determining potential physical and social vulnerabilities to be researched further in the key informant interviews and in the public meeting. Existing disaster planning for St. Pauls, or rather the aspect of it that is formalized, is described by the Robeson County Hazard Mitigation Plan, which the team examined to gain a better understanding of its strengths and weakness. This, in addition to the other data collected, allowed us to learn to what extent physical and social vulnerabilities were already addressed in the community, if at all. These preliminary findings were presented at a public meeting during a question-and-answer session, where the findings could be expanded upon and their validity could be assessed. The team started the public meeting by describing the project, its purpose, and the research methods. The question and answer session followed, and then the map activity was conducted.

All team members participated in the process of interviewing public officials, and the information from interviews was compared with that gained during the public meeting. This
meeting was an attempt to obtain supplemental information from the community, and proved successful in bringing new voices to the table. One interview was conducted before the meeting, and the information from that interview, and with data gained from research, was used to guide questions and discussion during the public meeting. Furthermore, the information learned during the public meeting helped to create more in-depth dialogue during a second interview. Both interviews were transcribed and coded in order to identify reoccurring themes.

The findings to emerge from the public meeting and the interviews motivated us to develop an additional final product that would be useful to the community. In collaboration with the St. Pauls Town Administrator, the team decided to put together a lesson plan and take-home sheet for parents about disaster preparedness and response in the St. Pauls community. These materials were targeted at elementary school children, and the take-home sheets were designed to get parents talking with their kids about disaster preparedness, and maybe learning a little along the way.

**Mapping**
Maps created for the town meeting in St Pauls were designed to be written on during the meeting by citizens and officials. As a result many of the layers found through the UNC-Chapel Hill libraries’ GIS data finder were not displayed on the final maps, to avoid clutter and invite contributions from the meeting attendees. However, maps and layers displaying the elevation and flood plains, other risk areas, and town and township boundaries provided useful information for the group even if not included on the printed maps. Layers included on the final versions displayed the roads and railroad in and around the town. Two maps were produced, one at the scale of the township and one zoomed in on the downtown area. Also included were the town’s schools as well as facilities registered with the EPA as dealing with hazardous chemicals. This layer did not print correctly on the final maps, but this meant that we found out that the firemen at the meeting and the officials were well aware of these facilities and of where they were.

Participants in the meeting added their knowledge to the maps with markers; in addition to the locations of facilities regulated by the EPA, a great deal of information not available from any other source was collected. This included areas of downtown that are known to flood frequently as a result of the town’s strained stormwater system and locations of some of the vulnerable populations. Past and potential future hazmat spill locations also were marked out. The maps were also a useful tool to spark dialogue about other topics, and to allow attendees to provide information in a more informal way and seemed to cause more people to participate than were willing to in the more formal parts of the meeting.
Town Profile

History of St. Pauls
The Town of St. Pauls originated in 1799 with the founding of the St. Pauls Presbyterian Church. Growth in the town was slow until the early 1900s, when textile mills providing manufacturing jobs were opened and a railroad line was built that connected St. Pauls with Lumberton and Elizabethtown, where it branched out to the Atlantic Coast Line. Although the textile mill is now in decline, a number of other industries have moved into the area, and the rail line is still in use to bring supplies to those industries (St. Pauls Town Website at http://www.stpaulsnc.gov/).

Disaster History
St. Pauls has suffered from a variety of disasters, but the most frequent cause of severe destruction has been tornadoes. A 1999 tornado caused approximately $200,000 of damage, killed one person, and caused four injuries. The town has also experienced earthquakes, but these have not been the cause of any significant property damage or loss of life. Severe thunderstorms and winter weather occur regularly, in addition to other low-level natural disasters and hazards. However, the storm water infrastructure in St Pauls is very old (some parts of it were originally built by the Works Progress Association during the depression) and as a result is not designed to accommodate the increased amount of impermeable surface in the modern town. Because of this, rainstorms that might not have a serious impact on other cities or municipalities can cause flooding in certain parts of the town, which in turn can cause property damage or injury. This flooding has been, in recent times, the most frequent cause of concern for town officials and local disaster management personnel (like the volunteer fire department). Despite the fact that it does not generally cause serious damage or injury it is a chronic problem that seems to be on everyone’s minds. It was brought up in nearly all (if not all) of the discussions and interviews we conducted with citizens and officials of St Pauls.

Social Vulnerability
A central objective of this project was to better describe socially vulnerable populations in St. Pauls, an especially important goal considering their lack of coverage in the hazard mitigation plan that now exists for Robeson County. The two populations that we looked at were (a) the elderly or disabled population and (b) the Spanish-speaking population.

The response system for disaster planning mostly includes a system of sirens, flash warnings on television, radio announcements, and phone calls. Because these warning systems are less helpful if a person is deaf or blind, it would seem that some populations would be unable to respond effectively in the event of a disaster. The town of St. Pauls has already thought this through, and benefits from having a small population and a community atmosphere. The town officials know where the disabled and elderly reside and, because the town isn’t too large to cover, are able to physically go to the houses of these persons and assist those in need.
The second population—that of the Spanish speakers—is a more difficult population to assist. The difficulty is that most of the Hispanic population has children that are able to speak English, and are in the school system, but the adults may not understand the warnings. We suggest that the town hire a translator, who perhaps could be a student from a North Carolina university who might perform the services for free, to make one-time translations of stock messages, and a script for disaster personnel to learn. A full-time translator would be costly and not justified for the intermittent needs; however, it would be beneficial to the population of St. Pauls to have an interpreter on hand during disasters to handle spoken communications. Our recommended solution would be to select a community communicator to help with translating and interpreting, or ensure that there is always one designated Spanish speaker on the board for emergency planning. This way, the perspective of that section of the population may be represented during hazard mitigation planning. (The town generally does this, but might benefit from organizing a volunteer corps of interpreters.) The team decided to focus on this population in our educational manual to be distributed to children at the schools by including a Spanish version of the letter home to the parents describing the lesson plan, as described later in this report.

**Physical Vulnerability**

**Overview**
Physical vulnerability, according to MDC’s vulnerability assessment tool, is generally known to be “people and property at risk if a disaster occurs.” In St Pauls the people and properties most at risk were generally located in the center of the city. The research team assessed physical vulnerabilities of St Pauls by researching its susceptibility to natural hazards and which areas are more prone to disaster than others.

**Storms**
St Pauls is located in southeastern North Carolina, and its proximity to the coast makes it vulnerable to anything from thunder storms and winter hail and snowstorms, to hurricanes and tornadoes. The stormwater system of the town represents a physical vulnerability, and sporadic downpours of heavy rainfall can result in flooding when water backs up in the damaged and outdated pipes and ditches. The majority of the rains occur in the spring and summer, ranging from February to July. Within this time period, however, it becomes difficult to predict specifically when heavy rains will occur. These downpours cause damage to local infrastructure as well as injury and potential loss of life. The heavy rainfall primarily affects the downtown area of St Pauls, which includes municipal buildings, local businesses, and main areas of traffic. More than 250 residents live in 150 mobile homes, which are structurally deficient and thus particularly vulnerable to storms.

**Flooding**
Flooding, while a direct result of the heavy rainfall St Pauls suffers from, is caused in part by the town’s outdated stormwater system. The severity of a flood is generally dependent upon the amount of rainfall and prior soil conditions. Floods are the easiest hazards to pinpoint since they occur only in specific vulnerable areas of St Pauls. Flooding occurs in the downtown area of St Pauls in the following locations:
the majority of Evans Road, the intersection of Third and Third Street, the intersection of Third and Broad Street, the intersection of Blue and Second Street, the intersection of Fourth and Clark Street, and the intersection of McClain and Elizabeth Street. These locations tend to accumulate up to seven inches of rainfall. The flooding has, on several occasions in the past, resulted in waste water from the sewer lines of the treatment facility spilling into the streets, causing road blocks. This is due primarily to the aging and cracking sewer pipes that are found under the roads of the city, but damage caused by the flooding is sometimes exacerbated by citizens. Residents of St Pauls are known, on occasion, to drive in the accumulated waters either out of necessity or for fun. This causes water to splash onto the infrastructures located directly by the roads and damage the property. On privately owned property, residents do not maintain their own ditches, causing debris to also flow into the city with the floods. If the ditches were properly maintained, the rainfall would more easily flow out of downtown and into the drainage system. In order to solve this problem of flood vulnerability, the town of St Pauls has looked into finding resources and funding to redevelop the pipe and sewer system. Flood vulnerability can also be reduced by the citizens, who could maintain the ditches on their property that lead to the drainage and sewer system. This would not only decrease flooding but also keep the wastewater within the sewer system.

Hazardous Material Spills
Another physical vulnerability St Pauls deals with is the issue of spills of hazardous materials. These spills harm people, the environment, and property in St Pauls. The construction of the Virginia and Coastal Railroad through the middle of the town, connecting it to the Atlantic Coast Line Railroad, has served to be something of a problem for St Pauls. It was this very railway that helped the town grow while textile mills were still operating in the area, but now trains passing through the town spill hazardous materials onto the surrounding grounds. These contaminants are a health risk to the residents and are very difficult to clean up. One major incident that occurred in recent St Pauls history was the derailment of a DuPont train in the mid 1980s. One of the train’s tankers burst, spilling chemicals and contaminants right outside the center of downtown St Pauls. Somewhat less dangerous spills have, in the past, been caused by trucks passing through the town. St Pauls is known to be a crossroads town through which many trucks transporting goods across the country pass. Many of the trucks travelling the area are transporting poultry entrails (because of the large poultry industry in the area), and when these trucks stop at traffic lights they often spill some of the poultry entrails onto the road leaving a slippery slush, and cause accidents as other vehicles pass over the spill. These spills can be very difficult for St Pauls to clean up, and produce a terrible smell. In order to regulate the spills, the town has established a system of fees for the companies dispatching trucks. St Pauls has levied fines of up to five hundred dollars on the owners of these ‘gut trucks’ for each individual instance of a spill. This has greatly reduced the number of spills; however, spills still occur, posing a danger to St Pauls drivers.
**Town Assets and Hazards**

**Employment Centers**

When considering potential vulnerable sites during a disaster event, it is imperative to include major places of employment. If employment centers are damaged during a disaster event and have to close permanently or even temporarily, severe economic instability and financial stress can occur if a large number of people become unemployed at the same time. These employment centers are a source of income for many families in the town and identifying major employment centers is necessary to assess this type of vulnerability. Employment centers located in hazard-areas would be a focus for such an assessment inventory. Fortunately, none of the major employment centers in St. Pauls are located in identified hazard areas. The major employment centers are listed in the table below:

**Table 1: Major Employment Centers**

<table>
<thead>
<tr>
<th>Employer or employment center</th>
<th>Physical Address</th>
<th>Number of Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prestage Farms, Inc.</td>
<td>4470 Highway 20 E</td>
<td>250</td>
</tr>
<tr>
<td>Du Pont</td>
<td>22828 NC Highway 87 W</td>
<td>150</td>
</tr>
<tr>
<td>Campbell Soup Company</td>
<td>2120 NC Highway 71 N</td>
<td>150</td>
</tr>
<tr>
<td>Mueller Steam Specialties</td>
<td>1491 NC Highway 20 W</td>
<td>130</td>
</tr>
<tr>
<td>MSA Paraclete</td>
<td>106 E Clark St., St. Pauls</td>
<td>100</td>
</tr>
<tr>
<td>Mountaire Farms</td>
<td>17269 NC Highway 71 N</td>
<td>100</td>
</tr>
</tbody>
</table>

Manufacturing and agriculture jobs play a key part in the employment and economic stability of St. Pauls, with the top three employers being Prestage Farms, Du Pont, and Campbell Soup Company. Other significant employers not listed in the table include St. Pauls Elementary, Middle, and High School, as well as Walane gas Company. Each of these centers employs about fifty to eighty workers. Significant future employers include the State Industrial Park that is located off of Interstate 95, and expected to employ twenty-five to one hundred people.

A complete table of current and potential future employers is available via Worksheet # 10 in the Appendix.

**Critical Facilities**

The town of Saint Pauls has an elementary school, a middle school, and a high school. None of these were determined to be within a hazard area, but some hazards (such as tornados) do not strike exclusively in particular areas so they may still be at risk. All three schools are able to
serve as emergency shelters, though we learned during the town meeting that this requires approval from the county and the designation cannot be made by the town officials and managers alone. The town also has a police station and fire station, as well as being served by the Tobermory Volunteer Fire Department.

There is a small medical facility in the town, specializing in dialysis. It was stated at our town meeting that none of the trained staff at this facility live in St. Pauls and as a result are unlikely to be immediately available in the event of an extreme disaster after hours. Because of the large elderly population in the town, the availability of medical care is of great concern. Cromarties Rest Home is where some of the town’s elderly residents live, although many reside in homes throughout the town as well. The closest medical centers or hospitals other than the dialysis center are the Southeastern Regional Medical Center in Lumberton, and the Cape Fear Valley Health System in Fayetteville. Both of these are about twenty minutes drive from the town. (However, the Southeastern Regional Medical Center is physically closer, smaller roads mean the time taken to travel there is about the same.)

**Environmental Hazards**

Arguably the most serious environmental hazard in the town of St. Pauls and in the surrounding area is the threat of hazmat spills from a number of facilities. The most notable is the DuPont facility that, though located outside of town, has been responsible in the past for several spills in and around the town. Shipments from the center are sent by a railway that travels through town, and past spills have resulted from cars derailing or otherwise malfunctioning. In at least one case, evacuation procedures had to be followed because of such a spill.

Other hazardous facilities in the area include the new industrial park (outside of town), Safety Kleen, and possibly Paraclete. Paraclete is a facility that works with Kevlar in the manufacture of many of its products. Kevlar is a stable compound, but is produced using very hazardous chemicals. Depending on the form in which the facility is receiving the Kevlar (either in solid form or as chemicals to be mixed and molded), Paraclete could be considered a spill hazard. Safety Kleen, however, is a known hazard as their branch facility in St Pauls handles used oils and other potentially poisonous or environmentally damaging materials and substances.
Key Informant Interviews

IRB process/application
Before getting any interviews, the team had to submit our intention to interview to the Institutional Review Board (IRB), which monitors all the research performed at the University of North Carolina involving human subjects. One team member took the initiative to draft the IRB application. Delays related both to missing information and to IRB’s switch from paper to online meant the review was hung up for several weeks. In an effort to move it along, we consulted by phone with IRB and discussed the nature of the interviews—key informant interviews with professionals whose job it is to work in this area, representing low risk of harm, and agreed that the interviews do not constitute human subjects research, so IRB review was waived. Still, the team committed to having the interviews done by team members with CITI certification (required for any people identified on an IRB-reviewed application involved in research) as participants in performing the interviews and following standard protocols for conducting interviews and handling data. (The CITI online ethics training on treatment of human subjects can be accessed at [https://www.citiprogram.org/](https://www.citiprogram.org/). It typically takes four to seven hours to complete.) Other useful resources on preparing for and navigating through IRB review is found at the website research.unc.edu.

Interview selection process and coding themes
After the approval of the IRB application and completion of CITI training, the research team chose key informants to interview. Key informants were town officials that deal directly with disaster planning and/or emergency response. The community contact for St. Pauls, Town Administrator Stuart Turille, was chosen for the initial interview, after which he suggested the St. Pauls Police Chief and the St. Pauls Fire Chief as potential key informants. Due to time constraints and communication issues, the team interviewed the Chief Evans of the St. Pauls Fire Department. Before interviewing Mr. Turille, the interview questions were sent in advance. However, Chief Evans preferred to have his interview conducted at the time of contacting him to schedule the interview, and therefore was not sent the questions beforehand. For each interview, the communication facilitator asked the interview questions over the phone, while the rest of the team recorded the interview and took notes. Afterward, the interviews were transcribed based on the available recording and notes, then coded into reoccurring themes. Themes were as follows:

1. Discrepancies between Robeson County and St. Pauls
2. Man-made disasters
3. Natural Disasters
4. Response to vulnerable populations
5. Emergency planning and response

These themes were chosen based on reoccurring concepts that were in the interviews. Material from both interviews regarding each theme was then compiled into narratives based on the themes to be used as data. Furthermore, these themes seemed to reoccur during the public
ground-truthing meeting, and there city officials and the volunteer fire department expanded upon these issues.

**Discrepancies Between St. Pauls and Robeson County**
Throughout the interviews and even the public meeting, a theme of tension between the St. Pauls town government and the Robeson County government became apparent. The general consensus from St. Pauls seemed to be that the county did not provide enough resources for the town, and that St. Pauls could not rely on the county for assistance, especially in times of disaster. Perhaps the most extreme example of this was the local preference for using town dispatchers instead of calling 911. While this could seem unreasonable at first glance, it turns out that calls to 911 go to Robeson County dispatch and response time is at least ten minutes longer than if the same call were made directly to the St Pauls dispatch. During one interview, a key informant shared a story about a teenage girl who was driving and hit a sign. Because the calls into emergency services went through a cell phone rather than a landline, they went to the Robeson County dispatch center. It took twenty-five minutes from the time of the call until the first vehicle arrived at the scene. The girl was dead by the time help arrived, and emergency responders do not know whether a faster response time would have been the difference between life and death. More about this disconnect came to light in the public meeting, such as the fact that St. Pauls is not authorized to implement emergency evacuations until receiving instruction or approval from the county. This system can lead to a potentially devastating situation, considering not only the natural disasters St. Pauls faces, but also because of the technological and man-made disasters that may affect St. Pauls and not the rest of the county, such as drainage and sewer overflows, and hazmat spills.

**Technological Disasters**
The most problematic man-made disaster described in the interviews was the recurring failure of the drainage and sewage systems during periods of heavy rainfall. These failures cause flooding in many downtown areas and roads, and can cause sewage from the wastewater treatment plant to flow into local water bodies. It becomes unsafe for citizens to drive in the area, and the local fire department often has to go out during these times to regulate traffic. This type of disaster occurs because of the infrastructural vulnerability of St. Pauls’s sewer and drainage pipes, which were built as public works projects in the 1930s or ’40s, and have not been updated since. An updated system would mitigate many of these flooding occurrences, but unfortunately St. Pauls, as a small community, lacks the funding needed for such a large project.

**Natural Disasters**
Most common natural disasters occurring in St. Pauls seemed to be hurricanes, flash floods (although this disaster is a combination of natural and man-made factors), and severe thunderstorms, due to St. Pauls’ location in the coastal plain. Other, less common, natural disasters described by interviewees include snow storms, ice storms, and tornadoes. However, according to the research done on the town’s history, St. Pauls appeared to be at a slightly higher
risk for tornadoes than addressed in the interviews.

**Response to Vulnerable Populations**

Vulnerable populations in St. Pauls seemed most likely to be the elderly population, especially those suffering from Alzheimer's, those hard of hearing, and those requiring either oxygen supplies or dialysis. The town’s way to respond to the elderly in times of emergency is to keep a physical list of vulnerable people or households, and go door to door to warn them or transport them in the case of an emergency. Another vulnerable population could be the Hispanic population, more specifically the non-English speaking population, but the interviews conveyed the availability of translators in times of emergencies and possibly a “hidden” ability to speak English better than portrayed on a normal basis. In times of emergencies, emergency responders can typically find a bilingual volunteer to ride with them and speak to non-English speakers, but there is no formal translator for the town. We took this population into consideration when creating our lesson plan for the schools, and made the take-home letter available in English as well as Spanish.

**Disaster Planning and Response**

In order to prepare for disasters, town officials keep track on weather reports so they can take appropriate measures. In the event of a disaster, such as a tornado or hurricane, the sirens will release three long bursts as a warning. Another mechanism recently put in place is the reverse 911 call done through Code Red, which automatically calls citizens signed up for the program in times of disaster events. As far as planning, the schools in St. Pauls are designated shelters, and the town manager makes sure that they are stocked with food in the case that an evacuation will have to take place. Furthermore, the town has an Emergency Services Committee, as well as a town disaster plan, although the latter is apparently accessible only to the head of the dispatch center, and not easily obtained by other interested parties.

See Appendix C for a complete set of questions asked during key informant interviews.
Community Meeting

Overview
The town meeting conducted by the capstone team took place on the evening of November 24th, 2011 at the St Pauls Town Hall. The meeting was the product of collaborative efforts between the St Pauls Town Manager Stuart Turille and the UNC Vulnerability Assessment capstone team. It was intended to present the town of St Pauls with the information gathered thus far and gain feedback and other relevant information necessary for furthering the completion of this report. The meeting consisted of twelve fire department volunteers, the chief fireman, three city officials, a North Carolina Community Foundation (NCCF) board member, and the town administrator.

Publicity
Stuart Turille was the primary source of advertisement. The team communicator sent him the advertisement flier made by the capstone team. He then send the flier to the local newspaper, The St. Pauls Review, to publicize the meeting and invite any citizens who would want to come to the meeting. The communicato of the team also sent fliers to local churches of St Pauls as well as to local businesses. Two versions of the advertisement flier were available. One version was in English and the other version was in Spanish. The capstone team made the Spanish version to attract a diverse audience from the citizens of St Pauls. The audience of the meeting turned out to be predominantly local government officials and volunteers with experience and professional expertise relating to emergency management.

St. Pauls Town Hall. Source: http://www.stpaulsnc.gov/index.php/faq/administration
Meeting

The capstone team prepared a number of questions that would be helpful in assessing the vulnerability of particular populations and neighborhoods in St Pauls. Participants at the meeting, who included the town administrator, three commissioners, the fire chief and most of the volunteer firemen, were very willing to answer the questions proposed by the capstone team. Participation was particularly active among the city officials, the town manager, the fire chief, and most of the volunteer firemen. The city officials discussed the history of the emergency system and how it has changed over the years. The major issue that the town officials discussed at the meeting was the discrepancy between St Pauls and Robeson County. St Pauls is supposed to receive information regarding emergencies from the county; however, the county lacks communication with the city. The county is large in area but primarily rural in character, making communication among communities in the county difficult.

Some of the major issues that were discussed were the county-versus-town problem, hazmat spills, flooding in the city downtown, and vulnerable populations. Decisions regarding emergencies in St Pauls must be made with the consent of the county. This leads to delays with emergency planning for St Pauls. The simple task of designating shelters for the residents of St Pauls is delayed due to the consent needed by the county. This puts St Pauls citizens at higher risk during a disaster.

Another issue discussed was the St Pauls emergency plan. The city lacks a formal plan that it can execute during a disaster. Instead, St Pauls relies on past experience for their emergency system. In the time of a disaster, the town manager calls upon other city officials to decide on what is the best way to keep the citizens of St Pauls safe. They call the county for information, read reports sent by meteorologists, and make decisions accordingly. The police and fire station of St Pauls also implements a siren system for the town. The siren system is heard around the majority of the town. Three long blows warn the citizens of a disaster or hazardous situation. Due to its small size, St Pauls officials keep a records of town members who are socially vulnerable, such as the elderly or hard-of-hearing, and warns them of disasters by going to their homes.

The Town Manager reported a large undocumented populated in St Pauls that is not covered by the US Census. The majority of this population is Hispanic and non-English speaking. During a disaster, it can be difficult to communicate with this population. In order to alleviate this problem, town members who are fluent in both languages are requested to communicate to those who do not speak English at all. Volunteers will go around the city and inform those who are unaware of the situation. Recently a reverse 911 system was introduced to the town of St Pauls. This system calls town members and warns them of any disasters that can occur and to take immediate action if need be. This system has made it easier for the town to inform as many citizens as possible. However one major discrepancy of this system lies in reaching out to those who do not have landlines and are not registered with the reverse 911 call system.
Figure: Comments recorded directly on simple maps at public meeting, for incorporation into analysis
Mapping
One of the most informative components of the meeting was the presentation of maps of St Pauls. The maps were created using GIS systems by a member of the team. There were two maps in total; one showed the entire outline of St Pauls and the other more specifically showed the main center. The maps included roads, water bodies, railroad lines, and schools; the maps were primarily left empty to get the input of the town members. Participants of the meeting were asked to provide insight on vulnerable areas of the town and the most common disasters that occur. The purpose of the map for our meeting was to provide a tactile ground-truthing exercise for the attendees of the meeting. From this exercise the team discovered information that they lacked from prior research. An interesting topic discussed during this exercise was the flooding that occurred because of the heavy rainfall in the town. Members pointed out major locations where the majority of flooding occurs in the city. Also, the participants pointed out the locations of hazardous material spills by railroads and transport trucks on the map. At the conclusion of the meeting, the map was covered in marker and notes identifying additional geographically vulnerable locations and environmental threats or critical facilities not found through the Environmental Protection Agency’s website.

Outcome
Vulnerable populations discussed during the meeting were noted to be those with disabilities, elderly, non-English speaking populations and those living in mobile homes. In the event of a disaster, methods used to communicate with the residents of St Pauls include Code Red, Reverse 911, neighbor advice, and informing vulnerable populations door to door. From the meeting, the capstone team gained useful information about the vulnerability assessment that the team may have not found from usual online or printed resources. The comments offered at the meeting led the capstone team to decide on an additional possible deliverable. The town administrator and commissioners discussed how they have found that the major issue with emergency response is communication. Town residents are unaware of what to do if an emergency or disaster were to occur, suggesting that a disaster plan lesson created for young students would be useful. The plan would include where to find help, the most common disasters that occur in St Pauls, what to do in an event of a disaster, and how to be prepared. This document could be distributed to school children, who then would be encouraged to share with their parents, potentially raising the level of awareness on emergency planning among more citizens of St Pauls. This goal was partially met, with a collection of select relevant American Red Cross materials, as well as four new documents drafted and designed by a capstone team member (Appendix B).

Overall the meeting was very informative and enlightening. Much of the information presented at the meeting would not have been accessible to the capstone team with the aid of the Internet resources that the team was initially relying on. The meeting gave a better insight to the team to accurately assess St Pauls vulnerability.
Conclusions

The team gained valuable experience with this project, and generated several products that may be useful for the town. In the process, the team encountered some challenges.

Limitations

Lack of an Available Town Hazard Mitigation Plan
St Pauls did not have a town-specific Hazard Mitigation Plan, which made it harder to assess how well their socially and physically vulnerable populations were covered. A general emergency plan has been devised, but it is accessible to very few individuals—perhaps just one (according to the Fire Chief). Robeson County, on the other hand, has a Hazard Mitigation Plan, which reads like a summary of issues of concern to the county overall, but doesn’t address very local needs. This plan is inadequate for town emergency planning and response, particularly as they relate to vulnerable populations. This hindered a more comprehensive assessment.

Lack of Data
Another limitation the team faced was the lack of data. The worksheets provided by FEMA were supposed to be used to point out inconsistencies or lack of planning regarding social vulnerabilities, or to point out potential policy changes. Finding sufficient data to fill out the worksheets proved to be very difficult. For instance, finding facilities that may be hazardous to the community was not found on the EPA website nor the FEMA website. Before the public meeting, the team found very limited information. Demographic data for St Pauls was available via the 2000 census and the 2005 American Community Survey, but at the town meeting it came out that the community has a large undocumented population that in not accounted for in the data available to the capstone team. Because the town is allocated funding based on the population according to the Census, but the town serves all people who reside there, they are not receiving sufficient funds that reflect the actual number of people to whom they have to provide resources.

Time Constraints
The project proved to be very time-demanding. The time constraints of the project and of persons who are full-time employees prevented the capstone from performing as many interviews as originally intended. The fire chief and town manager, however, were very helpful and supportive. The town meeting conducted by the capstone team was held later than anticipated. This made it even harder to prepare final materials, such as the assessment and final report. Information gained from the meeting was needed to make the assessment.

Deliverables

Our deliverable products, delivered to the town, include some items planned from the start (report, presentation), and some that emerged from the process as feasible and potentially useful.
For example, during the public meeting, the group suggested that it would be useful to engage in disaster planning education with school children, since the classroom provides a captive audience and conveys information on the importance of being prepared to children starting at a young age, with the potential to reach parents as well.

This report covers the motivation for the project, our methods and process, and findings, including worksheets with a wide range of information and data, and analysis of phone interviews.

We also produced a presentation in Powerpoint format, done in collaboration with our colleagues on the Wilson team. Because we met with the team for background discussions, training, and planning, the presentation covers methods and framing that were common to the two teams, although the findings of each team reflect the difference communities.

Because the idea for targeting school children emerged late in the semester, when scheduling dictated we hold the public meeting, the team had limited time to develop curriculum for elementary school children and associated materials for parents. In order to provide materials that help families prepare for and respond to emergencies, one team member reviewed American Red Cross materials generally available to the public, and selected two dozen pages that seem relevant for the area and its residents. She then designed four new pages of material specific to St. Pauls, as draft documents for review by Town staff and possible revision. Finally, she produced a draft translation of the American Red Cross letter to parents in Spanish. NOTE: this letter has not been vetted with a professional translator.

- How to respond to a disaster
- What resources are available in St. Pauls
- To understand the definition of a disaster
- To distinguish between different types of disaster and the response to each of them
- To pass on their knowledge by teaching their parents about disaster planning
- To assist with disaster planning in their homes

Concluding remarks

From the research the team conducted over the semester, it is clear that St. Pauls has physically and socially vulnerable populations that are at risk during times of disaster. Physically vulnerable populations include people living in vulnerable structures such as structurally weak housing and mobile homes. In addition, infrastructure vulnerabilities within St. Pauls include the outdated sewer and drainage system that cause flooding during storm events. This flooding causes dangers for citizens driving through town, and for stores located downtown that get flooded during these events. Socially vulnerable populations include a large elderly and disabled population that could be at risk during disaster events. The lives of people who are on oxygen tanks or on
dialysis may be at risk if electricity goes out during a storm and they cannot use their medical devices or access life sustaining services. Furthermore, the elderly population may be mobility-limited and have a harder time evacuating during a disaster event, and may not even be aware of a disaster if they are unable to hear emergency sirens going off or the Code Red reverse 911 call.

Another socially vulnerable population includes the economically vulnerable, such as the 6.6% of the population without access to a car. Furthermore, census data reported that about 10% of the population does not have phone access, and therefore could not be called during an emergency or subscribe to the Code Red reverse 911 call. However, during the public meeting there was a consensus among those attending that the number was not accurate, and that this number must be the number of residents without a land-line who nevertheless have a cell phone. This number still is significant, however, because of the difficulties with routing cell phone calls to 911. St. Pauls also has a large Hispanic population (at least one-fourth of St. Pauls total population). Of that population, a significant number are considered non-English speakers, which makes them vulnerable in times of disaster since St. Pauls has no formal translator employed.

After identifying these vulnerable populations by completing the worksheets, the key informant interviews, and the public meeting, we believe it is important to consider them in the context of existing disaster plans for St. Pauls. Unfortunately, the team did not gain access to St. Pauls’ disaster plan, which does not seem to be well circulated in St. Pauls (no one the team spoke to had read it, and it seems that only one person in the town has access to it). The team found out that it had not been updated in five or six years. However, the team had access to the current Robeson County Hazard Mitigation Plan, which was updated earlier this year. In analyzing this plan, we found that the socially and physically vulnerable populations in St. Pauls are not explicitly addressed. Although the Robeson County Plan discusses disasters that affect the Robeson County area, and some demographics about St. Pauls, it does not specify a plan of action for St. Pauls in the case of a disaster event, let alone address how to plan for vulnerable populations.

In the absence of a plan that addresses these populations, St. Pauls town officials have had to find other ways to compensate for its vulnerable populations in times of disaster. The town uses the list they created to contact and assist vulnerable households during emergencies. Furthermore, the town encourages its residents to call local dispatch in times of emergency instead of 911 to minimize response time. Although this system seems to work for the small community of St. Pauls, the assessment shows that there is room for improvement in the communication between St. Pauls and vulnerable residents. There could also be many improvements in disaster planning coordination between St. Pauls and Robeson County, particularly in the power that St. Pauls has to designate and orchestrate its own disaster plans, as well as the distribution of resources within the county, and the resources that have been made available to St. Pauls.
Appendix A:
Worksheets from *Community-Based Hazard Vulnerability Assessment*

Worksheet 1: Taskforce Membership—for possible future use
Worksheet 2: Taskforce Contact Information—for possible future task force
Worksheet 3: Community Demographics
Worksheet 4: Existing Information
Worksheet 5: Identifying Hazards
Worksheet 6: Ranking Hazards
Worksheet 7: Critical Facilities Inventory
Worksheet 8: Demographics
Worksheet 9: Future Inventory of People and Property
Worksheet 10: Employment Center Inventory
Worksheet 11: Environmental Threat Inventory
## Worksheet 1: Taskforce Membership (to be used for possible new task force created in the future)

<table>
<thead>
<tr>
<th>Possible Taskforce Member Affiliations and Characteristics</th>
<th>Represented?</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Agencies</strong></td>
<td></td>
</tr>
<tr>
<td>Public Safety/Emergency Management Office</td>
<td></td>
</tr>
<tr>
<td>Department of Health (include Office of Aging)</td>
<td></td>
</tr>
<tr>
<td>Department of Planning</td>
<td></td>
</tr>
<tr>
<td>Department of Social Services</td>
<td></td>
</tr>
<tr>
<td>Fire and Law Enforcement</td>
<td></td>
</tr>
<tr>
<td>School</td>
<td></td>
</tr>
<tr>
<td>State Agencies</td>
<td></td>
</tr>
<tr>
<td><strong>Community Groups</strong></td>
<td></td>
</tr>
<tr>
<td>Community Development Corporations (CDCs)</td>
<td></td>
</tr>
<tr>
<td>Faith-based Organizations</td>
<td></td>
</tr>
<tr>
<td>Other Nonprofit Groups</td>
<td></td>
</tr>
<tr>
<td>Small Business Owners</td>
<td></td>
</tr>
<tr>
<td>Private Companies and Organizations</td>
<td></td>
</tr>
<tr>
<td><strong>Residents</strong></td>
<td></td>
</tr>
<tr>
<td>Elderly</td>
<td></td>
</tr>
<tr>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Low Income</td>
<td></td>
</tr>
<tr>
<td>Non-English Speakers</td>
<td></td>
</tr>
<tr>
<td>Race/Ethnic Minorities</td>
<td></td>
</tr>
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</table>
Worksheet 2: Taskforce Contact Information (Note—potential members of a task force that could be formed in the future)

<table>
<thead>
<tr>
<th>Name</th>
<th>Telephone</th>
<th>E-mail Address</th>
<th>Title/Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Westbrook, Gordon</td>
<td>910-865-5164</td>
<td></td>
<td>Mayor</td>
</tr>
<tr>
<td>Ayers, W. David</td>
<td>910-865-5164</td>
<td></td>
<td>Commissioner</td>
</tr>
<tr>
<td>Cain, Sandra</td>
<td>910-865-5164</td>
<td></td>
<td>Commissioner</td>
</tr>
<tr>
<td>Johnson, Ghee Blain</td>
<td>910-865-5164</td>
<td></td>
<td>Commissioner</td>
</tr>
<tr>
<td>McAllister, Mr. Sam</td>
<td>910-865-5164</td>
<td></td>
<td>Commissioner</td>
</tr>
<tr>
<td>Terry, McClure, Jr.</td>
<td>910-865-5164</td>
<td></td>
<td>Commissioner</td>
</tr>
<tr>
<td>Weindel, Gerard J.</td>
<td>910-865-5164</td>
<td></td>
<td>Commissioner</td>
</tr>
<tr>
<td>Chief Hagens, Thomas</td>
<td>910-865-5155</td>
<td></td>
<td>Police Department VP</td>
</tr>
<tr>
<td>Chief Jackson, Evans</td>
<td>910-865-4603</td>
<td></td>
<td>Fire department chief</td>
</tr>
<tr>
<td>McDuffie, A. Wayne</td>
<td></td>
<td></td>
<td>Public works department</td>
</tr>
<tr>
<td>Holloman, Daniel</td>
<td></td>
<td></td>
<td>Public works department</td>
</tr>
<tr>
<td>Johnson, Earl</td>
<td></td>
<td></td>
<td>EMS commander</td>
</tr>
<tr>
<td>Dean, Jacqueline</td>
<td></td>
<td></td>
<td>Vice commander, EMS</td>
</tr>
<tr>
<td>Chief Inman, Alex</td>
<td>910-865-5368</td>
<td></td>
<td>2nd fire department</td>
</tr>
<tr>
<td>Captain Overton, Michael</td>
<td></td>
<td></td>
<td>2nd fire department</td>
</tr>
<tr>
<td>Caudell, Dohn</td>
<td></td>
<td></td>
<td>Planning board member</td>
</tr>
<tr>
<td>Connors, George</td>
<td></td>
<td></td>
<td>Planning board member</td>
</tr>
<tr>
<td>Ferguson, Libby</td>
<td></td>
<td></td>
<td>Planning board member</td>
</tr>
<tr>
<td>Ferguson, Tim</td>
<td></td>
<td></td>
<td>Planning board member</td>
</tr>
<tr>
<td>Glover, Paul</td>
<td></td>
<td></td>
<td>Planning board member</td>
</tr>
<tr>
<td>Gudauskas, John</td>
<td></td>
<td></td>
<td>Planning board member</td>
</tr>
<tr>
<td>Jackson. Chris</td>
<td></td>
<td></td>
<td>Planning board member</td>
</tr>
<tr>
<td>McDonald, Ronald</td>
<td></td>
<td></td>
<td>Planning board member</td>
</tr>
<tr>
<td>Quick, Jerry</td>
<td></td>
<td></td>
<td>Planning board member</td>
</tr>
</tbody>
</table>
# Worksheet 3: Community Demographics

<table>
<thead>
<tr>
<th>Group</th>
<th>County</th>
<th>NC</th>
<th>USA</th>
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</thead>
<tbody>
<tr>
<td><strong>Physically Vulnerable</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elderly (65+) %</td>
<td>12</td>
<td>12.9</td>
<td>13.0</td>
</tr>
<tr>
<td>Single Head of House (%)</td>
<td>18.2</td>
<td>NF</td>
<td>29.5</td>
</tr>
<tr>
<td>Physically Disabled (%)</td>
<td>32</td>
<td>9.3</td>
<td>17.0</td>
</tr>
<tr>
<td>Institutionalized Persons (%)</td>
<td></td>
<td>1.3</td>
<td>No Data</td>
</tr>
<tr>
<td><strong>Economically Vulnerable</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median household income $</td>
<td>St. Pauls</td>
<td>$22,347</td>
<td>$43,754</td>
</tr>
<tr>
<td>Households living below poverty line (%)</td>
<td>22.7</td>
<td>16.2</td>
<td>14.3</td>
</tr>
<tr>
<td>Vehicle availability (% of households)</td>
<td>6.6</td>
<td>No Data</td>
<td>91.9</td>
</tr>
<tr>
<td><strong>Culturally and Historically Vulnerable</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-English speaking (%)</td>
<td>20.7</td>
<td>9.6</td>
<td>19.6</td>
</tr>
<tr>
<td>Ethnicity:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic (%)</td>
<td>26.4</td>
<td>8.4</td>
<td>16.3</td>
</tr>
<tr>
<td>Non-Hispanic (%)</td>
<td>73.6</td>
<td>91.6</td>
<td>83.7</td>
</tr>
<tr>
<td>Race:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African-American (%)</td>
<td>12.9</td>
<td>21.5</td>
<td>12.6</td>
</tr>
<tr>
<td>American-Indian (%)</td>
<td>8.1</td>
<td>1.3</td>
<td>.9</td>
</tr>
<tr>
<td>Asian-American (%)</td>
<td>0</td>
<td>2.2</td>
<td>4.8</td>
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<tr>
<td>White (%)</td>
<td>65.1</td>
<td>68.5</td>
<td>72.4</td>
</tr>
<tr>
<td>Two or more races (%)</td>
<td>0.7</td>
<td>2.2</td>
<td>2.9</td>
</tr>
<tr>
<td>Other (%)</td>
<td>13.2</td>
<td>4.3</td>
<td>7.1</td>
</tr>
<tr>
<td><strong>Structurally Vulnerable</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residents living in mobile homes (%)</td>
<td>12.9</td>
<td>14.3</td>
<td>No Data</td>
</tr>
<tr>
<td>Other (%)</td>
<td>9.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau, American Factfinder
### Worksheet 4: Existing Information

<table>
<thead>
<tr>
<th>Document</th>
<th>Available?</th>
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</thead>
<tbody>
<tr>
<td>City or County Comprehensive Plans and Reports</td>
<td></td>
</tr>
<tr>
<td>Comprehensive Plan</td>
<td></td>
</tr>
<tr>
<td>Source:</td>
<td></td>
</tr>
<tr>
<td>Local or county emergency management plans</td>
<td></td>
</tr>
<tr>
<td>Robeson County Hazard Mitigation Plan, source:</td>
<td>X</td>
</tr>
<tr>
<td>Pet plan, source: <a href="http://www.co.robeson.nc.us/docs/pet.pdf">http://www.co.robeson.nc.us/docs/pet.pdf</a></td>
<td>X</td>
</tr>
<tr>
<td>St. Pauls Emergency Disaster Plan</td>
<td>X</td>
</tr>
<tr>
<td>Source: <a href="http://publichealth.southernregionalahec.org/robeson/report.html">not accessible to capstone team</a></td>
<td></td>
</tr>
<tr>
<td>Local Health Department reports or plans</td>
<td>X</td>
</tr>
<tr>
<td>Robeson County Community Health Assessment</td>
<td></td>
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<tr>
<td>2009 Robeson County—State of the County Health Report</td>
<td></td>
</tr>
<tr>
<td>Office on Aging reports or plans</td>
<td>X</td>
</tr>
<tr>
<td>Source:</td>
<td></td>
</tr>
<tr>
<td>Other relevant reports or documents</td>
<td></td>
</tr>
<tr>
<td>Flood damage prevention ordinance</td>
<td>X</td>
</tr>
<tr>
<td>Zoning ordinance</td>
<td>X</td>
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</table>
## Worksheet 5: Identifying Hazards

<table>
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<tr>
<th>Disaster</th>
<th>Past Occurrences</th>
<th>Source of information</th>
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</thead>
<tbody>
<tr>
<td>Avalanche</td>
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<tr>
<td>Coastal Erosion</td>
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<tr>
<td>Coastal Storm</td>
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<td></td>
</tr>
<tr>
<td>Dam Failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drought</td>
<td></td>
<td>.</td>
</tr>
<tr>
<td>Earthquake</td>
<td>September 25, 2006 September 27, 2006</td>
<td></td>
</tr>
<tr>
<td>Expansive Soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extreme Heat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hailstorm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hurricane</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land Subsidence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe Winter Storm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tornado</td>
<td>3/27/2009, injury, $35,000 in property damage</td>
<td>USA.com, citydata</td>
</tr>
<tr>
<td>Tornado</td>
<td>4/15/2009, 1 death, 4 injuries, $200,000 in property damage</td>
<td>USA.com, citydata</td>
</tr>
<tr>
<td>Tsunami</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wildfire</td>
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<td></td>
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<tr>
<td>Windstorm</td>
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<td></td>
</tr>
<tr>
<td>Other</td>
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</tbody>
</table>
## Worksheet 6: Ranking Hazards

<table>
<thead>
<tr>
<th>Hazard or Event</th>
<th>Extent</th>
<th>Frequency</th>
<th>Severity</th>
<th>Economic Impact</th>
<th>Overall Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dam failure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extreme heat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earthquake</td>
<td>Possible/unlikely</td>
<td>Critical</td>
<td></td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Expansive soils</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floods</td>
<td>Likely</td>
<td>Critical</td>
<td></td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Hailstorm</td>
<td>Possible</td>
<td>Limited</td>
<td></td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Hurricane</td>
<td>Possible</td>
<td>Critical</td>
<td></td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Land subsidence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riverine erosion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thunderstorms</td>
<td>Highly likely</td>
<td>Limited</td>
<td></td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Tornado</td>
<td>Possible</td>
<td>Critical/ catastrophic</td>
<td></td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Wildfires</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Windstorm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter storms</td>
<td>Possible</td>
<td>Limited/ critical</td>
<td></td>
<td>Medium</td>
<td></td>
</tr>
</tbody>
</table>
### Worksheet 7: Critical Facilities Inventory

<table>
<thead>
<tr>
<th>Type of Facility</th>
<th>Name of Facility</th>
<th>Address</th>
<th>Located in hazard zone?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools</td>
<td>St. Pauls Elementary</td>
<td>222 MLK Drive</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>St. Pauls Middle School</td>
<td>526 Westshaw St</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>St. Pauls High School</td>
<td>648 Old Stage Rd</td>
<td>No</td>
</tr>
<tr>
<td>Hospital(s)</td>
<td>No hospital or medical center located in St. Pauls. Closest regional medical centers are in Lumberton and Fayetteville</td>
<td>300 West 27th St. Lumberton NC 101 Robeson St. Fayetteville NC</td>
<td>N/A</td>
</tr>
<tr>
<td>Police Station(s)</td>
<td>St. Pauls Police Station</td>
<td>210 ½ West Blue St</td>
<td>No</td>
</tr>
<tr>
<td>Fire Station(s)</td>
<td>St. Pauls Fire Department</td>
<td>585 West McLean St</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Tobermorn Volunteer Fire Dept</td>
<td>1759 Pages Lake Rd</td>
<td>No</td>
</tr>
<tr>
<td>Emergency Shelter(s)</td>
<td>See shelter list at: <a href="http://www.co.robeson.nc.us/shelter.htm">http://www.co.robeson.nc.us/shelter.htm</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daycare Center(s)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing Home(s)</td>
<td>Cromarties Rest Home</td>
<td>1107 East Worth St</td>
<td>No</td>
</tr>
<tr>
<td>Other</td>
<td>National Guard</td>
<td>705 N Old Stage Rd</td>
<td>No</td>
</tr>
</tbody>
</table>
Worksheet 8: Demographics

<table>
<thead>
<tr>
<th>Social Characteristics</th>
<th>Estimated #</th>
<th>Percent</th>
<th>U.S.</th>
<th>Margin of Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average household size</td>
<td>2.63</td>
<td>2.60</td>
<td>+/- 0.32</td>
<td></td>
</tr>
<tr>
<td>Average family size</td>
<td>3.30</td>
<td>3.19</td>
<td>+/- 0.35</td>
<td></td>
</tr>
<tr>
<td>Population 25 years and over</td>
<td>1411</td>
<td></td>
<td>+/-242</td>
<td></td>
</tr>
<tr>
<td>High school graduate</td>
<td></td>
<td>64.6</td>
<td>84.6</td>
<td></td>
</tr>
<tr>
<td>Bachelors degree</td>
<td></td>
<td>16.9</td>
<td>27.5</td>
<td></td>
</tr>
<tr>
<td>Civilian veterans</td>
<td>182</td>
<td>11.2</td>
<td>10.1</td>
<td>+/-69</td>
</tr>
<tr>
<td>Male</td>
<td>420</td>
<td>52.3</td>
<td>52.3</td>
<td>+/-107</td>
</tr>
<tr>
<td>Female</td>
<td>379</td>
<td>43.6</td>
<td>48.4</td>
<td>+/-94</td>
</tr>
</tbody>
</table>

Source: US Census Bureau, American FactFinder

Worksheet 9: Future Inventory of People and Property

<table>
<thead>
<tr>
<th>Type of building</th>
<th># Buildings</th>
<th># People</th>
<th>Value ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-family detached</td>
<td>60-100</td>
<td>180-300</td>
<td>5.1-8.1 million</td>
</tr>
<tr>
<td>Single-family attached</td>
<td>50-70</td>
<td>150-210</td>
<td>3.5-4.9 million</td>
</tr>
<tr>
<td>Mobile homes</td>
<td>50-70</td>
<td>150-210</td>
<td>2.2-3.1 million</td>
</tr>
<tr>
<td>Multi-family</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other, e.g., state industrial park</td>
<td>2</td>
<td>25-100</td>
<td>550,000</td>
</tr>
</tbody>
</table>
**Worksheet 10: Employment Center Inventory**

<table>
<thead>
<tr>
<th>Employer or Employment Center</th>
<th>Physical Address</th>
<th>Employees (#)</th>
<th>Located in Hazard Area?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campbell Soup Co.</td>
<td>2120 NC Highway 71 N</td>
<td>150</td>
<td>No</td>
</tr>
<tr>
<td>Mountaire Farms</td>
<td>17269 NC Highway 71 N</td>
<td>100</td>
<td>No</td>
</tr>
<tr>
<td>Du Pont</td>
<td>22828 NC Highway 87 W</td>
<td>150</td>
<td>No</td>
</tr>
<tr>
<td>Prestage Farms, Inc.</td>
<td>4470 Highway 20 E</td>
<td>250</td>
<td>No</td>
</tr>
<tr>
<td>Mueller Steam Specialties</td>
<td>1491 NC Highway 20 W</td>
<td>130</td>
<td>No</td>
</tr>
<tr>
<td>MSA Paraclete</td>
<td>106 E Clark St</td>
<td>100</td>
<td>Yes</td>
</tr>
<tr>
<td>St. Pauls Elementary School</td>
<td>222 Martin Luther King St</td>
<td>65</td>
<td>No</td>
</tr>
<tr>
<td>St. Pauls High School</td>
<td>648 Old Stage St</td>
<td>80</td>
<td>No</td>
</tr>
<tr>
<td>St. Pauls Middle School</td>
<td>526 W Shaw St</td>
<td>50</td>
<td>No</td>
</tr>
<tr>
<td>Walane Gas Co.</td>
<td>230 N 5th Street</td>
<td>50</td>
<td>No</td>
</tr>
<tr>
<td>Future Employer or Employment Center</td>
<td>Physical Address</td>
<td>Employees (#)</td>
<td>Located in Hazard Area?</td>
</tr>
<tr>
<td>State Industrial Park</td>
<td>I-95</td>
<td>25-100</td>
<td>Yes</td>
</tr>
<tr>
<td>Half Baked</td>
<td>117 N Second St.</td>
<td>6-10</td>
<td>No</td>
</tr>
<tr>
<td>D.D. McColl, Inc.</td>
<td>109 W Broad St</td>
<td>10-15</td>
<td>No</td>
</tr>
</tbody>
</table>
## Worksheet 11: Environmental Threat Inventory

<table>
<thead>
<tr>
<th>Environmental Threat</th>
<th>Physical Location</th>
<th>Type of hazard</th>
<th>Natural Hazard Area?</th>
<th># People at Risk</th>
<th>Level of Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSA Paraclete</td>
<td>106 E Clark St</td>
<td>Possible chemicals: Kevlar</td>
<td>Yes</td>
<td>100</td>
<td>High</td>
</tr>
<tr>
<td>State Industrial Park</td>
<td>Interstate 95</td>
<td>Chemicals</td>
<td>Yes</td>
<td>25-100</td>
<td>Medium</td>
</tr>
<tr>
<td>Rail Line—Dupont</td>
<td>Passes through St. Pauls</td>
<td>Chemicals going to DuPont</td>
<td>Unknown</td>
<td>Unknown</td>
<td>High</td>
</tr>
</tbody>
</table>
Appendix B: Curricular Materials

*Designed by capstone team*

Code Red
I hear sirens
Dear Parents (with Spanish translation)
Disaster plan

*Red Cross materials for elementary school children*

Family contact plan—2 pages
Family disaster plan—2 pages
Family disaster kit—2 pages
What do we need?—2 pages
Emergency Watches and Warnings—1 page
Call 9-1-1—1 page
Warning—Act fast—2 pages
Hurricane safety—3 pages
Flash flood safety tips—1 page
What to do in a thunderstorm—4 pages
Help reduce hazards—2 pages
Masters of Disaster certification—1 page
Tell your parents to register your telephone number for CodeRED online!

CodeRED is an emergency response system. It sends telephone messages warning households about disasters coming your way!

If you get a call from CodeRED, be sure to tell your parents what the message says.

©P Smith, 2011
I Hear Sirens!

If there is an emergency, the dispatch center will play sirens. If you hear a siren, be sure to turn on the closest television or radio to find out what emergency is headed your way!

Remember, stay in your homes unless officials recommend evacuation. Driving on the roads is unsafe to your passengers and other drivers trying to get home safely!

© P Smith, 2011
Dear Parents,

This week in school, your child will be learning about different types of disasters and how to respond to them. They will bring home a few activities for you to do as a family. Please participate in helping them learn about disaster planning to make sure that the Town of St. Pauls is well prepared in the case of an emergency.

Your students will learn about what a disaster is, and will also be learning about the St. Pauls siren system and the implementation of the CodeRED system from Robeson County. In case they ask you questions, here is a summary of emergency protocol.

In the event of an emergency, the town will blare sirens. If you hear sirens, turn on the nearest radio or television to find out more information about the disaster headed your way. It is important to pay attention to these warnings, and find out if Disaster Personnel advise you to stay off roads or to evacuate to an emergency shelter.

You can sign up for the CodeRED system through the Robeson County website, at www.co.robeson.nc.us/codered.htm. This is a communication service for emergency notifications. In the case of an emergency that requires immediate action, such as evacuation, contaminated water, hazardous chemical spill, severe thunderstorm, flash flood, tornado warning, etc., CodeRED will send you an emergency message via your telephone. Your family can register your home, cell phone, or business phone number, but be sure to include your physical address instead of a P.O. Box so that the information from your call is pertinent to your location.

If you receive a CodeRED message,
• Listen carefully
• Follow instructions
• Do not hang up until you hear the entire message
• Do not call 911 unless instructed to do so

If you look through the information they bring home, you will see that the town now advises individuals to call the local dispatch number, 910-865-5155 in case of an emergency. Do not call 911 if assistance is needed immediately.

Thank you for being good role models for our children and helping us to make sure that St. Pauls is a safe place to live, even in an emergency!

Regards,
The Town of St. Pauls

©P Smith, 2011
TO HELP STUDENTS LEARN HOW TO PREPARE FOR AN EMERGENCY

Children and families will be less confused and scared during disasters if they are knowledgeable about different types of disasters and how to respond to them, and if they know who in the community to get help from.

What is a disaster?
What do I do?

*Key Terms*

<table>
<thead>
<tr>
<th>Disaster</th>
<th>Hurricane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency</td>
<td>Siren</td>
</tr>
<tr>
<td>Prepare</td>
<td>CodeRED</td>
</tr>
<tr>
<td>Tornado</td>
<td>Evacuate</td>
</tr>
<tr>
<td>Flood</td>
<td>Emergency Shelter</td>
</tr>
</tbody>
</table>
Family Contact Plan

Page 1 of 2

I understand—

☐ How to call 9-1-1 in an emergency. I know what a real emergency is. If there is a fire, I get out of the building BEFORE we call 9-1-1.

☐ Our family has a landline touch-tone phone that does not require electricity, in case the power is out.

☐ If there is an emergency while I'm at school, I will wait until I can be picked up. I know that could be quite a long time. The school will let me go only with adults my family lists on the school's emergency information sheet.

☐ If local phones don't work, our family will call our out-of-town emergency contact:

☐ If phones are not working, I can try to e-mail emergency contacts that are listed on My Yellow Pages.

☐ If the phones don't work, I need to be patient.

☐ My family and I must keep My Yellow Pages information up-to-date.

Keep this sheet as part of your family disaster plan.
Family Contact Plan

Staying in contact is part of any good family disaster plan. Go through the checklist below to make sure your family has correct information. Then, fill in *My Yellow Pages* with the names and numbers your family needs.

I know and can tell you—

- My name, complete address and phone number and the nearest cross street to my home.
- The full name of my parent, guardian and/or caretaker.
- My family’s meeting places:
  - Outside our home (by a tree or streetlight)
  - Outside our neighborhood (at friend’s or relative’s home)

- If there’s an emergency, ____________________ will pick me up from school.
- Where I keep *My Yellow Pages*, all the important numbers I need to stay in contact. (in my backpack, school bag)
Family Disaster Plan

Your family disaster plan includes ways to reduce hazards, a family contact list and a supplies kit to meet the needs of everyone in case of a disaster or emergency situation. Here are some final points to consider, including plans to get to safety and stay safe.

It is most important to discuss all the steps in your disaster plan and to practice safe actions for different types of emergency. Planning and practicing will keep your family safe.

Be familiar with the school’s plan—
- Students and parents know the school’s emergency plan.
- If an emergency happens while children are at school, they must follow the direction of the teachers, principal or emergency teams.
- Students know to stay at school or with school personnel in the event of a disaster.

Neighbors helping neighbors
- Meet with your neighbors to plan how the neighborhood could work together after a disaster.
- Agree to check on each other in the event of an emergency. Form a “tree” where everyone checks on one or two other neighbors.
- Determine where children might go for help in the neighborhood.

If a disaster happens, we plan to—
- Drop, Cover and Hold On if there is an earthquake or explosion.
- Move to a safe place, in the basement or away from windows, and Drop, Cover and Hold On if there is a tornado.
- Get out and get help if there is a fire.
- Get to higher ground if there is danger of a flood.
- Stay inside if there is danger outside.
- Follow our family contact list.
After the emergency passes—
- Check everyone around you; give first aid when possible and get help for seriously injured people.
- Wear protective clothing and sturdy shoes to avoid injury from debris.
- If the building is unsafe for any reason, get everyone outside quickly.
- Sniff for gas leaks. If you smell gas or suspect a leak, get everyone outside quickly, and turn off the main gas valve.

Next steps to take—
- Listen to radio and television reports for instructions. Follow the directions of local emergency officials.
- Carefully confine or secure your pets with a carrier or leash. Remember, they may be frightened and might bite or scratch.
- Check on your neighbors.
- Stay away from fallen power lines.
- Following an earthquake, expect aftershocks that might cause more damage. Stay where nothing can fall or cause injury.

For more detailed information about a family disaster plan, check the American Red Cross Web site at http://www.redcross.org/images/pdfs/code/family_disaster_plan.pdf.

Keep this sheet as part of your family disaster plan.
Family Disaster Supplies Kit

Name ________________________________

One important step in any family disaster plan is to have needed supplies ready. It’s a good idea to prepare to be on your own, without power or running water, for three days or more. Any extra supplies will help, so do the best you can.

Complete this list as a family. Put a check mark by those items you already have and leave the check box blank by those items you plan to get.

**Water** (1 gallon [4 liters] per person per day for drinking and washing)
- We need ___________ gallons (liters) for ___________ people.

**Food** (packaged, canned or dried foods that will not spoil, plus serving utensils and a nonelectric can opener)
- We have enough food for ___________ days.
- We have food for special diets (babies, elderly or infirm).
- We have utensils.

**Medical Needs**
- Extra supplies of essential medications and a list of medicines, including dosage
- First aid kit and handbook
- Extra eyeglasses
- Other needs, such as hearing aid batteries ________________

**Tools**
- Battery-powered radio or weather radio with extra batteries
- Flashlights with extra batteries
- Tool kit
- Duct tape and heavy plastic sheeting to cover windows and doors

American Red Cross

Visit the American Red Cross Web site at www.redcross.org/disaster/masters

FAMILY DISASTER SUPPLIES KIT
Masters of Disaster® Be Disaster Safe, Level 1
Copyright 2007 The American National Red Cross
Sanitation Supplies

☐ Soap or hand cleaner and cleaning supplies
☐ Plastic bags
☐ Bleach
☐ Toilet paper and other essential paper goods

Special Supplies

☐ For baby or other family members ___________________________
☐ Emergency kit in the car (water, food, first aid supplies and walking shoes.)
☐ Pet supplies (food, carrier or leash, and extra water for a large animal)

Check your family disaster supplies kit regularly to replace items that become out-of-date, replace batteries or update special needs. For a more detailed list, check the American Red Cross at http://www.redcross.org/images/pdfs/code/disaster_supplies_kit.pdf.

Keep this sheet as part of your family disaster plan.
If there is no electricity, no running water and stores are closed, there are many items every family will need in an emergency. These items belong in a family disaster supplies kit. Some items, however, are things we might want, but do not need.

**Needed Items**

- Portable, battery-powered radio or TV
- Toothbrush, toothpaste, soap
- Flashlight and batteries
- First aid kit

Visit the American Red Cross Web site at www.redcross.org/disaster/master
What Do We Need?

Needed Items

- Water
- Change of clothes
- Food
- Blankets

Visit the American Red Cross Web site at www.redcross.org/disaster/masters
Emergency WATCHES and WARNINGS

Page 1 of 1

It is important to understand the meanings of emergency bulletins on radio and television and whether or not they apply to you.

WATCH
A severe weather WATCH means—
   Severe weather may be on the way. Be ready to take steps to get to safety if conditions worsen.

WARNING
A severe weather WARNING means—
   Severe weather is happening right now. Get to safety right away.

What kinds of severe weather or other emergencies might you experience near your home?

Where do you live?
   City or Town: ____________________________
   County: ________________________________
   State: _________________________________
   Area in the State:
      North    South    Central    East    West

American Red Cross

Visit the American Red Cross Web site at www.redcross.org/disaster/masters
Call 9-1-1

Directions: Practice making emergency calls and giving the correct information with play phones or disconnected phones. Keep this information to use in case of an emergency.

In most places, if you need a police officer, a firefighter or an ambulance, you need to call just one phone number: 9-1-1. If your community does not have 9-1-1 access, please use the correct number for emergency response:

____________________________________.

Tell the emergency dispatcher three things:

Your name: ________________________________

Your address: ______________________________

(Or, describe where you are if you’re not at home.)

The emergency:

American Red Cross

Visit the American Red Cross Web site at www.redcross.org/disaster/masters

Masters of Disaster® Be Disaster Safe, Level 1
Copyright 2007 The American National Red Cross
**WARNING: Act Fast**

**Directions:** Use the information below to plan a “safe place” with your family in case of a tornado.

**Go to a safe place.**
Drop and cover your head and neck.

If you are outside, go inside.

If you are stuck outside, lie down in a ditch.

---

Visit the American Red Cross Web site at www.redcross.org/disaster/masters

---

WARNING: ACT FAST
Masters of Disaster® Tornadoes, Level 1
Copyright 2007 The American National Red Cross
WARNING: Act Fast

Go to a safe place.
Drop and cover your head and neck.

In a closet or hallway.
Under the stairs or workbench.

In a storm cellar.
In a bathroom.

Visit the American Red Cross Web site at www.redcross.org/disaster/masters
Hurricane Safety Rebus

Directions: Search old magazines to find pictures, or draw your own pictures, to use in place of the underlined words in the sentences below.

During a Hurricane WATCH

1. In a hurricane WATCH, bring inside things that might blow in the wind.

2. Check for bicycles, toys, and your pets.
During a Hurricane WARNING

3. In a hurricane Warning, listen to radio or television reports and follow directions.

4. Lock all windows and doors and protect your home from wind and rain.
After a Hurricane

5. After a hurricane, you and your family must watch out for danger.

6. Stay away from fallen power lines, flooded areas and storm drains.
Flash Flood Safety Tips

1. Find out where a flash flood could happen.
   Stream, river, canal, ditch, storm drain, flood control channel, canyon, cave.

2. Check the weather before going to these places.

3. Listen to and follow the rules.
   If you hear on radio or see on TV that there is a—
   • FLASH FLOOD WATCH, that means it is raining hard nearby.  
     Stay indoors.  
     Change your outdoor plans.
   • FLASH FLOOD WARNING, that means a flash flood is happening nearby.  
     Stay indoors.  
     Tell a grown-up.
What to Do in a Thunderstorm

How can you stay safe during a thunderstorm? Know what to do.

When I hear thunder...

• If I'm on the phone, then...

• If I'm outside, then...

• If I'm watching television, then...
What to Do in a Thunderstorm

• If I’m playing football, then...

• If I’m at my friend's house, then...

• If I’m playing a video game, then...

• If I’m playing with my portable electronic game, then...

Visit the American Red Cross Web site at www.redcross.org/disaster/master
What to Do in a Thunderstorm

• If I’m in a boat, then...

• If I’m outside on my grandmother’s farm, then...

• If I’m taking a bath, then...

• If I’m playing cards, then...

Visit the American Red Cross Web site at www.redcross.org/disaster/masters
What to Do in a Thunderstorm

Page 4 of 4

• If I'm in the car, then...

• If I'm watering the garden, then...

• If I'm reading a book, then...

Visit the American Red Cross Web site at www.redcross.org/disaster/matters

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Help Reduce Hazards

Making your home safer is a key part of any family disaster plan. During a disaster, objects in your home can cause injury or damage. Anything that can move, fall, break or cause a fire is a home hazard.

Consider these points as you walk around your home and reduce the hazards:

Secure items that can shift or fall.
- Look in every room to see what could tip over or fall during an earthquake or if a child climbs on it.
- Attach tall furniture like bookcases and cabinets to wall studs.
- Secure televisions, computers and other heavy items to shelves or walls.
- Hang heavy objects, such as large pictures or mirrors, away from beds and chairs.
- Make sure that the water heater is strapped to studs.
- Install secure latches or locking devices on all cabinet doors.

Check for fire hazards.
- Keep lighters, matches and candles out of the reach of children.
- Keep space heaters and candles away from curtains and furniture.
- Never leave a lighted candle unattended or with children.
- Make sure that flammable items are away from heat sources—fireplaces, stovetops or lamps.
- Store hazardous and flammable materials on low shelves in locked cupboards, away from heat sources and children.
Help Reduce Hazards

General safety:

☐ Keep hallways and stairs clear of obstacles to prevent tripping and to ensure easy evacuation.

☐ Keep electric cords and other obstacles away from evacuation paths.

☐ Make sure that there are two clear and safe exits from every room in your home.

☐ Place and maintain smoke alarms on each level of your home, inside and outside each bedroom and right outside the kitchen.

☐ Identify and secure any areas in your home that should be off-limits to children.

☐ Identify any areas outside your home that should be off-limits to children because of the danger of flood, flash flood or other hazards.

Keep this sheet as part of your family disaster plan.
The American Red Cross congratulates the ________________ Family

for taking steps at home and in your community to become prepared for disasters.

Together, our family has -
(Please check each item below as you complete it.)

- Made a family disaster plan and practiced it.
- Identified two family meeting places.
- Created a family communications plan.
- Made a disaster supplies kit.
- Learned more about the kinds of disasters that could happen in our neighborhood.
- Helped others learn about the dangers of fires, floods, lightning, tornadoes, hurricanes, earthquakes and other disasters.

Signed,
(have family members sign below)

American Red Cross
Appendix C: Interview Questions

These questions were used in the key informant interviews conducted with Wilson County, the City of Wilson, and Town of St. Pauls. The key informants are those identified in the IRB.

Questions
We may want to have separate lists of questions for each stakeholder (e.g. a set of questions for the mayor, different questions for a business on Main St.)

Disaster-specific
We want to ask you about specific events, but just to get started, what are the most common emergencies, natural disasters, or infrastructural failures that you deal with?

1. What was the most recent notable disaster?
   a. How much time did you have to prepare for the most recent disaster faced by your community?
   b. Were there steps or actions in your current plan that you were unable to complete?
2. In general, what steps or actions do you usually take to prepare for possible disasters?
3. Are there certain populations that are particularly affected by disasters more than others?
   a. How does the town/city/county address these populations that are more affected by disasters?
   b. How does the composition of the vulnerable population change with the type of disaster?
4. How do you coordinate disaster planning with schools, hospitals, nursing homes, day cares, and prisons?
   a. Who can we talk to from each of these groups?
5. Are there any changes you would like to see in your community’s disaster preparedness, including planning, notification, response, or other procedures?
   a. How can we best assist your community in disaster mitigation?
6. Is there anything else that you would like to share regarding disaster planning in your community?
   a. Who else in the community should we talk to?

Potential Case Study Questions
- When did you become aware of the potential for a major storm? For example, how long before Tropical Storm Nicole arrived did you know it was a potential threat?
- How and what did you learn about the impending storm?
- What steps or actions did you take to prepare for possible disaster?
- Were there steps or actions you wanted to take but were not able to complete?
- From your experience, what steps are most important for preparing for a disaster?
- From your experience, are there any changes you would recommend making to your community’s disaster preparedness, including planning, notification, response, or other procedures?