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ST. CHARLES PARISH

HAZARD MITIGATION PLAN

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Project Number 447-004

PROVIDENCE

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1.0 INTRODUCTION

St. Charles Parish prepared this Hazard Mitigation Plan (HMP) to be better equipped for disasters before they occur. It is our hope that, with proper planning, our citizens can be more knowledgeable of things they can do to protect their property and their lives from the devastation caused by hazards like floods and hurricanes. In addition, it is our desire to objectively evaluate the hazards that occur in our Parish and, as government officials, prioritize the actions that we need to take to provide a safe place to live.

This HMP outlines St. Charles Parish's strategy to help lessen the effects of hazards on people and property. In accordance with the requirements of the Disaster Mitigation Act of 2000, this Plan examines all hazards that might affect St. Charles Parish and focuses on those hazards that are most prevalent, estimates the location and the extent of possible losses to life and property from different hazards, identifies and prioritizes mitigation strategies, and plans ways of implementing these strategies.

Hazard mitigation planning is important to all communities. Every year, local governments and individuals across the U.S. must spend time, energy, and money to recover from natural and man-made disasters. The costs of disaster recovery are high and frequently state and federal aid is insufficient to cover the full extent of damages. Hazard mitigation planning can help lower the overall costs of damage from disasters, lessen their impact, and speed the response and recovery process.

Because it is located in southeastern Louisiana, St. Charles Parish is vulnerable to many natural hazards, such as hurricanes and strong storms. St. Charles Parish is also vulnerable to many man-made hazards, such as chemical leaks, because of the presence of many industrial plants and because of the transportation routes that pass through it. The information in this Plan provides a detailed picture of the risks that face St. Charles Parish. Based on this information, mitigation strategies specifically tailored to St. Charles Parish have been created. By implementing these strategies, St. Charles Parish will improve its ability to cope with the hazards that it faces.

The Parish's original Hazard Mitigation Plan was funded by a Planning Grant from the Federal Emergency Management Agency (FEMA) and administered by the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) and was finalized in February 2006. In 2005, St. Charles Parish was reminded of its intrinsic vulnerability to natural hazards and of the importance of disaster planning and disaster response. In August and September of 2005, Hurricanes Katrina and Rita swept through southern Louisiana resulting in extensive flooding, extensive property damage, and loss of life. While St. Charles Parish was spared from the worst effects of these storms, it nonetheless suffered considerable property damage. Subsequently, St. Charles Parish was made

aware of a Planning Grant that would assist us in updating our existing HMP using funds made available through FEMA from the Hazard Mitigation Grant Program (HMGP) fund created after Hurricanes Katrina and Rita. The Parish applied for a Planning Grant and was awarded the grant in May 2008. These funds assisted St. Charles Parish in updating our HMP, which was finalized in March 2010, to reflect new information such as the Advisory Base Flood Elevations (ABFEs) and identifying cost effective specific mitigation projects, focusing on those particular types of projects that may be eligible for HMGP funding.

Late in 2012, the Parish secured funding through FEMA's Pre-Disaster Mitigation Grant Program to conduct another five-year update to the HMP. This update includes a summary of those mitigation activities completed and a strategy for implementing new mitigation activities focusing on community sustainability and repetitive loss reduction. We felt it was important to have the assistance of someone skilled in preparing such plans, so after receiving the grant, we hired a hazard mitigation consulting firm, Providence Technical Services, LLC (Providence) to guide us in this process. What follows in Section 1.0 is a description of the "scope of the plan" which addresses why we are preparing the plan, a discussion of the "authority" for preparation of the plan which addresses the federal acts that drive the preparation of such plans, and "plan preparation and organization" which outlines how the plan was prepared and what can be found in the rest of the plan.

1.1 Scope Of The Plan

The St. Charles Parish HMP is a concerted effort on the part of the Parish to develop an all hazards, parish-wide approach to disaster damage reduction. In order to focus on a process needed to attain a sustainable future for the community and reduce dependence on federal funding, St. Charles Parish utilized a FEMA-approved process to identify and assess all potential hazards that may affect the community and develop an action plan to address those hazards. In addition, the Parish developed a Repetitive Loss Strategy that will help focus potential future grant funding on the most beneficial projects. This HMP will be utilized to better articulate accurate needs for the community based on a process that involves all stakeholders including the general public, government, business and industry.

1.2 Authority

Authority for the preparation of the Hazard Mitigation Plan is derived from the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988, P.L. 93-288, as amended by the Disaster Mitigation Act of 2000 (DMA 2000), P.L. 106-390. The Disaster Mitigation Act of 2000 (The Act) required state and local governments to develop and formally adopt natural hazard mitigation plans by November 2003 in order to be eligible to apply for Federal assistance under the

HMGP. The Act was further amended to extend the planning requirement deadline to November 2004.

When the DMA 2000 was signed into law on October 30, 2000, the Robert T. Stafford Disaster Relief and Emergency Assistance Act was amended by adding a new section, 322 – Mitigation Planning. Section 322 places new emphasis on local mitigation planning. It requires local governments to develop and submit mitigation plans as a condition of receiving HMGP project grants. An Interim Final Rule for implementing Section 322 was published in the Federal Register on February 26, 2002. After several revisions the interim rule was published on October 31, 2007 implementing 44 CFR Parts 201, 204, and 206. On September 16, 2009, the regulations established at 44 CFR Parts 59, 61, 78, 79, 80, 201, and 206 by the October 31, 2007 interim rule were finalized and adopted. The requirements for local plans, or Local Mitigation Plan Criteria, are found at 44 CFR 201.6.

In addition to the plan requirement, the Act also requires communities to utilize a specific planning process developed for an all hazards approach to mitigation planning. This planning process is crucial to ensure that the effective planning by a community meets all the plan content criteria required by the Act. The Act requires adoption by the local governing body and specifies a stringent review process, by which states and FEMA Regional Offices will review, evaluate and approve hazard mitigation plans.

1.3 Plan Preparation and Organization

The Parish recognized early that planning is not a product, but rather a process. Although the result of the planning process would be an updated plan, it would be the planning process that helps us obtain our desired outcome – a disaster resilient community. Therefore, from the beginning, the community has been involved in this process.

To begin the planning process for updating the HMP, the Parish Planning Team, consisting of members from the St. Charles Parish Department of Homeland Security and Emergency Preparedness (DHSEP) and Grants Office reviewed the *Local Mitigation Planning Handbook,* which is FEMA's guidance for local governments to use in developing and updating their HMP. The *Local Mitigation Planning Handbook* provides worksheets to help complete portions of the planning process. These worksheets were used by the Parish during the planning process and are referenced throughout this plan. They may be found in Appendix A.

To begin the planning process and form a Steering Committee, the Planning Team used Worksheet 2.1 (found in Appendix A) to help determine who should be invited to join the Steering Committee and who would be considered stakeholders in the process. Members of the community with a variety of

backgrounds (i.e. law enforcement, schools, utilities, and emergency response) were invited to attend a project initiation meeting on November 19, 2013. The list of invitees to the project initiation meeting may be found in Appendix B. All meeting sign-in sheets are included in Appendix C.

The Steering Committee reviewed the mission statement contained in the previous HMP and agreed that it still reflected the goal of the HMP.

The Hazard Mitigation Plan will provide a framework to organize resources in order to save lives and reduce future losses, by alleviating hardships and facilitating the delivery of assistance to residents of St. Charles Parish.

The Parish followed the planning process outlined by FEMA as detailed in the *Local Mitigation Planning Handbook*:

- Task I – Determine the Planning Area and Resources
- Task 2 – Build the Planning Team
- Task 3 – Create an Outreach Strategy
- Task 4 – Review Community Capabilities
- Task 5 – Conduct a Risk Assessment
- Task 6 – Develop a Mitigation Strategy
- Task 7 – Keep the Plan Current
- Task 8 – Review and Adopt the Plan
- Task 9 – Create a Safe and Resilient Community

Hazard mitigation planning is the process of determining how to reduce or eliminate the loss of life and property damage resulting from hazards such as floods and hurricanes. The primary purpose of hazard mitigation planning is to identify community policies, actions, and tools for implementation over the long term that will result in a reduction in risk and potential for future losses community-wide. This is accomplished by using a systematic process of learning about the hazards that can affect a community, setting clear goals, identifying appropriate actions, following through with an effective mitigation strategy, and keeping the plan current.

This Hazard Mitigation plan layout is as follows:

- Section 2.0 – Parish Profile
- Section 3.0 – Planning Process
- Section 4.0 – Risk Assessment
- Section 5.0 – Mitigation Strategy
- Section 6.0 – Community Capabilities: Sustainability and Resiliency
- Section 7.0 – Plan Maintenance Procedures
- Section 8.0 – Action Plan

Prior to documenting the planning process, we set the stage for each reader by presenting a detailed description of our Parish in Section 2.0 – Parish Profile.

Then we walk through each part of the planning process in Sections 3.0 - 7.0. Finally, any effective plan must result in actions taken to implement that plan. Section 8.0 encapsulates the actions that St. Charles Parish plans to implement in order to build a more disaster resilient Parish.

1.4 Local Adoption of the Plan

The *Local Mitigation Planning Handbook* states that the plan must be adopted by the local governing body prior to final approval by the State and FEMA. Once the Steering Committee reviews the plan to ensure that it meets the federal regulation, it will be submitted to the State Hazard Mitigation Officer (SHMO) for review. The State will work with St. Charles Parish to correct any deficiencies and present required revisions for approval. Once the State is satisfied the plan meets the requirements, the SHMO will forward the plan to the FEMA Regional Office for review and approval. FEMA will conduct its review within 45 days, if possible, and provide a completed *Local Mitigation Plan Review Tool* to the State. Once FEMA determines the plan meets the requirements, FEMA will notify the SHMO that the plan is approvable pending adoption (APA).

Requirement 44 CFR 201.6(c)(5):
[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council)…

Adoption by the local governing body (the Parish council) is achieved at the end of the planning process, draft review, State and FEMA review, and FEMA's determination that the plan is approvable pending adoption. Appendix D contains the resolution formally adopting this HMP.

2.0 PARISH PROFILE

Prior to addressing the hazards that our community faces, this plan presents a brief overview of our community, taking into account the geography, population, transportation routes, Parish history, topography, climate, economics, and community assets.

2.1 Location and Topography

St. Charles Parish is located in southeastern Louisiana. It is entirely bisected by the Mississippi River, which runs mostly west to east through the Parish (see Map 1). This creates the odd situation in which the northern half of the Parish is referred to as the "East Bank" and the southern half of the Parish is referred to as the "West Bank." St. Charles Parish is bordered by St. John the Baptist Parish to the west, Lafourche Parish to the south, Jefferson Parish to the east, and Lake Pontchartrain to the north.

The Parish encompasses 410 square miles. Nearly one-third of this area, 126 square miles, is water or wetlands. The land in the Parish is mostly flat. According to the U.S. Geological Survey, elevations in the Parish range from approximately two to 15 feet above sea level.

Levees run along both banks of the Mississippi River in St. Charles Parish. A hurricane protection levee runs nearly the entire length of the Parish approximately four miles inland from Lake Pontchartrain to protect areas on the East Bank from flooding during a hurricane. The new East Bank levee has been raised, reinforced, is 9.5 miles in length, has four drainage structures, four floodwalls, and a gate. Construction has begun on the West Bank Hurricane Protection Levee as well. It is a multi-phase project and when completed, will be a 33-mile flood protection system that will extend from Luling into LaFourche Parish, protecting Highway 90, a critical hurricane evacuation route. Two other levees border each side of the Bonnet Carre Spillway and the Davis Pond Freshwater Diversion Project, which are used to divert water from the Mississippi River when river levels are very high. Also, a section in the southern portion of the Parish is surrounded by a levee. This levee is designed to protect the communities of Des Allemands, Paradis, and Bayou Gauche from tidal flooding; however, it is not a hurricane protection levee.

2.2 Climate

St. Charles Parish has a subtropical climate and enjoys pleasant weather for much of the year. Summers are long and hot with average high temperatures

running into the low 90s. Hot summer days are made worse by the high levels of humidity that are common in St. Charles Parish. Winters tend to be very mild with average high temperatures in the low to mid 60s from December to February and average low temperatures in the 40s.

St. Charles Parish's subtropical climate also results in high rainfall rates throughout the year. In fact, the average rainfall is over five inches per month for all months except October and May. The annual average rainfall is 64 inches per year.

2.3 History

The first people to settle in the area that is now known as St. Charles Parish were German families from the Rhine region of Germany who settled along the west bank of the Mississippi River in 1720. In 1765, the first Acadians arrived in the area after being exiled from Nova Scotia by the British. By 1792, the area in and around St. Charles Parish contained a rich mixture of Germans, French Acadians, and Free Blacks.

Like much of Louisiana, St. Charles Parish was a French territory until 1763, when Spain was awarded control of the area. After being returned secretly to France in 1800, the Louisiana territory was sold to the United States in 1803 in what is known today as the Louisiana Purchase.

Industry began moving into St. Charles Parish in the early 1900s. Also, at that time oil was discovered in Louisiana. In 1914, Destrehan Plantation was sold to the Mexican Petroleum Company, becoming the first of the River Road Plantations to change from an agricultural to an industrial economic base. Industries related to oil quickly moved into the Parish in the following years. Throughout the 1930s, 1940s and 1950s, many chemical plants and businesses related to oil production located in the Parish. As businesses moved to the Parish, people followed. The population of St. Charles Parish more than doubled in size from 1950 to 1970.

Today, the population of the Parish is still growing by about one percent per year. According to the 2010 U.S. Census, St. Charles Parish had a population of 52,780. There are no incorporated areas within the Parish, but there are several separate communities. These communities include Destrehan, Montz, New Sarpy, Norco, and St. Rose on the East Bank of the Mississippi River and Ama, Bayou Gauche, Boutte, Des Allemands, Hahnville, Killona, Luling, Paradis, and Taft on the West Bank. Bayou Gauche was not listed in the last HMP update; however, it is a census-designated place under the U.S. Census Bureau and is included in this plan update. The 2010 Census also reported that 88 percent of

the population of St. Charles Parish lives in an urban setting. See Table 1 for St. Charles Parish's population data.

Table 1
St. Charles Parish Population

Name	Total 2008-2012 Population	Total 2010 Population
St. Charles Parish	52,663	52,780
Destrehan	N/A	11,535
Montz	N/A	1,918
New Sarpy	N/A	1,464
Norco	N/A	3,074
St. Rose	N/A	8,122
Ama	N/A	1,316
Bayou Gauche	N/A	2,071
Boutte	N/A	3,075
Des Allemands	N/A	2,505
Hahnville	N/A	3,344
Killona	N/A	793
Luling	N/A	12,119
Paradis	N/A	1,298
Taft	N/A	63

Source: factfinder.census.gov
Source Note: Column 2 shows estimates that represent the average characteristics of population and housing between January 2008 and December 2012 and DO NOT represent a single point in time. Because these data are collected over 5 years, we are able to include estimates for geographic areas with populations of 20,000 or more. The one-year estimates are only available for geographic areas with populations of 20,000 or more.

2.4 Economy

St. Charles Parish is part of the New Orleans metropolitan area. It is located approximately 25 miles from New Orleans and approximately 70 miles from Baton Rouge, allowing businesses to take advantage of these nearby markets.

Due to its proximity to the Gulf of Mexico and the large reserves of natural gas and oil that can be found in the Parish, St. Charles Parish's economy is dominated by the energy and petrochemical industries. The largest sectors of the economy are manufacturing, services, and construction. Recently, however, the Parish has diversified its economy by attracting transportation and technology-related companies, along with an ever-growing retail trade expansion. Government employment also plays a major role in St. Charles Parish's economy. Almost 15 percent of all workers in the Parish are employed by the government at some level.

2.5 Transportation

St. Charles Parish has an extensive transportation network. It is served by rail, water, air, and ground transportation systems.

Four major highways pass through St. Charles Parish. The largest is I-10, which runs east-west through the Parish. I-10 is an elevated highway over wetlands as it passes through the Parish. The only exit from I-10 in St. Charles Parish is at the interchange with I-310. I-310 runs south from I-10 for approximately 12 miles. The only bridge across the Mississippi River in the Parish is the Luling Bridge along I-310. I-310 connects with the other two highways in the Parish, Highway 61 and Highway 90.

The ground transportation network in St. Charles is particularly important because the Parish faces the possibility of large-scale evacuations. While St. Charles Parish has an extensive network of highways and Interstates, it nevertheless faces the threat of slow, congested evacuations. According to the *Herald-Guide*, more than one-third of all traffic passes through St. Charles during an evacuation of the New Orleans metropolitan area. The New Orleans metropolitan area has a population of over 1,227,000. During the evacuation prior to Hurricane Georges in 1998, one-third of the population of Orleans and Jefferson Parishes left the metropolitan area. Based on that experience, the number of people passing through the Parish during an evacuation could easily approach 150,000, a number equal to three times the total population of the Parish.

The Mississippi River is a major mode of transporting domestic and international cargo. The Port of South Louisiana, located in St. Charles, St. James, and St. John the Baptist Parishes, is the largest tonnage port in the United States. The Port stretches for 54 miles along the Mississippi River. The primary inbound cargoes for the Port of South Louisiana are crude oil, ores, and petrochemicals. The primary exports are corn, animal feeds, soybean, and wheat.

The Parish is also served by several rail lines: Canadian National Illinois Central, Union Pacific, Burlington Northern Santa Fe, and Kansas City Southern. These rail lines tend to run parallel to the major highways in the Parish, with several spurs serving facilities that are on the Mississippi River. In the future, the Parish will be a destination on a proposed high-speed railway between Baton Rouge and New Orleans.

Although there is no major airport terminal in the Parish, Louis Armstrong New Orleans International Airport is located adjacent to St. Charles Parish.

2.6 Community Assets

St. Charles Parish prides itself on the quality of life that its residents enjoy. One of the major factors contributing to the high quality of life for residents is the opportunity for outdoor activities of all kinds. Water sports, from fishing to sailing, are popular on the extensive network of swamps, bayous, and lakes throughout the Parish. The Bonnet Carre Spillway and the bike paths along the Mississippi River levees are used year-round for hiking, walking, and biking.

Residents of St. Charles Parish have access to good health care in the Parish and in the surrounding area. The Parish has St. Charles Parish Hospital which is located in Luling. The hospital recently added a state of the art Cardiac Unit and emergency room to better serve the Parish. Also, the St. Charles Parish Health Unit, a state-operated clinic, provides medical services for residents of the Parish with locations on the East and West Banks in Norco and Luling, respectively.

The rich culture of St. Charles Parish is the basis for several festivals throughout the year. Among the most popular festivals are the Catfish Festival in July, the Alligator Festival in September, and the Destrehan Plantation Fall Festival. The German Coast Farmer's Market is also a favorite among citizens of the parish and surrounding area. It offers residents a place to purchase and sell local produce and products.

3.0 PLANNING PROCESS

Development of the original St. Charles Parish HMP and the 2010 update were led by planning consulting firms, GCR & Associates in 2006 and Providence Engineering and Environmental Group, LLC in 2010. At the staff level, the St. Charles Parish Hazard Mitigation Plan development was led by the Director of the Department of Emergency Preparedness, now called the Department of Homeland Security and Emergency Preparedness (DHSEP). For the current plan update, personnel from the DHSEP and the St. Charles Parish Office of Grants provided specific input on the mission statement and the makeup of the Steering Committee. The Steering Committee was responsible for oversight of the planning process and review of the Plan drafts. The Steering Committee met on a regular basis to develop the details of the risk assessment; to develop the goals, objectives and strategies presented in the HMP; and to develop the action plan.

The hazard mitigation planning process for the plan update in 2014, as outlined below, was facilitated by mitigation planning consultant, Providence Technical Services, LLC (Providence), and the St. Charles Parish DHSEP.

3.1 Plan Outline

Organization – The planning consultant worked with the St. Charles Parish DHSEP in coordinating the Planning Team and the Steering Committee.

Coordination – Prior to the first Steering Committee meeting, all relevant local and state agencies as well as members of the public and business community were notified of the meeting and the planning process and invited to attend the project initiation meeting.

Identification of Hazards – Hazards were identified at the first Steering Committee meeting. Providence provided a presentation on the planning process and facilitated the identification of hazards in St. Charles Parish.

Assessment of Risks – The risk assessment was prepared by the consultant with the direction and input of the Steering Committee and the St. Charles Parish DHSEP.

Creation of Goals, Objectives and Mitigation Actions – Providence held a series of meetings with the Steering Committee to identify the goals, objectives and mitigation actions for the Hazard Mitigation Plan.

Development of the Action Plan – The Action Plan was prepared with the input and direction of the Steering Committee members.

Draft Plan Presentation – A meeting was held to present the Draft Hazard Mitigation Plan to the Steering Committee and the general public. All participants were encouraged to provide input on the Draft Plan. Contact information was provided so that participants could contact the consultant with any comments and recommendations.

As part of the mitigation planning process, a comprehensive evaluation of the Parish's existing capabilities and funding mechanisms was conducted. This resulted in a more complete picture of the expertise, the personnel, and the resources that St. Charles Parish has at its disposal for the purposes of hazard mitigation. This section—the result of that evaluation—describes St. Charles Parish's administrative capacity to implement the actions proposed in this Plan.

St. Charles Parish has a Home Rule Charter, as defined by the Louisiana Constitution. Among other things, it has the power to adopt and implement regulations for land use, zoning, and historic preservation and to adopt standards for the use, construction, demolition, and modification of areas and structures.

St. Charles Parish has developed many plans related to hazards and mitigation. In addition to this Hazard Mitigation Plan, the Parish has a Repetitive Loss Strategy and a Vulnerability Assessment. St. Charles Parish also has a comprehensive plan, zoning ordinance and subdivision regulations in place that address issues related to development and flood damage prevention. Section 6.0 provides additional information on these plans and discusses how the various plans can work in conjunction with this HMP to promote a more resilient community.

The Hazard Mitigation Plan builds on these plans and other existing regulations. The sections below describe how this plan fits in with the current administrative organization of St. Charles Parish. Existing authorities, policies, and programs related to hazard mitigation in St. Charles Parish are detailed in the first section below. After that, possible sources of funding other than Parish revenues are described.

3.2 Departments, Boards, and Commissions

Many Parish departments, boards, and commissions perform functions related to hazard mitigation. The organizations listed below are those that are most likely to be involved in mitigation activities or to facilitate other organizations in that capacity.

St. Charles Parish Council - The Council has the authority to levy taxes, excises, licenses, liens and fees necessary for the proper operation and maintenance of the Parish, for the payment of debt, and for capital improvements.

St. Charles Parish Department of Homeland Security and Emergency Preparedness (DHSEP) – The DHSEP is responsible for responding to disasters and coordinating those actions needed to protect the lives and property of the citizens of St. Charles Parish from natural or man-made disasters. The DHSEP is also responsible for emergency planning for St. Charles Parish. All requests for federal disaster assistance and federal funding subsequent to disaster declarations are made through this office.

St. Charles Parish Department of Planning and Zoning – The Department of Planning and Zoning conducts studies and recommends plans for the proper development of the Parish. This department, which was created by the Home Rule Charter, advises and proposes action to be taken by the Planning Commission, processes zoning and subdivision requests, strives to ensure compliance with St. Charles Parish code, and coordinates coastal zone management. In keeping with the mission of the Department of Planning and Zoning, a Comprehensive Plan has recently been finalized, which will guide the Parish in decisions concerning every aspect of community living; among them, land use, transportation, housing, and infrastructure,

The Coastal Zone Management Section of the St. Charles Parish Department of Planning and Zoning is responsible for coordinating responsible development and restoration of St. Charles Parish's most plentiful natural resource, wetlands. The Coastal Zone Management Section works with various State and Federal Agencies, as well as private landowners, to facilitate the funding, permitting and construction of Coastal Restoration projects throughout St. Charles Parish and surrounding watersheds.

The St. Charles Parish Floodplain Management responsibilities are handled by the Department of Planning and Zoning as well. St. Charles Parish is a participating community in the National Flood Insurance Program (NFIP) and as such, flood insurance is available to St. Charles Parish residents. Floodplain management influences most aspects of parish government from building permit requirements to design and construction of drainage systems.

St. Charles Parish Department of Public Works and Wastewater – The Public Works and Wastewater Department is responsible for the maintenance of roads and drainage facilities, as well as the maintenance and operation of wastewater and sewer facilities for the Parish.

St. Charles Parish Department of Waterworks – St. Charles Parish drinking water was originally the responsibility of the East Bank and West Bank Waterworks Districts. These two districts were combined under the Department of Waterworks in November of 1989. The Department of Waterworks ensures that the citizens of St. Charles Parish have a stable drinking water supply that meets all applicable standards. The Department operates water treatment plants

on the East Bank and West Bank as well as the distribution system for those plants.

St. Charles Parish Office of the Contract Monitor – The St. Charles Parish Office of the Contract Monitor is responsible for animal control, mosquito control, solid waste, and street lighting within St. Charles Parish.

Fire Departments – St. Charles Parish is protected by volunteer fire departments in nine districts; additionally, several private facilities have Haz Mat-trained personnel.

St. Charles Parish Sheriff's Office – The St. Charles Parish Sheriff's Office provides law enforcement service in order to enhance community safety, protect lives and property and reduce crime. The St. Charles Parish Sheriff's Communications Division oversees the parish's 9-1-1 Public Safety Answering Point and Dispatch Center. Emergency Telecommunicators provide callers in need with a vital link to law enforcement, fire and medical aid.

Pontchartrain Levee District – The Pontchartrain Levee District is responsible for maintaining the levee system and associated drainage. It must also issue a permit or letter of "No Objection" to any work or structures intended to occur in the vicinity of the levee system. As part of the maintenance program for the levees, a joint inspection of the hurricane levees is conducted each May by the U.S. Army Corps of Engineers (USACE), the Louisiana Department of Transportation and Development (LaDOTD), the St. Charles Parish Office of Emergency Preparedness, and the Pontchartrain Levee District. Each October or November, the same parties conduct an inspection of the Mississippi River levee system. Furthermore, the Operations and Maintenance Director for the Pontchartrain Levee District is required to make biweekly checks of all levees for unusual conditions.

Port of South Louisiana – The Port of South Louisiana, which stretches 54 miles along the Mississippi River, is the largest tonnage port district in the Western Hemisphere. The Port's area of responsibility includes the Mississippi River in St. Charles, St. John and St. James parishes. In 2002, the Port of South Louisiana was awarded a grant from the U.S. Department of Transportation of $624,000 that was used to conduct a comprehensive risk vulnerability assessment of the Port according to guidelines set forth by the U.S. Coast Guard. As a result, the Port outlined a long-term plan to provide adequate protection within its jurisdiction. The Port received additional grants from the U.S. Department of Homeland Security (DHS) for over $800,000 for hurricane related damages.

3.3 Documentation of The Planning Process

Requirement 44 CFR 201.6(c)(1):

[The plan must document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

The Parish applied for a Pre-Disaster Mitigation Grant Program (PDM) grant and was awarded the grant late in 2012 for the purpose of updating the HMP. The focus of this plan update is to identify and update mitigation activities completed, recognize those mitigation activities that were successful in preventing losses, propose and create a strategy for implementing additional mitigation efforts, address disaster events that have occurred since the HMP was last updated, and prepare and include a Repetitive Loss Strategy. Existing plans, procedures, regulations, ordinances, and codes were reviewed to introduce sustainability into the HMP and make it consistent with sustainability aspects of the other plans.

Five meetings were held prior to submittal of the Draft Hazard Mitigation Plan. Prior to the first meeting, the project initiation meeting, representatives from the community were invited to participate in the planning process. Representatives from a wide cross section of the public, including fire, law, health care, schools, municipal and public utilities were invited to attend. See Appendix B for a list of the people from the communities that were invited to the project initiation meeting.

The project initiation meeting was held on November 19, 2013. This meeting was aimed at informing the attendees of the planning process for updating the hazard mitigation plan as they would continue to meet with our consultant and guide the planning process. At this meeting, the concept of mitigation planning and sustainability were explained to the audience. The steering committee's role was discussed and data sources, past hazards, and past and potential critical facilities were reviewed.

At the project initiation meeting, a new roster of Steering Committee members was developed. See Table 2 for a list of those serving on the Steering Committee.

Table 2 St. Charles Steering Committee		
First Name	**Job Title**	**Organization**
Carl Bischoff	QA Coordinator	SCP Public Works
Buddy Boe	Chief Administrative Officer	SCP Administration
Greg Champagne, Jr.	IT/GIS Director	SCP Tax Assessor's Office
Carla Chiasson	Grant Specialist II	SCP Grants Office
Butch Clay	Operations Manager	SCP Wastewater Department of Wastewater
Brenda Cooper	Hazard Mitigation Specialist	Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP)
Julia Fisher-Perrier	Councilwoman	SCP Council
Holly Fonseca	Grants Officer	SCP Grants Office
Duane Foret	Director	SCP Parks and Recreation
Ross Gares	Plant Manager	Rain CII Norco
Reggie Gaubert	Fire Chief	Fire District
Darren Gros	Sergeant	SCP Sheriff's Office
Dawn Higdon	Paralegal	SCP Department of Legal Services
Jason Johnson	Industry Personnel	Arkema
Kacy Kernan	Director of Community Impact	United Way of St. Charles
Herman Louque	Board Member	Norco Civic Association
Rodney Madere	Major	SCP Sheriff's Office
Luis Martinez	GIS Coordinator	SCP Geographic Information Systems
Earl Matherne	CZM Administrator	SCP - Floodplain Administration
Irvin Patecek	Disaster Specialist	American Red Cross
Ron Perry	Director	SCP Department of Homeland Security and Emergency Preparedness (DHSEP)
Ricky Robert, Jr.	Operations Manager	SCP Waterworks
Kade Rogers	Coordinator of Safety, Security and Emergency Preparedness	SCP Public Schools (SCPPS)
John Rome Jr.	Executive Director	Physical Plant Services, SCPPS
Pam Roussel	Region 3 Coordinator	GOHSEP
Rene Schmitt	Agent	LSU AgCenter
Daniel Songy	Field Engineer	Emerald Coast Services
Adrienne Swann	Grants Specialist I	SCP Grants Office
Jason Tastet	Sr. Emergency Coordinator	SCP DHSEP
Sunny Vial	Director	SCP Department of Legal Services

In order to prepare the plan, four additional meetings with the Steering Committee were held. All four of these meetings were open for the public to attend. Public notices were posted on the parish website inviting the public to attend. After the first meeting, a press release was prepared informing the public about the hazard mitigation plan update and the planning process and urging

them to participate by stating when the next meeting would be held. After the second meeting, a press release was prepared to keep the public involved, explaining the hazard summaries, hazard loss data, and hazard statistics, and urging them to participate by stating when the next meeting would be held. After the third meeting, a press release was prepared to keep the public involved, explaining the mitigation strategy, mapping of the Parish, identifying potential mitigation projects, and informing the public of who to contact regarding the next meeting. After the fourth meeting, a press release was prepared informing the public that the Steering Committee discussed goals and the repetitive loss strategy and urging the public to complete a public opinion survey concerning their experience with natural hazards. After the fifth meeting, a press release was prepared informing the public that the preliminary draft plan was under review.

The press releases that were issued after each of the five meetings informed the public about what was discussed during the meetings and also informed the public when the next meeting would take place, if they wanted to participate. Anyone from the public who wanted to be involved could have attended the meetings, joined the Steering Committee, become part of the planning process, and offer any changes or recommendations. These press releases gave neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties an opportunity to be involved in the planning process.

Our consultant, Providence, facilitated each meeting to address the next stage in the planning process and gain input from the committee on local conditions and the Steering Committee's desires. After each meeting, Providence researched ideas presented in the meeting and summarized their findings for presentation and input by the Steering Committee at the next meeting. This approach allowed the Steering Committee to play a valuable role in getting ideas and issues addressed in the plan. Each member of the Steering Committee was an equal member in the overall process. Everyone on the Steering Committee had an opportunity to review the draft plan. All the meetings were open discussions, where each person attending, whether a Steering Committee member or not, had the opportunity to volunteer information about the community and present ideas.

The second meeting on hazard profiles and risk assessment was held on February 19, 2014 and addressed hazard summaries, hazard loss data, and hazard statistics. The Action Plan from the previous HMP was reviewed and the committee was asked to update the status of each action item. Updated maps of critical facilities and repetitive loss structures were reviewed at the third meeting, the mitigation strategy and maps meeting, on April 15, 2014. The Action Plan that had been handed out in the previous meeting was discussed and the Steering Committee was asked to rank each action item with a priority ranking of high, medium, or low. The fourth Steering Committee on June 17, 2014 focused on goal setting. A major goal of this HMP update, the Repetitive Loss Strategy was discussed. Another goal, public involvement, was discussed and a public survey was distributed to the Steering Committee members for them to pass out to

citizens. An example of this survey, similar to one found in the *Local Mitigation Planning Handbook*, may be found in Appendix A. Final information to complete the HMP was gathered during this meeting.

On September 16, 2014, a fifth meeting was held and a draft of the HMP was reviewed. The Steering Committee had an opportunity to comment on all aspects of the plan prior to its submittal to GOHSEP and FEMA. As with all the previous meetings, the public was invited to attend via a press release indicating that the draft HMP would be under review and all comments were welcome.

This plan was updated over a period of 10 months. See a copy of the sign-in sheets for each meeting in Appendix C. See Appendix E for a Summary of Meeting Attendees. See the Milestone Schedule in Appendix F. Meeting minutes for the five meetings were prepared and are found in Appendix G. As stated earlier, in an effort to keep the public informed and to invite additional input, press releases were published on the Parish website after each meeting. The press releases may be found in Appendix H. The general public was also invited to provide input into the planning process by completing a public opinion survey concerning hazard mitigation. A summary of the results of that survey may be found in Appendix I.

The role of the Steering Committee was to attend the planning meetings where they provided valuable information on the Parish, developed parts of the plan and reviewed the results of the research conducted by our consultant. Tasks completed by the Steering Committee include:

- Developing a list of potential hazards, such as flooding and hurricanes within the Parish and municipalities
- Assembling a list of the critical facilities, such as hospitals, police stations, and shelters within the Parish and municipalities
- Evaluating potential losses to vulnerable assets in the Parish and municipalities
- Establishing goals and objectives for the Parish and municipalities
- Determining mitigation measures that would be prudent

3.4 Funding Sources

St. Charles Parish has the capacity to fund some mitigation activities from Parish revenues. Under the Louisiana Constitution, parishes have the authority to levy ad valorem and sales taxes. While the ad valorem taxes levied by a Parish for general purposes are not to exceed four mills on the dollar of assessed valuation, parishes may increase the millage for specific purposes (subject to approval by voters).

In addition to the Parish General Fund, St. Charles Parish currently has several dedicated reserve funds for issues that could be related to hazard mitigation,

including transportation infrastructure, water and wastewater infrastructure, and emergency services. The St. Charles Parish Finance Department assists the Parish President in preparing and executing the Parish budget and capital program.

There are also a number of State and Federal programs that provide funds for disaster mitigation activities before a disaster or as part of the recovery efforts after a disaster.

The programs listed below are some of the major external sources of funding for mitigation activities in St. Charles Parish.

Hazard Mitigation Grant Program (HMGP) – The HMGP is a post-disaster program designed to encourage mitigation activities to reduce or eliminate losses from future disasters. HMGP funds are available only after a Presidential declaration of disaster. State and local governments and certain non-profit organizations are eligible to apply for funds under HMGP. Projects completed under this program must provide long-term solutions to the threats posed by hazards. HMGP provides 75 percent of a project's cost; the other 25 percent must be covered by non-federal funds. (Individuals should contact their local Office of Emergency Preparedness for more information on this program.)

Flood Mitigation Assistance (FMA) Program– FMA funds are available to State and local governments that participate in the NFIP and have an approved Flood Mitigation Plan. Funds may be used for pre-disaster mitigation projects that correspond to mitigation activities outlined in the community's Flood Mitigation Plan. FEMA places particular emphasis on RL/SRL structures in awarding FMA funds. For insured properties, FMA provides 75 percent of a project's cost; the other 25 percent must be covered by non-federal funds. For RL properties FMA provides 90 percent of a project's cost with the other 10 percent covered by non-federal funds. For SRL properties, FMA provides 100 percent of a project's cost. (Individuals should contact their local Office of Emergency Preparedness for more information on this program.)

Pre-Disaster Mitigation (PDM) Program – The PDM Program was authorized by the Disaster Mitigation Act of 2000. It provides funding to State and local governments for mitigation activities aimed at a variety of hazards. The PDM Program provides 75 percent of a project's cost; the other 25 percent must be covered by non-federal funds. (Individuals should contact their local Office of Emergency Preparedness for more information on this program.)

Louisiana Statewide Flood Control Program (SFCP) - This program provides funds to parish governments, municipal governments, levee boards, and drainage districts for projects that have a total construction cost of at least $100,000. SFCP funds may cover up to 90 percent of the cost of construction for projects that reduce existing flood damages, do not encourage additional

development in flood prone areas, and do not increase upstream or downstream flooding.

Community Development Block Grant (CDBG) – CDBG grants are made to State and local governments by the U.S. Department of Housing and Urban Development. CDBG funds can be used for mitigation activities in two ways. First, CDBG grants may be used to carry out a wide range of community development activities directed toward revitalizing neighborhoods, economic development, and providing improved community facilities and services. Mitigation measures can be combined with some of these activities. For example, the construction of a new community center to serve a low-income community would be allowed under CDBG rules. This community center could also be constructed according to specifications that would allow it to serve as a shelter during a hazard. Second, additional CDBG funds are sometimes made available to State and local governments as part of a Disaster Recovery grant following a Presidential disaster declaration. Grantees may use CDBG Disaster Recovery funds for recovery efforts involving housing, economic development, infrastructure and prevention of further damage to affected areas, as long as such use does not duplicate funding available from the Federal Emergency Management Agency, the Small Business Administration, and the USACE.

Small Business Administration (SBA) Pre-Disaster Mitigation Loan Program – The SBA operates this pilot program designed to support FEMA's Pre-Disaster Mitigation Program. This program makes low-interest, fixed-rate loans to small businesses to undertake mitigation actions consistent with the mitigation goals and priorities of the community in which the business is located. Mitigation measures funded through this program may protect buildings, leasehold improvements, or contents.

Other Programs – In addition to the programs described above, FEMA and the SBA offer other programs that can fund mitigation activities. Programs such as Public Assistance (FEMA), Community Assistance Program (FEMA), Home and Personal Property Disaster Loans (SBA), and Physical Disaster Business Loans (SBA) make specific provisions for mitigation activities. While all of these programs provide post-disaster funding, mitigation against future hazards can be incorporated into recovery efforts funded by these programs.

Private Funding Sources – Some private sources of hazard mitigation funding exist. Insurance company foundations are one particular source of mitigation grant programs. Many private mitigation funds are targeted to non-profit agencies.

4.0 RISK ASSESSMENT

Risk assessment is the process of measuring the potential loss to a community, including loss of life, personal injury, economic injury, and property damage resulting from a hazard event. To begin a risk assessment, hazards affecting the jurisdiction must be identified. A hazard is any source of potential danger or adverse conditions that exist with or without the presence of people and land development.

This section profiles all hazards that pose a threat to St. Charles Parish based on a variety of factors, including its history, its topography, and its land development patterns. The list of hazards that are profiled in this Plan was developed based on information from a variety of sources: recent events, historical records, existing emergency management plans, and the knowledge of local residents and experts. During the plan update, the Steering Committee discussed the hazards that affect the Parish and determined that the hazards included in the previous update were still appropriate to include in this plan. Those hazards include (in the order presented in the 2009 HMP Update): Coastal Erosion, Levee Failure, Drought, Flood, Hazardous Materials, Hurricanes/Tropical Storms, Land Subsidence, Tornadoes, Thunderstorms / Lightning / Hail, Winter Storms, Extreme Heat, and Saltwater Intrusion.

During the 2014 HMP update, the Steering Committee decided that, although Coastal Erosion is an ongoing problem for the Parish, it should be addressed differently than it was in the previous plan. The State Hazard Mitigation Plan addresses coastal erosion along with saltwater intrusion, sea level rise, and subsidence under the umbrella of coastal hazards. In this update, St. Charles Parish will continue to profile the coastal hazards identified in this plan (coastal erosion, land subsidence and saltwater intrusion) and existing mitigation actions will remain in the Plan; however, these hazards will be removed from further consideration for additional mitigation action as they are not hazards that are readily mitigated by conventional hazard mitigation activities. Hazardous Material incidents were discussed in the previous HMP update and are profiled in this plan update. Existing mitigation actions for Hazardous Material incidents will remain in this plan; however, additional mitigation actions will be considered for these incidents as they relate and apply to the other hazards listed in this plan update. All other hazards will be addressed in the same manner they were addressed in the previous update.

The Parish will follow the outline used in the State Hazard Mitigation Plan for its hazard profiles. First, climatological hazards will be profiled, then geologic and human-influenced hazards will follow. Climatological hazards profiled in this section include:

- Drought
- Extreme Heat
- Flooding

- Thunderstorms (which includes hail, high wind, and lightning)
- Tornadoes
- Tropical Cyclones
- Winter Weather

Geological / Human-influenced hazards profiled in this section include:

- Coastal hazards (which include Coastal Erosion, Land Subsidence, and Salt Water Intrusion)
- Levee Failure
- Hazardous Materials

In this section, we will first discuss the process of identifying the hazards affecting St. Charles Parish (Section 4.1) and present a priority ranking for each hazard. Next, in Section 4.2, we will present an overview of how each hazard was profiled including how the Parish determined the location, extent, and previous occurrences of each hazard. Section 4.2 will also include a hazard history of the Parish, an estimate of losses per year for each hazard, and the probability of reoccurrence for each hazard based on past incidents.

As discussed in FEMA's *Local Mitigation Planning Handbook*, a risk assessment involves four steps:

- Describe hazards
- Identify community assets
- Analyze risks
- Summarize vulnerability

Section 4.3 presents Hazard Profiles for each hazard addressed by the Plan. Hazard profiles include descriptions of a given hazard – the first step in our risk assessment. They describe the conditions that will likely be present when a hazard occurs and answer the question "How bad can things get?" for different hazards. Hazard profiles are important because they describe how St. Charles Parish is likely to be affected by each hazard. The effects from each of the hazards covered by the Plan vary dramatically. Furthermore, any given hazard may affect St. Charles Parish differently than it would affect another community. Because occurrences of a given hazard can vary in terms of magnitude, duration, and intensity, it is important to specify the conditions that each hazard is likely to create in St. Charles Parish. Hazard profiles will give details on location and extent of the hazard, previous occurrences and probability of future events.

The second step in a risk assessment is to identify community assets that may be affected by hazard events. The Steering Committee conducted an inventory of the vulnerable assets and critical facilities to understand what could be affected by the various hazard events. In Section 4.3, each hazard profile includes a hazard impact section that discusses the impact on community assets - more specifically, the impact on the Parish's people, economy, structures, and its natural environment.

The third step is to analyze the risk to vulnerable assets and how they will be affected by the hazard events. Some buildings, infrastructure, or functions will be damaged more than others because of their vulnerability. Vulnerability is defined as how exposed or susceptible due to location, or construction, an asset is damaged from a hazard event. Each hazard profile contains a risk analysis section evaluating the impact of that hazard and providing a vulnerability assessment. The Steering Committee analyzed risks and estimated losses based on historical analysis and information presented in the State Hazard Mitigation Plan. The Parish felt that this information was an improvement to the last Plan update as it was compiled by technical experts, the State Hazard Mitigation Plan Committee, and an Advisory Team from Louisiana State University. Included in the hazard profiles will be an assessment of developmental trends within the parish to determine if vulnerability has increased or decreased since the last Plan update.

The fourth step is to summarize vulnerability. Each hazard profile will include a summary of the Parish's vulnerability to that hazard. Section 4.4 provides an overview of the risk assessment regarding the hazards identified, vulnerable assets, and potential impacts for use by the Parish in determining the mitigation strategy.

4.1 Identifying Hazards

Requirement 201.6(c)(2)(i):
[The risk assessment shall include a] description of the type … of all natural hazards that can affect the jurisdiction…

St. Charles Parish identified many hazards that affected the community in the past, and may possibly affect the Parish in the future. These hazards are addressed individually through a widespread process that included input from the Steering Committee members (comprised of representatives from Parish/State departments and agencies, Parish and State Emergency Preparedness Offices, and local residents), public involvement, researching archived articles pertaining to those disasters, past disaster declarations in the Parish, and a review of current FIRMs and Flood Insurance Studies.

The Avalanche and Volcano hazards were not selected due to the topography of the St. Charles Parish region. These hazards do not pose any threat to St. Charles Parish. An examination of USGS landslide hazard information indicates that St. Charles Parish is at a low risk for landslides; therefore landslide hazards are not addressed in this Plan. St. Charles Parish is at a very low risk for earthquakes. A review of the U.S. Geological Survey National Seismic Hazard Data Mapping Project and the State of Louisiana Hazard Mitigation Plan indicate a 1 percent gravity (1%g) peak acceleration, which indicates a very low probability of occurrence. The earthquake hazard is not profiled in the risk assessment due to this low probability, combined with no history of previous

occurrence of earthquakes. There are no dams located in St. Charles Parish; therefore Dam Failure is not relevant and not included in the Risk Assessment. St. Charles Parish is not located on the West Coast and is not a Pacific Island or a Caribbean Island and the tsunami is not profiled in the State of Louisiana Plan, therefore, St. Charles Parish is not at risk and the tsunami hazard is not profiled in the risk assessment. A review of the Observed Fire Danger Class Map indicated that St. Charles Parish is at a low risk of wildfire danger. This observation, combined with the fact that St. Charles Parish is not located near forest, grasslands, or densely wooded areas, is the reason that the wildfire hazard is not profiled in the risk assessment.

FEMA has tracked and compiled a list of all the federally declared disasters for the State of Louisiana. Therefore, we know since 2001 this data is a complete and accurate list of all the federally-declared disaster events in St. Charles Parish.

St. Charles Parish has been a presidentially-declared major disaster area on twelve (12) different occasions since 2001. Since the last plan update there have been three federally-declared disasters in St. Charles Parish. Table 3 contains a list of the federally declared disasters that have affected St. Charles Parish.

Table 3
Federally Declared Disasters in St. Charles Parish

DR #	Type	Date
1380	Flood/Tropical Storm Allison	6/11/01
1435	Tropical Storm Isidore	9/27/02
1437	Hurricane Lili	10/03/02
1548	Hurricane Ivan	9/15/04
1601	Tropical Storm Cindy	8/23/05
1603	Hurricane Katrina	8/29/05
1607	Hurricane Rita	9/24/05
1786	Hurricane Gustav	9/2/08
1792	Hurricane Ike	9/13/08
4015 (EM3322)	Louisiana Flooding	8/18/11
4041	Tropical Storm Lee	10/28/11
4080	Hurricane Isaac	8/29/12

Source: www.fema.gov/disasters

Table 4 summarizes the hazards the Steering Committee identified as impacting the Parish. The hazards were prioritized based on a number of factors including, frequency, severity, life and death consequences, potential impact, and ultimately ranked based on what the Steering Committee determined. This table also explains how the hazards were identified and why they were identified.

Table 4
Hazard Identification Table

Hazard	How Identified	Why Identified	Priority
Drought	• Recent Events • Input from local residents and businesses • Input from Parish DHSEP	• Possible impacts on agriculture and marshes	Low
Extreme Heat	• Input from Planning Team	• Hot conditions during summer months in South Louisiana	Low
Flooding	• Review of past disaster declarations • Historical records • Review of FIRMs and Flood Insurance Studies • Input from local residents and businesses • Input from Parish DHSEP and GOHSEP • Identification of NFIP repetitive loss properties in the Parish	• Topography of the Parish • Effects from hurricanes which caused tremendous devastation in the Parish • Numerous repetitive loss properties are located in the Parish • Federally declared disaster	High
Thunderstorms /Lightning/ Hail/ High Winds	• Historical records • Recent events • Input from local residents and businesses • Input from Parish Emergency Preparedness Office DHSEP • Input from Parish Utilities Department	• Related to hurricane and thunderstorm frequency • Potential for losses to property	Medium
Tornadoes	• Location in an area of the U.S. at risk for tornadoes • Historical records • Input from local industry • Input from the Parish Sheriff's Office and Department of Public Works • Input from Parish Planning Commission • Input from Parish DHSEP and GOHSEP	• Related to hurricane and thunderstorm frequency • Potential for losses to property (residential / commercial) and crops • Potential for loss of life and bodily injury • Several tornadoes have caused damages in the parish	Medium

Table 4
Hazard Identification Table

Hazard	How Identified	Why Identified	Priority
Tropical Cyclones	• Review of past disaster declarations • Input from local residents and businesses • Input from Parish DHSEP and GOHSEP	• Located on Gulf Coast • Caused debris and wind damage • Power outages throughout the Parish • Federally declared disasters	High
Winter Weather	• Input from Planning Team • Input from Parish DHSEP	• Infrequency of storms means limited capacity to cope with them	Low
Coastal Erosion	• Historical records • Environmental records	• Entire Louisiana coast is threatened by erosion	Medium
Land Subsidence	• Historical records	• Property damage incurred as a result of subsidence	Medium
Saltwater Intrusion	• Input from Planning Team	• Contributing factor to erosion	Medium
Levee Failure	• Existing plans • Newspaper articles	• Levees protect many developed areas of the Parish	High
Hazardous Materials	• Recent Events • Input from Parish DHSEP	• Numerous facilities with hazardous chemicals in the Parish	High

4.2 Profiling Hazard Events

Requirement 201.6(c)(2)(i):
[The risk assessment shall include a] description of the… location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

Natural hazards, the largest single contributor to catastrophic or repetitive damage to communities nationwide, evolve from atmospheric, geologic, hydrologic, and seismic events. They pose threats in all areas of the United States.

The impacts of natural hazards can be local or widespread, predictable or unpredictable. Resulting property and infrastructure damage can range from minor to major, depending on whether hazard events affect major or minor population centers. When the damage to life and property becomes real, not just potential, the event is commonly called a natural disaster.

Risk assessment provides the foundation for the rest of the mitigation planning process. It focuses attention on areas most in need by evaluating which populations and facilities are most vulnerable to natural hazards and to what extent injuries and damages may occur. It provides:

- The hazards to which the community is susceptible;
- What these hazards can do to physical, social and economic assets;
- Which areas are most vulnerable to damage from these hazards; and
- The resulting cost of damages or costs avoided through future mitigation projects.

In addition to the description of each hazard, the detailed hazard profiles will discuss:

- How likely it is that a hazard will impact the area (probability); often supported by previous occurrences, with the dates, frequency, extent and damage. When past events have not occurred, or data is missing or incomplete, probability potential is based on the experience of the Steering Committee and the history of the hazard in the Parish.
- How severe the hazard will be (magnitude);
- Where the hazards will affect the community (geographic extent or location); and
- Conditions in the community that may increase or reduce the effects of the hazard.

Based on the overall impact of the above considerations, the hazards for which this plan will develop mitigation actions are drought, flooding, thunderstorms / lightning / hail / high wind, tornadoes, tropical cyclones, and levee failure.

4.2.1 Location

A GIS database was developed, which mapped the Parish's emergency shelters and evacuation routes (Map 2); repetitive loss areas (Map 3); land use (Map 4); levee systems (Map 5); and critical facilities; including fire stations, health care facilities, governmental buildings, law enforcement facilities, pump stations, schools, etc. (Maps 6 through 28).

4.2.2 Previous Occurrences and Extent of Damages

Flood Insurance Rates, the Flood Insurance Studies, Flood Insurance Rate Maps (FIRMs), records of past federally declared disasters, National Climatic Data Center (NCDC), and Steering Committee recollections were reviewed in order to prepare the hazard history found below. There were data limitations in gathering an all inclusive hazard history.

Table 5, provides a detailed summary of the federally-declared hazards that have historically impacted the community, including the date, location and a description of the extent of the damage.

Table 5
St. Charles Parish Hazard History

HAZARD EVENT DATE & LOCATION	DESCRIPTION
Presidential Declaration DR# 1380 Flood Tropical Storm Allison June 11, 2001 Parish-Wide	• Homes and roads flooded • Damage to buildings
Presidential Declaration DR# 1435 Tropical Storm Isidore September 27, 2002 Parish-Wide	• Significant Storm Surge • Low-lying areas, roads and non elevated structures were flooded • Approximately 1000 homes flooded • Four to eight inches of rainfall in 6 hours • Ten to fifteen inches was common across southeast Louisiana
Presidential Declaration DR# 1437 Hurricane Lili October 3, 2002 Parish-Wide	• Significant storm surge across southeast Louisiana • Storm surge 3-5 feet above normal • Flooding of roads and low-lying structures • Downed trees and branches due to strong wind gusts
Presidential Declaration DR# 1548 Hurricane Ivan September 15, 2004 Parish-Wide	• 71% of St. Charles Parish evacuated according to the University of New Orleans. • Many power outages. • Conta-flow evacuation was ordered when I-10 was bumper to bumper from New Orleans to the Texas border.
Presidential Declaration DR# 1601 Tropical Storm Cindy August 23, 2005 Parish-Wide	• Damages reached four times the amount to be designated a Presidential disaster. • Flash flooding developed in many areas of the Parish. • Upgraded to Hurricane status in post-event analysis • A refinery in Norco lost power to several oil processing units. • $500,000 in damages in St. Charles Parish according to NCDC database.

Table 5
St. Charles Parish Hazard History

HAZARD EVENT DATE & LOCATION	DESCRIPTION
Presidential Declaration DR# 1603 Hurricane Katrina August 29, 2005 Parish-Wide	• Maximum sustained winds of 175 mph. • Substantial storm surge flooding occurred. • Numerous homes and businesses were flooded. • Storm surge of 5 to 7 feet above normal overtopped or breached drainage levees..
Presidential Declaration DR# 1607 Hurricane Rita September 24, 2005 Parish-Wide	• Maximum sustained winds of 120 mph. • Flooding occurred in areas adjacent to Lake Pontchartrain • Damage in southwest Louisiana is estimated near $4 billion
Presidential Declaration DR# 1786 Hurricane Gustav September 2, 2008 Parish-Wide	• 105 mph winds at landfall. • 1.9 million people evacuated southern Louisiana
Presidential Declaration DR# 1792 Hurricane Ike September 13, 2008 Parish-Wide	• Storm surge ranging from 4 to 8 feet above normal along the southeast Louisiana coast. • Storm surge 5 feet above normal in Lake Pontchartrain. • Flooding took several weeks to fully drain from many low lying areas of southeast Louisiana. • Highest wind gust measured at 69 mph at the New Orleans Lakefront Airport.
Presidential Declaration DR# 4015 and EM# 3322 Flooding August 18, 2011 Parish-Wide	• Bonnet Carre Spillway opened for the 10th time in its 80 year history - 110 of the spillway's 350 bays are opened. • The Parish requests that residents refrain from driving, walking, or biking on river levees until further notice. • Cost to Parish for emergency work was $93,000 and repairs to Spillway Road were over $1.5 million.
Presidential Declaration DR# 4041 Tropical Storm Lee October 28, 2011	• Slow-moving system causing storm surge and heavy rainfall (7 – 15 inches) • Storm surge tide values were between three to five feet above normal. • Approximately $600,00 in damages
Presidential Declaration DR# 4080 Hurricane Isaac August 29, 2012 Parish-Wide	• 85 mph winds at landfall in Plaquemines Parish. A second landfall was made at the Port of Fourchon. • Sustained tropical storm force winds for more than 48 hours. • Storm Surge was between 4 to 13 feet. Flooding was significant • Highest rainfall total was recorded in New Orleans at 20.66 inches.

Source: www.fema.gov/disasters

Additional data on the extent of damage caused by these hazards were obtained using data from the NCDC. Estimated dollar amount of damages from the NCDC is summarized in Table 6.

Table 6
Estimated Dollar Losses Per Year

	ESTIMATED DAMAGE FROM NCDC $	TIME PERIOD	PROJECTED YEARLY LOSSES $
Drought	$480,000	2 years	$240,000
Flood	$2,218,000(1)	16 years	$138,625
Thunderstorms Lightning / Hail / High Wind	$264,900 $500,000 $15,000	17 years 7 years 17 years	$15,582 $71,428 $882
Tornadoes	$150,000	15 years	$10,000
Tropical Cyclones	$401.2 million(1)	17 years	$23,600,000
Winter Storms	See Note (1)(2)	1 year	$172,084
Extreme Heat	See Note (3)	See Note (3)	See Note (3)
Coastal Erosion	See Note (4)	See Note (4)	See Note (4)
Land Subsidence	See Note (4)	See Note (4)	See Note (4)
Saltwater Intrusion	See Note (4)	See Note (4)	See Note (4)
Levee Failure	See Note (4)	See Note (4)	See Note (4)
Hazardous Materials	See Note (4)	See Note (4)	See Note (4)
		Total	**$24,291,914**

(1) The Steering Committee provided updated loss data for these hazards during the 2014 plan update, in addition to what the NCDC data base contained.
(2) The Steering Committee provided updated loss data from this hazard in 2014.
(3) NCDC does not contain data for this hazard for St. Charles Parish.
(4) NCDC does not track data statistics for these hazards.

4.2.3 Probability of Future Events

The statistical probability of a hazard event for St. Charles Parish is not known, but a qualitative probability of its occurrence can be provided. Probability is defined as:

- Highly likely - 76% to 100% that the hazard would occur each year.
- Likely - 36% to 75% that the hazard would occur each year.
- Possible - 11% to 35% that the hazard would occur each year.
- Unlikely - 0% to 10% that the hazard would occur each year.

See Table 7 below for a summary of probability of reoccurrence. This information is found in Sections 4.3.1 and 4.3.2 in greater detail.

Table 7 Probability of Reoccurrence				
Hazard	**Previous Occurrences (Reported in 2009 HMP Update)**	**Additional Occurrences (Since 2009)**	**Total**	**Qualitative Probability**
Drought	3 (since 1998)	0	3 (16 years)	Possible (19%)
Flooding	14 (since 1995)	4	18 (18 years)	Highly Likely (100%)
Thunderstorms / Lightning / Hail / High Wind	79 (since 1955) 2 (since 2001) 16 (since 1956) 14 (since 1955)	11 0 4 8	90 (59 years) 2 (13 years) 20 (18 years) 22 (58 years)	Highly Likely (100%) Possible (15%) Highly Likely (100%) Likely (38%)
Tornadoes	13 (since 1953)	2	15 (61 years)	Possible (25%)
Tropical Cyclones	14 (since 1995)	2	16 (16 years)	Highly Likely (100%)
Winter Storms	2 (since 2004) See Note (3)	1	3 (10 years)	Possible (30%)
Extreme Heat	See Note (1)	See Note (1)	See Note (1)	Highly Likely (3)
Levee Failure (federal) Levee Failure (non-federal)	See Note (2)	See Note (2)	See Note (2)	Unlikely (3) Possible (3)
Hazardous Materials	See Note (2)	See Note (2)	See Note (2)	Highly Likely (3)
Land Subsidence	See Note (2)	See Note (2)	See Note (2)	Highly Likely (3)
Saltwater Intrusion	See Note (2)	See Note (2)	See Note (2)	Highly Likely (3)

(1) NCDC does not contain data for this hazard for St. Charles Parish.
(2) NCDC does not track data statistics for these hazards.
(3) Although NCDC does not contain information on this hazard, the Steering Committee decided the likelihood of this hazard.

4.3 Hazard Profiles

Requirement 201.6(c)(2) (ii)(A):

The risk assessment shall include a description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. The plan* should *describe vulnerability in terms of:

- ***The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas…***

The hazards identified and profiled by the Steering Committee are drought, flooding, thunderstorms / lightning / hail / high wind, tornadoes, tropical cyclones, winter weather, extreme heat, coastal hazards, levee failure, and hazardous materials. Unless otherwise specified, only hazards with a future probability of likely or highly likely are considered for vulnerability analysis and mitigation action. The State Hazard Mitigation

Plan separates hazards into two major categories: Climatological Hazards and Geologic / Human-influenced Hazards. The Parish has used this same approach to presenting hazard profiles.

4.3.1 Climatological Hazards

The hazard profiles are presented here in alphabetical order, the order does not reflect priority or severity.

4.3.1.1 Drought

Hazard Event Description

Drought is defined by the National Weather Service as a "period of abnormally dry weather which persists long enough to produce a serious hydrologic imbalance." There are four different types of drought: meteorological (when rainfall is less than normal), agricultural (when moisture in the soil no longer meets the needs of crops), hydrological (when surface and subsurface water supplies are below normal), and socioeconomic (when water shortages begin to affect people). St. Charles Parish is vulnerable to all of these types of drought. Its impact is far reaching; including potential for forest fires, destruction of agricultural crops, and reduction of surface and subsurface water supplies.

Location and Extent

There is no defined geographic hazard boundary for drought. Warning time for drought is long, since drought events take place over long periods of time. Although St. Charles Parish typically has a rainy climate, it is threatened by periods of drought brought on by little rain. Droughts can occur at any time, as global climatic patterns have an effect on rainfall. According to the Louisiana State Climatologist, forecasts for the El Niño/La Niña cycle can serve as predictive tools for Southeast Louisiana. While an El Niño period generally brings above normal rains, a La Niña period generally leads to drier winters. During 80 percent of La Niña periods, the Southeast U.S. receives less rainfall than normal.

Drought intensity categories are based on six key indicators and numerous supplementary indicators. The accompanying drought severity classification table (Table 8) shows the ranges for each indicator for each dryness level. Because the ranges of the various indicators often don't coincide, the final drought category tends to be based on what the majority of the indicators show. The analysts producing the map also weight the indices according to how well they perform in various parts of the country and at different times of the year. Additional indicators are often needed in the West, where winter snowfall has a strong bearing on water supplies.

Table 8
Drought Severity Classification

		RANGES					
CATEGORY	**DESCRIPTION**	**POSSIBLE IMPACTS**	**PALMER DROUGHT INDEX**	**CPC SOIL MOISTURE MODEL (PERCENTILES)**	**USGS WEEKLY STREAM FLOW (PERCENTILES)**	**STANDARDIZED PRECIPITATION INDEX (SPI)**	**SATELITTE VEGETATION HEALTH INDEX**
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures; fire risk above average. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered.	-1.0 To -1.9	21-30	21-30	-0.5 To -0.7	36-45
D1	Moderate Drought	Some damage to crops, pastures; fire risk high; streams, reservoirs, or wells low, some water shortages developing or imminent, voluntary water use restrictions requested	-2.0 To -2.9	11-20	11-20	-0.8 To -1.2	26-35
D2	Severe Drought	Crop or pasture losses likely; fire risk very high; water shortages common; water restrictions imposed	-3.0 To -3.9	6-10	6-10	-1.3 To -1.5	16-25

Table 8
Drought Severity Classification

		RANGES					
CATEGORY	**DESCRIPTION**	**POSSIBLE IMPACTS**	**PALMER DROUGHT INDEX**	**CPC SOIL MOISTURE MODEL (PERCENTILES)**	**USGS WEEKLY STREAM FLOW (PERCENTILES)**	**STANDARDIZED PRECIPITATION INDEX (SPI)**	**SATELITTE VEGETATION HEALTH INDEX**
D3	Extreme Drought	Major crop/pasture losses; extreme fire danger; widespread water shortages or restrictions	-4.0 To -4.9	3-5	3-5	-1.6 To -1.9	6-15
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; exceptional fire risk; shortages of water in reservoirs, streams, and wells, creating water emergencies	-5.0 or less	0-2	0-2	-2.0 or less	1-5

Source: U.S. National Drought Mitigation Center.

St. Charles Parish has experienced drought conditions in the past that were considered "exceptional". Exceptional drought conditions affect crop and pasture lands as well as water levels in local streams and reservoirs. It is possible that future occurrences of drought In St. Charles Parish may be classified as exceptional with widespread crop damage and water levels at all time lows.

Previous Occurrence

St. Charles Parish typically has abundant precipitation; however, periods of drought do occur. Over the last century, La Niña periods have occurred with approximately the same frequency as El Niño years, about every 3-7 years. During a recent La Niña cycle, St. Charles Parish experienced two years of drought. This drought started in the summer of 1999 and ended in the spring of 2001, one of the driest years on record in the region. During the summer of 2000, the Parish was rated as experiencing "exceptional drought" conditions by the Drought Monitor, a partnership of the U.S. Department of Agriculture, the National Weather Service's Climate Prediction Center, National Climatic Date Center, and the National Drought Mitigation Center at the University of Nebraska at Lincoln.

When a drought occurs, the entire Parish is at risk. Drought events affect St. Charles Parish equally and uniformly. The NCDC recorded three droughts in St. Charles Parish since 1998, two occurring in 1998 and one in 2000. Significant events are summarized below:

- July 1, 1998 - Unusually hot and dry weather conditions continued across much of southeast Louisiana during July. Average temperature departures were around 3 degrees above normal across the region. Three daily maximum temperatures records were set at New Orleans International Airport and five were set or tied at New Orleans Audubon Park. Although increased precipitation across the region during July resulted in some improvement of the dry conditions from the past two months, drought conditions continued with the Palmer Drought Index placing most of southeast Louisiana in moderate to mild drought at the end of July. However, severe drought conditions persisted in the immediate Baton Rouge area and areas to the west. Below normal precipitation occurred south of Lake Pontchartrain and near the coast, where an average monthly rainfall of 5.73 inches was observed compared to the normal of 6.82 inches. Near normal precipitation fell north of Lake Pontchartrain where an average monthly rainfall of 6.38 inches was measured.
- August 1, 1998 - East Central and Southeast Louisiana saw another hot month as average temperatures were 2 to 3 degrees above normal for August. Audubon Park in New Orleans tied or broke 12 previous record daily high temperatures and New Orleans International Airport

tied two previous record highs. In addition, August 1998 was the 4th warmest month on record at New Orleans International Airport and ranked among the ten warmest Augusts in the century across the state. Southeast Louisiana received near normal precipitation amounts, while East Central Louisiana received a rainfall average of 2.35 inches below the normal amount of 5.74 inches. The Palmer Drought Index remained in the severe drought range for East Central Louisiana and in the moderate to mild drought range for Southeast Louisiana.

- December 1, 2000 - Louisiana State University Agricultural Center reported that prolonged drought resulted in agricultural losses, including forestry losses, totaled approximately 80 million dollars in east central and southeast Louisiana during the year 2000. Record, or near record, annual rainfall totals were recorded at several locations. At Baton Rouge, the driest year on record was established since weather records began in 1887. Only 38.10 inches of rain was recorded during the year, approximately 23 inches below normal. At New Orleans International Airport, 38.88 inches of rain was measured during the year, about 23 inches below normal. This was the second driest year since weather records began at the airport location in 1946.
- Although NCDC does not report this event, the Drought Monitor indicates that during 2010 and 2011 abnormally dry conditions led to a period of severe drought in the summer of 2011. By July of 2011, 100% of Louisiana was considered to be under exceptional drought conditions.

Probability of Future Events

St. Charles Parish will certainly experience drought conditions in the future. La Niña periods have occurred with approximately the same frequency as El Niño years, about every 3-7 years. St. Charles Parish has experienced drought conditions in the past during these La Niña periods. Therefore, St. Charles Parish can expect to experience drought conditions every 3-7 years. This is comparable to information presented in the State Hazard Mitigation Plan, which provides a future likelihood of roughly one drought every four years which is considered a low likelihood. As shown in Table 7, the Steering Committee determined a qualitative probability of “possible”, or 19% for drought, which is equivalent to the State’s “low” category.

Hazard Impact

The impact of a drought varies depending on how long it lasts and the time of year that it occurs. On average, a major drought can occur every 20 years in Louisiana and can last for years. St. Charles Parish has had its share of droughts. In the spring and summer of 1998, Southeast

Louisiana experienced severe drought conditions. In April, May, and June total precipitation was only 2.29 inches. Only the fall of 1924 (1.39 inches) and the summer of 1934 (2.09 inches) were drier. Area rivers and lakes fell to well below normal levels with water users urged to conserve. Agriculture and forestry were especially hard hit. Replanting costs and reforestation were estimated to be in the millions. Row crops were the hardest hit with corn, cotton, soybean, rice, grain and sorghum totaling over half of the total dollar loss. Nearly 75 percent of other crops including pastures, hay and vegetables were also destroyed. It was estimated that $15 million in property damaged occurred during this drought.

The effects of drought are not likely to threaten human health or safety. The greatest impact from a drought is on agricultural crop yields. Drought can cause extensive damage to commercial and residential structures' foundations, framing and walls, agricultural crops, roads, bridges, pipelines, utilities and railroads.

St. Charles Parish recognizes drought as a hazard and currently participates in ongoing efforts to mitigate its effects. However, because the probability of future occurrence is low this hazard will not be considered for additional vulnerability analysis. Since the last plan update, development and population growth have not been substantial, therefore, the vulnerability to drought has not changed.

4.3.1.2 Extreme Heat

Hazard Event Description

During the summer months, the residents of St. Charles Parish are especially vulnerable to hot weather hazards. Heat can kill by pushing the human body beyond its limits. Under normal conditions, the body's internal thermostat produces perspiration that evaporates and cools the body. However, in extreme heat and humidity, evaporation is slowed and the body must work harder to maintain a normal temperature.

The major human risks associated with extreme heat are described below:

- Heatstroke – A substantial rise in the core body temperature, often fatal.
- Heat Exhaustion – Fluid and electrolyte imbalance causing weakness or fatigue with a slight body temperature elevation.
- Heat Syncope – A circulatory instability response to heat that causes a sudden loss of consciousness.

- Heat Cramps – Due to mild fluid and electrolyte imbalances.

Heat waves are particularly dangerous for children, the elderly and the infirm. In France, a blistering heat wave in August 2003 left an estimated 15,000 dead — many of whom were elderly. In July 1995, a two-week long Chicago heat wave — which saw the heat index peak at 119°F — claimed over 700 lives. More than half of the victims were 75 or older. According to the Centers for Disease Control, social isolation and the inability to care for oneself put a person at greater risk of heat-related illness.

A heat wave's duration plays an important role in how people are affected. Studies show that a significant rise in heat-related illnesses occurs when excessive heat lasts for more than two days. Spending at least two hours per day in air-conditioned spaces significantly cuts down on the number of heat-related illnesses. However, unusually high temperatures that persist over several days can cause heat-related illnesses that result in death, especially among the elderly.

Location and Extent

There is no defined geographic hazard boundary for extreme heat. Extreme heat generally affects people rather than property. The following heat index scale identifies the severity of high temperatures combined with high humidity:

Heat Index Chart

Temperature °F \ % Relative Humidity	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
110	108	112	117	123	130											
105	102	105	108	113	117	122	130									
100	97	98	102	104	107	110	115	120	126	132						
95	91	93	95	96	98	100	104	106	109	113	119	124	130			
90	86	87	88	90	91	92	95	97	98	100	103	106	110	114	117	121
85	81	82	83	84	85	86	87	88	89	90	92	94	96	97	100	102
80	76	77	78	78	79	79	80	81	82	83	84	85	86	87	88	89

Legend

80-89 degrees	Fatigue is possible with prolonged exposure and/or physical activity.
90-104 degrees	Sunstroke, heat cramps and heat exhaustion are possible with prolonged exposure and/or physical activity.

105-129 degrees	Sunstroke, heat cramps and heat exhaustion are likely. Heat stroke is possible with prolonged exposure and/or physical activity.
130+ degrees	Heatstroke/sunstroke is highly likely with continued exposure.

Extreme heat waves usually come on subtly, raising summer temperatures higher than normal, leaving casualties in their wake. Excessive heat can have a major impact, causing multiple deaths, but sparing property. With extreme heat, there is little physical destruction, although roads can buckle, trains derail, and livestock die. Extreme heat can cause damage to roads, bridges, pipelines, utilities, and railroads. High temperatures can be partially responsible for deflection of rails and related railroad accidents.

The entire Parish is at risk from extreme heat events. Extreme heat events affect St. Charles Parish equally and uniformly. Typically, during an extreme heat event, St. Charles Parish will experience extended periods of maximum temperatures in the mid to upper 90's lasting several days to weeks. It is uncommon for the Parish to experience temperatures above 100 degrees due to its proximity to the Gulf of Mexico; however, the maximum temperature recorded in St. Charles Parish is 102 degrees. Although the citizens of St. Charles Parish are acclimated to high temperatures, prolonged periods of extremely high temperatures can have major affects on the elderly and infirmed.

Previous Occurrence

While St. Charles Parish does experience high temperatures during the summer months, no record of extensive extreme heat defined as temperatures that hover 10 degrees or more above the high average temperature for a particular region and last for several weeks, is available.

The U.S. Department of Commerce reported that the 1995 Chicago heat wave caused over 700 deaths. Many deaths were among low-income elderly in residential units not equipped with air conditioning. When heat waves are accompanied by drought, agricultural losses can be high. A drought/heat wave during the summer of 1993 affected the Southeastern United States causing approximately $1 billion in damages and an undetermined number of deaths.

In 2000, heat was the number one killer out of all hazards reported to the National Weather Service, with 158 fatalities.

More than 52,000 Europeans died from heat in the summer of 2003, making the heat wave one of the deadliest climate-related disasters in Western history.

A severe heat wave occurred across much of the central, southeast, and eastern parts of the Southern U.S. throughout much of August 2007. More than 50 deaths were attributed to the excessive heat. In addition to the numerous deaths attributed to the heat wave, innumerable heat-related illnesses were reported in many parts of the region.

About 240 people in the United States die from heat illnesses each year. Seniors are most at risk from heat. In 2000, individuals between the ages of 50 and 89 accounted for 73% of the year's fatalities. The National Weather Service reported twelve (12) deaths in Louisiana in 2000. All twelve (12) were reported as occurring in a permanent home without air conditioning or adequate ventilation.

NCDC does not contain any data for St. Charles Parish under their excessive heat category, but because of the Parish's location in south Louisiana, we expect such events to occur.

Probability of Future Events

No data were available on specific extreme heat events in St. Charles Parish. Consequently, providing a unique estimate for future extreme events in the Parish is difficult. High temperatures are common in south Louisiana, so it is safe to assume that excessive heat events will occur with regularity. The State Hazard Mitigation Plan presents the future probability of extreme heat events as high. The St. Charles Steering Committee also determined that the future probability of extreme heat events is highly likely. If climatic patterns continue as in past years, the potential for extreme heat events during the summer months will remain.

Hazard Impact

Southeast Louisiana and the New Orleans Region, including St. Charles Parish experience hot summers with high humidity. On average, the New Orleans region has 72 days per year with temperatures of 90 degrees or higher. Humidity levels average 87 percent during the morning hours during this same period. The months of June,

July and August are historically the hottest months of the year for St. Charles Parish.

Southeast Louisiana is known for its long, hot summers. These conditions can pose problems for those not accustomed to the climate or who are outside for prolonged periods of time. Extreme heat is defined as temperatures that hover 10 degrees or more above the high average temperature for a particular region and last for several weeks. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a "dome" of high atmospheric pressure traps hazy, damp air near the ground.

Extreme heat can pose a threat even to individuals and communities that are accustomed to high temperatures. Heat kills by pushing the body beyond its limits. Under normal conditions an internal thermostat produces perspiration that evaporates and cools the body. However, in extreme heat and high humidity, evaporation is slowed, and the body must work extra hard to maintain a normal temperature.

Extreme heat generally affects people rather than property; however, it can cause roads to buckle and bridges, pipelines, and rail lines to be susceptible to damage. High temperatures can be partially responsible for deflection of rails and related railroad accidents

St. Charles Parish recognizes the impacts of extreme heat on its citizens and infrastructure. Alerts, advising high-risk people to reduce physical activity and stay in air-conditioned buildings have helped reduce fatalities and injuries. St. Charles also participates in public education activities, and has implemented an air-conditioning program for elderly residents.

Although the future probability of extreme heat events is highly likely, the citizens of St. Charles Parish and Louisiana are accustomed to handling high temperatures. The State Hazard Mitigation Plan pointed out that ". . . citizens are habituated to heat and its negative effects and have developed lifestyles to accommodate its omnipresence." With this in mind, extreme heat is not discussed in further detail in this plan and will not be considered for additional vulnerability analysis. Education programs and other mitigation activities will be continued to remind our citizens of precautions they can take during extreme heat events. Since the last plan update, development and population growth have not been substantial. Extreme heat affects the populace and with little population increase, the Parish's vulnerability to extreme heat has not changed in the past five years.

4.3.1.3 Flooding

Hazard Event Description

A flood is a natural event for rivers and streams. Excess water from snowmelt, rainfall, or storm surge accumulates and overflows onto the banks and adjacent floodplains. Floodplains are lowlands, adjacent to rivers, lakes, and oceans that are subject to recurring floods. Hundreds of floods occur each year, making it one of the most common hazards in all 50 states and U.S. territories.

Floods are also the most widespread of all natural disasters--except fire. Most communities in the United States have experienced some kind of flooding, after spring rains, heavy thunderstorms, or winter snow thaws. Flood waters can be slow, or fast rising, but generally develop over a period of days. Flooding tends to occur in the summer and early fall because of the monsoon rains and is typified by increased humidity and high summer temperatures. Floods kill an average of 150 people a year nationwide.

Flooding can occur at any time of the year, in any part of the country, and at any time of day or night. Floodplains in the U.S. are home to over 9 million households. Most injuries and deaths occur when people are swept away by flood currents, and most property damage results from inundation by sediment-filled water.

Several factors determine the severity of floods, including rainfall intensity (or other water source) and duration. A large amount of rainfall over a short time span can result in Flash Flood conditions. A small amount of rain can also result in floods in locations where the soil is saturated from a previous wet period or if the rain is concentrated in an area of impermeable surfaces such as large parking lots, paved roadways, or other impervious developed areas. Topography and ground cover are also contributing factors for floods. Water runoff is greater in areas with steep slopes and little or no vegetative ground cover. Frequency of inundation depends on the climate, soil, and channel slope.

In regions where substantial precipitation occurs in a particular season each year, or in regions where annual flooding is derived principally from snowmelt, the floodplains may be inundated nearly every year. In areas where flooding is caused by melting snow, and occasionally compounded by rainfall, the flood season is spring or early summer.

Fortunately, most of the known floodplains in the United States have been mapped by FEMA, which administers the NFIP. When a flood study is completed by the NFIP, the information and maps are assembled into a Flood Insurance Study (FIS). An FIS is a compilation and presentation of flood risk data for specific water courses, lakes, and coastal flood hazard areas within a community and includes causes of flooding. The FIS report and associated maps delineate Special Flood Hazard Areas (SFHAs), designate flood risk zones, and establish base flood elevations (BFEs), based on the flood that has a 1% chance of occurring annually, or the 100-year flood.

Location and Extent

Floods occur in all 50 states and the U.S. territories. FEMA indicated that the states with the most land area subject to flooding by the 1-percent-annual-chance flood are Texas, Louisiana, Florida, and Arkansas. In terms of percentage of a state's total land area, the states with the most flood-prone lands are Louisiana, Florida, Arkansas, and Mississippi.

Currently, there are approximately 20,500 communities across the United States and its territories that participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. Over 5.6 million people currently hold flood insurance policies in those communities. In exchange, the NFIP makes federally-backed flood insurance available to homeowners, renters and business owners providing financial protection in the event of flood damage. The NFIP reports that from 2008 to 2012, the average flood claim amounted to nearly $42,000. From 2003 to 2012, total flood insurance claims averaged $4 billion per year. This is up from $2.6 billion per year during the period 1996-2005. In 2012 alone, the NFIP paid more than $7.7 billion dollars in flood insurance claims in the United States with Louisiana accounting for over $5 million dollars of that total.

Presently, 11,750 structures located within St. Charles Parish have flood insurance policies through the NFIP and pay annual premiums totaling approximately $9,097,258. The total coverage value of these policies is approximately $3,223,180,800. Since 1978, NFIP policy holders within St. Charles Parish have filed 5,912 insurance claims for a total loss value of approximately $100,459,349. This data is summarized in Table 9.

Table 9
Flood Insurance Statistics for St. Charles Parish

NAME	NO. OF INSURED STRUCTURES	TOTAL INSURANCE COVERAGE VALUE	NO. OF INSURANCE CLAIMS FILED SINCE 1978	ANNUAL PREMIUMS PAID	TOTAL PAID CLAIMS
St. Charles Parish	11,750	$3,223,180,800	5,912	$9,097,258	$100,459,349

Source: National Flood Insurance Program (as of June 30, 2014)

All of St. Charles Parish lies in either the 100-year or the 500-year floodplain (See Maps). Fortunately, a large portion of the development in St. Charles Parish follows the Mississippi River. The area near the Mississippi River in St. Charles Parish lies in the 500-year floodplain. However, some developed areas in portions of the Boutte, Destrehan, Norco and Luling communities are located within the 100-year floodplain. In these low-lying areas, flood waters may reach maximum depths of one to two feet depending on the intensity and duration of rainfall.

An analysis of repetitive loss structures in St. Charles Parish shows those areas that are most vulnerable to flooding. The majority of these structures are located in portions of Norco, Destrehan, New Sarpy, Luling, and St. Rose. More specifically, the area north of River Road between West Pine Street and Goodhope Street in Norco; the area north of River Road between Villere Drive and Dunleith Drive and the area southwest of the railroad tracks near Ormond Boulevard and Ducayet Drive in Destrehan; the area centered on Harding Street between Airline Highway and River Road in New Sarpy; the area north of River Road between Oakland Street and Ann Street and the area south of the railroad tracks on Dianne Drive in St. Rose; and the area south of Highway 90 between Valencia Drive and Lakewood Drive in Luling are prone to flooding in St. Charles Parish. Additional repetitive loss structures are located in the Lone Star, Mimosa Park and Boutte areas. All of the repetitive loss areas are shown on Map 3. For the most part, there has not been much change since the last plan update in the areas that are most vulnerable to flooding.

Many of the areas shown on Map 3 have been identified by the Parish's Public Works Department as being in need of structural measures to improve storm water flow, drainage, and pump capacity. A number of structural mitigation measures have already been completed in these areas, and many more are planned by the Public Works Department for further improvements in drainage.

Repetitive Flood Losses

As part of the process to reduce or eliminate repetitive flooding to structures across the United States, FEMA has developed an official Severe Repetitive Loss (SRL) Properties Strategy. The purpose behind the national strategy is to identify, catalog, and propose mitigation measures to reduce flood losses to the relatively few number of structures that absorb the majority of the premium dollars from the national flood insurance fund. A severe repetitive loss property is defined as a residential property that has at least four separate NFIP claim payments (including building and contents) over $5,000 each and the cumulative amount exceeding $20,000 dollars with at least two of the claims within a 10-year period; or that has at least two separate NFIP claim payments (building payments only), within a 10-year period, in which the cumulative amount exceeds the market value of the building. To be considered separate claims, each claim must be ten days apart.

As of June 2014, FEMA has identified approximately 11,900 SRL properties nationwide. Many of these structures have suffered extensive flooding and filed claims that equal or exceed the value of the property. St. Charles Parish has 57 SRL properties with 36 of these un-mitigated at this time. See Map 3 for locations of SRL properties.

Another category of known flood susceptible structures are those appearing on the NFIP repetitive loss list. A property is considered a repetitive loss when there are at least two paid flood losses of at least $1,000 each, in any ten year period since 1978. St. Charles Parish currently has 584 repetitive loss structures, of which 520 are un-mitigated at the time of this plan update. This number has decreased from 601 structures in March 2008 due to mitigation programs the Parish has pursued in recent years. All of the structures identified are residential structures. Map 3 shows the areas where the majority of these structures are located.

Through the use of GIS mapping analysis of known flood susceptible structures within the Parish, a series of definable repetitive loss areas emerge. The repetitive loss areas are illustrated on Map 3.

Previous Occurrence

There have been twelve Presidential Flood Declarations in St. Charles Parish since 2001. An analysis of the period between May 8, 1995 and May 10, 1995 provides an example of the flooding potential of St. Charles Parish. During that period, most of Southeast Louisiana was subjected to severe thunderstorms that produced extremely heavy rainfalls over a 12-parish area. The thunderstorms moved across the area in such close

succession that some localities received nearly continuous moderate to heavy rainfall for almost three days.

The long series of heavy rainfalls resulted from a combination of atmospheric conditions that are, separately, very common to the central Gulf Coast, but that are not usually present simultaneously. The heavy rains began on the evening of May 8, 1995 and rainfall totals on May 9th exceeded 18 inches in some areas such as Ormond Estates. Numerous structures were damaged by flooding or leaking roofs. The town of Destrehan was particularly hard hit, with some sections receiving up to 24 inches of rain. Fortunately, drainage throughout the Parish was good, and recovery was rapid.

The Federal disaster area in Louisiana was first established on May 10, 1995, when President Clinton declared the flooding a major disaster under PL-93-288 for Individual Assistance and Public Assistance in St. Charles Parish, Louisiana. The damage survey by the Red Cross reported that over 2,000 residential structures were damaged by flooding. Residential insurance claims paid, as reported by the NFIP, consisted of 1,977 claims totaling $57,566,242. Business insurance claims, of which there were 37, totaled $663,874. Damage to public buildings was light. Officials reported that four buildings experienced damages totaling $2,509. The Parish reported $38,616 in physical damages to Parish roads and bridges.

On April 25, 2004, a slow-moving system dropped approximately 12 inches of rain in eight hours in the Norco area of St. Charles Parish. Parish officials stated that the water came too fast for Norco's automatic pumps. Most of the flood damage occurred in Norco, where between eight and twelve inches of rain fell, but some homes in Killona, Destrehan, St. Rose, Hahnville and Luling also flooded. A Red Cross assessment indicated that 226 homes were damaged by flooding. Norco Primary K-3 and Norco Elementary School 4-6 also suffered flood damage.

The NCDC has tracked significant events, as described below:

- April 25, 2004 – Thunderstorms dumped up to twelve inches of rain during the afternoon and evening hours. Norco was hardest hit with 110 homes and businesses flooded. Numerous roadways were flooded across the parish and a number of automobiles were flooded. Estimated damages were $400,000.
- May 15, 2004 – Approximately 10 homes in Norco were flooded due to heavy rainfalls. Additional homes in nearby areas located outside of St. Charles Parish were also flooded.

- October 22, 2007 – Widespread heavy rain fell across southeast Louisiana with rainfall amounts ranging from three to eight inches across the area. Streets, vehicles, homes and business were flooded.
- May 22, 2008 – Five homes were flooded due to heavy rainfall that was produced from isolated strong to severe thunderstorms.
- June 17, 2008 – Areas located in Destrehan, Montz, and Norco had significant street flooding, and high waters caused a portion of Ormond Boulevard to close.
- December 14, 2009 – Heavy rain resulted in widespread and significant street flooding. It was reported that a few homes around Destrehan were flooded. In Boutte, fifteen homes were flooded with 100 more threatened by high water.
- August 29, 2010 - Slow-moving thunderstorms caused flooding of five homes in Des Allemands, Bayou Gauche, Boutte, and Paradis.
- March 8, 2011 – Thunderstorms in association with a strong cold front caused flooding concerns in Destrehan. Multiple streets were flooded with water in two homes.
- March 23, 2012 – A slow-moving cold front produced heavy rain over a three-day period. Extensive flooding was reported in the Hahnville area.
- April 21, 2012 – A slow-moving thunderstorm produced flooding in five homes in Mimosa Park. Widespread street-flooding was reported throughout St. Charles Parish.

Probability of Future Events

There have been twelve Presidential Flood Declarations in St. Charles Parish since 2001. This number does not account for the lesser magnitude flooding of some of the events detailed above in the list of previous occurrences. According to Table 7, the future probability of flooding in St. Charles Parish is highly likely. The State Hazard Mitigation Plan states that the future likelihood for flooding in Louisiana is high. The associated maps show the extent of the 100-year and 500-year floodplains in St. Charles Parish. Areas that lie within the 100-year floodplain have a 1 percent chance of flooding in any given year. The areas that lie within the 500-year floodplain have a 0.2 percent chance of flooding in any given year or are protected by levees from 100-year flooding.

Hazard Impact

All of St. Charles Parish lies in either the 100-year or the 500-year floodplain (See Maps). Every home and business in St. Charles Parish is vulnerable to flooding. Currently, a large portion of the development in St. Charles Parish follows the Mississippi River. The area near the Mississippi River in St. Charles Parish lies in the 500-year floodplain. However, some

developed areas in portions of the Boutte, Destrehan, Norco and Luling communities are located within the 100-year floodplain.

According to the State Hazard Mitigation Plan, approximately 70 – 80% of St. Charles population lives in the 100-year floodplain. Flooding from high stages in the Mississippi River does not occur due to protection by the main levees along the River; however, tidal flooding does occur in association with winter storm fronts and tropical cyclones. Sources of flooding are Lake Pontchartrain to the north, Lake Salvador to the south, and Lake Cataouatche to the southeast. In areas protected by levee systems, pump stations are at times inadequate to handle intense rainfalls and flooding when ponding occurs.

The Parish has installed numerous pump stations and built many miles of levees to prevent tidal surges from flooding developed areas. The East Bank levee system has been upgraded and affords protection from a 1-percent annual chance flood event. Unfortunately, much of the West Bank is not protected from a 1-percent annual flood. A multi-phased project has commenced on the West Bank hurricane protection levee system, which will eventually offer added protection to those residents. However, at this time they remain unprotected from coastal flooding.

When flooding occurs, all local residents, businesses, and industrial sites are affected as well as citizens who commute through or conduct business in the Parish. Flooding poses serious threats to public health, safety, and welfare and can negatively impact transportation corridors and economic activities throughout the Parish and fatalities. When flooding is extensive, the local economy is negatively impacted by temporary closing of businesses and industrial sites, employee lost work time, and additional government financial burden.

Risk Analysis

In assessing the risk to the Parish caused by flooding, a review of previous occurrences suggests that the average estimated loss is $138,625 annually based on NCDC occurrences. This is grossly underestimated as it does not take into account flooding from hurricanes or storm surge. The State Hazard Mitigation Plan provides Hazus flood analysis for a 100-year flood event, including population (based on 2000 census data), total building exposure (in thousands), total economic loss (in thousands), total number of damaged buildings, total building loss (in thousands, short-term shelter needs, and transportation losses (economic losses to bridges). This data is presented in Table 10.

Table 10
Summary of Hazus Flood Model for 100-yr Flood in St. Charles Parish

Hazus Model Population	Total Building Exposure ($1,000)	Total Economic Loss ($1,000)	Total Damaged Buildings	Building Loss ($1,000)	Short Term Shelter Needs	Transportation Infrastructure Economic Loss ($)
48,072	3,434,466	11,147	85	5,344	510	42,340

Source: State of Louisiana Hazard Mitigation Plan 2014 Update

The State Hazard Mitigation Plan also provides potential annualized losses due to flooding as ranging from $100,000 to $400,000.

Although St. Charles Parish has not experienced significant population growth since the last plan update, it is clear that any development can have an impact on flooding. The Parish will continue to monitor development and ensure that all buildings are built to comply with elevation requirements. The vulnerability to flooding has not increased significantly since the last plan update due to limited population growth and development.

Summarizing Vulnerability

St. Charles Parish is vulnerable to flooding due to its location and topography. Much of the Parish is at a low elevation and is in the 100-year floodplain. With 70% - 80% of the population living in a flood zone, citizens are vulnerable to flooding. Most development is on higher ground near the Mississippi River, which is less likely to flood; however, many areas on the West Bank are still not fully protected by levees.

Repetitive Loss Areas exist on the East Bank and West Bank and should continue to be addressed through mitigation programs. A Repetitive Loss Strategy is being developed concurrently with this HMP Update to determine the path forward in mitigating the repetitive loss properties that exist in St. Charles Parish.

4.3.1.4 Thunderstorms / Lightning / Hail / High Wind

Hazard Event Description

Thunderstorms, sometimes referred to as “thunder events” are recorded and observed as soon as a peal of thunder is heard by an observer at a NWS first-order weather station. A thunder event is composed of lightning and rainfall,

and can intensify into a severe thunderstorm with damaging or deadly hail, high winds, tornadoes, and flash flooding. The National Weather Service (NWS) estimates that over 100,000 thunderstorms occur each year on the U.S. mainland. Approximately 10 percent are classified as “severe.” Thunderstorms spawn as many as 1,000 tornadoes each year.

The NWS classifies a thunderstorm as severe if its winds reach or exceed 58 mph, produces a tornado, or drops surface hail at least .75 in. in diameter. The average thunderstorm system is approximately 15 miles in diameter and typically lasts less than 30 minutes at a single location. However, weather- monitoring reports indicate that coherent thunderstorm systems can travel intact for distances in excess of 600 miles.

Many thunderstorms occur in St. Charles Parish each year. This is largely due to its proximity to the Gulf of Mexico, a rich source of the low-level moisture needed for the development of thunderstorms. Thunderstorms can be accompanied by gusty winds, heavy rains, lightning, hail and occasionally tornadoes.

Thunderstorms typically occur when dense cold air overlies warm moist air and uplift is initiated by one of several possible factors such as solar heating, orographic (topographic) effects or fronts and troughs. Strong localized upward currents of air can develop as the heat energy stored in the moist warm air is converted to kinetic energy high in the clouds.

During this process, condensation of the moist air occurs at altitude, together with separation of positive and negative electrical charges, leading to the generation of lightning. Hail is formed by the freezing of raindrops at very high levels. These are then thought to grow steadily in size while being recirculated throughout the storm by powerful updrafts and downdrafts. When the weight of the circulating water and ice can no longer be supported by the updrafts, they fall to earth in concentrated shafts, dragging the surrounding air downwards and causing strong ‘downburst’ winds at the surface.

When conditions are favorable, mature thunderstorms can form in very short periods of time and have highly organized motion comprising complementary up- and down-drafts. Sometimes, practical warnings for such events are not possible. Large hail results in nearly $1 billion in damage annually to property and crops in the United States. Hail is made up of spherical balls of ice. It is a product of thunderstorms or intense showers. It is generally white and translucent, consisting of liquid or snow particles encased with layers of ice. Hail is formed within the high tops of a well organized thunderstorm. An updraft will sometimes throw rain droplets high up into the tops of a cloud. There, the temperature is well below freezing, and the droplet freezes.

The droplet then falls and can become caught in another updraft. This time, a second coating of ice is added, making the hail stone larger. This cycle continues until the hailstone is too heavy to be lifted again, and it then falls as hail. The stronger the updraft, the longer the hail develops, and the bigger the hailstone is when it falls. Hail is not to be confused with sleet, which are frozen raindrops that fall during winter storms. Hail can be smaller than a pea or as large as a softball and can be very destructive to plants, cars, homes, buildings and crops.

The development and maturation of hailstones are very complex processes. Numerous factors impact the resultant size of the hailstone including updraft strength, storm scale wind profile, height of the freezing level, and the mean temperature and relative humidity of downdraft air. The complexities of hail formation and sub-cloud processes make utilizing Doppler radar data to forecast the occurrence of large hail difficult. Verification of hail events is also important, but is a cumbersome process due to the limited temporal and spatial distribution of the event.

Lightning, which occurs during all thunderstorms, can strike anywhere. Generated by the buildup of charged ions in a thundercloud, the discharge of a lightning bolt interacts with the best conducting object or surface on the ground. The air in the channel of a lightning strike reaches temperatures higher than 50,000 degrees F. The rapid heating and cooling of the air near the channel causes a shock wave, which produces thunder.

Lightning also has the potential to inflict considerable damage and loss of life, but it rarely does so. The haphazardness with which harmful lightning strikes occur and their relative rarity make lightning a hazard that is difficult to mitigate. The relatively low population density within St. Charles Parish also means that lightning strikes are unlikely to cause harm to persons or property within the Parish.

Location and Extent

There is no defined geographic hazard boundary for thunderstorms. Therefore, all of St. Charles Parish can be affected by thunderstorms, lightning, hail, and high wind. The extent of thunderstorms may be measured by cell intensity: ordinary cell, multi-cellular, and supercell. The most common type of thunderstorm is termed the *ordinary* cell, which is limited in size and lifespan, but can produce short bursts of severe

weather. *Multi-cellular* storms are more persistent and larger in impact, formed by successive cell generation on the forward left flank, allowing them to move transverse to the prevailing wind and to present a broader impact front. Several other variants also exist, but the most dangerous form is termed the *supercell* thunderstorm. The *supercell* is typically an isolated form and always has the potential to be severe because of its strong and persistent rotating updraft, which dissipates at the upper levels forming the characteristic anvil and overshoot of clouds. Vertical wind shear (i.e. wind speed increasing with height) is important in the development of severe storms such as *supercells*. The shearing effect serves to separate the updrafts from the downdrafts, thus creating a circulation. In a normal thunderstorm the downdraft tends to fall back into the updraft, effectively dissipating the storm's energy. Hail and heavy rain is associated with the downdraft zones and under some specific conditions may also form a tornado towards the left rear flank of the storm cell.

This small but rapidly rotating column of air descends below the cloud base, reaching the surface with devastating consequences. As the storms translate at speeds typically in the range of 40 to 50 km/h, these relatively narrow impact widths become long swaths of potentially very high damage. *Supercells* may have a lifespan of several hours and present an impact front as wide as 40 km. Records of damage generally indicate 'pulsing' whereby the ground level impacts tend to fluctuate, probably depending on the supply of material held aloft by the updrafts. Very severe *supercells* can exhibit almost continuous damage fronts for several hours as combinations of wind, rain and hail.

The winds that accompany thunderstorm events have the potential to cause property damage and, in rare circumstances, loss of life. As mentioned above, severe thunderstorms are classified as having wind speeds of at least 50 knots or 58 miles per hour. While thunderstorm winds can occasionally reach considerably higher speeds, recent severe thunderstorms in St. Charles Parish whose wind speeds have been recorded have not had extraordinarily high wind speeds, have not caused loss of life, and have resulted in relatively minor property damage. Damage from thunderstorm winds usually takes the form of downed tree limbs or downed power lines. Clean up and repair resulting from thunderstorm winds are usually negligible. The following Beaufort scale (Table 11) is an empirical measure for the intensity of the wind associated with windstorms.

Table 11
Beaufort Scale

NUMBER	WIND SPEED (MPH)	DESCRIPTION	WAVE HEIGHT (FT)	SEA CONDITIONS	LAND CONDITIONS
0	<1	Calm	0	Flat.	Calm. Smoke rises vertically.
1	1-3	Light air	0.33	Ripples without crests.	Wind motion visible in smoke.
2	3-7	Light breeze	0.66	Small wavelets.	Wind felt on exposed skin. Leaves rustle.
3	8-12	Gentle breeze	2	Large wavelets.	Leaves and smaller twigs in constant motion.
4	13-17	Moderate breeze	3.3	Small waves.	Dust and loose paper rise. Small branches begin to move.
5	18-24	Fresh breeze	6.6	Moderate (1.2 m) longer waves. Some foam and spray.	Small trees sway.
6	25-30	Strong breeze	9.9	Large waves with foam crests and some spray.	Large branches in motion. Whistling heard in overhead wires. Umbrella use difficult.
7	31-38	High wind, Moderate Gale, Near Gale	13.1	Sea heaps up and foam begins to streak.	Whole trees in motion. Effort needed to walk against the wind.
8	39-46	Fresh Gale	18	Moderately high waves with breaking crests forming spindrift. Streaks of foam.	Twigs broken from trees. Cars veer on road.
9	47-54	Strong Gale	23	High waves (6-7 m) with dense foam. Wave crests start to roll over. Considerable spray.	Larger branches break off trees, and some small trees blow over. Construction/temporary signs and barricades blow over. Damage to circus tents and canopies.
10	55-63	Whole Gale/Storm	29.5	Very high waves. The sea surface is white and there is considerable tumbling.	Trees uprooted. Considerable structural damage.
11	64-72	Violent storm	37.7	Exceptionally high waves.	Widespread vegetation and structural damage.
12	≥73	Hurricane-force	≥46	Huge waves. Sea is completely white with foam and spray. Air is filled with driving spray, reduced visibility.	Massive and widespread damage to structures.

Source: www.spc.noaa.gov

Although wind damage associated with thunderstorms is normally minor, the extent to which St. Charles Parish could be affected by high winds is not insignificant. As an example of the intensity of winds that St. Charles Parish may experience, a thunderstorm on record in St. James Parish just north of St. Charles indicated damage associated with 90 mile per hour straight line winds. This same intensity may be expected in St. Charles Parish as a worst case high wind thunderstorm. In this scenario, building damage would be significant, power lines downed, trees uprooted, and loss of life possible.

There is no defined geographic hazard boundary for hailstorms; therefore, all people and property in St. Charles Parish are exposed to risk from damage from hailstorms. Hailstorms are generally localized events. The severity of impact of most hailstorms is considered to be limited since they generally result in injuries treatable with first aid, shut down critical facilities and services for 24 hours or less, and less than ten percent of affected properties suffer major damage. The National Weather Service classifies a storm as severe if hail of 3/4 of an inch in diameter (approximately the size of a penny) or greater is imminent based on radar intensities or observed by a spotter or other people.

Large hailstones fall at speeds faster than 100 mph. Large falling balls of ice can be very dangerous. Large hail can do significant damage to automobiles, windows, roofs, crops and animals. St. Charles Parish has experienced damage from hailstorms ranging from pea-size to 1 ¾-inch diameter. Since there is no record of larger hailstones occurring in the Parish, it is expected that the largest likely extent of future damages would be from 1 ¾"- sized hailstones.

As previously stated, the irregularity of occurrences of harmful lightning strikes and their relative rarity make lightning a hazard that is difficult to mitigate. The relatively low population density within St. Charles Parish also means that lightning strikes are not very likely to cause harm to persons or property within the Parish. The State Hazard Mitigation Plan indicates that the northern and eastern parts of the Parish have a higher density of lightning strikes per square mile (11 – 12 flashes per square mile per year) than the western and southern parts of the Parish (which have 3 – 5 flashes per square mile per year). The State Hazard Mitigation Plan provides the jurisdictional vulnerability to lightning, which indicates a total number of lightning events as less than five, damages due to lightning between $500,000 and $1,000,000, five or fewer injuries due to lightning, and no fatalities attributed to lightning events.

Previous Occurrence

The NCDC's data reports that since 1955, there have been at least 79 thunderstorms with strong wind events, 2 major lightning events since 2001, and 39 hail events since 1956 in St. Charles Parish. Descriptions of several thunderstorm events (including high wind events), lightning events, and hail events, as recorded in NCDC data, are below.

Thunderstorm with Strong Wind Events

- On February 25, 1993, thunderstorm winds blew the roof off a mobile home in Hahnville and blew down several business signs and trees in Destrehan causing approximately $50,000 in damages.
- On October 21, 1993, numerous thunderstorms moved east at 15 to 20 mph, blowing down several trees two miles northwest of Lockport and in Des Allemands. Based on NCDC data, no property damage was reported.

- On March 18, 1996, persistent gradient winds caused approximately $250,000 in damage across sections of Southeast Louisiana.
- On April 26, 1997, severe thunderstorms through east central and southeast Louisiana. North of Norco, wind gusts dislodged approximately 3500 unsecured 250 pound timbers from the Bonnet Carre Spillway. Sixty miles per hour wind gusts were measured by wind gages in New Orleans and on Lake Pontchartrain.
- On January 2, 1999, it was reported by St. Charles Parish Department of Emergency Management that thunderstorm winds caused damage to the roofs of three buildings at a church-school complex.
- On November 8, 2000, thunderstorm wind gusts caused several trees to blow down in Hahnville. Several homes suffered damage. The estimated damage amount was $60,000.
- On December 9, 2004, numerous power lines were knocked down in Destrehan from thunderstorm winds and caused approximately $75,000 in property damage.
- On June 17, 2008, strong to severe thunderstorms blew down in Destrehan causing $1,000 damage.
- On July 14, 2008, in association with a weak cold front, thunderstorms knocked down trees in Hahnville.
- On February 1, 2011, strong thunderstorms brought down trees and damaged a home and power lines in Killona and Hahnville causing $10,000 in damages.
- On April 4, 2011, thunderstorms damaged shutters and downed trees in Luling. One home in Destrehan received roof damage.

- On August 9th and 10th, 2012, an unseasonably strong cold front triggered severe thunderstorms that downed trees and power lines.
- On June 6, 2013, Thunderstorm winds knocked down trees in Boutte, causing $3,000 in damages.

Lightning Events

- On June 7, 2001, lightning formed during Tropical Storm Allison struck a gas storage tank at the Orion Norco Refinery which started a large fire. Heavy rains throughout the day from Tropical Storm Allison caused the roof of the tank to sag, allowing gas to collect on top. The tank was struck by lightning in the afternoon and the fire burned until 3:00 a.m. the next day. The fire caused an estimated $500,000 in damages and led to Parish officials issuing a "shelter-in-place" notification to 2,623 residents in the area.

- On June 10, 2008, a lightning strike injured four workers at an oil refinery when it struck a nearby steel crane.

Hail Events

- On April 7, 2003, quarter-sized hail was reported in Destrehan. Approximately $15,000 in damages occurred.
- On June 21, 2001, dime to nickel-sized hail was reported in Killona. No property damage was reported.
- On February 25, 2004, golf ball-sized hail was reported in Des Allemands. No damage was reported.
- On June 15, 2005, nickel-sized hail was reported in Boutte, Willowdale, and Luling. No property damage was reported.
- On March 6, 2008, 1 ¾-inch hail was reported in Hahnville. Remarkably, no damage was reported.
- On April 5, 2008, one-inch hail was reported in Des Allemands.

- On April 22, 2008, one-inch hail was reported in Paradis.
- On June 6, 2013 severe thunderstorms associated with a weak cold front dropped quarter-sized hail in St. Rose and Luling although no property damage was reported.
- On April 5, 2014, Strong thunderstorms produced ¾–inch hail in Hahnville. No property damage was reported.

Probability of Future Events

The probability of a severe thunderstorm occurring in a specific region depends on certain atmospheric and climatic conditions. Duration and frequency can be used as indicators of potential severity. The geographic areas with a high density of lightning strikes are at a greater risk for damage or potential loss of life during a thunder event.

Louisiana has an annual average of 100 – 110 thunderstorms lasting from 90 to 100 minutes. In comparison, South Florida has the greatest number of thunderstorms, with an annual average of 100 to 130, and an average duration of 80 to 100 minutes.

As seen on Table 7, the probability of thunderstorms events reoccurring each year in St. Charles Parish is highly likely, with a qualitative probability of reoccurrence at 100%. The probability of lightning events reoccurring each year is possible, with a qualitative probability of reoccurrence at 15%. The probability of hail events reoccurring each year in St. Charles Parish is highly likely, with a qualitative probability of reoccurrence at 100%. The probability of high wind events reoccurring each year in St. Charles Parish is likely, with a qualitative probability of reoccurrence at 38%. NCDC's data indicate that there have been a total of 90 thunderstorms events in St. Charles Parish since 1955, yielding over a 100% reoccurrence rate for strong thunderstorms. Reoccurrence rates calculated at over 100% are assumed to be 100%.

Risk Analysis

The 2014 Steering Committee concluded that the future probability of thunderstorms occurring in the Parish is High with a Medium to Low impact. Thunderstorms are a common occurrence in the south and residents have grown accustomed to them as indicated by the medium to low impact rating. Thunderstorms normally do not cause major damage; however, minor damage is common and can cause impacts on a community-wide basis.

Thunderstorm winds can cause property damage and power outages, which in turn may cause additional problems for area residents. Power outages cause economic loss to businesses, heightened health risks to elderly or infirmed in need of medical equipment or air conditioning, and loss due to food spoilage. The State Hazard Mitigation Plan indicates that St. Charles Parish has had no injuries or fatalities due to high winds in the period from 1987-2012. Estimated annual losses are $400,000 or less with vulnerability to property damage reported as less than $10,000,000.

According to the State Hazard Mitigation Plan, approximately 100 deaths and 500 injuries occur annually due to lightning. Louisiana is 12th in the nation for lightning fatalities. Lightning can strike power lines, telephone lines, electrical appliances, and computers causing substantial property damage. Fires are also a threat from lightning. Louisiana is 2nd in the nation for the number of lightning flashes per year. The State Hazard Mitigation Plan indicates that St. Charles Parish's vulnerability for property damage associated with lightning is between $500,000 and $1,000,000. The Parish has had five injuries and no fatalities attributed to lightning. Estimated annual losses due to lightning are between $20,000 and $40,000.

Hail damage can be extensive when severe thunderstorms produce large hailstones. Damage to homes and other structures can be extensive resulting in roof damage. Automobiles and crops can be damaged as well. The State Hazard Mitigation Plan indicates that St. Charles Parish may see approximately $100,000 or less in property damage from hail and annualized losses are $4,000 or less. There have been no hail injuries or fatalities in St. Charles Parish. St. Charles Parish has not had a significant population growth since the last Plan update; therefore, vulnerability to this hazard has not increased.

Summarizing Vulnerability

Thunderstorms have occurred in St. Charles Parish with varying amounts of damage. Substantial damage is possible to buildings, infrastructure and critical facilities. Residential, commercial, governmental and industrial properties are at risk. The Parish has numerous mitigation actions in place to protect critical structures and educate citizens on methods to protect their own properties.

4.3.1.5 Tornadoes

Hazard Event Description

A tornado is a violently rotating column of air extending between, and in contact with, a cloud and the surface of the earth. The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 miles per hour or more. In extreme cases, winds may approach 300 miles per hour. Tornadoes are related to larger vortex formations, and therefore often form in convective cells such as thunderstorms or in the right forward quadrant of a hurricane, far from the hurricane eye. Damage paths can be in excess of one mile wide and 50

miles long. Approximately 1,000 tornadoes are spawned by severe thunderstorms each year.

Tornadoes are the most hazardous when they occur in populated areas. Tornadoes can topple mobile homes, lift cars, snap trees, and turn objects into destructive missiles. Among the most unpredictable of weather phenomena, tornadoes can occur at any time of day, in any state in the union, and in any season. In Louisiana, tornadoes have higher frequency in the spring months of March, April, and May. While the majority of tornadoes cause little or no damage, some are capable of tremendous destruction. Personal injury is very possible during a tornado. Loss of life and injuries may be reduced if more individuals seek shelter in small interior rooms, or hallways, and avoid rooms and buildings with large roof spans. An interior room or closet has less chance of collapse or failure than other areas.

Tornado damage severity is now measured by the Enhanced Fujita Tornado Scale, which was adopted by the National Weather Service in 2007. The Fujita scale was revised to better reflect damage surveys and align wind speeds more closely with associated storm damage. The Enhanced Fujita Scale assigns numerical values based on wind speeds and categorizes tornadoes from 0 to 5 as the Fujita Scale did in the past. The letters “EF” precede the numerical value. Table 12 shows the Enhanced Fujita Scale ratings for tornadoes from EF0 to EF5. Discussions contained in this plan related to tornadoes will use the Fujita Scale in use at the time of the individual tornado. Prior to 2007, tornadoes will be designated F0 to F5 and conversely, after 2007, the designation will be EF0 to EF5.

Table 12
Enhanced Fujita Tornado Measurement Scale

Category	Wind Speed	Examples of Possible Damage	Number in Louisiana	% of LA Tornadoes (Note 1)
EF0	Gale (65-85 mph)	Light damage. Some damage to chimneys; break branches of trees; push over shallow rooted trees; damage to sign boards.	593	32%
EF1	Moderate (86-110 mph)	Moderate damage. Peel surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off roads.	831	45%
EF2	Significant (111-135 mph)	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.	299	16%
EF3	Severe (136-165 mph)	Severe damage. Roofs and some walls torn off well constructed houses; trains overturned; most trees in forest uprooted; cars lifted off ground and thrown.	93	5%
EF4	Devastating (166-200 mph)	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.	9	<1%
EF5	Incredible (>200 mph)	Incredible damage. Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile sized missiles fly through air in excess of 100 yards; trees debarked; incredible phenomena will occur.	1	<1%

Source: www.TornadoHistoryProject.com

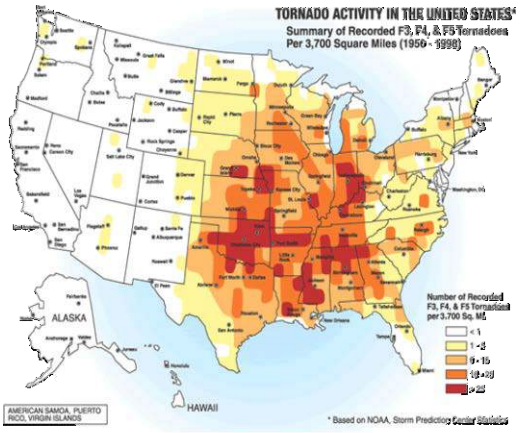
A useful gauge of how intense tornadoes are likely to be in an area is the design wind speeds for community shelters recommended by the American Society of Civil Engineers (ASCE). The ASCE divides the U.S. into Wind Zones based on 40 years of tornado history and 100 years of hurricane history. St. Charles Parish is in Wind Zone III, meaning community shelters should be designed to withstand 200 mph winds. This corresponds approximately to the highest wind speed of an EF4 tornado or a strong Category 5 hurricane. Newly constructed buildings are required to meet standards specified by the parish with respect to withstanding strong winds.

Location and Extent

Louisiana averages more than 25 tornadoes annually. In Louisiana, peak tornado occurrence is in March through May, and in November. The National Oceanic and Atmospheric Administration (NOAA) reports that 117 tornadoes were spawned by Hurricane Ivan in 2004, 86 from Hurricane Rita and 62 from Hurricane Katrina in 2005.

Because of the nature of tornadic events, it is impossible to say where in St. Charles Parish a tornado is likely to occur or how much damage a tornado is likely to cause. Therefore, the entire Parish is at risk for a tornado. Generally, the length of the path traveled by a tornado and the width of the path cut by a tornado increase as the EF-rating increases.

Since St. Charles Parish is most likely to experience weak tornadoes as evidenced by the previous occurrences detailed below, any tornado in the Parish will probably have a relatively short and narrow path. Based on the Storm fax Weather Almanac, paths for weak tornadoes typically are less than 10 miles long and less than 175 yards wide.



Source: http://www.fema.gov/plan/prevent/saferoom/tsfs02_torn_activity.shtm

See Table 13 for Louisiana's ranking nationwide for tornadoes. This table provides Louisiana's ranking in the nation for number of tornadoes, fatalities and injuries caused by tornado events, and accumulated dollar damages. Louisiana ranks within the top 20 states in the nation for all four categories, as seen by the ranking, indicating that it has a relatively high probability for occurrences and damages. The data for this table comes from statistics provided by www.disastercenter.com. The website has not been updated since 1995. Further research led us to "The Extreme Weather Sourcebook" at www.sip.ucar.edu/sourcebook/index.jsp. This site was current through 2009 and ranked Louisiana eighteenth in the nation with total damages (in 2009 dollars) of $1,240,800,000. For more current data, the National Climatic Data Center (NCDC) has been used. However, the NCDC did not include information on Louisiana's ranking for tornado events; therefore, this table will be kept in the Plan update.

Table 13 Louisiana Rankings for Tornadoes, Fatalities, Injuries, and Damages From 1950 – 1995							
TORNADOES		**FATALITIES**		**INJURIES**		**DAMAGES**	
RANK	NUMBER	RANK	NUMBER	RANK	NUMBER	RANK	DOLLAR
11	1137	13	134	16	2191	15	$595,262,464

Previous Occurrence

The National Climatic Data Center's website indicates that between 1953 and 2014, there were 15 tornadoes reported in the Parish. Seven were F0 or EF0 tornadoes; six were F1 tornadoes; one was an F2 tornado; and one was an F3 tornado. No deaths have been reported as a result of tornadoes in St. Charles Parish in the last 50 years. Property damages have ranged from $25,000 to $500,000 per occurrence.

- On November 24, 1996, a tornado touched down and caused an estimated $15,000 in damages. The tornado moved vehicles, and caused damage to a greenhouse unit and a fence. Damage to several gas lines lead to a gas leak.
- On February 27, 1999, a tornado touched down and caused approximately $100,000 in damages. The tornado travelled along a three quarters of a mile long and 25 to 50 yard wide path. Three mobile homes were destroyed, 2 buildings were heavily damaged, and 29 roofs had minor damages.
- On November 5, 2002, a tornado touched down and caused an estimated $25,000 in damages. The tornado destroyed one mobile home and damaged several others. Several power lines were also knocked down.
- More recently, an EF0 tornado touched down on February 12, 2008 near Montz. No damage was caused by this event.
- On November 3, 2010, a water spout was reported over Bayou des Alllemands. It moved onto land areas causing no damage.
- On March 29, 2011, a weak tornado touched down with estimated winds of 85 mph in Gypsy. Minimal tree damage occurred and a vehicle was reported to have lost its camper top.
- In June 2011, a funnel cloud was seen in the Destrehan area. It dissipated without causing any damage.

Probability of Future Events

As seen in Table 7, the probability of tornadoes reoccurring each year in St. Charles Parish is possible, with a percentage likelihood of 25%. NCDC's data indicates that there have been 15 occurrences since 1953. The State Hazard Mitigation Plan reports a probability of future occurrence of tornadoes for the State as high. It also ranks St. Charles Parish as one of the parishes (1 of 27) most likely to be affected by tornadoes according to SHELDUS.

Hazard Impact

In St. Charles Parish, according to previous occurrences, tornadoes can be expected approximately once every four years. It is unlikely that St. Charles Parish will be struck by a *violent* tornado (EF4 or EF5). Historically, tornadoes in St. Charles Parish have not been violent and few have been *strong* (EF2 or EF3). Most tornadoes affecting the Parish have been weak (EF0 or EF1).

Tornadoes may cause damage to residential property, businesses, industrial facilities and governmental infrastructure in the Parish. Tornadoes may also cause fatalities and injuries. The NCDC database reports 10 injuries caused by tornadoes in St. Charles Parish during the period from 1950 to present. Power outages disrupt people's lives, close businesses and schools, and impede response and recovery operations. Damaged infrastructure caused by tornadoes hinders critical services such as police, fire, and ambulances. Major tornado damage may close schools and hospitals and render economically-important facilities inoperable for long periods of time.

Risk Analysis

It is difficult to assess the monetary impact a tornado may have on a community, as the effect may vary from minor roof damage on a single structure, to destruction of an entire neighborhood. Based on Table 6, the average annual monetary impact of tornadoes in St. Charles Parish is $10,000. However, a single event could cause millions of dollars of damage. The State Hazard Mitigation Plan indicates that St. Charles Parish has a vulnerability for damage from tornadoes of $2.5 million or less and annualized loss from tornadoes of $100,000 or less, based on data from 1987-2012. The highest monetary impact from a tornado in St. Charles Parish reported on the NCDC website is $500,000 due to an EF1 tornado that occurred in December of 1993.

The State Hazard Mitigation Plan indicates that the overall exposure for St. Charles Parish is $11,391,140 based on the Hazus MH 2.1 inventory

database. It also provides the building exposure by occupancy type for tornadoes. That information is presented in Table 14.

Table 14
Building Exposure by Type ($1,000) for Tornadoes

Residential	Commercial	Industrial	Agricultural	Religion	Government	Education
8,318,110	1,948,898	717,882	25,498	204,072	96,946	79,734

Source: State of Louisiana Hazard Mitigation Plan 2014 Update

Since the last plan update, development and population growth have not been substantial, therefore, the vulnerability to a tornado has not increased significantly.

Summarizing Vulnerability

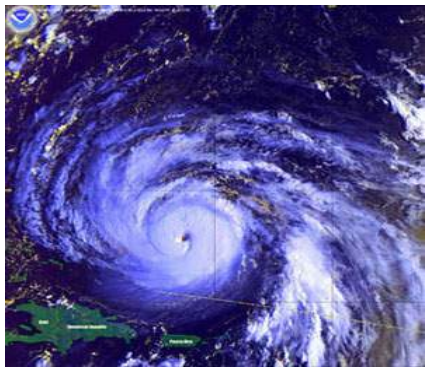
Tornadoes have occurred in St. Charles Parish with varying amounts of damage and injuries. Substantial damage is possible to buildings, infrastructure and critical facilities. Residential, commercial, governmental and industrial properties are at risk. Loss of life and injury is always a threat when a tornado occurs.

Tornadoes are unpredictable weather phenomena, but with advances in weather-forecasting, warning times may help save lives. The Parish should continue to be proactive in educating the citizens on actions to be taken in the event of natural hazards. This may be one of the most important ways to save lives.

4.3.1.6 Tropical Cyclones

Hazard Event Description

Hurricanes are tropical cyclones that have maximum sustained winds of at least 74 miles per hour. In addition to producing strong winds, they are capable of producing heavy rains, high waves, and storm surges.



The distinguishing feature of a hurricane is the eye around which winds rotate. The eye, the storm's core, is an area of low barometric pressure that is generally 10 to 30 nautical miles in diameter. The surrounding storm may be 100 to 500 miles in diameter.

St. Charles Parish is threatened by hurricanes that develop in the Atlantic and the Gulf of Mexico. With its low elevation

and close proximity to open water on both East and West Banks, St. Charles Parish is vulnerable to all types of hurricane threats. The greatest threat to St. Charles Parish comes during the Atlantic/Gulf Hurricane season, which runs from June 1 to November 30. See Table 15 for the classification of tropical cyclones.

Table 15
Classification of Tropical Cyclones

STAGE OF DEVELOPMENT	CRITERIA
Tropical Depression (development)	Maximum sustained surface wind speed is < 39 mph
Tropical Storm	Maximum sustained surface wind speed ranges from 39 - <74 mph
Hurricane	Maximum sustained surface wind speed is at least 74 mph
Tropical Depression (dissipation)	Decaying stages of a cyclone in which maximum sustained surface wind speed has dropped below 39 mph

Source: http://www.srh.noaa.gov/jetstream/tropics/tc_classification.htm

The chief causes of damage from a hurricane are strong winds, heavy rains, high waves, and storm surge. Because some of these features overlap with other hazards addressed by the Plan, this section will focus on the threat of flooding due to high waves and storm surges. The risk assessment section on flooding covers all heavy rainfall events, including those associated with hurricanes.

Location and Extent

St. Charles Parish, located approximately 20 miles west of New Orleans, adjacent to Jefferson Parish to the east, St. John the Baptist Parish to the west, and 50 miles to the north of the Gulf of Mexico, is extremely vulnerable to the effects of tropical storms and hurricanes. It is located on a floodplain some of which lies at or below sea level and is surrounded by an extensive marine estuarine system of lakes, canals, bayous, the Gulf of Mexico and the Mississippi River. All areas of St. Charles Parish are vulnerable to the effects of a hurricane. The Saffir / Simpson Hurricane Scale is used to classify storms by numbered categories (Table 16). Hurricanes are classified as Categories 1 through 5 based on central pressure, wind speed, storm surge height, and damage potential. Year 2005 marks the first time in recorded history that two hurricanes (Katrina and Rita) have reached Category 5 strength in the Gulf of Mexico in a single season.

Table 16 Saffir/Simpson Hurricane Scale				
STORM CATEGORY	**CENTRAL PRESSURE**	**SUSTAINED WINDS**	**STORM SURGE**	**POTENTIAL DAMAGE**(1)
1	> 980 mbar	74 - 95 mph	4 – 5 ft	Minimal
2	965 – 979 mbar	96 - 110 mph	6 – 8 ft	Extreme
3	945 – 964 mbar	111 – 130 mph	9 – 12 ft	Devastating
4	920 – 944 mbar	131 – 155 mph	13 – 18 ft	Catastrophic
5	< 920 mbar	> 155 mph	> 18 ft	Catastrophic

Source: http://www.srh.noaa.gov/jetstream/tropics/tc_classification.htm

(1) Potential Damage category titles were taken from the State Hazard Mitigation Plan (2014)

Previous Occurrence

Since 2001, St. Charles Parish has been presidentially-declared a disaster area eleven times due to hurricanes / tropical storms. Although these storms are the worst to have hit St. Charles Parish in the past several decades, there have been many more that have caused damages in the Parish.

Hurricane Betsy, whose eye was 40 miles in diameter, came ashore at Grand Isle (Jefferson Parish), Louisiana. Great devastation was caused by high water on the central Gulf Coast from Grand Isle to Mobile, Alabama. Although evacuation advice prompted 300,000 people in Louisiana to seek safe shelter, 58 people lost their lives because of winds and floods in that state. Highest sustained winds of 136 mph were recorded at Port Sulphur, LA, with gusts to 160 mph reported along the Gulf Coast. Betsy's damages in 1990 dollars amounted to $6.5 billion, the third costliest U.S. hurricane of the 20th Century.

In 1985, Hurricane Juan looped across Southern Louisiana for several days in late October, dropping ten inches of rain across South Louisiana, with pockets of 15 inches in some areas. Bridges were washed out and levees were overtopped throughout South Louisiana. Total damages exceeded $300 million and 12 people were killed. Hurricane Andrew struck the Louisiana coastline in August of 1992. Seven people died and many were injured across South Louisiana. Rainfall totals exceeded 5 inches over a four day period in many locations. An F3 tornado struck Laplace and stayed on the ground until reaching Reserve, causing 2 deaths. Approximately 1 ½ million people evacuated across Southern Louisiana and damages were estimated near $1 billion in Louisiana.

After a month of off-and-on battering from tropical storms starting in mid-August 1998, St. Charles Parish watched the long, destructive journey of Hurricane Georges from the eastern Atlantic, across the Virgin Islands and Hispaniola and into the Gulf of Mexico. By Saturday, Sept. 26, the hurricane was moving toward the New Orleans area, causing hundreds of

thousands of residents to flee and thousands more to evacuate into shelters, including the Superdome. A last-minute bobble took the storm to the east, sideswiping Greater New Orleans and smashing straight into the Mississippi coast. In New Orleans, the mass evacuation, citywide curfews and major damage to lakefront areas and outlying parishes gave weight to experts' predictions that a direct hit on the City could bring catastrophe. Flooding, property damage and power outages were reported from Louisiana to the Florida Panhandle as the wide, lumbering storm neared the Gulf coast. Twenty inches of rain fell in the Florida Panhandle, with 10 inches reported in southern Alabama.

Tropical Storm Allison was the first named storm of the 2001 Atlantic Hurricane Season. The storm brought the heaviest rains Louisiana has seen in many years and helped spark an oil refinery fire in Norco in St. Charles Parish. In Louisiana, the governor declared states of emergency in 20 of the State's 64 parishes where more than 500 homes were damaged by flood waters. Over the duration of the storm, rainfall amounts ranged from 8 to 20 inches in the southern parishes, with an estimated two feet of rain recorded in areas around New Orleans.

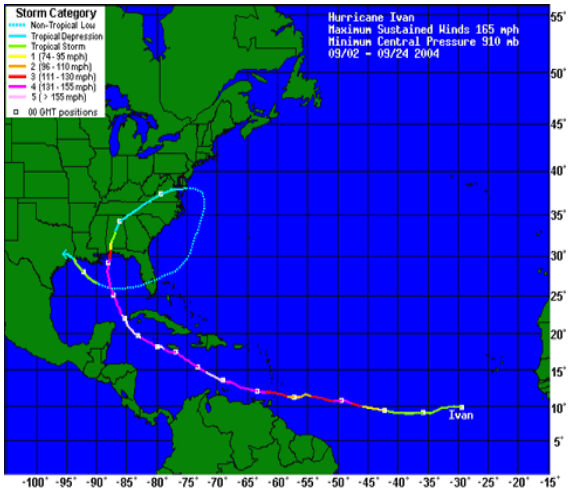
On September 25, 2002, widespread street flooding that, by early evening, had closed Interstate 10 and made lakes in neighborhoods throughout the New Orleans metro area heralded the impending arrival of Tropical Storm Isidore, which plowed ashore shortly after midnight with 60-mph winds and additional bands of soaking rain. Tropical Storm Isidore's visit to the River Parishes dumped between 11 and 17 inches of rain overnight, flooding some homes and closing major roads including Airline Drive, Almedia Road, Ormond Boulevard in St. Charles and exits off Interstate 10 in LaPlace in St. John the Baptist Parish. St. Charles Parish took the brunt of the storm and 9,000 residents lost power. Schools in the parish remained closed after the storm. A six-mile stretch of Airline Drive from the Kenner line to Harding Avenue was turned into a veritable lake, forcing motorists onto River Road to access many subdivisions. All entrances from U.S. 61 to Interstate 310, Almedia Road, St. Rose Avenue and portions of other streets were closed as a result of flooding associated with Tropical Storm Isidore. The tidal surge of 5.75 feet from Lake Pontchartrain caused about 50 homes in the parish to flood, with St. Rose being the worst hit. Tidal surges from Lake Pontchartrain also flooded the Shell Norco Chemical plant and Motiva Norco Refining plant on the east side of Norco.

Several units, including the catalytic cracking units, sour water strippers, solvents, an olefins unit and sulfur plants were operating at reduced levels. While the utilities and wastewater-treatment facilities were operating, all remaining units were shut down. In the aftermath of Tropical Storm Isidore, some of the most affected residents were sugar cane and vegetable growers/farmers. Sugar cane fields across St. Charles Parish

suffered from severe “Lodging”- or bending over- as a result of moisture in the soil and high winds, however, due to flooding, vegetable farmers suffered most.

An additional storm, Hurricane Lili, made its way through the Gulf of Mexico on October 2, 2002. On October 3, 2002, Hurricane Lili weakened to a Saffir Simpson Scale Category 1 Hurricane before making landfall along the south central coast of Louisiana. No sustained hurricane force winds were measured but storm surge tides were measured at 3 to 5 feet above normal across southeast Louisiana, and 4 to 7 feet above normal in locations where the hurricane made landfall.

Many low lying roadways and structures were flooded along Lake Pontchartrain and Lake Maurepas. On October 3, 2002, wind gusts of approximately 69 mph were recorded at Mid-Lake Pontchartrain Causeway.



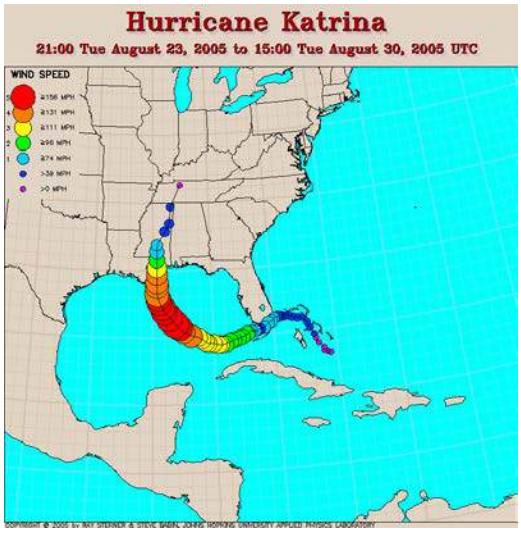
In June 2003, Tropical Storm Bill developed in the Gulf of Mexico and moved into southeast Louisiana on June 30, 2003. The Louisiana Universities Marine Consortium (LUMCON) facility recorded the lowest pressure at 995.4 mb. Storm surge was measured at 3-5 feet above normal along the southeast Louisiana coast and Lake Pontchartrain. A maximum storm surge of 5.8 ft was measured at the LUMCON facility. Sustained winds of 35 to 45 mph were experienced, and a total rainfall over a 48 hour period was 6 to 10 inches. Tropical Storm Bill brought with it 3 confirmed tornadoes, 4 injuries, and caused approximately $44 million in damage to St. Charles and several other parishes in Louisiana.

In 2004, two hurricane / tropical storm events occurred. Hurricane Ivan moved through the Gulf of Mexico on September 1, 2004 and made landfall in Alabama on September 16, 2004 as a Category 3 hurricane. The highest sustained wind recorded in southeast Louisiana was 83 mph with gusts of 100 mph. The lowest barometric pressure recorded was 983.6 mb. A storm surge of 3 to 5 feet above normal was measured east of the Mississippi. In areas around Lake Pontchartrain and west of the Mississippi River, a storm surge of 2 to 4 feet was measured. Numerous homes and businesses suffered damage. At least 55,000 customers experienced power outages in the areas. It was estimated that approximately 600,000 people evacuated from southeast Louisiana.

Hurricane Ivan is estimated to have caused approximately $15.8 million in damages – 75% being from wind and 25% being from storm surge.

Also, in 2004, Tropical Storm Matthew developed in the Gulf of Mexico. On October 10, 2004, Tropical Storm Matthew made landfall along the south central Louisiana Coast. The coastal areas experienced tropical storm force winds. The highest sustained wind recorded in southeast Louisiana was at 48 mph with gusts of 55 mph. The lowest pressure recorded was at 999.7 mb. The average rainfall amount was approximately 5 to 10 inches with some areas reporting up 13 to 16 inches. The storm surge measured was 2 to 4 feet above normal, but higher in some locations. Around the shores of Lake Pontchartrain and Lake Maurepas coastal flooding was experienced. Tropical Storm Matthew is estimated to have caused approximately $255,000 in damage.

In 2005, there were three hurricane / tropical storm events. Hurricane Cindy made landfall on July 6, 2005 in southeast Louisiana. Much of southeast Louisiana experienced tropical storm force winds and high gusts for long periods at a time. There was wind damage to trees and widespread power outages. A maximum sustained wind of 54 mph and a peak gust of 70 mph was recorded at the Lakefront Airport. The lowest pressure measured in southeast Louisiana was 997.3 mb and the highest surge recorded was 5.5 feet. Hurricane Cindy is estimated to have caused approximately $50 million in damage.



Hurricane Katrina became a Category 5 hurricane on August 28, 2005 approximately 250 miles south southeast of the Mississippi River. Katrina weakened to a Category 3 storm with maximum sustained winds of 127 mph just before making landfall on August 29, 2005. Katrina was one of the strongest storms to impact the coast of the U.S. during the last 100 years. Hurricane protection levees and floodwalls were overtopped and/or breached which caused widespread flooding of homes and businesses. Wind and wind driven debris caused windows to break, and trees and power lines to fall. Fatalities numbered approximately 1,600 people. Storm surges ranged from 5 – 17 feet in various parishes. Total rainfall measured 7 to 14 inches. Hurricane Katrina is estimated to have caused approximately 22.6 billion dollars in damages, excluding losses covered by the Federal Flood Insurance Program. Overall uninsured and insured

losses combined were estimated to exceed $100 billion along the entire Gulf Coast.

Hurricane Rita was the fourth-most intense Atlantic hurricane ever recorded and the most intense tropical cyclone ever observed in the Gulf of Mexico with peak sustained winds reaching 175 mph. Rita made landfall with wind speeds of 120 mph along the Texas/Louisiana border early on September 24, 2005 as a Category 3 hurricane. The hurricane caused storm-surge flooding of 10 to 15 feet above normal tide levels along the southwestern coast of Louisiana, and other areas previously flooded by Hurricane Katrina. The maximum sustained winds recorded in southeast Louisiana were 42 mph at the Baton Rouge Airport with maximum wind gust of 53 mph. Rainfall amounts were heaviest across western areas of southeast Louisiana where totals ranged from 6 to 12 inches. Tropical Storm Rita is estimated to have caused approximately $48 million in damages.

On September 1, 2008, Hurricane Gustav made landfall as a Category 2 storm. In preparation for this storm, approximately 1.9 million people evacuated southern Louisiana, making it the largest evacuation in the history of Louisiana. It caused approximately $15 billion in property damage.

On September 13, 2008, Hurricane Ike made landfall in Galveston, TX. Many of the Louisiana parishes felt the effects of Hurricane Ike. Hurricane Ike caused approximately $10 billion in property damage in Louisiana.

In September 2011, Tropical Storm Lee made landfall in south Louisiana. It moved slowly northeast causing property damage due to storm surge flooding impacts. The cost of damage to the Parish was $600,000.

In August 2012, Hurricane Isaac came ashore in Plaquemines Parish near the mouth of the Mississippi River, then went back into the Gulf and made landfall the next day near Port Fourchon. Hurricane gusts were felt between 70 to 85 mph throughout the region. Due to its slow forward speed, tropical storm force winds were felt across much of the area. This storm would cost the Parish over 5 million dollars in damage. Wind damage was the greatest concern and over 700,000 homes were without power during the height of the storm.

Probability of Future Events

The 2014 State Hazard Mitigation Plan states that, based on previous occurrences, the future probability of a Hurricane / Tropical Storm impacting the Parish is classified as Medium. During the 2014 update, the Steering Committee ranked the probability of future Hurricanes / Tropical Storms as Highly Likely, based on previous occurrence. It is estimated that the likelihood of a hurricane impacting St. Charles Parish is once every one to two years based on data collected in SHELDUS from 1987 to 2012.

Hazard Impact

Storm surge is a major issue associated with hurricanes. Storm surge comes ashore with the hurricane, causing flooding. Storm surge is especially a problem in Louisiana because of the shallow continental shelf that restricts water from returning to the Gulf of Mexico. The extent of the damage that St. Charles Parish would sustain from the storm surge would depend on the direction from which the storm hit. The East Bank would be susceptible to a high surge if a storm hit from the east or southeast. A storm from the south through Barataria Bay would create a high surge for the West Bank. In general, St. Charles Parish should be able to handle a Category one or two storm. Category 3 or stronger storms would be problematic for St. Charles Parish.

Elevations throughout St. Charles Parish vary with the highest areas being closest to the Mississippi River. However, the change is substantial just a short distance from the River. Major neighborhood areas such as Ormond, Mimosa Park and Willowdale average approximately five feet above sea level. Depending on the path of the storm, a slow-moving tropical cyclone could cause high levels of standing water in residential areas, especially on the West Bank where the hurricane protection levee is not complete. The worst case scenarios would be a slow moving Category 4 or 5 storm.

Another potential problem that arises when a hurricane is predicted to make landfall is the evacuation of residents. If the evacuation routes are not sufficient or if there are not enough routes, this can cause major delays in moving people quickly out of the hazard area. The most important factor in limiting human losses in St. Charles Parish due to a hurricane is the evacuation of the population. As the New Orleans metropolitan area is evacuated, more than one-third of all the traffic will pass through St. Charles Parish. For a full-scale evacuation of the Parish to be effective, it must begin early. Due to

the backup on Interstate 10, alternate routes for Parish residents need to be considered.

If the Parish calls for a mandatory evacuation, both sides of the river will be evacuated at the same time. According to the State Contraflow Plan, once contraflow has started residents will not be able to access I-10 from I-310. Delays on the I-310 interchange connecting to I-10 West may be heavy as well as LA 48 (East Bank River Road), U.S. 61 (Airline Hwy.) and U.S. 90.

East Bank residents should evacuate north following U.S. 61 to the I-10 and I-55 interchanges, taking I-55 through Hammond. An alternate route is to take LA-48 to I-310 South to LA 3127 North, turn onto LA 70 East the Left on LA 3089. This leads to either I-10 west to Baton Rouge or LA 1 to West Baton Rouge. West Bank evacuation route is on U.S. 90 to Lafayette then North on I-49. An alternate route to this is to take LA 18 to I-310 South to LA 3127 North, turn onto LA 70 East then Left on LA 3089. This leads to either I-10 west to Baton Rouge or LA 1 to West Baton Rouge.

Evacuation routes in St. Charles Parish are limited and susceptible to flooding. High water levels would impede adequate pumping and prevent relief against flooding from heavy rainfall. It could take 48 hours to evacuate large numbers of people from the Parish.

Storm surge associated with the “worst case” Category 3, 4, or 5 hurricane scenario for the Parish could cause an inundation of 20 feet above sea level in some areas of the Parish, not including tidal effects, wind, rain, and storm rainfall. A Category 3 hurricane can be expected within 80 miles of St. Charles Parish once every 32 years. A Category 4 hurricane can be expected within 80 miles of the Parish once every 69 years. A Category 5 hurricane can be expected within 80 miles of the Parish once every 180 years. A very near miss or a direct hit on St. Charles Parish by a Category 3 or worse hurricane would be described as an extensive, extreme, or catastrophic disaster. A multitude of private and public emergency service agencies would be required to respond to a hurricane threat and evacuations may be necessary.

If the storm threat is not severe enough to require an evacuation, two shelters are available for residents who need to be in a sound structure.

The Lake Pontchartrain, LA, and Vicinity Hurricane Protection Project (LP&V-HPP) was authorized by the Flood Control Act of 1965 and the Water Resources Development Acts of 1974, 1986, 1990, and 1992. A hurricane protection levee is completed to protect most of the communities on the East Bank from storm surge from Lake Pontchartrain. This project is designed to protect residents between Lake Pontchartrain and the

Mississippi River levee from surges in Lake Pontchartrain driven by storms up to the Standard Project Hurricane (SPH). The St. Charles Parish North of Airline Highway levee, a feature of the Lake Pontchartrain, Louisiana and Vicinity Hurricane Protection project, is located on the East Bank of the Mississippi River. The levee is oriented in an east-west direction and separates the developed areas in St. Charles Parish from the approximately 26,000 acres of wetlands on the north side of the levee, known as the "LaBranche Wetlands." On its eastern end, the levee ties into the Jefferson / St. Charles Return Levee just south of the east-west runway extension. In general, the levee parallels Airline Highway to where, at its western limits, it turns north and goes around the Shell Oil Company tank farm and ties into the East Guide Levee of the Bonnet Carre Spillway.

The West Bank Levee construction broke ground in January 2014. When all four parts of the levee in St. Charles Parish are finished (Willowridge, Ellington, Magnolia Ridge and Sunset), the flood protection system will consist of a 23-mile levee and will include three new pump stations, two detention ponds, two tidal interchange structures, three T-wall structures for pipeline crossings, a floodgate, and frontal protection for three existing pump stations. It will eventually protect 7,768 households. For now, the communities on the West Bank of the Parish remain unprotected from storm surges from the south.

Construction on upgrades to the East Bank Levee was completed in 2014. The levee has been raised and reinforced. It is 9.5 miles in length and has four drainage structures, four floodwalls, and a gate. Construction projects on the East Bank between Norco and Louis Armstrong New Orleans International Airport including the LaBranche wetlands levees, fronting protection at pump stations and drainage structures, as well as construction of the new floodwall beneath Interstate 310 will defend against a storm surge event that has a one percent chance of occurring in any given year.

The National Hurricane Center has produced a model for predicting storm surge from an actual or theoretical hurricane. The SLOSH (Sea, Lake and Overland Surges from Hurricanes) model takes into account the characteristics of the modeled storm as well as the physical configurations and features of a specific locale. The SLOSH models developed for St. Charles Parish are a result of analysis done for the Southeast Louisiana Hurricane Preparedness Study of 1994.

In the previous plan, seven scenarios were considered using SLOSH models to develop Surge Inundation Maps for Southeast Louisiana. These seven scenarios included all Category 1 and Category 5 hurricanes, and slow and fast moving Category 2, 3 and 4 hurricanes. They indicate that a direct hit from a slow-moving Category 3 storm could put the water level at

10-15 feet above sea level on the West Bank and 15-20 feet above sea level on the East Bank, resulting in approximately seven feet of standing water in some residential areas. The worst case scenarios would be a slow moving Category 4 or 5 storm. These scenarios would put St. Charles Parish under approximately 15 feet of water.

Recently, the NOAA / NWS's Meteorological Development Laboratory has released an experimental product called the Probabilistic Hurricane Storm Surge. This product takes into account two parts which include the Gulf of Mexico and the Eastern Atlantic coastal areas. Part one shows graphics that present probability percentages of storm surge exceeding 2 through 10 feet. Part two is a graphic that shows that there is a 10 percent chance of the displayed storm surge heights being exceeded. These products are based on the SLOSH model runs using the National Hurricane Center (NHC) official advisory. This product can be retrieved from http://www.weather.gov/mdl/psurge website whenever a hurricane watch or warning is in effect in St. Charles Parish.

St. Charles Parish also faces economic losses from a major hurricane. The economic base of St. Charles Parish is dominated by the energy and petro-chemical industries. Damage to energy and petro-chemical facilities, including facilities operated by Shell Oil Company, Union Carbide Corporation and Entergy, could greatly impact the economic viability of St. Charles Parish. Economic losses from recent Hurricanes / Tropical Storms have been significant with Hurricane Isaac in August of 2012 costing the Parish over $5 million in damages and Tropical Storm Lee right under $700,000.

Risk Analysis

The impact from a Tropical Cyclone could be catastrophic for St. Charles Parish as seen in the events that have occurred in the past decade. Depending on the intensity of the tropical cyclone and where it makes landfall, the outcome could be devastating for the Parish. The State Hazard Mitigation Plan provides a summary of how hurricanes affect St. Charles Parish in terms of economic damage, injuries, and fatalities. This information is based on historical data from SHELDUS (1987-2012). It suggests that the jurisdictional vulnerability for St. Charles Parish of total events is more than 15. The Parish's vulnerability to property damage is estimated at more than $800 million, vulnerability to hurricane injuries at more than 2.0, and vulnerability to fatalities at 10.00 or fewer. The overall composite risk is Very High at >2.5. The State Plan indicates that

annualized losses for St. Charles Parish are in the highest category of more than $32 million.

The vulnerability to hurricanes for St. Charles Parish has not increased significantly since the last Plan update as there has not been a significant growth in population or development. For the 2014 update, the Steering Committee has ranked Tropical Cyclones at a High probability and a High impact.

To reduce risk, mitigation opportunities for hurricane winds are similar to mitigation measures for other wind hazards. Attention to the type of structure used in hurricane-prone areas may yield benefits, particularly by avoiding highly susceptible manufactured or mobile homes.

Summarizing Vulnerability

The St. Charles Parish Steering Committee determined that the probability of a future Hurricane Event is High. The Steering Committee placed a high priority on this hazard and the Parish has made great strides in enhancing hurricane protection for all its citizens. Much of the population would be affected by a hurricane. Although the threat to St. Charles Parish from hurricanes is high, many of the most effective hurricane protection and mitigation actions are simply beyond the Parish's jurisdictional and financial capacity. Funding and master planning for both levee protection and erosion are largely the purview of the USACE. This plan does not assign responsibility to Parish government for the vast scale of hurricane protection and wetlands restoration projects that are necessary to better protect its residents. Instead the Parish's mitigation actions will focus on emergency preparedness and response; resource planning and allocation to meet local cost share requirements for large scale hurricane protection and coastal restoration projects; and project planning and prioritization to ensure that the Parish is an active player in large scale levee and wetlands restoration projects and that the Parish's most vulnerable areas are given priority.

The greatest hurricane protection is achieved by quality construction and reinforcement of walls, floors, and ceilings. Proper anchoring of walls to foundations and roofs to walls is essential for a building to withstand certain wind speeds. Code adoption by local jurisdictions, compliance by builders, and local government inspection of new homes could reduce the risk of destruction in the coastal areas.

Public awareness campaigns to educate residents about storm preparedness, and development of evacuation plans and actual evacuation of high-risk areas during emergencies will help reduce the overall impact of hurricanes.

4.3.1.7 Winter Storms

Hazard Event Description

Winter months in Louisiana (December, January, and February) have average seasonal temperatures ranging from the mid-40s over northern Louisiana to the low 50s across southern parishes. While average seasonal temperatures remain above freezing Statewide, cold fronts extending from Canada through the State occur at least once during most winters. Severe winter weather in Louisiana consists of freezing temperatures and heavy precipitation, usually in the form of rain, freezing rain, or sleet, but sometimes in the form of snow.

Severe winter storm events are relatively rare in Louisiana, especially in the coastal areas of the state. Severe winter events tend to be very disruptive to transportation and commerce when they occur in the extreme south. Trees, cars, roads, and other surfaces develop a coating or glaze of ice, making even small accumulations of ice extremely hazardous to motorists and pedestrians. The most prevalent impacts of heavy accumulations of ice are slippery roads and walkways that lead to vehicle and pedestrian accidents; collapsed roofs from fallen trees and limbs and heavy ice and snow loads; and felled trees, telephone poles and lines, electrical wires, and communication towers. As a result of severe ice storms, telecommunications and power can be disrupted for days.

St. Charles Parish is rarely affected by winter storms because of its warmer climate and proximity to the coast. The average low temperature during the month of January is 43°F. However, in January 2014, Winter Storm Leon shutdown the Parish causing significant icing throughout the Parish. Prior to that event, the last major freeze was in 1989 during one of the most significant cold spells in the South in a century. Temperatures in the Parish dropped below freezing for 64 consecutive hours.

Location and Extent

Because there is no defined geographic boundary, all people and property in St. Charles Parish are exposed to the risk of damage from severe winter storms. In south Louisiana, including St. Charles Parish, the coldest months of the year are December through February. During this time, low temperatures average 45 degrees. However, cold fronts that move through the region can drop temperatures below freezing.

Winter storms are relatively rare in Louisiana, yet occurrences tend to be very disruptive to transportation and commerce. Trees, cars, roads, and other surfaces develop a coating or glaze of ice making even small

accumulations of ice an extreme hazard to motorists and pedestrians. The most prevalent impacts of heavy accumulations of ice are slippery roads and walkways, collapsed roofs from fallen trees, telephone poles and lines, electrical wires, and communication towers. As a result of severe winter storms, telecommunications and power can be disrupted for days.

Although uncommon, extreme winter weather can occur in St. Charles Parish. To define the extent to which it may occur, historical records were reviewed. The lowest temperature recorded in the Greater New Orleans area is 11 degrees, which occurred in December of 1989 and the greatest snowfall recorded was 4½ inches. The area has seen ice accumulation of one inch during extreme winter weather. These types of extreme winter weather paralyze the Parish through loss of transportation, power outages, breakage of water pipes, reduction in water supply, and crop damage.

The entire Parish is at risk from winter storms. Winter storms affect St. Charles Parish equally and uniformly. Table 17 provides the average monthly temperatures for St. Charles Parish:

Table 17
Average St. Charles Parish Temperatures

	TEMPERATURE (^{O}F)	RELATIVE HUMIDITY (%)
	Average	Average
January	51.3	72.9%
February	54.8	81.1%
March	61.0	78.0%
April	67.2	73.1%
May	74.7	86.2%
June	80.0	67.4%
July	82.0	74.4%
August	82.0	79.5%
September	77.9	69.5%
October	69.1	75.7%
November	60.6	74.5%
December	53.3	94.6%
Annual	**67.8**	**77.2%**

Source – www.usa.com/school-district-2201440-weather.htm

Previous Occurrence

Official data from the National Climatic Data Center on snowfall and ice storms in the New Orleans region appears to be incomplete. Based on the best available resources, though, the New Orleans region has experienced six major snowfalls in the past 60 years—in 1954, 1963, 1989, 2004, 2008, and 2014.

NCDC's data indicates that on December 25, 2004, a mixture of sleet and snow fell which caused approximately one half of an inch of accumulation across east central and southeast Louisiana. This event resulted in transportation problems, accidents, and road closures.

In December 11, 2008, a snowfall occurred across of most of southeast and east central Louisiana. Two to six inches of snow was common in the Florida parishes north of Lake Pontchartrain and one to two inches was common in the areas south and southwest of Lake Pontchartrain including New Orleans. This event resulted in widespread power outages and tree damage in areas that received the heavier snowfall amounts.

On January 28, 2014, Winter Storm Leon marched across the south stopping all activities for residents of Louisiana, Alabama, Florida, and Georgia. Within the Parish, the cost for emergency work exceeded $150,000. According to news accounts, Parish residents heeded warnings about the storm, stayed in their homes, making life-threatening situations minimal. Interstates and businesses were shut down for days, adding to the economic impact.

Probability of Future Events

As indicated above, the New Orleans region has experienced six major snowfalls in the past 60 years—in 1954, 1963, 1989, 2004, 2008, and 2014. This pattern of a major winter storm event every 10 years is possible to continue in St. Charles Parish in the coming decades. As Table 7 indicates, based on previous occurrences, the probability of future events is "possible" (30% likelihood). The State Hazard Mitigation Plan states that the future probability for winter weather is rated as a high for the State, taking into account the northern parishes of the State, which receive more winter events than the southern parishes. The State Hazard Mitigation Plan does not list St. Charles Parish as one of the parishes at the high risk level.

Hazard Impact

In St. Charles Parish, where the climate is subtropical, severe winter storms are rare and pose a minimal threat to life and property. However, winter weather, ranging from extreme cold to freezing rain, snow and dense fog, can move across Louisiana.

The wind chill temperature is how cold people and animals feel when outside. Wind chill is based on the rate of heat loss from exposed skin caused by wind and cold. As the wind increases, it draws heat from the body, driving down skin temperature and eventually lowering the internal body temperature. The updated Wind Chill Formula was implemented in

2001. The new formula uses advances in science, technology, and computer modeling to provide a more accurate, understandable, and useful formula for calculating the dangers from winter winds and freezing temperatures. Hypothermia and frostbite are human health issues associated with winter weather.

Other consequences of severe winter cold include the improper use of space heaters and poorly maintained heating systems. These can create a fire and/or carbon monoxide hazard potentially resulting in injuries and fatalities. As stated previously, infrastructure can be damaged by winter weather with the icing of telephone / electrical lines and communication towers as well as freezing of pipes. When power is disrupted, local businesses are impacted by the loss in revenue and shortage of workers.

St. Charles Parish recognizes the potential impact winter weather can cause and has implemented building codes, maintains generators, utilizes response resources for salting and sanding roads, and coordinates with local utility companies to maintain the tree line along the utility lines. Because the future probability of winter weather events is low, the Steering Committee determined that winter weather would not be considered for additional vulnerability analysis. Existing mitigation actions will continue to be implemented to combat the impact of this hazard. Since the last plan update, development and population growth have not been substantial, therefore, the vulnerability to winter storms has not changed.

4.3.2 Geological / Human Influenced Hazards

4.3.2.1 Coastal Hazards

4.3.2.1.1 Coastal Erosion

Hazard Event Description

Erosion is the gradual wearing away of land by water, wind, and/or general conditions. Southeastern Louisiana has been experiencing very high rates of erosion for the past several decades. Subsidence, sea-level rise, shoreline erosion, freshwater and sediment deprivation, saltwater intrusion, the dredging of oil and gas canals, and the creation of navigation channels, have all contributed to wetland loss in the region.

A major contributing factor to erosion in Southeastern Louisiana has been the change in the hydrology of the region. River deltas naturally undergo accretion and

erosion. Accretion is the process by which sediments accumulate through flooding of the banks and natural levees. Erosion occurs as these sediments are worn away by wind or water over time. Prior to the 20th century, the accretion process equaled or exceeded the erosion process in the Mississippi River delta. However, the creation of flood-protection levees along the River has stopped the accretion process in recent decades. Thus, there is nothing to counteract the natural erosion that occurs in this area.

Saltwater intrusion has also contributed to erosion in St. Charles Parish. As saltwater moves into marshes that are usually freshwater or brackish and stays for extended periods, the plants and animals in the marshes die because of the increase in salinity. Once the plants die, their roots can no longer hold onto the soft soils. These soils quickly wash away and what was once marsh or swamp becomes open water. There are several, interrelated causes of saltwater intrusion. One cause is rising sea levels around the world. Another cause is channeling. Over the past several decades, industry and private citizens have cut channels through marshes in and around St. Charles Parish. These channels provide pathways for saltwater to move further into marshes. A third cause is related to hurricanes and tropical storms which drive saltwater into the marshes.

Location and Extent

Erosion has been a problem throughout southeast Louisiana for the past several decades. The U.S Geological Survey estimates that Louisiana lost approximately 1,900 square miles of coastal land during the 20th century. While the loss within St. Charles Parish is only a fraction of the total loss, some areas of St. Charles Parish have experienced significant erosion. The areas of St. Charles Parish that are most vulnerable to erosion are the La Branche wetlands on the shore of Lake Pontchartrain and the marshes along Lake Salvador in the southern portion of the Parish.

Previous Occurrence

Over the past two decades, awareness of the problem of wetland loss in Louisiana has increased greatly. As previously mentioned, erosion is the gradual wearing away of land by water, wind, and/or general conditions. Records of previous occurrence of this hazard are not available.

Probability of Future Events

Despite the many restoration projects planned, St. Charles Parish will continue to experience the constant effects of erosion for many years to come. While the Parish is not experiencing the extreme erosion that is taking place in many nearby parishes located directly on the coast of the

Gulf of Mexico, erosion is highly likely to continue at a steady rate in St. Charles Parish.

One of the major impacts of the erosion in and around St. Charles Parish is decreased protection from storm surge. Erosion of marshlands has resulted in less vegetation to produce a drag on moving storms. Analysis from Hurricane Andrew shows that the storm surge decreased 3.1 inches in height for every mile of marsh it traveled over as it made landfall along the Louisiana coast. Thus, for every four miles of marsh lost to erosion, storm surges are approximately one foot higher. This information was based on the Times-Picayune report by John McQuaid and Mark Schleifstein entitled "In Harm's Way" from "Washing Away: Special Report."

Hazard Impact

Erosion has gradual effects on areas in the Parish. Coastal Erosion is a constant process that cannot be easily mitigated through conventional mitigation actions. St. Charles Parish will continue to participate in coastal restoration projects as they are conceived.

In 1990, the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA, or the Breaux Act) was passed by Congress. The purpose of CWPPRA is to plan, design, construct, maintain and monitor coastal wetland restoration projects in coastal Louisiana. Table 18 identifies projects in St. Charles Parish that have been undertaken or proposed as part of CWPPRA; the total acres created, restored or protected; and the status of the project.

Table 18
CWPPRA Projects in St. Charles Parish

PROJECT	ACRES	STATUS
Bayou LaBranche Marsh Creation (PO-17)	203	Complete (2000)
LaBranche East Marsh Creation (PO-75)	715	Approved (2010)
LaBranche Central Marsh Creation (PO-133)	731	Approved (2012)
Lake Salvador Shore Protection Demonstration (BA-15)	N/A	Complete
Opportunistic Use of the Bonne Carre Spillway (PO-26)	177	De-authorized (2007)
LaBranche Wetlands Terracing/Plantings (PO-28)	489	De-authorized (2007)

N/A – Acres benefited not available for demonstration projects.
Source: http://lacoast.gov/new/Projects/List.aspx

Some of the projects funded under the Breaux Act are focused on improving the health and viability of existing marshes while others are focused on creating new marshes or replacing those already lost. It has been estimated that 660 square miles of land that would otherwise be lost

will be saved by CWPPRA projects throughout Louisiana. While this figure represents a net loss of some coastal lands, the rate at which land is lost will be greatly slowed through these and other programs.

The Breaux Act was originally designed to be an arena for testing small projects. However, it also helped to spur the development of a coast-wide restoration plan and to identify many larger projects. These larger projects are included in the Louisiana Coastal Area Ecosystem Restoration Study or LCA Study.

In addition to those programs planned as part of the Breaux Act, many other restoration projects have been completed or are pending in St. Charles Parish.

The area of the Parish that has experienced perhaps the greatest erosion is the La Branche Wetlands. These wetlands run the entire width of the Parish and extend approximately four to five miles inland from Lake Pontchartrain. They encompass more than 14,000 acres of marsh and forested swamp. Since the 1960s, the La Branche Wetlands have lost over 5,000 acres to erosion. Many of the projects discussed above target the La Branche Wetlands. These wetlands were the site of the first marsh restoration project under the Breaux Act. In addition, the La Branche Wetlands were the site of the first Christmas tree fence project conducted by the Louisiana Department of Natural Resources, a program that is now offered annually to 19 coastal zone parishes.

Another area of the Parish that has experienced significant erosion is the southeastern section of the Parish. The Lake Salvador Shore Protection Demonstration – General Factsheet that was written by the Louisiana Coastal Wetlands Conservation and Restoration Task Force states that from the early 1950s to the early 1980s, the shoreline of Lake Salvador lost 13 feet per year to erosion. The Lake Salvador Shore Protection Demonstration project completed in 1998 has not only halted the erosion but has also led to shoreline creation of 1.8 feet per year. Another large project located in this area of the Parish is the Davis Pond Freshwater Diversion Project. This project opened and diverts water from the Mississippi River to help re-introduce freshwater, sediment, and nutrients to the Barataria estuary, which is threatened by saltwater intrusion.

On the East Bank, the La Branche Wetlands play an important role in hurricane protection for St. Charles Parish. A hurricane protection levee was constructed to protect most of the communities on the East Bank from storm surge from Lake Pontchartrain. As the wetlands erode, the hurricane levees that protect the East Bank of the Parish will be subjected to higher storm surges. Currently, the West Bank of the Parish is not protected by a hurricane levee, so storm surge is an even bigger threat.

The first phase of a hurricane protection levee for the West Bank has begun; however, it will be many years before even the first phase of the proposed project can be completed and it will be even longer before all communities on the West Bank are protected by hurricane protection levees. For now, the communities on the West Bank of the Parish remain unprotected from storm surges from the south.

St. Charles Parish also faces economic impacts from erosion. The Parish faces increased costs and decreased economic activity as erosion begins to negatively affect infrastructure and habitats. Public infrastructure, such as roadways, navigation channels, and drainage and flood control structures, will require more maintenance and repairs as erosion increases. Private infrastructure is also threatened by erosion. According to the Louisiana Mid-Continent Oil and Gas Association, there were 2,101 oil and gas wells located in St. Charles Parish in 2001. Many of these wells are located in areas that are directly threatened by the impacts of erosion. Furthermore, erosion puts the infrastructure that supports these facilities at risk and threatens to reduce the contribution they make to the Parish economy. Changes in fisheries can also have economic consequences for St. Charles Parish if commercial and recreation fishing declines. According the LSU AgCenter, aquaculture and fisheries contributed over $463,000 to the local economy in 2002. As the salinity levels of the waters of the Parish change, fisheries will be lost, which will have significant impacts on an important sector of St. Charles Parish's economy.

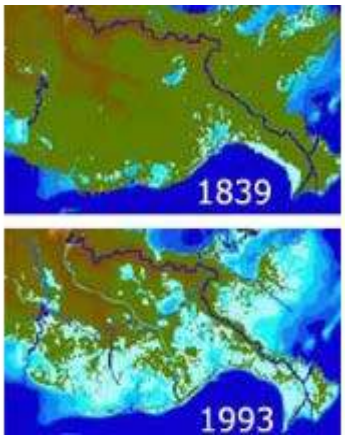
The Parish government recognizes that the scope of the erosion problem and the scope of the remediation efforts are beyond its capacity as a local government. Therefore, the Parish envisions that its role in assisting the federal and state governments in the coastal restoration effort will consist of both allocating sufficient resources to match federal and state monies and providing guidance to state and federal officials as to which projects are most crucial to the Parish's ecological, cultural, and economic health.

Development changes have not significantly altered the Parish's vulnerability to Coastal Erosion as development and population growth have not been substantial since the last plan update. However, the Davis Pond Diversion Project has helped to decrease the effects of coastal erosion on the wetlands in the southern portion of the Parish by depositing sediment in the marsh which serves to enhance vegetative growth.

Mitigation Approaches

Several coastal restoration and freshwater diversion projects have been completed in South Louisiana over the last 15 years. Some of these projects include Barataria Bay Shoreline Protection, Barataria Bay Marsh

Creation, the West LaBranche Shoreline Protection Project, the Davis Pond Freshwater Diversion Project, the Lake Salvador Shoreline Protection, and the Grand Terre island Vegetation Planting/Barrier Island Restoration. The East LaBranche Shoreline Protection project is slated to begin construction in March 2015.



Methods to mitigate wetlands loss are costly and politically sensitive, affecting communities, agriculture, and industry. A variety of ideas have been put forward as partial solutions to the dramatic loss of wetlands along the Louisiana coast. Most ideas include soft engineering solutions such as coastal restoration through barrier island re-nourishment. Dredged materials could be distributed onto wetlands. Other ideas include a strategic retreat by creating new navigation channels allowing the delta plains, such as the modern Mississippi River delta, to erode and proceed through their normal cycles. Such solutions could affect small communities, agricultural interests, and the petroleum industry. Hard engineering solutions, such as building sea walls and breakwaters, are also possible; however, these solutions are not only expensive but have produced mixed results at best.

When Hurricane Georges roared through Louisiana in 1998, the sea almost took this island. Here's a before-and-after shot of the island. Photo: USGS

Consensus on deciding the most cost-effective solutions to wetlands loss should be based on a thorough understanding of the geologic framework and physical processes that drive the barrier island-wetland system.

Many questions remain about the environment in which barrier islands evolve and wetland areas evolve

and mature. A variety of coordinated studies, such as sediment budge, storm events, wave action, and sea-level fluctuations, are showing how nature intended the barrier island/wetland system to work, and can guide planners to augment the natural evolution of this system rather than operate contrary to nature. Present data collection activities are being included in models that simulate natural processes for future diversions of the Mississippi River, sea level rise, subsidence of coastal areas, and beach nourishment. Other studies examine ways in which fine grained sediments can be introduced into wetlands to replace sediments lost by diversion of the river; the aggravating effects of wave action as determined by moving offshore sands to onshore areas; sources of sand for nourishment activities such as sand from Ship Shoal, some 25 kilometers offshore; and whether sediment can best be removed from the ends, the top, or the sides of the shoal. In general, human attempts to engineer coastal areas have had limited successes.

4.3.2.1.2 Land Subsidence

Hazard Event Description

Subsidence is the sinking of large portions of the Earth's crust. This region has been experiencing very high rates of subsidence for the past several decades. Subsidence in the region is due to natural processes, such as the natural compaction of soils, as well as to the activities of humans, such as oil and gas extraction.

Subsidence is caused by a diverse set of human activities and natural processes. Different types of subsidence are address below:

- Collapse into Voids – Collapse of surficial materials into underground voids is the most dramatic form of subsidence. Most of the subsidence-related voids in the United States were created by coal mining.
- Sediment Compaction – Sediment compaction typically causes broad regional subsidence. Rates of subsidence usually are low, ranging from a few millimeters to centimeters per year, but total subsidence may reach several meters over decades. Sediment compaction results from underground fluid withdrawal, natural compaction, and hydrocompaction. Underground fluid withdrawal is one of the major causes of sediment compaction in the U.S. When fluids are withdrawn, fluid pressures decline and support of the overburden is transferred to the solid skeleton. If the reservoir soil is compressible, sediment compaction and subsidence occurs.

- Another type of sediment compaction occurs naturally as older sediment is buried by younger sediment. Natural subsidence is occurring most rapidly in the Mississippi River Delta area of southern Louisiana where approximately 1,500 mi^2 of land are subsiding. Estimating average rates of subsidence range from 0.3 to 0.4 inches per century. Maximum rates measured by geodetic surveys are approximately 0.5 inches per year.
- Drainage of Organic Soils – Drainage of organic soils, particularly peat and muck, induces a series of processes that reduces the volume of soil. These processes include biological oxidation, compaction, and desiccation. Biological oxidation usually dominates in warm climates.
- Tides and heavy storms in the Gulf are eroding Louisiana's marshy coastline at an alarming rate. Hurricanes Katrina and Rita increased the total land loss on the Louisiana coast by an additional 217 square miles. Land loss in this region generically refers to the transformation of land, especially wetlands, to open water largely because of subsidence, sea-level rise, and erosion.

The single most important factor that has contributed to subsidence in the region is the change to the hydrology of Southeast Louisiana, including St. Charles Parish. River deltas naturally undergo accretion and subsidence. Accretion is the process by which sediments accumulate through flooding of the banks and natural levees. Subsidence occurs as these sediments compact over time. Prior to the 20th Century, the accretion process equaled or exceeded the subsidence process in the Mississippi River delta.

However, the creation of flood-protection levees along the River has stopped the accretion process in recent decades. Thus, there is nothing to counteract the natural subsidence that occurs in this area.

Location and Extent

The sinking problem in Louisiana, as a result of subsidence, has run anywhere from 6 to 20 inches over the past 20 years. All of St. Charles Parish is vulnerable to the effects of land subsidence.

Exposure of people and property is a function of the type and duration of subsidence and extent of the area affected.

- Collapse into Voids – Collapse of surficial materials into underground voids is most commonly associated with coal mining. Coal is found in 37 states and mined underground in 22 states.
- Sediment Compaction – Sediment compaction subsidence is caused by pumping groundwater and petroleum. More than 30 areas in seven states have experienced land subsidence of this type. Groundwater

withdrawal in Houston, TX, caused some coastal areas to subside more than 6 feet.

- Drainage of Organic Soils – Approximately 3,600 miles^2 of land underlain by organic soil has subsided because of drainage of organic soils. An even larger area is susceptible to subsidence. Approximately 39,000 mi^2 of the conterminous United States are covered by peat and muck soils and more than 10,000 mi^2 of organic wetlands are in Standard Metropolitan Statistical Areas.

See Table 19 below for the types of soils that are found in St. Charles Parish, what the land subsidence rates are for each, and how many acres there are for each of those soil types. Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage, or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Table 19
Soil Subsidence Rates for St. Charles Parish

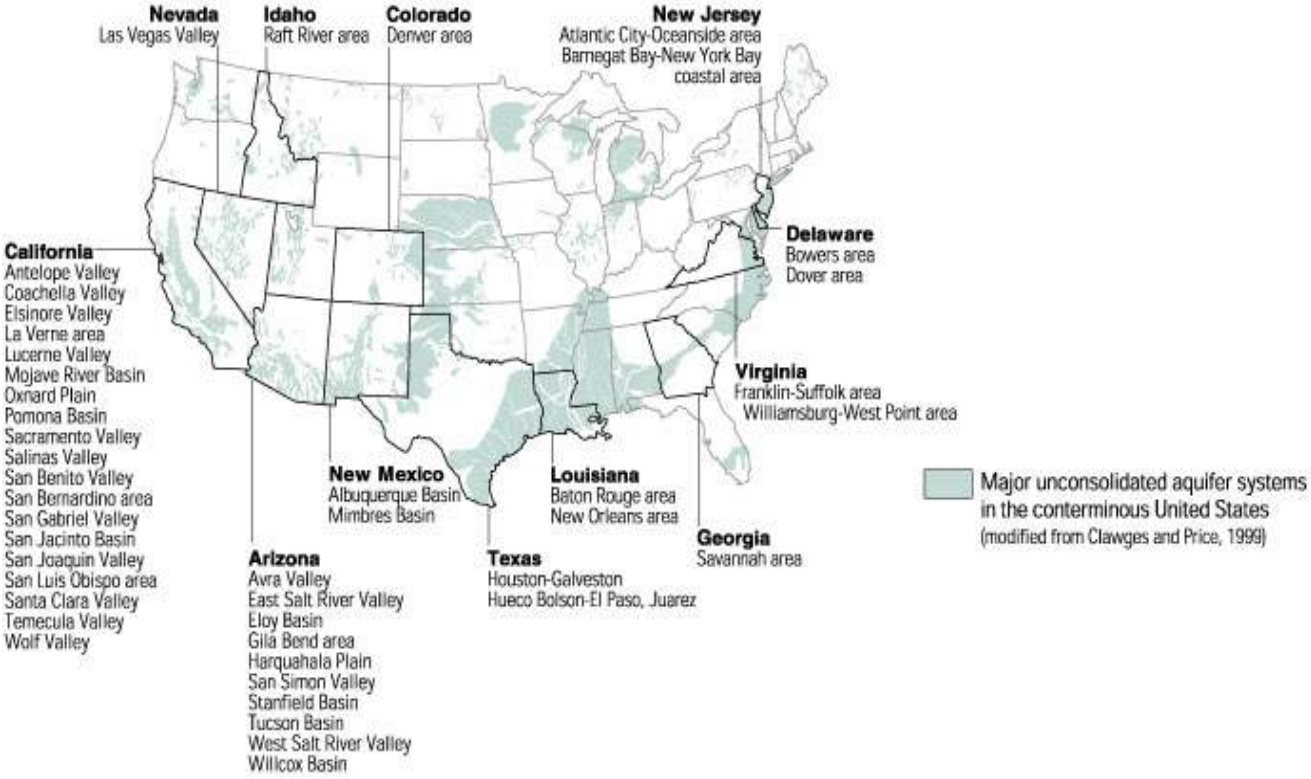
SOIL NAME	SOIL SYMBOL	SUBSIDENCE RATE INITIAL *IN*	SUBSIDENCE RATE TOTAL *IN*	NUMBER OF ACRES
Allemands	AE/Am/AR/Co	8-25	16-51	1,857
Aquents	AQ			78
Arents	LV			719
Barbary muck	BB	3-12	6-15	28,586
Cancienne	Cc/Cm/Cn/Co/CR			31,254
Carville				
Fausse	FA			7,984
Harahan clay	Ha	2-5	4-10	55,337
Kenner muck	KE	15-30	51	2,606
Larose		2-8	5-15	
Lafitte	LF	15-30	51	5,599
Maurepas muck	MP/MA	15-30	51	4,608
Schriever	Sa/Se/Sh			15,584
Udorthents	Ud			461
Urban land	UR			3,841
Vacherie	Vc			810
Water	W			89,541

Absence of an entry indicates that the feature is not a concern or that data was not estimated at this time.
Source: http://soildatamart.nrcs.usda.gov/Default.aspx

Previous Occurrences

Over the past decade and a half, awareness of the problem of land subsidence in Louisiana has increased. As previously mentioned, land subsidence is most often caused by human activities, including the

removal of subsurface water. The figure below shows some of the areas where subsidence has been attributed to the compaction of aquifer systems caused by ground-water pumpage.



Source: USGS http://water.usgs.gov/ogw/pubs/fs00165

Probability of Future Events

Land subsidence is an on-going problem that will continue in future years. According to a 2001 report by Virginia Burkett of the United States Geological Survey (USGS), estimates on the rate of land subsidence in southern Louisiana range from 1/3 to 1.5 inches per year. St. Charles Parish should witness this rate of subsidence in coming years.

All states with low-lying coasts are vulnerable to accelerated sea-level rise, but Louisiana's coast is much more so because of the subsidence of the Mississippi River delta. Until humans intervened, the surface elevation of the broad delta complex had kept pace with rising sea level for several thousand years, largely because the river built delta lobes and nourished wetland vegetation. The rates of natural subsidence and sea-level rise along the Louisiana coast have been exacerbated by human modifications, primarily levees which have isolated the Mississippi River from a delta complex that depends on an annual flooding cycle. These modifications cut off the delta-building process of the river.

Louisiana's coastal system has been heavily impacted by channels dug for navigation and mineral extraction, which have allowed high-salinity Gulf waters to migrate inland. Over a million acres of coastal land have been lost since the 1930s, and between 25 and 35 square miles continue to be lost each year. Louisiana's coastal ecosystems are threatened with systemic collapse.

Louisiana is clearly a state at risk from further sea-level rise. Absent major intervention, a continuation of current trends is projected to cause loss of more than 400,000 acres over the next 50 years. This is a conservative estimate; since it presumes a continuation of what has been observed over the past 50 years, without factoring in acceleration of sea level rise from climate change. This information was gathered from the report "Danger & Opportunity: Implications of Climate Change for Louisiana"; A Report for the Louisiana State Legislature to fulfill House Concurrent Resolution 74, May 1999.

The probability of land subsidence reoccurring each year in St. Charles Parish is highly likely, with a percentage range of 75% to 100%. NCDC does not track land subsidence data, but because of the soil types found in St. Charles Parish, we expect land subsidence to likely reoccur. Those soils with high organic content have higher subsidence potentials, if drained, because of their greater compatibility and water content.

Hazard Impact

While the effects on property in St. Charles Parish can be significant, subsidence is a constant process that cannot be easily mitigated through comprehensive mitigation actions. Subsidence problems are addressed on an individual basis as problems are discovered.

Subsidence continues to be a problem for the New Orleans region, including St. Charles Parish. Most of these areas are built on Mississippi River silt, and the silt is slowly settling and compacting. Houses not built on deep pilings are tipping and cracking. Subsidence is also responsible for infrastructure problems, including ruptured water and sewer lines. While the effects in St. Charles Parish can be significant, subsidence is a "creeping" hazard event, one with chronic, not acute impacts.

The parish implements building codes which provide some measure of mitigation for this hazard. The parish conducts public awareness, mapping, and groundwater monitoring activities.

Due to the nature of land subsidence as a coastal process and one that is not readily mitigated through conventional methods, land subsidence is

not discussed in further detail in this plan and will be reassessed during the plan evaluation process for the five year update. Since the last plan update, development and population growth have not been substantial, therefore, the vulnerability to land subsidence has not changed.

4.3.2.1.3 Saltwater Intrusion

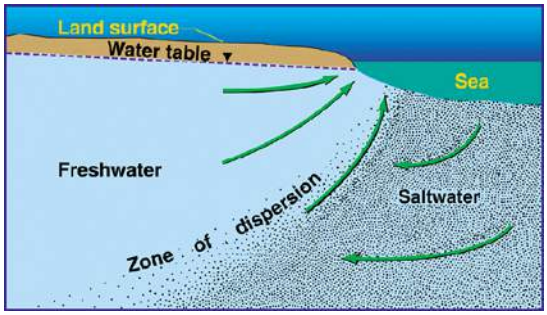
Hazard Event Description

Saltwater intrusion is a natural process that occurs in virtually all coastal aquifers. It is the movement of salt water (from the sea) inland into freshwater aquifers. This movement is caused by the fact that sea water has a higher density (due to high level of solutes) than freshwater. This higher density has the effect that the pressure beneath a column of saltwater is greater than that beneath a column of the same height of freshwater. If these columns were connected at the bottom, the pressure difference would trigger a flow from the saltwater column to the freshwater column. This is precisely what happens in saltwater intrusion cases. The flow of saltwater inland is limited to coastal areas. Inland the freshwater column gets higher and the pressure at the bottom also gets higher. This compensates for the higher density of the saltwater column. Where this happens, saltwater intrusion stops.

The higher water levels inland have another effect: they trigger flow of freshwater seaward. This completes the picture: at the sea-land boundary, we have in the high part of the aquifer outflow of freshwater and in the lower part, inflow of saltwater. The saltwater intrusion gets a sort of cone shape. Saltwater intrusion is natural process, but it becomes an environmental problem when excessive pumping of fresh water from an aquifer reduces the water pressure and intensifies the effect, drawing salt water into new areas. When freshwater levels drop, the intrusion can proceed further inland until reaching the pumped well. Then you may get saltwater out of the pump, unfit for drinking or irrigation. To prevent this, more and more countries adopt extensive monitoring schemes and numerical models to assess how much can be pumped without causing such effects.

Saltwater intrusion has contributed to erosion in St. Charles Parish. As saltwater moves into marshes that are usually freshwater or brackish and stays for extended periods, the plants and animals in the marshes die because of the increase in salinity. Once the plants die, their roots can no

longer hold onto the soft soils. These soils quickly wash away and what was once marsh or swamp becomes open water. There are several, interrelated causes of saltwater intrusion. One cause is rising sea levels around the world. Another cause is channeling. Over the past several decades, industry and private citizens have cut channels through marshes in and around St. Charles Parish. These channels provide pathways for saltwater to move further into marshes. A third cause is related to hurricanes and tropical storms which drive saltwater into the marshes.



Saltwater intrusion is not a typical hazard in that it is a gradual process and not a sudden occurrence; it is not weather-related; and creeping saltwater intrusion is unlikely to ever trigger a federal disaster declaration. Nevertheless, it is a serious problem that poses a major threat to St. Charles Parish. Because it is a real, albeit gradual, hazard and because mitigation measures can be adopted to combat its effects, saltwater intrusion has been included n this Plan.

Location and Extent

The area of the Parish that has experienced significant erosion resulting from saltwater intrusion is the area of the Barataria estuary. A large project located in this area of the Parish is the Davis Pond Freshwater Diversion Project. This project diverts water from the Mississippi River to help re-introduce freshwater, sediment, and nutrients to the Barataria estuary, which is threatened by saltwater intrusion. The project includes a ponding area of 9,300 acres, much of which is located in St. Charles Parish. The Davis Pond Diversion Project provides mitigation to the saltwater intrusion problem in the Lake Salvador area, an area that is experiencing the fastest rate of land loss in the entire state.

The Davis Pond Diversion Project stabilizes salinity levels by the periodic introduction of freshwater from the Mississippi River. Historically, the wetlands in St. Charles Parish were freshwater with salinities ranging from 0 - 2 ppt (parts per thousand). A study conducted in 2008 at the University of New Orleans determined the average salinity at Davis Pond was 0.202 ppt and at Lake Cataouatche was 0.206 ppt, indicating a freshwater ecosystem. A search for more current data produced no new salinity information, although many scientists stated that new studies on the Barataria Basin were needed. Anecdotal information found in newspaper articles stated that, during low rainfall and high tide conditions salinities in Lake Salvador were 12 ppt, indicating a brackish ecosystem.

Further study is required to determine the rate of saltwater intrusion in St. Charles Parish. Hopefully, prior to the next HMP update, additional data will be available regarding salinities in St. Charles Parish.

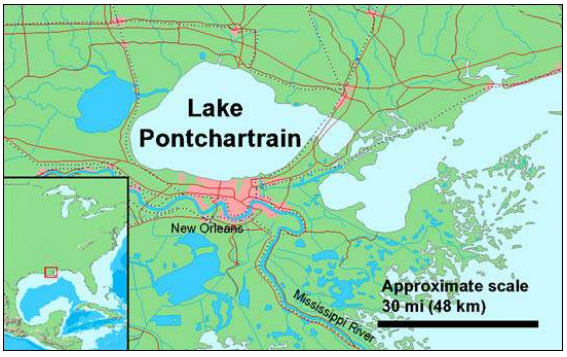
Without the Davis Pond Diversion Project the effects of saltwater intrusion would be felt at a greater level in St. Charles Parish: increased wetland loss due to sediment deprivation, decreased / changed fisheries and wildlife habitat due to wetland loss, economic impacts to fishermen, increased storm surge during tropical cyclone activity, and increased erosion caused by wave action. The Davis Pond Diversion Project cost $120,000,000 to construct with an annual operating budget of $1,840,000 (for FY 2011 to 2016).

Previous Occurrence

Saltwater intrusion contributes to erosion in St. Charles Parish. Erosion is a continuous process that has a gradual impact on the loss of the coastal areas of St. Charles Parish. Over the past several decades, industry and private citizens have cut channels through marshes in and around St. Charles Parish. These channels provide pathways for saltwater to move further into marshes.

The Pontchartrain Basin is a 4,700 square mile watershed in southeast Louisiana and southern Mississippi. Elevations range from over 300 feet mean sea level in the hills along the Mississippi state line to sea level throughout the coastal lowlands and occasionally below sea level in some urban areas. Many small rivers drain the Florida Parishes and introduce freshwater into Lakes Maurepas and Pontchartrain, the great mixing zone of fresh and saline water.

Lake Pontchartrain was formed 5,000 years ago, covering almost 630 square miles. The shallow lake (average depth 12 feet) is brackish, receiving freshwater from Lake Maurepas, the Tangipahoa and Tchefuncte Rivers, Bayous Lacombe and Bonfouca, as well as drainage canals, and saltwater from the Gulf of Mexico. This combination and the resultant surrounding wetlands form a complex estuarine ecosystem.



The Basin experiences a variety of environmental stressors. Non-point source pollutants, sewage from humans and farm animals and industrial and agricultural discharges comprise the majority of runoff problems. Shell

dredging, oil and gas exploration and development, and industrial activities along the Inner Harbor Navigation Canal (IHNC) also impact the environmental quality of the Basin.

Natural forces, such as hurricanes and land subsidence, affect change in the Basin. Subsidence and accompanying shoreline erosion has had significant consequences in low lying areas.

For many years, the Basin's wetlands have been channelized, drained and filled, resulting in Lake Pontchartrain receiving a variety of contaminants. The cumulative effects of wetland degradation, shoreline erosion, saltwater intrusion, and discharge of contaminants have decreased grass beds, diminished shellfish and fish harvests, closed beaches, and resulted in occasional occurrences of oxygen-deficient areas ("dead zones") in the Lake.

The Pontchartrain Basin is a complex system of physical elements where biological diversity is the rule. The Basin is further complicated by the rapid growth around Metropolitan New Orleans and Baton Rouge. Economic activities range from heavy industry along the Mississippi River, to forestry and agriculture in the upper reaches of the watershed, to fishing and trapping in the coastal wetlands.

Any additional damage to the Lake further reduces the quality of this ecosystem. The continued loss of habitat from environmental stressors, natural forces, and manmade degradation will destroy the biological diversity found in Lake Pontchartrain Basin’s ecosystem.

Probability of Future Events

Because saltwater intrusion is slow occurring over an extremely large geographic area, its future effects are difficult to quantify. Recently completed freshwater diversion projects such as the Davis Pond Project will substantially mitigate the effects of saltwater intrusion in some of the most vulnerable areas of St. Charles Parish. However, due to the myriad causes of saltwater intrusion and the geographic breadth of the problem, the Parish will continue to experience the effects of saltwater intrusion in the next five years.

Hazard Impact

There are a number of other possible effects of saltwater contamination, as indicated by the following:

- Synergistic enhancement of the toxicity of other toxic chemicals dissolved in water may occur.

- Saturation levels of dissolved oxygen decrease with increasing salinity, thus potentially accentuating poor dissolved oxygen conditions in streams.
- Permeability of soils can be altered, thus altering aquifer recharge conditions.
- Excessive salt build-ups on shores of salty waters may decrease aesthetic qualities.
- Reduction of game fish species may reduce recreational value.
- Reduced commercial values of lands adjacent to salty surface waters may result.
- Large costs may be incurred in the treatment of saline water in order to make it usable.
- Increasing salinity may force the use of alternate sources of water which, in turn, may have adverse consequences.

The Parish currently conducts and participates in public awareness, mapping, coastal planning mechanisms and management to protect the groundwater through measurement, monitoring, modeling, and modification. This approach can assure coastal communities of maximum utilization of their ground water resources at a minimal long-term cost.

Due to the nature of saltwater intrusion as a coastal process and one that is not readily mitigated through conventional methods, saltwater intrusion is not discussed in further detail in this plan and will be reassessed during the plan evaluation process for the five year update. Development changes have not significantly altered the Parish's vulnerability to Saltwater Intrusion as development and population growth have not been substantial since the last plan update. However, the Davis Pond Diversion Project has helped to decrease the effects of saltwater intrusion on the wetlands in the southern portion of the Parish by introducing fresh water and sediment from the Mississippi River into the marsh which serves to enhance the overall function of the wetland ecosystem.

4.3.2.2 Levee Failure

Hazard Event Description

Levees play a vital role in protecting St. Charles Parish from riverine and tidal flooding. Levees are usually built by piling earth on a cleared, level surface to prevent flooding of the adjoining countryside. Broad at the base, they taper to a level top, where temporary embankments or sandbags can be placed, if necessary. Levees confine the flow of a river or other water body, resulting in increased water flow in the stream. Increased pressure can cause topping of the levee, under seepage of water, and levee slides.

Location and Extent

Levees built and maintained by the USACE run the entire length of both banks of the Mississippi River as it runs through the Parish. There are also several other levees in the Parish designed to protect areas from normal tidal flows. Levees on the East Bank are maintained by the Pontchartrain Levee District and approved by the USACE. Construction on the East Bank hurricane protection levee was completed in 2014. This levee is 9.5 miles in length, has four drainage structures, four floodwalls, and a gate. Levees on the West Bank are maintained by the Lafourche Levee District. Construction on a new hurricane protection levee on the West Bank began in January 2014. This multi-phase project consists of 33 miles of levee from the Davis Diversion West Guide Levee in Luling to a ridge at Highway 308 in Lafourche Parish. There are also guide levees that run along the floodway of the Bonnet Carre Spillway, but these levees do not serve as protection to property in St. Charles Parish under ordinary conditions.

Previous Occurrence

While no levee failures have occurred in St. Charles Parish in recent decades, a Mississippi River levee in Marrero failed during a non-flood event in 1985. The failure was due to scouring and erosion of sand from the toe of the riverbank. The levee failure did not result in flooding on the protected side of the levee, however. The USACE concluded that other locations along the Mississippi River that have similar geologic settings of ancient channel deposits on the concave side of the river are likely to be susceptible to the same type of levee failure.

Another neighboring levee failure occurred on August 29, 2005 when Hurricane Katrina passed east of New Orleans with intense wind gusts and tidal surge. Within a couple of days, approximately eighty percent of New Orleans flooded due to the more than 50 breaches that were in the canal levees. The breaches were caused by the storm surge. The devastation brought by this event has brought levee safety to the forefront of public awareness.

Probability of Future Events

As seen in Table 7, the probability of future levee failure events in St. Charles Parish is unlikely for federal levees and possible for non-federal levees. This is a change from the 2009 plan update, in which the Steering

Committee gave a probability of future failures of non-federal levee systems as highly likely. After considering previous occurrences, the Steering Committee decided that this should be a relatively low probability. The State Hazard Mitigation Plan determined that the likelihood of future occurrence of levee failure is low.

The existing levees are designed to protect the Parish from flooding associated with the 100-year flood event. Therefore, the odds of levee failure are assumed to be equivalent to the odds for a 200-year flood, or 0.5 %.

Hazard Impact

The Pontchartrain Levee District oversees the East Bank levees in St. Charles Parish, and the Lafourche Levee District oversees the West Bank levees. Each fall, the levees along the Mississippi River are inspected by officials from the Levee Districts, the USACE, and the LaDOTD. Weekly inspections of the levees are also conducted by levee district employees.

As reported on the National Levee Safety Program Fact Sheet, the USACE currently has a Levee Safety Program in place. Congress set aside funds for the Corps to initiate a national levee inventory and assessment program. They wanted a program that would determine the status and condition of federal levee systems in the nation. The program helps to achieve three goals: 1) Reduce risk and increase public safety through an informed public, 2) Develop a clear national levee safety policy and standards, 3) maintain a sustainable flood damage reduction system that meets public safety needs. This program is divided into three areas: 1) Levee Inventory, 2) Technical Risk Assessments, 3) Revised Inspection of Completed Works Procedures.

In repairing and rebuilding levees and floodwalls, the USACE is incorporating lessons learned and recommendations from international experts, scientific organizations, government agencies and the private sector who have studied causes of system failure during Hurricane Katrina. To address recent levee breach issues, some levees and floodwalls have been (or are in the process of being) raised and in some areas widened. Additonally scour protection will be added to some areas in the form of armoring, which protects earthen levees form erosion. There are many types of levee armoring. The most common and important form of armoring on earthen levees is grass. Some additional armoring examples include rip-rap (large

stones), turf-reinforced mats, and concrete slabs. In some repaired areas, rip-rap armoring has been reinforced with grout to lock the large stones in place and solidify the protective layer. Critical areas for scour protection include transition points where levees and floodwalls abut; where pipelines cross levee alignments; at floodwalls, particularly in densely populated areas; and where levees are directly exposed to large sections of open water.

Although the future probability of a levee failure is low, the impact of an actual levee failure is high. Significant personal injury and property damage are possible as seen by the aftermath of Hurricane Katrina. Threat to life may be limited with advanced warning; however, property damages would be similar to the damages of flooding. Levee failure can occur when pressure from high waters causes the structure to fail or when high waters overtop a levee. Levees in St. Charles Parish protect a significant portion of the developed area in the Parish. It is estimated that 25,000 people on the West Bank would be affected by a levee failure. In addition, businesses and industrial sites would suffer tremendous financial loss. Should these levees fail, the structures in the areas protected by the levees, primarily along the Mississippi River and in the southern portion of the Parish would suffer significant flood damage. Little information was available on the estimated flood heights that would result from a levee breach in St. Charles Parish. It stands to reason that the degree of flooding and impact upon life and property would vary greatly depending on the circumstances of a levee breach. During a non-storm or non-flood event, a levee failure could have minimal consequences as with the aforementioned breach along the Mississippi River. During a major hurricane, though, flood water depth could be substantial depending on the size and strength of the hurricane, the height of the storm surge, the path of the hurricane and the location of the levee breach(es).

According to a computer model devised by LSU scientists, a slow moving Category 3 storm moving from the south directly over the City of New Orleans would overwhelm the levees in St. Charles Parish and result in 3 – 8 feet of water in St. Charles Parish communities on the East Bank of the River. This was reported by John McQuaid and Mark Schleifstein in the Time-Picayune story “in Harm’s Way”. With the work on the hurricane protection levees and varying hurricane scenarios, substantially different flood heights may occur in St. Charles Parish; nonetheless, the effects could be devastating to the Parish.

Risk Analysis

St. Charles Parish recognizes the possible impacts of a levee failure and is taking steps to help mitigate those impaces. The Parish has been working on obtaining funding for and beginning construction on the West

Bank hurricane protection levee system since 2008. This project will protect portions of Luling, Boutte, Paradis, Bayou Gauche, and Des Allemands. Funding has been received through the Statewide Flood Control Program and the Coastal Protection and Restoration Authority with the Parish committing its own funds to see this project to fruition.

The State Hazard Mitigation Plan estimates that $250,000 to $500,000 in building damage would occur in the event of a levee failure. Vulnerable population is estimated to be between 2,000 and 4,000 people. Many communities in St. Charles Parish rely on the protection of a levee and would be greatly impacted in terms of personal injury, loss of life, infrastructure damage, and business loss. Since the last plan update, development and population growth have not been substantial, therefore, the vulnerability to a levee failure has not increased significantly.

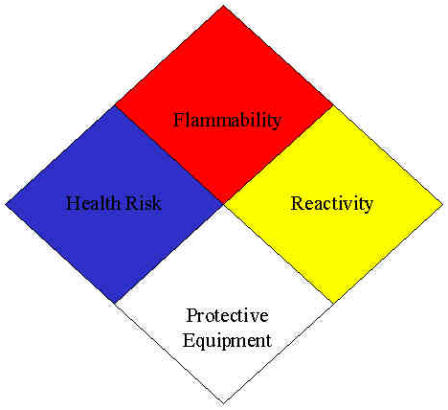
Summarizing Vulnerability

The St. Charles Parish Steering Committee determined that the probability of a future levee failure is low. If a levee failure were to occur, though, the impacts would be high. The Steering Committee placed a high priority on this hazard and the Parish has made great strides in enhancing levee protection for all its citizens. Much of the population would be affected by a levee failure. Widespread flooding would occur, with many structures incurring damage. Critical facilities would be impacted by flood waters or loss of use. The State Hazard Mitigation Plan states the loss estimation for buildings alone would be between $250,000 and $500,000. As a result of such a high impact on the Parish, steps need to be taken to ensure the preservation and well-being of Parish assets and citizens. In order to achieve this communication must continue between the Parish and the Pontchartrain Levee District, the LaFourche Levee District, the USACE, and the LaDOTD.

4.3.2.3 Hazardous Materials

Hazard Event Description

St. Charles Parish has several facilities that are regulated by the Environmental Protection Agency because they use or store toxic chemicals. A leak at one of these facilities could cause health problems for residents, property damage, and economic losses due to downtime at businesses that are evacuated. St. Charles Parish also faces threats from chemicals that are



transported through the Parish on highways, railways, and waterways.

Interstate 10, a major east-west corridor across the U.S., runs through the Parish. Because of its proximity to several major ports (including Jacksonville, New Orleans, Houston, Los Angeles), I-10 serves as a major transportation route for many freight trucks. Other major transportation routes running through the Parish include I-310, Highway 61, and Highway 90. Four major freight rail companies operate in St. Charles Parish: Canadian National Illinois Central, Kansas City Southern, Burlington Northern Santa Fe, and Union Pacific. Many toxic chemicals are transported by rail through the Parish on a routine basis. Furthermore, the Mississippi River is a major method of transporting a wide variety of hazardous materials.

Location and Extent

Many of the largest employers in St. Charles Parish are chemical companies or facilities, including Shell, Dow, Monsanto, and Occidental. These facilities ship and receive hazardous materials along the Mississippi River and the railways that run through the Parish. Also, St. Charles Parish has a well established petroleum industry. Petroleum products are moved through the Parish on roadways, waterway, railways, and through pipelines.

There are many facilities in St. Charles Parish that store or produce hazardous materials. St. Charles Parish is also vulnerable to hazardous materials leaks on transportation routes. Numerous ships pass through the Parish every day on the Mississippi River. Also, four railroads run through St. Charles Parish. While emergency officials are generally aware of the type and amount of hazardous materials at fixed sites in St. Charles Parish, much less is known about the materials that could be moving through the Parish at any given time.

Previous Occurrence

One of the largest evacuations related to a hazardous materials incident in St. Charles Parish's history occurred in 1982. Just after midnight on December 11 of that year, a tank containing approximately 45,000 gallons of acrolein exploded at the Union Carbide plant in Taft. An evacuation of affected communities began at 4:30 a.m. and was completed by 7:00 a.m. It was estimated that about 17,000 people evacuated.

Another significant hazardous materials incident occurred in July 1995 at the Koch Nitrogen Co. in Taft. Thousands of pounds of ammonia gas were released into the air over several hours after a flare used to burn off excess vapor went out. The St. Charles Department of Emergency Preparedness declared a "general emergency," the most serious emergency classification of an emergency, around 8:00 a.m. Residents of four communities were told to voluntarily evacuate or remain indoors with their air conditioners off. The Red Cross opened shelters at Destrehan and Hahnville high schools and parish school buses transported persons who wished to evacuate but did not have transportation. The all-clear signal was given at 4:00 p.m.

Other incidents have resulted in smaller evacuations. In March 1997, more than 130 barges broke loose on the Mississippi River near LaPlace. As the barges traveled downstream, they hit pipelines carrying ammonia and sodium hydroxide, leading to the evacuation of several homes. Although the pipes were not operating at the time they were struck, the residue in the pipes escaped. About a dozen houses near the River were evacuated. This incident had the potential to be much more serious, as a larger release of hazardous chemicals could have occurred if the pipelines were in use at the time of the incident. Also, several of the out-of-control barges were carrying hazardous materials.

Another problem caused by the runaway barges was the closing of the Hale Boggs Bridge. Safety officials feared that the bridge could become unstable because its foundation was struck by several barges. The closing of the bridge could have had significant consequences had a large-scale evacuation been ordered.

Another hazardous materials accident occurred on the Mississippi River in February 2004. On February 19, a freighter hit the side of a crude tanker that was docked at the Valero St. Charles Refinery. As a result of the collision, 22,000 gallons of fuel oil from the tanker spilled into the river, however none of the crude oil in the tanker's cargo holds was spilled. A section of the river was closed for less than a day as the spill was cleaned up. St. Charles Parish closed its two water intake valves at Luling and New Sarpy as a precaution while the spill was being cleaned up.

Hazardous materials accidents have also occurred on the railways in St. Charles Parish. In 1980, three persons were killed by ammonia fumes after a tanker truck carrying ammonia was struck by a train. In 1981, 12 railcars filled with hydrocarbon derailed near Norco. No deaths occurred as result of this accident; however, 30 to 40 people had to be evacuated. Most of these people had to remain at a local hotel for a week while the railcars were righted.

On May 8, 2009, a small chlorine gas release occurred around 9:30 a.m. at the Oxy Chem plant in Hahnville, LA. Eleven people were treated and the Coast Guard, Louisiana Department of Environmental Quality and the Louisiana State Police HAZMAT team responded to the release that lasted about two hours. Air monitoring was conducted by Oxy Chem employees and reported that the chlorine gas level detected would not pose a danger to the community.

A train derailment occurred in 2010 in the Ormond section of Destrehan and forced the evacuation of 15 homes. The train was carrying soybean oil and aniline, an oily, poisonous chemical used to make dyes, plastics, and some medicines. No one was reported as being injured in the incident.

Shell reported an unexpected release of chemicals and flaring at the Norco plant in May of 2012 according to officials with the Louisiana Department of Environmental Quality. The report said that part of the plant was shut down following the incident and an unknown amount of chemicals including butadiene, benzene, carbon monoxide, ethylene, hydrogen sulfide, propylene and sulfur dioxide were released into the flare.

Probability of Future Events

Because there are many facilities in St. Charles Parish that store or produce hazardous materials, the Parish will continue to be at risk for hazardous materials releases. The severity of a hazardous materials release depends upon the type of material released, the amount of the release, the proximity to populations or sensitive areas like wetlands or waterways. As previous hazardous materials incidents in St. Charles Parish have shown, the release of materials can lead to injuries or evacuation of thousands of nearby residents. Because the probability of this type of event is high, the St. Charles Parish EOC has mapped zones in both a two-mile radius and a five-mile radius around industrial sites in the Parish. If an incident should occur at one of those sites, the EOC has information concerning the residents in the area, and at-risk populations needing assistance in evacuating.

Hazard Impact

While St. Charles Parish has many sites that store or use hazardous materials, three sites in particular have been identified by Parish

emergency officials as sites where large amounts of hazardous materials are stored or used.

St. Charles Parish's vulnerability to chemical accidents along transportation routes is more difficult to gauge because hazardous chemicals are not located at fixed sites and because many different chemicals are transported through the Parish. A study from January 1998 entitled *An Assessment of the Transportation of Extremely Hazardous Substance for the Southern Mississippi River Corridors* analyzed the potential effects of a hypothetical chemical leak along the southern Mississippi River rail corridors using the Arial Locations of Hazardous Atmospheres (ALOHA) model available from the Environmental Protection Agency. The researchers modeled two leaks from a railcar, a large breach and a small hole, for five different meteorological conditions. Simulations were run on 46 "extremely hazardous substances," as defined by the EPA, which are transported along the Mississippi River corridor. The researchers identified vulnerability zones for each chemical under each set of meteorological conditions. A vulnerability zone is defined as the "total area where any time following an accident the concentration of a given chemical meets or exceeds the level which is 'Immediately Dangerous to Life and Health.' The results of the model showed that 15 chemicals that are transported along rail lines in the region have vulnerability zones of less than one mile, six chemicals have vulnerability zones of between one mile and less than six miles, and five chemicals have vulnerability zones of six miles or more under some conditions.

St. Charles Parish emergency officials have identified buffer zones around the railways that run through the Parish. While the vulnerability of facilities close to railways varies based on distance, the type of chemical involved, and meteorological conditions, those facilities within five miles of a railway are vulnerable under a variety of scenarios. One important factor that decreases St. Charles Parish's vulnerability to hazardous materials incidents is the fact that the Parish has an extremely detailed and accurate evacuation plan because of the presence of the Waterford 3 Nuclear Power Reactor in the Parish. This evacuation plan is well-practiced and tested. In the case of a hazardous materials incident, the Waterford 3 evacuation plan can be implemented to quickly evacuate affected areas.

4.3.2.4 Hazardous Materials – Nuclear Accidents

Hazard Event Description

The Waterford 3 Nuclear Power Reactor is located in Taft, Louisiana, in St. Charles Parish. Waterford 3 has been in operation since 1985 and is licensed to operate

through 2024. The Nuclear Regulatory Commission has identified areas of risk around nuclear power reactors. These areas of risk are divided into Emergency Planning Zones (EPZs). EPZs define the areas for which planning is needed to ensure that prompt and effective actions are taken to protect the health and safety of the public if an accident occurs. In theory, EPZs are circles centered on the plant; however, the actual shape will vary depending on the characteristics of a particular site.

The smaller of the two EPZs identified by the Nuclear Regulatory Commission is the 10- mile Plume Exposure Pathway. Human health and safety risks associated with this EPZ include whole body injury from exposure to gamma radiation and thyroid, lung, and possibly other organ injury from inhalation of radioactive materials. The larger of the two EPZs identified by the NRC is the 50-mile Ingestion EPZ. Risks to human health and safety associated with this EPZ include whole body and thyroid injury from ingestion of radiologically contaminated water and food. Within this EPZ, contamination may happen in people, the water supply, crops, and livestock including dairy livestock. Much of St. Charles Parish lies within the 10-mile Plume EPZ and the entire Parish lies within the 50-mile Ingestion EPZ.

Location and Extent

Protective actions for areas within the 10-mile EPZ include sheltering, evacuation, and the use of potassium iodide where appropriate. Evacuation is the preferred response to a radiological emergency. St. Charles emergency officials have identified two locations for sheltering people who must evacuate. These shelters can accommodate more than 7,000 people. Although approximately four times that many people live within the 10- mile EPZ, many evacuees will choose to stay in hotels or with family and friends rather than in shelters.

The State of Louisiana does not currently distribute potassium iodide to citizens living near nuclear power plants. When taken within a few hours of exposure to radioactive iodine, potassium iodide can help prevent thyroid cancer. In a study in December 2003 entitled “Potassium Iodide Should Be Available to People Living Near Nuclear Power Plants,” the National Academies’ National Research Council recommended that potassium iodide pills be available to all persons age 40 or younger living near a nuclear power plant. Potassium iodide is not recommended for persons over 40 because this age group has not been shown to have a risk of radiation-induced thyroid cancer and

the risk of side effects from potassium iodide is higher for this age group. It is important to remember that potassium iodide is effective in protecting only the thyroid. Evacuation from the area eliminates or reduces the dosage of radiation to all organs.

Previous Occurrence

No major accidents have occurred at the Waterford 3 Nuclear Power Plant in the past.

Probability of Future Events

Despite the presence of the Waterford 3 plant in the Parish, the probability that it will result in injury to persons or damage to property in St. Charles Parish is low. No major accidents have occurred at the plant in the past. Furthermore, in 2000, officials at the plant hired more guards, improved training, and fortified physical barriers to the plant.

Hazard Impact

The 10-mile EPZ covers many of the most densely populated areas of the Parish. All development along the Mississippi River from the St. Charles-St. John the Baptist Parish line almost to St. Rose falls within this zone. At least 25,000 people live within the 10- mile EPZ. Table 20 shows the number of facilities that are within the 10-mile EPZ for the Waterford 3 plant. Several critical facilities are included in this list. The locations of the five largest employers in St. Charles Parish (including the Waterford 3 plant itself) are within the 10-mile EPZ, as is the St. Charles Parish Hospital. In 2012, St. Charles Parish Hospital built a decontamination room with its own entrance and ventilation system within the Emergency Room area. The room is designed to limit the spread of contaminants in the event of an industrial accident. Additionally, essential government facilities are located in this zone: a waterworks plant, a wastewater treatment plant, a police station, the Parish courthouse, the Parish Council offices, and the Emergency Operations Center.

Table 20 Number of Facilities within 10-mile EPZ by Occupancy	
OCCUPANCY	**NUMBER OF FACILITIES**
Business	401
Day Care	15
Financial Institutions	20
Fire Station	15
Gas Station	19
Government Building	38
Health Care	40
Hotel / Motel	7
Place of Worship	46
Plant	2
Post Office	8
Private Facility	10
Restaurant	78
Retail store	58
School	24

Source: CAMEO special locations data from St. Charles Parish.

As discussed above, evacuation is the preferred means of protecting people within the 10-mile EPZ. St. Charles Parish has several highways that could serve as evacuation routes during a radiological emergency. People on both banks of the Mississippi River could travel east or west on Interstate 10, Highway 61, or Highway 90. However, it is important to note that the number of evacuees might exceed the number of people who live within the 10-mile EPZ. When an evacuation is ordered, people outside of the evacuation area also flee out of fear in some cases. For instance, during the incident at Three Mile Island in 1979, the number of people who spontaneously evacuated was ten times as much as officials had expected to evacuate.

As mentioned in the Hazard Event Description, all areas of St. Charles Parish that are outside the 10-mile EPZ are within the 50-mile EPZ. One of the primary sources of concern in the 50-mile EPZ is dairy animals. According to the Louisiana Agricultural Statistics Services, there were no dairy cows in St. Charles Parish as of 2001. Thus, sheltering of dairy animals and quarantining of milk should not be an issue in St. Charles Parish.

Fruits, vegetables, and meats can also be contaminated with radiation. However, there are options for handling contaminated fruits, vegetables, and meats beyond disposal. Fruits and vegetables can be scrubbed or peeled to remove radio nuclides. Fruits, vegetables, and meats can also be used for non-human consumption or can be stored to allow radioactive decay of radio nuclides. The extent of damages from any nuclear incident is difficult to estimate because the level of contamination can vary based

on several factors. In the event of an accident at Waterford 3, the control of contaminated food will be handled by the State and decisions will be made on a case-by-case basis. Contamination of the drinking water supply is also a concern for St. Charles Parish, which takes its drinking water from the Mississippi River. Ground water can be contaminated and moving water, such as the Mississippi River, can transport radioactive particles. The exact impact on drinking water supplies for St. Charles Parish would depend on the nature of the accident.

4.3.3 Vulnerability of Structures and Critical Facilities within the Parish

In order to inventory assets in the Parish, the Steering Committee used HAZUS-MH 2.1 data from the State Hazard Mitigation Plan to determine the extent of building vulnerability to each hazard. First, the Parish determined the percentage of the Parish that might be affected by a hazard at any given time (See Table 21).

Table 21
Estimated Percent of Parish That Could be Impacted by Hazards At Any One Time

Drought	35%
Extreme Heat	100%
Flooding	100%
Thunderstorms / Lightning / Hail / High Wind	60%
Tornadoes	60%
Tropical Cyclones	100%
Winter Weather	40%
Coastal Hazards	40%
Levee Failure	100%
Hazardous Materials	80%

The value of structures, Parish - wide, was taken from the State Hazard Mitigation Plan, which used HAZUS-MH 2.1 The Parish determined that this would be a more accurate inventory of the structures in the Parish than HAZUS data used in the previous plan update. Building values reported here are substantially higher than in the last plan due to the fact that HAZUS-MH 2.1 uses specific Parish data rather than the national general building stock databases used previously. This does not indicate a development boom in the Parish, but a refined evaluation of the worth of structures in the Parish. Once building values were obtained, a dollar amount of damage Parish–wide was determined based on the percentage of the Parish affected by that hazard (as reported in Table 21). See Table 22 for the potential dollar losses to the Parish from each hazard. The potential losses include residential properties, commercial, industrial, agricultural, religious/non-profit, government, and educational facilities. It is unlikely that a hazard would occur that would adversely affect all

categories of buildings at the same time, but the potential for this level of damage does exist.

Table 22
Potential Dollar Losses to St. Charles Parish

Hazards	POTENTIAL LOSSES ($1,000)						
	Residential	Commercial	Industrial	Agriculture	Religious / Non-Profit	Government	Education
Drought	$2,911,399	$682,114	$251,259	$8,924	$71,425	$33,931	$27,907
Extreme Heat	$8,318,110	$1,948,898	$717,882	$25,498	$204,072	$96,946	$79,734
Flooding	$8,318,110	$1,948,898	$717,882	$25,498	$204,072	$96,946	$79,734
Thunderstorm / Lightning / Hail / High Wind	$4,990,866	$1,169,339	$430,729	$15,299	$122,443	$58,168	$47,840
Tornadoes	$4,990,866	$1,169,339	$430,729	$15,299	$122,443	$58,168	$47,840
Tropical Cyclones	$8,318,110	$1,948,898	$717,882	$25,498	$204,072	$96,946	$79,734
Winter Weather	$3,327,244	$779,559	$287,153	$10,199	$81,629	$38,778	$31,894
Coastal Hazards	$3,327,244	$779,559	$287,153	$10,199	$81,629	$38,778	$31,894
Levee Failure	$8,318,110	$1,948,898	$717,882	$25,498	$204,072	$96,946	$79,734
Hazardous Materials	$6,654,488	$1,559,118	$574,306	$20,398	$163,258	$77,557	$63,787

Source: State of Louisiana Hazard Mitigation Plan 2014 Update

4.3.4 Critical Facilities

After completing the Parish-wide assessment of vulnerable assets, focus was brought to an analysis of those facilities that were determined to be "critical". A critical facility is defined as a facility in either the public or private sector that provides essential products and services to the general public, is otherwise necessary to preserve the welfare and quality of life in the Parish, or fulfills important public safety, emergency response, and/or disaster recovery functions. The critical facilities in the Parish include police and fire stations, health care facilities, schools, public utilities, and municipal buildings.

See Appendix J for a detailed complete list of critical facilities. The critical facilities listed in Appendix J are all of the facilities that could be identified by the community after intensive surveying community representatives. They are indicated on Maps 6 – 28.

4.3.5 Analyzing Development Trends

As discussed throughout this section, development in the Parish has not been significant since the last HMP update. Population growth for the period 2000 to 2010 (slightly less than 10%) was lower than the period from 1980 to 2000 (29% growth), and significantly lower than the period from 1960 to 1980 (75% growth). It is assumed that parish population growth will continue to be less than 1% per year. With this slight growth expected, one would assume that demand for housing will not increase significantly. The St. Charles Parish 2030 Comprehensive Plan indicates that housing in the Parish is predominantly single dwelling units but may trend towards multi-unit dwellings due to an aging and more diversified population.

Since the last plan update, development and population growth have not been substantial, therefore, the vulnerability to hazard events has not increased significantly.

5.0 MITIGATION STRATEGY

The Mitigation Strategy presents the goals, objectives, and actions that St. Charles Parish will implement to accomplish the overall purpose of the Hazard Mitigation Plan – to become a "disaster-resilient community". Based on the current risk assessment and a review of the Parish's capabilities, including policies, programs, and resources, the goals and objectives in the previous plan update were reviewed and determined to portray the Parish's needs. These goals and objectives have been modified to fit current circumstances and are presented here. The end result of this process will be to present an Action Plan that the Parish will follow to reduce potential losses due to natural hazards that affect the Parish.

The Hazard Mitigation Steering Committee (see Table 2) met on numerous occasions to discuss possible mitigative measures that could reduce the effects from disasters. Because flooding; thunderstorms with lightning, hail and high winds; tornadoes; tropical cyclones; and levee failure are hazards of concern in the Parish, they were the focus of the discussions. From these discussions, an Action Plan (Section 8.0) was prepared which identifies specific actions to achieve identified goals, an appropriate lead person for each action, a schedule for accomplishment, and an estimate of cost, and suggested funding sources.

5.1 Local Hazard Mitigation Goals

Requirement 201.6(c)(3) (i):
[The hazard mitigation strategy shall include: a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

The Hazard Mitigation Steering Committee met on February 18, 2014 to analyze the results of the risk assessment. The risk assessment consisted of identifying the hazards that affect the Parish and the critical facilities that are vulnerable to the hazards. Based on the risk assessment, it was determined that the Parish should keep the goals established in the original HMP because the goals were consistent with the most common hazards identified in the Parish. The goals are related to the risk assessment in that they address ways to reduce the impact of the identified hazards on the identified critical facilities. The three goals listed were determined to be those that would have the greatest benefit in hazard reduction to the Parish considering the predominate hazards profiled in the Risk Assessment. The Action Plan established by the Steering Committee from the previous HMP was updated to include additional action items that the Steering Committee felt would benefit the Parish and to update the project status for existing action items. The profiled hazards identified in the Risk Assessment are addressed in the Action Plan. See the complete Action Plan in Section 8.0, where the action items for each goal are defined. All of these action items and goals established will help St. Charles Parish.

Goal #1 Reduce losses to existing and future property due to hazards.

Goal #2 Protect the health and well-being of the people of St. Charles Parish from the negative effects of hazards.

Goal #3 Ensure the ability of emergency services providers and facilities, including essential facilities, to continue operating during hazard events.

Many of the action items hinge on funding becoming available; therefore, these activities may be accomplished with outside funding. The details of the Action Plan serve to deal with changing priorities, administration transitions, and unpredictable funding and still allow for adoption of the plan by Parish and local governments.

5.2 Mitigation Objectives

Mitigation objectives are designed to support community goals while further defining parameters for development of mitigation actions. Objectives are numbered to correspond with the goal that each supports.

Objective 1.1 Target FEMA / NFIP repetitive loss structures for property protection measures.

Objective 1.2. Evaluate existing regulations that might impact the vulnerability of property and persons to hazards and how well those regulations are enforced.

Objective 1.3. Improve the ability of property owners in hazard areas to undertake mitigation actions.

Objective 1.4. Enhance the Parish's information base to support future hazard mitigation planning.

Objective 1.5. Reduce the impacts of hazards on St. Charles Parish through structural measures.

Objective 1.6. Increase the capacity of the Parish to use existing infrastructure in an efficient manner.

Objective 1.7. Protect the continuity of important Parish records.

Objective 1.8. Increase public awareness of potential damages to property from natural hazards.

Objective 2.1. Increase awareness of appropriate actions to take in the case of a hazard event.

Objective 2.2. Seek effective and efficient methods and technology for notifying residents of hazards and severe weather events.

Objective 3.1. Enhance property protection measures at emergency services facilities and other critical facilities.

Objective 3.2. Evaluate the interdependencies between emergency service providers during hazard events.

5.3 Identification and Analysis of Mitigation Actions

Requirement 201.6(c)(3) (ii):
[The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

A very inclusive and structured process was used to develop and prioritize mitigation projects and actions for the HMP. During the risk assessment meeting and subsequent discussions, the Steering Committee identified and proposed potential hazard mitigation projects within the Parish that would benefit the Parish and help protect the lives and property of the citizens of the Parish. This process included input from representatives from governmental organizations, businesses, and citizens. Potential projects included traditional HMGP projects such as elevations, retrofits for high wind loads, hardening and retrofitting critical facilities or infrastructure, and drainage improvements. See Appendix K for types of mitigation actions considered.

5.3.1 Potential Mitigation Actions

The following sections (5.3.2 – 5.3.6) represent project ideas that are a priority to the Parish in the future. These sections represent examples of projects that were considered for inclusion in the Action Plan (Section 8.0) and may be addressed in the future by the Parish.

5.3.2 Retrofitting of Structures

The retrofitting of structures prone to periodic flooding is a cost-effective mitigation technique to reduce flood losses to properties. Retrofitting techniques include dry flood-proofing, wet flood-proofing, hardening structures against wind damage by the installation of hurricane shutters and impact resistant glass, and installation of generators.

Dry flood-proofing techniques include the building of floodwalls adjacent to existing walls, the installation of special doors to seal out floodwaters, and special backflow valves for water and sewer lines. Wet flood-proofing includes low cost mitigation measures such as raising air conditioners, heat pumps, and hot water heaters on platforms above the BFE. Flood proofing structures can eliminate many problems experienced during hurricanes and floods.

Another cost effective retrofitting technique includes the installation of generators. By preserving power with generators during and after severe storms, many critical facilities may continue to provide necessary services to the community. The installation of generators serves to assist the

communities with problems experienced from flooding; thunderstorms with lightning, hail, and high winds; tornadoes; and tropical cyclones.

Hardening structures by installing hurricane shutters serves mainly to assist with problems experienced during thunderstorms with lightning, hail, and high winds; and tropical cyclones. By installing hurricane shutters, the exterior integrity is maintained by protecting the interior of the structure.

The Parish approves of retrofitting of critical facilities in the Parish. Projects identified by the Steering Committee (see the Action Plan in Section 8.0) are as follows:

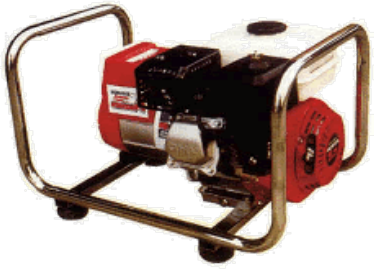
- Harden the gymnasiums at Eual J. Landry Alternative Center and at Harry Hurst Middle School.
- Harden the 911 Communication Center against high winds by installing hurricane shutters and impact-resistant windows.
- Enhance new construction, expansions, or infrastructure projects with mitigation measures for high wind and flood events.

Another retrofitting technique would be to bury electric power lines to avoid wind damage resulting in an interruption of power supply to emergency services or other customer.

Potential projects could include encouraging electrical providers and new subdivision developments to consider installing underground utilities. Burying electric power lines serves to assist the communities with problems experienced from hurricanes, floods, thunderstorms with lightning, hail and high winds and tornadoes.

Projects that were identified by the Parish, but were deemed not economically feasible at this time, are as follows:

- Wind Retrofitting of all public school sites, all administrative facilities, and the maintenance facility.
- Install back up power supply/generators at all critical facilities.
- Pursue elevation / acquisition / flood-proofing projects for all repetitive loss structures.



5.3.3 Elevation of Structures

The elevation of structures prone to periodic flooding is an effective mitigation technique to reduce flood losses to properties. Almost any type and size of structure can be elevated so that the lowest floor is above the Base Flood Elevation (BFE) or other regulatory-defined flood height such as Advisory Base Flood Elevation (ABFE) or Digital Flood Insurance Rate Map (DFIRM). Elevating structures can eliminate many problems experienced as a result of hurricanes and flooding. When elevating structures, it is necessary to place essential equipment, i.e. computer, telephone, electrical, and HVAC ductwork above the base flood elevation as well.

Projects identified by the Parish (see the Action Plan in Section 8.0) for elevation includes:

- At the discretion of the property owner, elevate repetitive loss structures throughout the Parish.
- The Parish will continue to seek grant funding for the purpose of elevating repetitive loss and severe repetitive loss properties.

Projects that were identified by the Parish, but were deemed not feasible at this time, are as follows:

- Work with FEMA and the Southeast Louisiana Hurricane Task Force to develop a demolition / rebuild program that would permit new construction above the base flood elevation – instead of green space only – on the sites of repetitive loss properties.
- Develop a new homeowner assistance program whereby the Parish, rather than the individual homeowner, would cover the non-federal 25% funding portion for the elevation of repetitive loss structures.

Elevation of structures serves to assist the communities with problems experienced from flooding; thunderstorms with lightning, hail, and high winds; and tropical cyclones.

5.3.4 Drainage

Improving the drainage capacity around roads and low-lying areas is a time-tested technique to mitigate flood damage. Maintenance of drainage canals and laterals is essential to maximize their efficiency and continued long term effectiveness.

Portions of St. Charles Parish are subject to flooding due to the many bayous and waterways throughout the Parish and their associated wetlands. During high water levels, this area is susceptible to backwater flow through the wetlands. This prevents proper drainage of the land. Evaluation of drainage patterns throughout the Parish, in the context of recent drainage improvements and in light of anticipated land use changes, is ongoing.

Generally, actions undertaken to reduce the effects of flooding consist of widening and deepening the earthen canals, cleaning of existing ditches, and replacing existing culverts, upgrading pumps, and installing check valves and inverts in certain culverts. Projects identified by the Parish (see the Action Plan in Section 8.0) are as follows:

- Evaluate the need for additional drainage and flood control measures for both newly developing areas and more established areas.
- Continue to work with other agencies to complete construction of West Bank Hurricane Protection Levee.
- Upgrade the Canal A / Dunleith Canal intersection for enhanced drainage in the Destrehan Community.
- Continue to replace undersized culverts.
- Continue upgrades of pump stations.

A project identified by the steering committee, but was deemed not feasible at this time, follows:

- Oakland Jack and Bore project consisting of the installation of steel culverts under the CN / IC Railroad.
- Fairfield Jack and Bore project consisting of the installation of steel culverts under the CN / IC Railroad.

Maintaining and improving drainage serves to assist the communities with problems experienced from flooding; thunderstorms with lightning, hail, and high winds; and tropical cyclones.

5.3.5 Floodplain Management and Building Codes

Improved floodplain management, including land use planning, zoning, and enforcement at the local level can reduce flood related damages. The use of the NFIP is critical to the reduction of future flood damage costs to the taxpayer. The LaDOTD is the primary agency responsible for the administration of the NFIP for the State of Louisiana. St. Charles Parish joined the NFIP on May 5, 1983.

The Community Rating System (CRS) is a voluntary program for NFIP-participating communities. The program provides premium discounts for communities to go beyond the minimum floodplain management requirements. The program helps to reduce flood damages to property that is insurable, strengthen the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management. St. Charles is currently rated in class 8 as listed on FEMA Online Library for *Community Rating System Communities and their Classes*.

Within floodplain management as a whole, the education process must play an important role. An effective education program should be implemented to show citizens the importance of building codes and ordinances and how cost effective they could be in reducing future damages.

Projects identified by the Parish (see the Action Plan in Section 8.0) are as follows:

- Identify, schedule and conduct activities above and beyond those required under the NFIP. Conduct public outreach and education efforts and providing elevation certificates in non-hazard areas.
- Provide brochures and other publications that explain repetitive loss structures and options to owners.
- Evaluate potential activities to lower the Parish's CRS rating.

Floodplain management and building codes serve to assist the communities with problems experienced from flooding; thunderstorms with lightning, hail, and high winds; tornadoes; and tropical cyclones.

In January 2006, the State of Louisiana adopted the Uniform Construction Code, in which all parishes and municipalities must comply. St. Charles Parish follows this Code. These building codes have standards and effectiveness provisions for flood-prone areas. Implementing these codes offers several advantages such as exceeding the scope of NFIP requirements and placing all hazard-related construction requirements in one place.

In November 2005, FEMA published the Flood Recovery Guidance to provide timely, up-to-date, and accurate coastal flood hazard information to guide reconstruction in the portions of the Gulf Coast most severely affected by Hurricane Katrina. This guidance added freeboard, a factor of safety usually expressed as feet above a flood level for purposes of floodplain management, to the Base Flood Elevations (BFEs) shown on the community's FIRM. Hurricane Katrina Surge Inundation and Advisory Base Flood Elevation (ABFE) maps, also known as Katrina Recovery Maps, were published to provide essential elements of information, such as preliminary surveyed coastal high water mark flood elevations from the storm surge, surge inundation limits, and Advisory Base Flood Elevations (ABFEs). An ABFE is an interim product to assist communities in their rebuilding efforts while new Flood Insurance Rate Maps (FIRMs) are being completed. The ABFEs were determined by adding freeboard to the Base Flood Elevations (BFEs) shown on each community's FIRM. The ABFEs are generally limited to portions of the current FIRM's Special Flood Hazard Area (SFHA) (or 100-year floodplain) that were inundated by Hurricane Katrina. In St. Charles Parish, one foot of freeboard was applied to all flood zones within the inundation limits from the Hurricane Katrina storm surge. Communities which do not require compliance with the ABFEs will not be eligible for FEMA funding for certain mitigation and recovery projects. St. Charles Parish adopted the ABFEs on October 16, 2006. In January of 2009, the newly revised Digital Flood Insurance Rate Maps (DFIRMs) for St. Charles Parish became available. The Parish has not yet been required by FEMA to adopt the revised maps.

5.3.6 Public Outreach and Education

Public education is vital in equipping citizens with the knowledge necessary to prepare for and respond to natural hazards. An educated public is more likely to heed warnings from emergency management officials regarding credible hazards. A comprehensive education and outreach program is critical to the success of early warning systems so that the general public, operators of critical facilities, and emergency response personnel will know what actions to take when a warning is disseminated.

Public outreach and education projects identified by the Parish (see the Action Plan in Section 8.0) are as follows:

- Coordinate a public education campaign to keep residents informed concerning all hazards.
- Develop a tornado awareness brochure that includes hazard information and measures that may be taken to protect life and property.

- Develop a public-speaking series to include topics such as types of natural hazards, how to develop a family disaster plan, how to develop a business continuity plan, and simple types of mitigation projects for homeowners.
- Coordinate with the Southeast Louisiana Hurricane Task Force to evaluate current evacuation and emergency response procedures.

Public outreach and education activities serve to assist the communities with problems experienced from flooding; thunderstorms with lightning, hail, and high winds; tornadoes; and tropical cyclones.

5.3.7 Repetitive Loss Strategy

During the planning process, St. Charles Parish determined that a repetitive loss strategy was a priority for this Plan update. St. Charles Parish has 63 SRL properties with 23 of these mitigated and 578 repetitive loss structures with one mitigated at the time of this plan update. The majority of these SRL and RL properties are located in Destrehan, Norco, and St. Rose. Repetitive flood loss properties represent only 1.3% of all flood insurance policies nationwide, yet historically they have accounted for nearly one-fourth of the claim payments. In Louisiana, the NFIP has paid $3 billion in claims since 1978 for repetitive and severe repetitive loss properties. Mitigating these repeatedly flooded properties reduces the overall costs to the NFIP, the communities in which they are located, and the individual homeowners. Ultimately, mitigating repeatedly flooded properties benefits everyone.

The Repetitive Loss Strategy is referenced in the Hazard Mitigation Plan but will not physically be a part of the HMP due to privacy issues. Information concerning individual properties will be presented in the document and should be protected from public perusal. The CRS Manual states that “Flood insurance data about private property, including repetitive loss properties, are protected under the Privacy Act. Personally identifiable information such as the names or addresses of specific properties, whether they are covered by flood insurance or not, whether they have received flood insurance claims, or the amounts of such claims may not be released outside of local government agencies or to the public or used for solicitation or other purposes. Such information should be marked “For Internal Use Only. Protected by the Privacy Act of 1974”.” The Repetitive Loss Strategy will be adopted by the Parish as part of the HMP as it is a very important mitigation action the Parish is undertaking.

St. Charles Parish has defined several repetitive loss areas. As stated above, most of these are in Destrehan, Norco, and St. Rose; however, there are areas of repetitive flooding on the West Bank as well. These areas were delineated on a map and, for each area, causes of flooding

were determined. The Parish inventoried all repetitive loss properties and produced a database, which includes photographs, square footage, structure and foundation type, building footprint, number of stories, elevation, and property value. Letters were sent to each property owner to determine their interest in mitigation measures for their structure. A number of mitigation methods will be considered, such as dry flood-proofing, wet flood-proofing, acquisition and elevation. To estimate cost of elevating the structure, square footage, cost per square foot and elevation height were used. Cost estimates are included in the database.

Property owners that are interested in mitigation measures for their structure were visited and additional information was obtained related to the building. The Parish will work with these homeowners, and any homeowners interested in mitigation for their property, to apply for funding as it becomes available.

5.4 Implementation of Mitigation Actions

Requirement 201.6(c)(3)(iii):

[The mitigation strategy section shall include] an action plan describing how the actions identified in section (c) (3) (ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

An Action Plan (Section 8.0) was prepared which identifies specific actions to achieve identified goals, an appropriate lead agency for each action, the priority of the action item, a timeframe for accomplishment, and suggested funding sources. The inclusion of any specific action item in this document does not commit the Parish to implementation. Each item will be considered in terms of the available staff and funding resources. Certain items may require regulatory changes or other decisions that must be implemented through standard processes, such as changing regulations. This plan is intended to offer priorities based on an examination of hazards and a review of the costs and benefits of a specific action.

The Steering Committee reviewed action items in the previous HMP and revised, added, and approved measures for the updated plan. Items listed in the action plan that have been completed were marked as “complete” and moved to the bottom of the action plan. No action items were deleted during the plan update process, however, some have been noted as unnecessary or not feasible and moved to the bottom as well.

A benefit-cost review compares the benefits of mitigation actions, such as public safety and property protection, to the costs. It is a technique used to evaluate

and prioritize the actions considered in the mitigation strategy. The Steering Committee discussed the potential costs associated with each type of mitigation action identified in Appendix K, and decided that any project could be cost effective if its scope were properly tailored to the situation. For example, one of the most effective mitigation actions identified for repetitively flooded structures is elevation. It may not be cost effective to elevate every repetitively-flooded structure in the Parish, but it certainly would be cost effective to elevate those that cause the largest drain to the NFIP.

For prioritization of the actions, the Steering Committee evaluated each mitigation action against criteria suggested by the *Local Mitigation Planning Handbook* to determine if the action supported that criterion. This was similar to the STAPLEE method used in the 2009 HMP Update; however, the criteria used were slightly different and a few additional criterion were added. Based on the benefit cost review and the evaluation of criteria a high, medium, or low priority was assigned. Following are the criteria reviewed:

- Life Safety – How effective is the action in protecting lives and preventing injuries?
- Property Protection –Will the action eliminate or reduce damage to structures and infrastructure?
- Technical – Is the mitigation action technically feasible and is it a long-term solution?
- Political – Does the mitigation action have political and public support?
- Legal – Does the community have the authority to implement the action?
- Social – Will the action adversely affect one segment of the population or disrupt established neighborhoods, or cause the relocation of lower income people?
- Administrative – Does the community have the personnel and administrative capabilities to implement the action and maintain it?
- Environmental – Are there environmental impacts of the action? Will it comply with environmental regulations?

The Steering Committee members prioritized the mitigation actions using these criteria and the benefit-cost review. The results were reviewed and the mitigation projects were ranked by priority. As in the 2009 HMP Update, the process of identifying the priority ratings was an informal process and whether or not the project will be cost effective was the driving factor. The mitigation projects were then grouped into categories: Emergency Services Measures, Natural Resource Protection Measures, Prevention Measures, Property Protection Measures, Public Information Activities, and Structural Projects. To summarize the mitigation actions prioritized by this process, the Steering Committee members used Mitigation Action Implementation Worksheets found in the *Local Mitigation Planning Handbook*. These are presented in Appendix L.

The action plan found in Section 8.0 is current as of submission of the HMP. Upon initiation of each mitigation action, the action item will be reevaluated to ensure it is still an effective project.

6.0 Community Capabilities

6.1 Introduction: the Link Between Sustainability, Resiliency, and the Hazard Mitigation Plan

Hazard mitigation planning must include of course an assessment of the hazard risks the community faces as well as a measure or understanding of its vulnerabilities associated with the risks identified. Through the mitigation planning process, the community is able to identify and set priorities for mitigation policies and strategies designed to reduce risk and future losses. According to FEMA, a community that couples "proactive mitigation policies and actions" with an effective and "inclusive" planning process, is well on its way to becoming "…a safer, more resilient community."

The U.S. Department of Homeland Security (DHS) Risk Lexicon (2008) defines Disaster Resilience as the community's *"…ability to adapt to changing conditions and prepare for, withstand, and rapidly recover from disruption."* Although DHS does not define *sustainability,* this term is closely related to its definition of *resilience.* As it is used in this context, *sustainability* refers to the community's efforts to implement plans and actions, etc. aimed at reducing hazard risks to the community *such that future reliance on available funding flowing from disaster declarations is greatly diminished* (emphasis added).

A sustainable community is one that has identified and pursues plans, policies, actions, and projects designed to reduce overall risks to its population from various hazards (through effective hazard mitigation planning and implementation, for example) *such that future reliance on available funding flowing from disaster declarations is greatly diminished.* The implication in this definition is that over-reliance on and/or a growing need for federal funding from disaster declarations means that the community is not sustainable in the long-term. The sustainable community strives for recovery that can be achieved without significant expenditure of public funds (federal or otherwise). If federal disaster funding can be equated with the natural resource base, the financial resources and the environmental quality upon which community life depends, then sustainability can also characterize the community in the following manner: A sustainable community is one whose plans, policies and strategies are designed to allow the community to use its resources to meet current societal needs without impairing or compromising the ability of future generations to access these same resources to meet their needs as well. If the present generation uses up these resources, then the community will eventually die as it is not sustainable.

A resilient community is one that has taken the steps which will allow it to bounce back or recover quickly from a disaster *without being overly reliant on federal disaster relief funding.* This means the community is in a position to minimize the

disruption of commerce and governmental services post-disaster. It has taken action to protect critical facilities and services (elevations, hardening, wind retrofitting, and other adopted measures in the HMP) so that the four supporting components are available quickly after a disaster to assist with the restoration of commercial activity and critical governmental services.

Community sustainability and resiliency do not come about by chance. These require careful planning and must ensure that consistency is evident in local plans (including hazard mitigation plans), codes and ordinances so that all these support sustainability and resiliency.

However, without four specific elements or components, neither sustainability nor resiliency can be achieved or achieved at an effective level. These components are the key underlying factors which support resiliency and sustainability, and if necessary, should be included in mitigation actions. They are potable water, wastewater treatment, energy, and transportation. The HMP should adopt actions which are designed to protect these key components from disasters, or at least mitigate the effects of disasters on these components, so that their availability after a disaster is ensured. Without access or availability to all four of these components, the community will experience delays or setbacks as it works to quickly overcome and bounce back from disasters, or will face problems which will adversely impact its long term sustainability.

Potable water is drinking water, i.e., water for human consumption. Nearly all communities have waterworks facilities designed to supply the community with fresh water and such facilities are typically identified as “critical facilities” in the community. Due to extensive damage and contamination from flooding, or lack of back-up power, for example, these facilities could be out of service for an extended period of time after a disaster. Emergency response and recovery personnel will need to make arrangements (in advance) for an alternative, reliable source of drinking water for the community while emergency repairs are made or alternate power to operate the facility is secured (something that can be addressed in the hazard mitigation plan if necessary). Without an adequate supply of drinking water, recovery work in the community will be delayed or proceed only slowly. In addition, the long-term sustainability of the community is also in jeopardy.

Wastewater treatment is crucial for public health and sanitation in the community. Untreated sewage can contaminate raw drinking water sources and spread disease. If community wastewater treatment facilities are damaged or otherwise rendered inoperable due to a disaster or loss of power, sewage can back up into residential and other structures making them uninhabitable. In communities where water wells are the source of drinking water, flood waters can introduce contamination if wells are not properly protected. In those communities where individual on-site sewage treatment package plants are used, flooding can adversely impact these systems and also threaten drinking water sources. To

counter such occurrences, modern building codes require safeguards to preclude this. The sustainability of the community requires adequate and reliable wastewater treatment and mitigation actions in the hazard mitigation plan can include alternate, back-up power sources, for example, to ensure operability of community sewage treatment plants after a disaster.

Energy is crucial to power the return of commercial activities and the restoration of critical governmental services in the community in the aftermath of a disaster. Power is required for water purification and wastewater treatment facilities, two additional critical support components for community resiliency and sustainability. Energy to power these needs after a disaster can be provided through the quick restoration of electrical service or through motor fuel or natural gas-fired generators in the interim before electrical power is fully restored. Pre-disaster planning, including hazard mitigation planning, must take into consideration the need for alternate power generation capabilities in the immediately after a disaster since power is necessary for communication and transportation, as well.

The fourth leg of the “table” supporting community sustainability and resiliency is transportation. By transportation is meant not only the vehicular means of getting around, including public transit and non-motorized transportation, but the supporting infrastructure as well. Supporting infrastructure for transportation in the community includes roads and bridges in the community and similar structures that connect the community to other communities and the region. In larger communities, transportation might include both air and rail service as well as intercity bus. The community must plan to ensure that its transportation infrastructure is open for safe use. This means that roads and bridges must be cleared of debris quickly to facilitate transportation. However, the use of transportation infrastructure (roads and bridges) requires that adequate traffic control can be put in place to ensure safe travel until power can be restored to operate traffic signals. In the case of bridges, particularly those spanning a body of water, care must be exercised to ensure the bridge’s structural integrity if the stream experienced extensive or severe flooding. Transportation also requires motor fuels, so energy supplies must be adequate and reliable. Since motor fuels are usually delivered to communities by tanker truck, roads and bridges must be cleared of obstructions early in the recovery process. The restoration of public transit service, when available in the community, can facilitate access to businesses and government services if motor fuel supplies are insufficient for general use or otherwise restricted during the early stages of recovery.

Therefore, a resilient and sustainable community is one that bounces back or recovers quickly from disaster *without over reliance on federal disaster relief funding.* Such a community minimizes post-disaster disruption to commercial activity and critical governmental services by taking steps to ensure adequate availability post-disaster of four key components to recovery: potable water; wastewater treatment; energy; and transportation. All four of these should be

given consideration or accounted for in some way in the community's Hazard Mitigation Plan if there are deficiencies in these areas.
It is very evident, therefore, that hazard mitigation planning plays a vital role in achieving community sustainability and resiliency. Through hazard mitigation planning, the community's hazard risks and vulnerabilities are assessed, and measures to mitigate or eliminate the identified risks and vulnerabilities are developed. While the *planning* phase of hazard mitigation planning is a critical and necessary first step, the achievement of community sustainability and resiliency is attained through *implementation* of the strategies and actions detailed in the plan. This requires commitment to follow-through and careful monitoring of progress during the planning cycle after the plan has been adopted. Sustainability and resiliency are not attained if hazard mitigation plans, once adopted, are relegated to the "shelf."

St. Charles Parish is currently in the planning process leading to the development and adoption of its hazard mitigation plan update. Those involved in this planning process are also aware of the need to address and incorporate sustainability and resiliency measures into the plan. This section of the plan, therefore, will also explore sustainability and resiliency in the Parish's recent Comprehensive Plan, the relationship between its Comprehensive Plan, its regulatory capabilities, the hazard mitigation plan, various capacities in the community, as well as the consistency (or lack thereof) in terms of sustainability and resiliency among the various relevant Parish ordinances and its plans.

Mitigation planning is a well-defined and highly structured process leading to the eventual adoption of a hazard mitigation plan for the community. However, for ultimate success in hazard mitigation, the community should have the capacity or capability in its available planning and regulatory assets, policies, programs, and resources to achieve the desired result. For this reason, the burden to accomplish the community's mitigation goals cannot fall on one individual in local government. For success, this burden must be shared by many, with responsibilities delegated, but all focused on achieving meaningful steps or actions designed to bring about mitigation while promoting community sustainability and resiliency. Obviously, some communities may have more of the required capabilities than others. The assessment which is the subject of this task is designed to help the community understand where changes, revisions or additions to its various planning and regulatory assets, its adopted policies and programs or its financial resources can assist in achieving a stronger state of mitigation.

The remainder of this section will review the planning and regulatory capabilities of St. Charles Parish, its administrative and technical capacities, its financial resources, and, finally, education and outreach programs and the relationship of these to hazard mitigation planning and the achievement of mitigation. A "Safe Growth Audit" has also been included. The information included here is based on discussions with various, knowledgeable officials within St. Charles Parish

Government. These were most helpful in providing information and answering questions. In addition, various plans and ordinances have been reviewed for this effort and where appropriate, these reviews have been included in the appropriate section of this task.

6.2 Planning and Regulatory

6.2.1 St. Charles Parish Comprehensive Plan

St. Charles Parish adopted its latest Comprehensive Plan (2030 Comprehensive Plan) in 2011. According to the Planning Director for the Parish, the Plan addresses hazards, identifies projects to be included in the mitigation strategy, and can be used to implement mitigation actions. The Parish has also adopted and has in place a number of plans which are useful for promoting or development community resiliency and sustainability. To the extent each of these plans can address hazards, or identify hazards to be included in the Parish's mitigation strategy, or actually be used to implement mitigation actions, then these plans are working in conjunction with the Hazard Mitigation Plan and helping to build a resilient and sustainable community as well.

The Comprehensive Plan is organized around and focused on five broad themes or principles:

- One of these ("B") focuses on the completion and improvement of basic infrastructure in the Parish, its road network, government services "…***and perhaps most important, the storm protection and flood hazard mitigation systems"*** (emphasis added). This theme sets the stage for the implementation of mitigation actions by virtue of its inclusion in the Parish's officially adopted Plan (and development policies document). This theme also addresses both resiliency and sustainability.

- Another key theme or principle: ("C") states that the promotion of "sound, efficient, fiscally responsible growth" can be achieved by looking to new types of development and development patterns ***"with higher design standards."*** This provision addresses sustainability if flooding issues and accessibility are taken into consideration in developing these standards. Higher design standards could include the promotion of infill development with slightly higher densities that, when taken together, utilize existing infrastructure more efficiently without the need for extensive new infrastructure. It could also mean provisions in the applicable ordinance(s) to reduce the amount of, or mitigate the amount of impervious surfaces in new development and new streets. Such provisions would mitigate localized flooding hazards.

The Plan's 2030 Vision Statement provides a solid foundation for the planning document. Among other things, the Vision Statement indicates that the Parish wishes to attain or achieve (its Vision for the future) the following:

- A sound infrastructure system that offers reliable protection from natural disasters, provides for optimum mobility through a variety of travel modes and supports sound growth. This not only promotes sustainability, but it also allows for the provision of mitigation actions that will protect from natural disasters.
- An upgraded road network that improves safety for all users. This is a Complete Streets solution that promotes community sustainability and resiliency.
- A more integrated roadway network to reduce travel time and congestion which would promote sustainability primarily, but also resiliency.
- The application of development standards to support and promote a more functional transportation system, including, access management, connectivity, and reservations for future roadway corridors. This vision element supports community sustainability.
- Greater transportation choices so that the community is less reliant on the automobile. Better transit service along with pedestrian and bikeways would help to promote both community sustainability and resiliency.
- Completion of the Parish's levee protection system; completion of comprehensive drainage plan with associated pumping stations. This vision element promotes possible mitigation actions as well as community sustainability and resiliency.
- Development and adoption of revised land development standards in coordination with FEMA and other government agencies with regulations to minimize damage from risks (flooding, primarily) in new developments. Community sustainability and resiliency are both promoted by this vision element. However, such an element could also be a mitigation action as well.
- Expansion of sewer system capacity to meet existing and future needs. This vision element promotes both community sustainability and resiliency.

6.2.2 Decision-making Principles in the Comprehensive Plan

This part of the analysis evaluates some of the key principles in the Comprehensive Plan which could be considered the decision-making "mind set" relative to development and regulatory issues as they pertain to the Plan. This evaluation also points out areas were revisions relative to

the Plan's relationship to the Hazard Mitigation Plan could be made to strengthen the connection between the two planning documents.

- Zoning and related development regulations and ordinances should be revised as necessary to maintain consistency with the Comprehensive Plan.
    - Recommended Revision: the Hazard Mitigation Plan should be specifically mentioned and included in this principle as both need to be mutually supportive.
- Consider consistency with the Comprehensive Plan as a factor in making decisions on proposed projects, programs, and Capital Improvement Program initiatives.
    - Recommended Revision: Include the Hazard Mitigation Plan as a consistency factor as well, particularly as it related to capital improvement programming.
- Capital Improvement Framework should be the Blueprint for allocating community expenditures and is an important governmental responsibility. Capital improvement project planning should be linked to the Vision and goals of the Comprehensive Plan. This is an effective way to help implement the Comprehensive Plan and carry out its recommendations.
    - Recommended Revision: This framework and the Comprehensive Plan should be tools to assist in the implementation of the Hazard Mitigation Plan and they should be linked officially.

If these procedures and recommended revisions can be put in place and institutionalized, then community sustainability and resiliency will be greatly enhanced and the Hazard Mitigation Plan will be more strongly supported.

6.2.3 Plan Elements of Comprehensive Plan

- Economic Development Element: Key recommendations
    - As a way to promote community sustainability and resiliency, develop retrofit plans for local industrial buffer zones (appropriate uses) to minimize risks and hazards. Do the same for plant sites and related transportation systems. This could be included as a mitigation action in the Hazard Mitigation Plan.

- o In support of local riverine and maritime industries, provide invaluable expertise in the areas of Emergency Planning, Disaster Recovery, Coastal Zone Management, etc. This would promote sustainability and resiliency, and could uncover actions items that should be included in mitigation actions.

- o Framework for sustainable growth: a balance must be struck between land use to support economic diversification and high quality of life. There should be a balance among diversity of housing types, commercial activity and civic uses. This promotes community sustainability.

- o New standards that encourage neighborhood livability, walkability and roadway connectivity; retention of open space and greenway corridors. All of these promote sustainability and resiliency, but open space and greenway corridors are sometimes created when severe repetitive loss properties, in particular, are acquired and removed from floodplain areas. The remaining land can easily be converted into a greenway corridor that can absorb or redirect floodwaters. Such recommendations can be included in mitigation actions plans.

- o Re-use/revitalization/re-investment in abandoned/neglected properties and neighborhoods in the community through a variety of tools and incentives. This promotes sustainability by reducing sprawl.

- o Mention of draft 2010 Comprehensive Economic Development Strategy (CEDS) document: 7 primary goals, one of which (#7) that the area should pre-plan to improve the region's emergency operations and recovery systems. This recommendation promotes community resiliency and elements of this could be included in mitigation action plans.

- o On p. 71: "The excessive zoning capacity is a factor that together with the rights of property owners, has an impact on the pattern of future land uses, facilitating the potential continuation of a dispersed and fragmented development pattern." This existing situation is counter-productive for sustainability and should be reviewed by staff so that improvements can be made.

- Land use, Housing, and Community Character Goals

The future land use map and use designations recognize the benefits of wetlands which include hydrologic and flood control, as well as reduction of flow velocity. This goal and related policies in the Comprehensive Plan

are directly related to and support the mitigation purposes of the Parish's Hazard Mitigation Plan and could be included, in some instances, in mitigation actions. They also support and promote community sustainability and resiliency. These are described below.

- Goal 7: reduce development vulnerability to storms and other disasters

- Policies:

  1) Sustainable development practices in new development and retrofits including: green roofs and water harvesting technologies; preserving existing trees and plant materials; reduced parking surfaces in areas of more urban character (but must be implemented in conjunction with transportation accessibility/mobility improvements); taking a regional approach, rather than site-by-site, to storm water solutions.
  2) LU 4: Reduce the overall environmental impact of buildings and encourage more hazard-resilient development.
  3) LU 4.2: Revise the zoning ordinance so that regulations that allow or encourage excessive impervious coverage of parking lots or excessive site disturbance are removed.
  4) LU 4.3: Encourage sustainable development practice in new development and retrofits that include:
     i. Reduced parking in areas of a more urban area
     ii. Regional approach (rather than site-by-site) to storm water solutions
  5) LU 4.4: Encourage maximum protection of wetlands and other natural systems in all developments. Wetlands/natural systems can act as a buffer against storm surge.
  6) Protection of wetlands and other natural systems that offer buffer against storm surge.
  7) Better connectivity via pedestrian and bike paths and roadways providing access to places to shop and work [in conjunction with 1) above].

- Community Character Policies & Action: Flexible storm water solutions

  1.6. Review existing standards to remove impediments for infill and redevelopment projects, including parking, storm water in older sites, etc. Such solutions can promote both sustainability and resiliency. The key is flexibility and the appropriate ordinances should be revised to require new ways to deal with runoff that allow flexibility in application.

- Transportation Element

  - Goals: The goals of increasing transportation choice and transportation connectivity both address and promote sustainability and resiliency

- Infrastructure Element

  - For flood protection, St. Charles relies on a comprehensive levee protection system (for the 100 year event)

  - Goal 3: Provide comprehensive hurricane flood protection to all developed and developable areas of the Parish to reduce the risk of life and material losses. This goal is aimed at promoting resiliency and sustainability by including all developed and developable areas of the Parish. Specific actions related to this could be included in mitigation actions in the Hazard Mitigation Plan.

  - Policies and Actions:

    3.1.2. Perform hydraulic/hydrologic drainage modeling for entire parish to locate drainage deficiencies in the system. This should be the first step in developing a Drainage Design Manual for the Parish. This policy/action promotes both community sustainability and resiliency.

    3.1.3. Prepare a Master Drainage Plan (Drainage Design Manual) and associated Capital Improvement Program to address deficiencies. It also appears (p.115, UFC Study) that the Parish's interior drainage system is "insufficient" to prevent flooding from heavy rainfall events. This deficiency should be corrected as soon as possible and, when corrected, both sustainability and resiliency will be promoted.

  - Flood Protection System:

    Infra. 4.1: "Expedite the construction of all planned levee protection projects, building [these] to the latest Corp of Engineers standard. Parish is still vulnerable to major storm events due to rainfall and heavy storm surge. Urgent action is needed if levees will be used primarily to solve flooding problems in the Parish. This action addresses sustainability and resiliency and elements of this recommendation could be included in mitigation actions.

    Infra. 4.2: "Adopt and implement complimentary strategies, measures and tools to improve the Parish's preparation and resiliency to storms. Promote 'multiple lines of defense' in

vulnerable areas." While this measure promotes sustainability and resiliency, elements could be included in mitigation actions.

Infra. 4.2.2: as an action item, the Parish is urged to continue to seek funding (FEMA grants, etc.) to acquire repetitive loss homes. This should be included in mitigations actions and it promotes both sustainability and resiliency in the community.

Infra. 4.2.4: This action item calls for the promotion and use of "non-structural flood-protection" tools, mentioning specifically approved architectural/building solutions (Note: This may be another way to characterize "elevations"), hazard mitigation and evacuation plans, etc. The elevation of homes is an effective means of flood protection. Home elevations above the BFE (with freeboard) promote both sustainability and resiliency and is an effective non-structural flood-protection tool and, as such, should be included in mitigation actions.

- Parks and Recreation Element

o Policies and Actions:

2.5. "Require that large-scale storm water retention areas in new development be designed as open space amenities conveniently accessible for the public for recreation and enjoyment." While this recommendation promotes sustainability, elements of this could be included in mitigation actions.

4.9. "Secure corridors that allow parks, cultural sites and other community destinations to be connected through both public and private development." This recommendation promotes community resiliency and sustainability.

- Natural/Cultural Resources

o Goals:

Protect the Parish's natural resources from scattered development and fragmentation. This goal promotes community sustainability.

o Policies and Actions:

1. Use zoning code and development regulations to protect sensitive environmental areas and resources, such as water resources, wetlands, existing tree canopy on individual sites and area-wide. This policy promotes sustainability and, to an extent,

the zoning ordinance and development regulations protect such sensitive areas as well.

2. NCR 3: Protect Parish's water resources.
3. NCR 3.1: Enact vegetated buffer and setback requirements to protect wetlands and other surface waters.
4. NCR 3.2: Require or at least encourage storm water management practices that minimize impacts on surface water, groundwater, and other natural resources, such practices as:
   i. Filtering and discharge designs for storm water management facilities that blend into existing landscapes;
   ii. Use pervious surfaces to reduce runoff.

   Note: This is found in the Parish's subdivision regulations as well; also codified in Chapter 25. These recommendations promote sustainability and resiliency.
5. Add landscaping standards to the zoning ordinance. If written into the zoning ordinance effectively, this recommendation could be used to promote both sustainability and resiliency.
6. Use vegetated buffers and setbacks to protect wetlands and other surface waters. This could be used to promote sustainability
7. Require (or at least encourage) good storm water management practices. This recommendation promotes sustainability.
8. Active coastal zone management. Note: this is in place currently through state and St. Charles may be adopting its own plan and ordinance. Such action promotes both sustainability and resiliency.

- Conclusions: The most recent St. Charles Parish Comprehensive Plan appears to have been written with sustainability and resiliency in mind, and in many cases, fits quite nicely into the Hazard Mitigation Plan as possible mitigation action items. The goals, policies, and actions that have been highlighted here are designed to promote either community sustainability, resiliency, or both. In addition, the Comprehensive Plan does address hazards, specifically flooding hazards and storm surge, and it identifies projects which either are, or could be included in the mitigation strategy (completion of hurricane protection levees and other non-structural mitigation projects, for example). To the extent that mitigation projects are identified in the Comprehensive Plan, this alone can serve as sufficient justification for including such projects in grant applications, or the Parish's Capital Improvement Program, or other funding mechanisms. What seems to be lacking at this point—but something that is easily remedied—is a more direct and specific connection between the Comprehensive Plan and the Hazard Mitigation Plan. If this connection were made, then both

plans could be used to work toward the implementation of projects in each other.

6.3 Appendix A – Zoning Ordinance

The St. Charles Parish Zoning Ordinance regulates land use. It addresses types of uses that are appropriate in specific areas of the Parish (zones), controls lot coverage through setback requirements and limits height. In addition, it has provisions for parking, signage, and other related regulations. It also addresses flood and industrial hazards. Flood hazard provisions in the Parish's zoning ordinance are evaluated below.

- Provisions for Flood Hazard Reduction

  - 2.a. This subsections contains no provision for flood venting in accessory buildings of less than 145 S.F. of floor area. Such buildings, however, can be built below the BFE if the interior of the structure is unfinished and the building is constructed with flood-resistant materials (if below the BFE). The building must be anchored to resist flotation, collapse and lateral movement. Recommendation: This subsection probably should be revised to add a provision for flood-venting nevertheless; venting may be cheaper than anchoring….which seems ineffective for resisting collapse (venting is better in this regard).
    1.7. While this subsection as written promotes resiliency, it should be revised to at least include an alternate provision for flood venting with appropriate specifications.

  - 2.c. Fully enclosed areas below the BFE in new construction or storage (other than basements) shall be designed to equalize automatically (by vents) hydrostatic flood forces on exterior walls (in or out). (Note: Hydrostatic is pressure at a point in a fluid at rest due to the weight of the fluid above it. Hydrodynamic pressure exerted at a point by a moving fluid such as water.)
    1.8. This provision promotes resiliency.

- In 3.Standards for Subdivision Proposals

  d. All subdivision proposals, including placement of manufactured home parks and subdivisions "shall have adequate drainage provided to reduce exposure to flood hazards." While this is the goal or standard to be met, there are questions about how this provision is interpreted, demonstrated, or enforced. For example, this section should contain some guidance as to what are the acceptable methods to "reduce exposure" to flooding, how much exposure (if any) to flooding is acceptable. Also, there is no mention of "eliminating flood damage" in this subsection, assuming reducing exposure to flooding is the same as minimizing flooding. This provision

generates many questions and seems to allow a great deal of interpretation in its review and enforcement.

1.9. This subsection will promote resiliency if it is revised to contain more quantifiable components and more specific.

- In e. Public utilities and facilities (sewer, gas, electrical, and water systems) must be "…located and constructed to minimize or eliminate flood damage."

  Note: This is much stronger language than that in "3.d" above. It is suggested that the zoning ordinance should be revised to include this stronger language in "3.d" as well. This would be much more sustainable and resilient.

  1.10. This subsection promotes resiliency.

- In 3. Special Provisions

  b. All manufactured housing-mobile homes shall be secured in accordance with FEMA's Sept. 1985 publication, "Manufactured Housing Installation in Flood Hazard Areas."

  Note: This publication should be made available to the public by the Parish; and any updates to this publication when they are made: at the Planning Office; at the Engineer's Office, and elsewhere in the parish.

  1.11. Promotes resiliency

- Regarding Type II and Type III landfills in M-2 zones, the zoning ordinance indicates that such facilities must have a drainage plan. If located in a floodplain, the drainage plan must demonstrate that the landfill will not restrict the flow off the 100-year base flood or "significantly reduce the water-storage ability of the floodplain integrity." Note: This section of the zoning ordinance should state how this "demonstration" is to be done. For example, engineering study by LA-licensed engineer, with numbers and calculations that can be reviewed by parish engineering personnel.

  1.12. Promotes sustainability and resiliency if demonstration requirement is made clearer and enforced.

6.4 Chapter 7 – Drainage and Flood Control

Chapter 7 of the St. Charles Parish Code of Ordinances deals with Drainage and Flood Control, two areas that are vital to community resiliency, in particular, and sustainability as well.

Prohibited: allowing or placing any type of fill material in drainage facilities that impedes flow or blocks flow into catch basins or any other drainage infrastructure.

Note: This may be aimed at those concrete trucks that used to (may not now) wash out their mixers and let it all drain into gutters and catch basins. Problem was that sometimes the wash-out hardened in the gutter and blocked or impeded flow into the catch basin. This provision may also address fencing placed in drainage swales.

1.13. This prohibition promotes sustainability and resiliency

6.5 Chapter 19 – Planning and Development

The St. Charles Parish Planning & Zoning Commission is created in Chapter 19 of the Code of Parish Ordinances.

- Creates the Planning & Zoning Commission and other provisions. Also adopted the comprehensive land use plan of 1980. A new comprehensive plan has been recently adopted that deals more effectively with sustainability and resiliency issues. The Planning & Zoning Commission, along with a professional staff, are key to integrating planning in the community with hazard mitigation planning.

6.6 Chapter 25 – Storm Water Management and Erosion and Sedimentation Control

St. Charles Parish recently adopted a storm water management ordinance which contains many provisions that directly impact sustainability and resiliency in a beneficial manner. This ordinance is designed to regulate non-storm water discharges into the Parish municipal separate storm sewer system (MS4) "…to the maximum extent practicable as required by Federal law." In short, this ordinance is designed to prevent and prohibit as far as possible illicit discharges and connections to the MS4 network in the parish with the goal of preventing contaminants, etc., from entering the waterways of the Parish. The ordinance requires sediment and erosion control during construction and works to limit "…the adverse effects of increased post-development Storm Water runoff and nonpoint source pollution…" It requires adherence to Best Management Practices (BMP) "…consistent with the Urban Stormwater Runoff; Roads, Highways, Bridges; Best Management Practices (BMP) for Coastal Louisiana Non-Point Source Pollution, Published by LA Dept. of Natural Resources in 2008. Ultimately, this ordinance is designed to improve the quality of surface and ground water in the Parish in order to facilitate compliance with state and federal water quality standards.

1.14. This ordinance greatly enhances sustainability.

6.7 Appendix C – Subdivision Regulations

Subdivision design and construction are both regulated in St. Charles Parish by Appendix C of the Code of Ordinances. Some of the provisions of these

regulations pertain to hazard mitigation, particularly flood hazard mitigation, and are evaluated below.

- IV Design Standards:

"All subdivision proposals shall be consistent with the need to minimize flood damage."

Note: This statement should be more strongly worded including "resiliency" and "sustainability" in the text. For example: "In order to work toward the establishment of a more resilient and ultimately sustainable community for the residents of St. Charles Parish, all proposals for subdivisions shall include provisions and components designed to minimize or eliminate (to the extent possible) the threat of damage attributable to flooding." See below, for another example.

1.15. This revised wording will more effectively promote sustainability and resiliency.

- B. Sewage Systems

"New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters with the systems and discharge from the systems into flood waters; and on-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding."

1.16. This section applies to both new and replacement systems, as well as on-site systems. The language is fairly strong and it should be as such provisions are key to promoting community sustainability and resiliency.

- D. Drainage

New developments must have adequate drainage to reduce exposure to flood damage. What is to be considered as "adequate" is to be determined by a drainage impact study that should be done as part of the engineering design of the development (see below).

- 5. Drainage impact analysis is usually required but can be waived if recommended by Director of Public Works and approved by Parish Council Ordinance.

- Subdivision regulations also contain specifications for Drainage Impact Analysis and Subdivision Drainage Design.

1.17. All these provisions promote resiliency.

- Subdivision subsurface storm sewers shall be designed for the 10-year storm as will outfall structures and outfall canals.

Note: Using the 25-year storm as the benchmark for design would be better and make the community less likely to flood. The 10-year storm as the design benchmarks for outfall structures and canals seems to provide a greatly reduced level of flood protection. A more sustainable and resilient design standard would use the 25-year storm as the benchmark to reduce exposure to flood damage.

1.18. To more effectively promote resiliency and sustainability and provide a greater level of flood protection, change benchmark design to 25-year storm event.

6.8 Conclusions

With the adoption of a storm water quality ordinance (Chapter 25 in the Parish Code of Ordinances), a Comprehensive Plan, and a Hazard Mitigation Plan Update (HMPU) in the works, St. Charles Parish has the foundation for building sustainability and resiliency into its plans and codes, as well as supporting mitigation actions in the HMPU, and including mitigation actions that support planning objectives. As often happens when newer codes containing the latest in environmental protections supporting sustainability and resiliency are adopted, older codes need revisions to be made consistent with the new ordinances. For this reason, St. Charles Parish should begin to review its current zoning, drainage and flood control, and subdivision ordinances for consistency with the Comprehensive Plan and its newer ordinances.

6.9 Additional Plans and Regulatory Capacities

Data supporting the summary analysis provided in this subsection can be found Appendix A, specifically Worksheet 4.1 (Capability Assessment). This worksheet also contains information provided by Parish officials addressing Administrative and Technical capabilities, Financial resources for hazard mitigation, and Education and Outreach. These elements are also summarized below in subsequent sections.

St. Charles Parish has in place a number of plans and regulatory ordinances related to land use, planning, and building codes, permitting, etc. The Parish annually adopts a capital improvements plan, actually more than one. Specific plans can be used to implement mitigation actions if the Parish Council so desires.

The Parish also has an adopted Economic Development Plan, a Local Emergency Operations Plan (adopted 2006 and again in 2014), a Continuity of Operations Plan (2014), a Transportation Plan (both as an element of Comprehensive Plan and in the New Orleans Metropolitan Transportation Plan),

a Storm Water Management Plan (recently adopted), a Disaster Recovery Plan (2014), and a Coastal Zone Management Plan (follows state-adopted plan). With the exception of the Economic Development Plan, the Local Emergency Operations Plan, and the Transportation Plan, the others can be used to implement mitigation actions. St. Charles Parish, as a member of South Central Planning and Development Commission, has been included in this agency's 2014 Comprehensive Economic Development Strategy (CEDS). This document in general recognizes the importance of hazard mitigation planning for economic development success. St. Charles Parish has no Community Wildfire Protection Plan because wildfire has not been identified as a community hazard.

Regarding its various codes, St. Charles Parish adopted a state-required building code in 2009 and it is adequately enforced, as are site plan review requirements. St. Charles Parish has nine (9) volunteer fire districts. Three of these maintain a PIAL rating of 3; six have an PIAL rating of 4. These are impressive ratings for volunteer fire districts.

St. Charles Parish also utilizes a number of ordinances relating to land use planning and land development. These include a zoning ordinance, subdivision ordinance, floodplain ordinance, and a storm water ordinance. These have been previously evaluated and all are adequately administered and enforced. The Parish considers all of these ordinances effective in reducing hazard impacts.

The Parish also utilizes flood insurance maps, continues to acquire land (as needed) for open space and public recreation uses, and is able to use a privately held wetlands mitigation bank of approximately 13 square miles. All of these are effective in reducing hazard impacts and are adequately administered and enforced, as appropriate.

6.9.1 Administrative and Technical Capacity

St. Charles Parish has a Planning Commission and a professional planning staff, in addition to a Mitigation Planning Committee, Mutual Aid agreements and pro-active parish government programs to trim trees and clear drainage systems. All of these are very capable and effectively coordinated. The Parish participates in Mutual Aid agreements with other adjacent and nearby parishes, as well as industrial operations within the parish.

The Parish also maintains a full-time Chief Building Official, Floodplain Administrator, Emergency Manager, a professional Community Planner (and professional staff), Civil Engineer and GIS Coordinator. All of these positions are backed by adequate staff to ensure enforcement of pertinent regulations and inter-departmental and agency coordination. All are trained to at least to some degree on hazards and mitigation.

St. Charles Parish also enjoys a great deal of technical capability. It employs various types of warning systems (see worksheet), utilizes hazard data and information (including nuclear) which is updated and published annually in various media, is actively engaged in grant writing (some grants have been used to mitigate risk), and uses HAZUS analysis in the GIS and Engineering Departments. In addition, St. Charles Parish has access to and uses two NOAA tide stations for advance flood warning. One station is located in Lake Pontchartrain; the other in Lac Des Allemands.

6.9.2 Financial Capacity

At the present time, St. Charles Parish is either eligible to use or has access to every funding source shown on the worksheet, with the exception of a storm water utility fee (although one is being actively considered at this time) and debt incurred through private activities. However, some of these fees are dedicated to the extent they can only be used for their dedicated purposes [i.e., water and sewer fees; impact fees; and bonds for levee construction (flood protection)]. The Parish has used FEMA funds for hazard mitigation (pump stations; drainage improvements; generators; wind retrofits, etc.). The Parish has also received FEMA hazard mitigation funds to elevate properties which are below the BFE. Community Development Block Grant (CDBG) funds have been used to fund water, sewer, and road improvements.

6.9.3 Education and Outreach Capacity

St. Charles Parish has a number of education and outreach programs in place that could be used to implement mitigation activities and communicate hazard-related information. In most of these the Parish maintains a pro-active position; in others it is available to participate when requested to do so. With the exception of Firewise Communities certification, St. Charles Parish makes informational brochures available to the community and updates information and makes it available daily on the local government access TV channel. The Industrial Mutual Aid Organization in St. Charles Parish is an example of a public-private partnership initiative that is used or could be used to address disaster-related issues. More information about this and other community capabilities can be found in Worksheet 4.1 in Appendix A.

6.9.4 Safe Growth Audit

The purpose of the Safe Growth Audit (see Worksheet 4.2 in Appendix A) is to identify gaps in the Parish's various growth guidance instruments and highlight improvements that could be made to reduce the vulnerability of

future development to natural hazards. According to the audit, the Comprehensive Plan, and its pertinent elements (land use, transportation, environmental management, and public safety) are adequately aligned overall with the task of reducing the vulnerability to hazards of future development in the Parish. Where the deficiencies occur, according the audit, are with the zoning ordinance, subdivision regulations, capital improvement program/infrastructure policies, and corridor plans. Regarding corridor plans, only one is currently in progress and it is expected that this planning project will recognize the need to avoid, or mitigate natural hazards.

It has been pointed our previously in this section that both the zoning ordinance and the Parish's subdivision regulations should be revised to more effectively deal with natural hazards through stronger regulations. Worksheet 4.2 lends support to this conclusion and offers details for more specific areas where revisions would strengthen the Parish's mitigation efforts and reduce vulnerabilities in St. Charles Parish, particularly for future development.

7.0 PLAN MAINTENANCE PROCEDURES

The Steering Committee will be involved in the process of monitoring, evaluating, and documenting the plan's progress. Part of the plan maintenance process should include a system by which local governing bodies incorporate the Hazard Mitigation Plan into the Parish's comprehensive or capital improvement plans. This process provides for continued public participation through the diverse resources of the Parish to help in achieving the goals and action items of the plan.

7.1 Monitoring, Evaluating, and Updating the Plan

Requirement 201.6(c)(4) (i):
[The plan maintenance process shall include a section describing the] method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

St. Charles Parish has developed a method to ensure that a regular review and update of the Hazard Mitigation Plan occurs. This will be the responsibility of the Steering Committee which consists of representatives from governmental organizations, local businesses, and private citizens, who will be involved in the process of monitoring, evaluating and updating the plan. Review and revision of the HMP will be directed by the St. Charles Parish Emergency Operations Center (EOC) Director.

Although the people filling the positions may change from year to year, each community will have a representative on the Steering Committee. The future Steering Committee will continue to be comprised of the same job functions as currently evident in the Steering Committee. However, the decision of specific job duties will be left to the St. Charles Parish EOC Director to be assigned as deemed appropriate. This section includes a description of the method and schedule for monitoring, evaluating, and updating the HMP within a five-year cycle. These procedures help to:

- Ensure that the mitigation strategy is implemented according to the Plan.
- Provide the foundation for an ongoing mitigation program in St. Charles Parish.
- Standardize long-term monitoring of hazard-related activities.
- Integrate mitigation principles into community official's daily job responsibilities and department roles.
- Maintain momentum through continued engagement and accountability in the plan's progress.

Progress on the mitigation action items will be monitored and evaluated by the St. Charles Parish EOC Director. The Lead Manager for each action item will complete an annual Progress Report and submit them to the St. Charles Parish

EOC Director for review. See Appendix M for the Mitigation Action Progress Report Form for each mitigation action found in the Action Plan. This Progress Report is designed to monitor the status of the projects and evaluate the success of each mitigation action. Completed Mitigation Action Progress Report Forms will be kept in the DHSEP HMP files.

If during this process of monitoring and reviewing the Mitigation Action Progress Report Forms, the St. Charles Parish EOC Director determines that the Steering Committee should be reconvened for discussion, he has the option of doing so. He will use the following criteria to determine if a meeting needs to be held:

- Are there any changes in mitigation plan requirements for funding programs?
- Are any changes or revision required to the Mitigation Action Items? (i.e. Have any action items been completed? Are there any new specific mitigation action items? Are there any changes to the mitigation plan requirements? Have any new specific mitigation action items been identified?)
- Does a review of the Progress Report Forms indicate any changes are necessary?
- Are there any changes within the Steering Committee membership?

Although not required, FEMA recommends an annual meeting of the Steering Committee. If the St. Charles Parish EOC Director determines that this annual meeting needs to be conducted, he is responsible for contacting committee members, organizing the meeting and providing a public notice for the meeting to solicit public input.

In addition to monitoring the progress of plan projects, the plan is required to be evaluated, then revised or updated at least once every five years from the date of FEMA approval. If a disaster occurs or as action items are completed, the plan will be reviewed, revised, and updated sooner than the required five years, using the process outlined in this section.

The Steering Committee will be reconvened approximately one year before the five-year deadline and begin evaluating the Hazard Mitigation Plan. The above criteria and the following key topics and questions below will be addressed at the meeting.

- Identify Hazards – Are there new hazards that affect your community? Has a disaster occurred?
- Profile Hazard Events – Are additional maps or new hazard studies available? Have chances of future events changed? Have recent and future development in the community been checked for their effect on hazard areas?

- Inventory Assets – Have inventories of existing structures in hazard areas been updated? Are there any new special high risk populations? Is future land development accounted for in the inventories?
- Estimate Losses – Have losses been updated to account for recent changes?

If the answer to any of the above questions is a "Yes", then the HMP will be updated accordingly.

The HMP review and update will be accomplished by reviewing each goal and action item to determine their relevance to changing situations in the Parish, as well as changes to State or Federal policy, and to ensure that they are addressing current and expected conditions. The Steering Committee will also review the risk assessment portion and determine if this information should be updated or modified. If no changes are necessary, the State Hazard Mitigation Officer will be given a justification for this determination.

The Steering Committee will work together as a team, with each member sharing responsibility for completing the evaluation and updates. Each member of the Steering Committee is an equal member of the process. It will be the responsibility of the representative from each community to ensure that their section of this plan is updated to meet the required deadline.

The St. Charles Parish EOC Director is responsible for incorporating all changes into the HMP after the Steering Committee has met and decided on the changes. All necessary revisions will be completed at least three months prior to the end of the five year period to allow the Steering Committee time to review the updated plan. During the revision process, the St. Charles Parish EOC Director will send a status report (meeting minutes) to the Parish Council after each Steering Committee meeting. Any required revisions will be implemented into existing plans, as applicable, within six months following the review process. This process will be repeated for each five year review of the plan.

After the plan update is completed, the final plan will be submitted to GOHSEP's Hazard Mitigation Officer for review and then on to FEMA for review and approval to remain eligible for continued HMGP funding.

FEMA, LA DOTD, and GOHSEP have the authority to evaluate the progress of existing mitigation plans to determine if the plan is fulfilling program requirements.

7.2 Implementation through Existing Plans and Programs

Requirement 201.6 (c)(4) (ii):
[The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate…

The project requirements from the Hazard Mitigation Plan shall be incorporated into other planning mechanisms, as applicable, during the routine re-evaluation and update of the Parish plans. Any changes or updates to the floodplain ordinances, Emergency Operations Plan, FIRMs, or the Comprehensive Plan will be reflected in this HMP during its update.

The Plans and Programs listed below were evaluated for integration during the completion of the original Hazard Mitigation Plan and were revisited for the plan update as necessary. Section 6.0 reviews many of these plans in depth and notes where these plans and programs incorporate information from the Hazard Mitigation Plan. Information from the HMP was used to support the St. Charles Parish Hazard and Vulnerability Analysis.

The St. Charles Parish Repetitive Loss Plan – The Repetitive Loss Plan identifies activities to reduce the number of repetitive losses due to flooding in St. Charles Parish.

St. Charles Parish Strategic Plan, Office of Economic Development – The Strategic Plan consists of strategies for the St. Charles Parish government to serve as the primary regulator and facilitator in the process of development, especially as it relates to protecting citizens from the adversity of natural disasters.

St. Charles Parish Zoning Ordinance – The Zoning Ordinance provides land use regulations and hazard identification. The Zoning Ordinance controls the uses and densities of various land uses throughout the Parish.

State of Louisiana Hazard Mitigation Plan – The purpose of this hazard mitigation plan is to implement actions which eliminate the risk from hazards, or reduce the severity of the effects of hazards on people and property. Mitigation actions are both short-term and long-term activities which reduce the cause or occurrence of hazards; reduce exposure to hazards; or reduce effects of hazards through various means to include preparedness, response, and recovery measures.

St. Charles Parish All Hazards Emergency Operations Plan – This publication constitutes the basic emergency management plan for the Parish of St. Charles, State of Louisiana, including charts detailing its implementation.

May 1995 Post Flood Report Flood Damage Assessment – This report covered the flooding that occurred in Southeast Louisiana between May 8 and May 10, 1995 and resulted in the declaration of a Federal Disaster Area.

Storm Surge Evacuation Plan – This report was developed by FEMA and local parishes to develop an evacuation plan based upon storm surges in the region.

St. Charles Parish 2030 Comprehensive Plan – This plan contains goals, policies, and actions that define and support a common vision and purpose. The plan sets a direction that can be used by St. Charles Parish to proactively manage future change.

The Parish is a member of the NFIP and has Floodplain Management Ordinances. When the Parish updates their Floodplain Ordinances, the requirements from this HMP will be included in the revised Floodplain Ordinance. This HMP plan will be made available to each committee leader responsible for revising their Floodplain Ordinance.

The St. Charles Parish Hazard Mitigation Plan will continue to be connected to other plans and planning mechanisms as well. During the planning process for new and updated local planning documents, such as the zoning ordinance, capital improvement plan, or emergency management plan, to name a few examples, the Department of Emergency Preparedness will provide a copy of the hazard mitigation plan to each respective Parish Department. The Department of Emergency Preparedness will ensure that all goals and actions of new and updated local planning documents are consistent with the hazard mitigation plan and will not contribute to increased vulnerability to hazards in St. Charles Parish.

The St. Charles Parish Council governs the Parish and has the final decision on what projects are worked on and how and when they will be accomplished. The action items in the Action Plan fall under their jurisdiction and they will delegate the tasks of the action items. Therefore, the Council will coordinate with the St. Charles Parish EOC Director and Lead Manager of each mitigation item to accomplish the goals and action items. The Lead Manager will follow any current procedures the Parish has while completing the action items. The Annual Progress Report and status reports (meeting minutes) will be submitted to the Parish Council, which will reflect progress on each item and on the Hazard Mitigation Plan.

The action items found in Section 8.0 will be implemented through the defined political process of the Parish. The annual budget, as required by law, is the driving factor in determining what projects are accomplished. Often, a certified public accountant generates the annual budget for the local governments. The lead manager for each action item will submit the corresponding project for consideration to the Council members. Then each Council member submits projects for consideration in the annual budget. They will use this HMP as a

guide to help them determine what projects will be submitted into the annual budget for completion. Outlined within each budget are projects that the Parish would like to complete. The Council then will hold budget hearings to determine what projects in the budget will and can be funded. All other projects are then removed and must be resubmitted during the following year's budget hearings.

7.3 Continued Public Involvement

Requirement 201.6(c)(4) (iii):
[The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

St. Charles Parish is dedicated to involving the public directly in the reshaping and updating of the Hazard Mitigation Plan. The Steering Committee members are involved in the process of the review and update of the plan, which is to be conducted every five years. Although they represent the public to some extent, the public will be able to directly comment on and provide feedback about the plan and its updates. Before the Steering Committee is reconvened for any meeting a public notice will be issued for anyone in the general population who would like to participate in the process of HMP review and update. A public notice will run on SCPTV (Cox Cable Channel 6 and ATT U-Verse Channel 99) and on the official St. Charles Parish website. Those who opt to participate in this process will have an opportunity to express their concerns, opinions, or ideas about the plan.

Copies of the plan will be catalogued and kept on hand at the St. Charles Parish Emergency Operations Center in Hahnville. The existence and location of these copies will be publicized on the St. Charles Parish website. The Parish Emergency Operations Center will be responsible for keeping track of public comments on the plan. All public comments will be reviewed and incorporated in the HMP at the five year update if appropriate. If an annual meeting of the Steering Committee is held, than the public comments will be reviewed and incorporated at this time, if appropriate. See the Edits and Revisions page at the beginning of this document for who to contact with recommendations, edits, and changes to this plan. The review, changes, and updates that are made during the review, every five years, will also be publicized.

Direct all comments to:
EOC Director
St. Charles Parish Department of Emergency Preparedness
Emergency Operations Center
15045 River Road
Hahnville, LA 70057

8.0 ACTION PLAN

Together with the Mitigation Strategy Section, this section presents the blueprint for St. Charles Parish's hazard mitigation strategy. The Action Plan describes the priorities given to the mitigation actions listed in the previous section and outlines how those strategies will be implemented.

The Planning Committee prioritized the mitigation actions presented in Section 5 through a prioritization exercise. The Committee began by reviewing the criteria outlined in Section 5.4. After considering the various aspects of each mitigation action, Committee members provided a list developed by their respective departments of potential projects to be addressed. Based on the benefit-cost review and the evaluation criteria, each member was asked to prioritize potential mitigation actions as High, Medium, or Low. The priorities assigned to each action by the Steering Committee will serve as a guide to those agencies responsible for implementation. Actions will be considered for implementation according to the priorities given in this Plan.

The St. Charles Parish DHSEP will oversee the implementation of the strategies listed below. The Action Plan outlines the other agencies that will be involved in implementation, approximate timeframes, and funding information for each of the actions. The Action Plan indicates whether a mitigation action has been carried over from a previous HMP or is new in the c current update.

The St. Charles Parish DHSEP will be responsible for general management of the implementation of the mitigation actions in this Plan. Accordingly, the St. Charles Parish DHSEP will have the authority to divide projects into phases to facilitate implementation.

Mitigation Actions
St. Charles Parish has developed the mitigation actions described in the Action Plan. Many of these mitigation actions will have a positive effect on mitigating potential damages from most if not all natural hazards. In developing actions, St. Charles Parish relied on the following six mitigation action categories provided by FEMA:

1. Emergency Services (ES) Measures

Although not typically considered a mitigation technique, emergency service measures do minimize the impact of a hazard event on people and property. These commonly are actions taken immediately prior to, during, or in response to a hazard event. Examples include:
(a) Hazard warning system
(b) Emergency response plan
(c) Critical facilities protection
(d) Health and safety maintenance

(e) Post-disaster mitigation

2. Natural Resource (NR) Protection

Natural resource protection activities reduce the impact 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. Examples include:
(a) Wetland protection
(b) Habitat protection
(c) Erosion and sedimentation control
(d) Best management practices (BMPs)

3. Prevention (P) Measures

Preventive measures 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 where capital improvements have not been substantial. Examples of prevention measures include:
(a) Comprehensive land use planning
(b) Zoning regulations
(c) Subdivision regulations
(d) Building code
(e) Floodplain development regulations

4. Property Protection (PP) Measures

Property protection measures protect existing structures by modifying the building to withstand hazardous events, or removing structures from hazardous locations. Examples of property protection measures include:
(a) Building relocation
(b) Acquisition and clearance
(c) Building elevation
(d) Building retrofit

5. Public Information (PI) Activities

Public information and awareness activities are used to advise residents, business owners, potential property buyers, and visitors about hazards, hazardous areas, and mitigation techniques that the public can use to protect themselves and their property. Examples of measures to education and inform the public include:
(a) Map information
(b) Outreach projects
(c) Library

(d) Technical Assistance
(e) Real estate disclosure
(f) Environmental education

6. Structural (S) Projects

Structural mitigation projects are intended to lessen the impact of a hazard by modifying the environmental natural progression of the hazard event. The projects are usually designed by engineers and managed or maintained by public works staff. The list of proposed structural projects is substantially different than the projects enumerated in previous drafts of the Plan. Due to the time that has elapsed since the inception of the hazard mitigation planning process, many of the structural projects that were originally included in the plan have been completed or are underway. In consultation with Parish engineers and the Parish Public Works Department, a revised and updated list of desired structural projects was generated. Typical examples of structural projects include:
(a) Reservoirs, retention and detention basins
(b) Levees and floodwalls
(c) Channel modifications
(d) Channel maintenance

Mitigation Actions Prioritization and Implementation

Mitigation Action Number	Item number in 2009 HMP	Mitigation Action Description	Action items carried over from 2005 HMP	Action items carried over from 2009 HMP	Action Items added during 2014 Update	Project Status	Priority	Hazard	Past Hazard Event Details *(List the Hazard ID that has occurred in the vicinity of the listed project)*	Lead Agency	Potential Partners	Timeframe	Funding
Emergency Services Measures													
ES-1	7	Coordinate with the Southeast Louisiana Hurricane Task Force to comprehensively evaluate the effectiveness of current evacuation and emergency response procedures. Drawing upon empirical evacuation data and assembled technical expertise, improve hurricane evacuation procedures.	✓			Ongoing	High	Tropical Cyclones		DHSEP	Neighboring Parishes, FEMA, GOHSEP	2014-2016	Staff Time
ES-2	27	Coordinate with the National Weather Service to improve the Parish's technical infrastructure for forecasting weather-related hazards in the Parish and improve the technical and administrative communication linkages between the Parish and the National Weather Service.	✓			Ongoing	High	Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds / Drought / Extreme Heat / Tornadoes / Coastal Erosion / Levee Failure / Hazardous Materials / Land Subsidence / Winter Storms		Parish President's Office	National Weather Service, DHSEP	Ongoing	Staff time
ES-3	28	Coordinate with the Coast Guard, Department of Homeland Security, and private industry to develop a program of regular, comprehensive evaluations of security surrounding fixed hazardous material sites. Coordinate with local, state, and federal law enforcement agencies as well as private sector security entities to implement suggested measures to improve security around these facilities.	✓			Ongoing	High	Hazardous Materials		DHSEP	US Coast Guard, Industry, Port of South Lousiana	Ongoing	Staff time
ES-4	50	Acquire the necessary infrastructure and equipment to ensure both an uninterrupted power supply at critical Parish facilities and improved surge protection for critical Parish computer and communications equipment.	✓			Ongoing - Community Center completed Jan 2014, EOC completed Sept 2013, Sheriff's Office completed June 2012, and other essential government buildings under design	High	Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds / Drought / Tornadoes / Coastal Erosion / Levee Failure / Hazardous Materials / Land Subsidence / Winter Storms		DHSEP		Ongoing	TBD
ES-5	29	Improve both technological and administrative communication capabilities among fire, police, 911, and other state and local emergency operations through improved planning and the upgrading of communication infrastructure and equipment.	✓			Ongoing	High	Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds / Drought / Extreme Heat / Tornadoes / Coastal Erosion / Levee Failure / Hazardous Materials / Land Subsidence / Winter Storms		DHSEP	Fire Department, EMS, Sheriff's Office	Ongoing	Staff Time
ES-6	86	Raise generator and switch gear to slab level, which is plus 10'. Current elevation is plus 7'. This will prevent the hospital from having to be shut down for all switch gears to be replaced in the event that the equipment would be damaged by flood waters.		✓		Partially complete and awaiting funding	Medium	Flooding		St. Charles Parish Hospital Service Dist No. 1		2014-2016	Parish Budgets/Grant Funding
ES-9	90	Raise existing structures that will house the Parish and regional communications systems.		✓		Awaiting Funding	High	Flooding		Sheriff's Office		2014-2016	Parish Budgets/Grant Funding
ES-11	95	Back up satellite communications system for phone and internet in order to have access to patient medical records and to maintain communications with primary care health providers of patients who evacuate to the hospital.		✓		Awaiting funding	Medium	Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds / Tornadoes		St. Charles Parish Hospital Service Dist No. 1		2014-2016	Parish Budgets/Grant Funding
ES-12	96	Addition of a potable water storage system. Loss of water will stop all surgical and dialysis services and cause an increased risk of infection to all patients.		✓		Awaiting funding		Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds / Tornadoes		St. Charles Parish Hospital Service Dist No. 1		2014-2016	Parish Budgets/Grant Funding
ES-14	98	Installation of Electric Actuators in the Distribution System to maintain essential supplies of water to continue essential operations at critical facilities.		✓		Awaiting funding	Low	Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds / Tornadoes		Waterworks		2014-2016	Parish Budgets/Grant Funding
ES-15	99	Installation of distribution monitoring panels in order for the parish to provide safe drinking water to schools, hospitals, nursing homes, shelters, etc.		✓		Awaiting funding	Med	Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds / Tornadoes		Waterworks		2014-2016	Parish Budgets/Grant Funding
ES-17	102	Acquisition and installation of a 30,000-gallon diesel fuel storage tank to provide a backup fuel supply for generators so that critical facilities can continue essential operations.		✓		Awaiting Funding	Med	Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds / Tornadoes		School District		2014-2016	Parish Budgets/Grant Funding
ES-18	103	Acquisition and installation of 30,000-gallon unleaded fuel storage tank to provide a back up fuel supply for generators so that critical facilities can continue essential operations.		✓		Awaiting Funding	Med	Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds / Tornadoes		School District		2014-2016	Parish Budgets/Grant Funding
ES-19	104	Engineer and construct an emergency fueling pad to allow the establishment of an emergency vehicle refueling site during disaster recovery. This will afford Emergency Services the ability to continue operations and services during disaster events when electrical utilities are not available.		✓		Awaiting Funding	Medium	Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds / Tornadoes		Sheriff's Office		2014-2016	Parish Budgets/Grant Funding
ES-20	105	East Bank Water Plant Generator Elevation		✓		Awaiting Funding	Med	Flooding		Waterworks		2014-2016	Parish Budgets/Grant Funding
ES-21	106	West Bank Water Plant Generator Elevation		✓		Awaiting Funding	Med	Flooding		Waterworks		2014-2016	Parish Budgets/Grant Funding
ES-23		For the two diesel-only generators, add fuel storage capacity to increase amount stored to 4,000 gallons to enable the hospital to operate for 96 hours without outside assistance.			✓	Awaiting funding		Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds /Tornadoes		St. Charles Parish Hospital Service Dist No. 1		2014-2016	Parish Budgets/Grant Funding

Mitigation Actions Prioritization and Implementation

Mitigation Action Number	Item number in 2009 HMP	Mitigation Action Description	Action items carried over from 2005 HMP	Action items carried over from 2009 HMP	Action Items added during 2014 Update	Project Status	Priority	Hazard	Past Hazard Event Details *(List the Hazard ID that has occurred in the vicinity of the listed project)*	Lead Agency	Potential Partners	Timeframe	Funding
Natural Resource Protection Measures													
NR-1	25	Prioritize those projects outlined in the Coastal Wetlands Planning, Protection, and Restoration Act; the Louisiana Coast Area (LCA) study and the Coast 2050 Feasibility Study that address the Parish's most pressing restoration needs. This exercise should culminate in a formal plan that identifies high priority projects and justifies their priority status. Particular attention should be given to utilizing the Bonnet Carre Spillway for wetlands restoration and implementing terracing and planting projects in the LaBranche Wetlands.	✓			Ongoing	High	Coastal Erosion / Land Subsidence / Saltwater Intrusion		Parish President's Office	Coastal Zone Management, Planning & Zoning	2014-2016	Staff time
NR-2	26	Conduct a comprehensive analysis of both existing and potential Parish revenue sources to identify adequate local funding mechanisms for meeting any potential local funding requirements for the coastal restoration projects outlined in the Coastal Wetlands Planning, Protection, and Restoration Act; the LCA study; and the Coast 2050 Feasibility Study. Incorporate findings into the aforementioned "priority plan" for coastal restoration in St. Charles Parish.	✓			Ongoing	High	Coastal Erosion / Land Subsidence / Saltwater Intrusion		Parish President's Office	Coastal Zone Management, Planning & Zoning	2014-2016	Staff time
NR-3	51	Coordinate with the elected officials and relevant staff of neighboring parish governments to identify high-priority regional coastal restoration projects that are most critical to the economic and environmental well-being of the entire southeast Louisiana region. Submit final list of regional coastal restoration priorities to all relevant state and federal parties, such as the Army Corps of Engineers.	✓			Ongoing	High	Coastal Erosion / Land Subsidence / Saltwater Intrusion		Planning & Zoning, Coastal Zone Management	Parish President's Office	2014-2016	Staff Time
NR-4	101	Shallow-rooted tree removal at all public school sites and administrative facilities.		✓		Awaiting Funding	Med	Thunderstorms / Lightning / Hail / High Winds / / Tropical Cyclones /Tornadoes		School District		2014-2016	Parish Budgets/Grant Funding
NR-5		Continue operation of the Davis Pond Freshwater Diversion Project to introduce fresh water, sediment, and nutrients into the Barataria Estuary.			✓	Ongoing	High	Coastal Erosion / Land Subsidence / Saltwater Intrusion		Planning & Zoning, Coastal Zone Management	U.S. Arny Corps of Engineers and Louisiana Department of Natural Resources	Ongoing	Parish Budgets/Grant Funding
NR-6		Complete the East LaBranche Shoreline Protection Project to restore marsh that has been converted to open water.			✓	Funded, awaiting construction	High	Coastal Erosion / Land Subsidence / Saltwater Intrusion		Planning & Zoning, Coastal Zone Management	National Resource Conservation Service, Coastal Protection and Restoration Authority	2015	Parish Budgets/Grant Funding
Prevention Measures													
P-1	46	Review and update the provisions and standards of Section XX, Flood Damage Prevention, of the St. Charles Parish Zoning Ordinance to devise more effective flood protection regulations, such as freeboard requirements and more stringent zoning designations for flood prone areas.	✓			Ongoing		Flooding		Planning & Zoning		2014-2016	Staff Time
P-2	2	Identify, schedule, and conduct activities, above and beyond those required under the National Flood Insurance Program (NFIP), to improve the Parish's ranking under the NFIP's Community Rating System. Conducting public outreach and education efforts and providing elevation certificates in non-hazard areas should be considered as potential activities to lower the Parish's CRS rating.	✓			Ongoing		Flooding		Planning & Zoning		2014-2016	Staff Time
P-3	47	Review and update Section IV B, Sewage Systems, of the St. Charles Parish Subdivision Regulations (Ordinance 81-8-2) in order to develop more stringent regulations requiring new and replacement sanitary sewage systems to minimize or eliminate infiltration of flood waters into the systems and discharge from the systems into flood waters.	✓			Ongoing		Flooding		Planning & Zoning		2014-2016	Staff Time
P-4	48	Study the feasibility of implementing an impact fee program or similar mechanism to retrofit existing sewage lift stations, sewer lines, and treatment plants to improve the effectiveness and the capacity of the existing wastewater treatment infrastructure.	✓			Ongoing		Flooding		Planning & Zoning	Ag Center	2014-2016	Staff Time
P-6	22	Develop and maintain a comprehensive Geographic Information System that will include the following data: 1. All properties and parcels in the parish 2. Hazard areas 3. Service districts 4. Public works facilities 5. Transportation infrastructure 6. Special needs residents.	✓			Ongoing		Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds / Drought / Coastal Erosion / Levee Failure / Hazardous Materials / Land Subsidence / Winter Storms		GIS Dept. and Planning & Zoning		2014-2016	Staff Time
P-7	23	Maintain a database of all properties that sustain damage as a result of a hazard. Include information about the nature and extent of the damage. Incorporate this database into the Parish Geographic Information System. Increase communication between EOC and GIS Dept. for this information	✓			Ongoing		Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds / Drought / Coastal Erosion / Levee Failure / Hazardous Materials / Land Subsidence / Winter Storms		Planning & Zoning	GIS Dept., DHSEP	2014-2016	Staff Time
P-8	24	Prepare a levee map with accurate information pertaining to all federal and non-federal levees within the parish.		✓		Ongoing - complete to date but will need updating as W. Bank Levee is completed		Levee Failure		GIS Dept.	Planning & Zoning	2014-2016	Staff time
P-9		Develop an ongoing program to provide air-conditioners to elderly and disadvantaged St. Charles Parish citizens who are unable to obtain one on their own.			✓	Awaiting Funding	Medium	Extreme Heat		DHSEP	Planning & Zoning, Fire Department, Sheriff's Office	2014-2016	Parish Budgets/Grant Funding

Mitigation Actions Prioritization and Implementation

Mitigation Action Number	Item number in 2009 HMP	Mitigation Action Description	Action items carried over from 2005 HMP	Action items carried over from 2009 HMP	Action Items added during 2014 Update	Project Status	Priority	Hazard	Past Hazard Event Details *(List the Hazard ID that has occurred in the vicinity of the listed project)*	Lead Agency	Potential Partners	Timeframe	Funding
Public Information Activities													
PI-1	4	Provide brochures and other publications through media, mail, libraries, Post Offices, and/or the Internet that explain (1) the definition of "repetitive loss structure" and (2) the options available to owners of repetitive loss structures.	✓			Ongoing	High	Flood		DHSEP		2014-2016	$50K; local funding
PI-2	8	Coordinate a public education campaign to keep Parish residents informed about on-going changes and improvements to the hurricane evacuation contra-flow transportation plan.	✓			Ongoing	High	Tropical Cyclones		DHSEP	SCP PIO	2014-2016	Staff Time
PI-3	31	Develop a tornado awareness brochure that includes hazard information and measures that may be taken to protect life and property during a tornado event. Make brochures available throughout the parish.	✓			In progress	Medium	Tornadoes		DHSEP	PIO	2015-2016	$10,000; local funding
PI-4	52	Develop a public-speaking series to include topics such as types of natural disasters, how to develop a family disaster plan, how to develop a business continuity plan, and simple types of mitigation projects for homeowners. Offer these engagements to civic groups, church groups, business groups, and others throughout St. Charles Parish.	✓			Ongoing	Medium	Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds / Drought / Coastal Erosion / Levee Failure / Hazardous Materials / Land Subsidence / Winter Storms		DHSEP	Public Information Organizations (e.g. United Way)	2010-Present	Staff Time
PI-5	53	Publish and distribute pamphlets on agricultural drought management strategies.	✓			Ongoing	Low	Drought		DHSEP		2013-2016	$10,000: Local Funding
PI-6	30	Publish and distribute information on hazardous materials routes and fixed sites so that the public becomes more aware of both the risks and recommended protective actions. Include a chart on warning symbols and terms in the publication.	✓			Ongoing	Medium	Hazardous Materials		DHSEP	SCP PIO	2009-present	$10,000; local funding
PI-7	84	Educate St. Charles Parish residents regarding all hazards in the form of forums, brochures, or web pages.		✓		Ongoing	Medium	Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds / Drought / Extreme Heat / Coastal Erosion / Levee Failure / Hazardous Materials / Land Subsidence / Winter Storms		DHSEP	PIO	2009-present	Staff Time

Mitigation Actions Prioritization and Implementation

Mitigation Action Number	Item number in 2009 HMP	Mitigation Action Description	Action items carried over from 2005 HMP	Action items carried over from 2009 HMP	Action Items added during 2014 Update	Project Status	Priority	Hazard	Past Hazard Event Details *(List the Hazard ID that has occurred in the vicinity of the listed project)*	Lead Agency	Potential Partners	Timeframe	Funding
Property Protection Measures													
PP-1	5	At the discretion of the property owners, either acquire or elevate repetitive loss structures throughout the Parish, giving priority to "target" repetitive loss structures.	✓			Ongoing		Flood		Grants Office		2014-2016	Parish Budgets/Grant Funding
PP-4	49	In association with Louisiana State University Cooperative Extension Services, provide technical assistance to St. Charles Parish farmers in the form of forums, brochures, or web pages regarding possible funding sources for and the installation of irrigation systems to protect crops from drought conditions.	✓			Awaiting funding	Low	Drought		DHSEP	LSU Ag Extension	2015-2016	Staff Time
PP-9	88	Addition of storm screens to the Community Health Center Loss of windows will damage the facility and render it unusable for some time. Include the addition of an emergency generator.		✓		Awaiting Funding		Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds		Community Health Center		2014-2016	Parish Budgets/Grant Funding
PP-10	91	Acquisition and installation of Hurricane Shutters on all public school sites.		✓		Partially Complete-Awaiting funding on additional work	High	Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds		School District	Grants Office	2015-2016	Parish Budgets/Grant Funding
PP-11	92	Acquisition and installation of Hurricane Shutters on all public school administrative facilities.		✓		Awaiting Funding	High	Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds		School District	Grants Office	2015-2016	Parish Budgets/Grant Funding
PP-12	93	Harden / Retrofit the public school maintenance facility, include the addition of an emergency generator set.		✓		Installed generator. Awaiting funding for additional work.	Low	Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds		School District	Grants Office	2015-2016	Parish Budgets/Grant Funding
PP-14	108	Consider mitigation measures that will enhance the performance of new buildings, expansions, or infrastructure during high wind and flood events, as these projects are proposed. This may include hardening structures, installing hurricane clips, or elevating utilities.		✓		Ongoing		Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds		Planning & Zoning	DHSEP, Parish President's Office	2014-2016	Parish Budgets/Grant Funding
PP-15	110	Construction of new or retrofit old Communications Center with mitigation measures that protect during high wind and flood events. This may include hardening structures, installing hurricane clips, or elevating utilities.		✓		Awaiting Funding	Medium	Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds		Sheriff's Office		2014-2016	Parish Budgets/Grant Funding
PP-16	111	Consider providing storm shelters at critical facilitiy sites.		✓		Awaiting Funding	Low	Flooding / Tropical Cyclones / Thunderstorms / Lightning / Hail / High Winds		Parish President's Office		2014-2016	Parish Budgets/Grant Funding
PP-21	N/A	Elevation of 27 Repetitive Loss Structures			✓	In Progress	High	Flooding		SCP Grants Office		2013 - 2016	Parish Budgets/Grant Funding
PP-22	N/A	Elevation of 4 Severe Repetitive Loss Structures			✓	In Progress	High	Flooding		SCP Grants Office		2013 - 2016	Parish Budgets/Grant Funding
Structural Projects													
S-1	9	Evaluate drainage patterns throughout the Parish in the context of recent drainage improvements and in light of anticipated land use changes. Evaluate the need for additional drainage and flood control measures for both newly developing areas of the Parish and more established areas.	✓			Planning	High	Flood		Public Works		2014-2016	Staff time
S-3	10	Implement the Riverbend Jack and Bore project, consisting of the installation of a 60" and 48" diameter steel drainage culvert under the KCS railroad and a 48" diameter steel culvert under the CN/IC railroad in order to improve stormwater drainage in the St. Rose community.	✓			Planning	High	Flood		Public Works		2014-2016	Parish Budgets/Grant Funding
S-4	11	Implement the Delta Drive Jack and Bore project, consisting of the installation of two 42" diameter steel drainage culverts under the CN/IC railroad in order to improve stormwater drainage in the St. Rose community.	✓			Work will be combined with Riverbend Jack and Bore - right next to each other	Medium	Flood		Public Works		2014-2016	Parish Budgets/Grant Funding
S-10	17	Construct the Willowdale Pump Station Canal Bank Stabilization Phase I project, consisting of embankment refurbishment, fill placement, reseeding/resodding, concrete slope paving, and splash block construction to improve stormwater flow through the canal. This project is part of the West Bank Hurricane Protection Levee Project	✓			Part of the West Bank Hurricane Protection Levee project	Medium	Flood		Public Works		2014-2016	Parish Budgets/Grant Funding
S-14	21	Stabilization of the Dunleith Canal Bank to protect it from scouring and erosion.	✓			Ongoing	High	Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-23	37	Complete design work and subsequently implement the Airline Culvert Enhancement and Replacement project. This project will provide enhanced drainage along US Highway 61 (Airline Highway) at Engineers Canal by installing new culverts under Highway 61.	✓	Maybe this has been done and the new problem is conveyance in ditch		Ongoing	Medium	Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-25	39	Complete final design work and subsequently implement the "Canal A" and Dunleith Canal Intersection Upgrade in order to realign and stabilize "Canal A" at the Dunleith Canal in Destrehan. This project will result in enhanced drainage flow in the Destrehan community.	✓			Ongoing	High	Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-28	42	Design and construct the Vial Pump Station. This project will provide a new pump station along the Vial Canal to improve drainage capacity in the Hahnville community.	✓			Awaiting Funding	Low	Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding

Mitigation Actions Prioritization and Implementation

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S-30	44	Finalize the design of and subsequently construct the Willowdale Pump Station Bank Stabilization II project, consisting of embankment refurbishment, fill placement, reseeding/resodding, concrete slope paving, and splash back construction to improve pumping capacity and flow from the Willowdale Pump Station. This project is part of the West Bank Hurricane Protection Levee Project	✓			Part of the West Bank Hurricane Protection Levee project	Medium	Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-32	54	Design and install the Tippy Pump Station Bar Screen Cleaner, Pump Station Cover, and Deck in order to upgrade the functioning of the Tippy Pump Station in Des Allemands.	✓			Awaiting design and funding	Low	Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-33	55	Design and install the Up the Bayou Pump Station Bar Screen Cleaner, Pump Station Cover and Deck in order to upgrade the functioning of the Up the Bayou Pump Station in Des Allemands.	✓			Construction funded and under Design	Low	Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-34	56	Design and install the Des Allemands Pump Station Bar Screen Cleaner, Pump Station Cover and Deck in order to upgrade the functioning of the Des Allemands Pump Station located in Des Allemands.	✓			Awaiting funding	Low	Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-35	57	Design and install the Tregle Pump Station (Eric Pump Station) Bar Screen Cleaner, Pump Station Cover and Deck in order to upgrade the functioning of the Tregle Pump Station located in Des Allemands.	✓			Awaiting funding	Low	Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-36	58	Design and install the Cortez Pump Station Bar Screen Cleaner, Pump Station Cover and Deck in order to upgrade the functioning of the Cortez Pump Station located in Des Allemands.	✓			Designed will go to bid early 2015	High	Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-38	59	Design and implement the Fairfield Pump Station Upgrade project, consisting of increasing the pump station capacity and improving the structural components of the Fairfield Pump Station in St. Rose.	✓			Designed and going to bid. Completion set for March 2015	High	Flooding		Public Works		2015-2016	Parish Budgets/Grant Funding
S-39	60	Design and implement the Oakland Pump Station Upgrade project, consisting of increasing the pump station capacity and improving the structural components of the Oakland Pump Station in St. Rose.	✓			Designed and going to bid. Completion set for March 2015	High	Flooding		Public Works		2015-2016	Parish Budgets/Grant Funding
S-42	63	Design and implement the Ormond Drainage Improvement project, which will entail making general drainage enhancements in the vicinity of the Ormond Nursing Home in Destrehan.	✓			On schedule	High	Flooding		Public Works		2011-2016	Parish Budgets/Grant Funding
S-43	64	Design and construct the Oakland Jack and Bore project, consisting of the installation of steel culverts under the CN/IC railroad to improve drainage in the vicinity of Oakland Ridge Lane in St. Rose.	✓			Delayed	Low	Flooding		Public Works		2015-2016	Parish Budgets/Grant Funding
S-44	65	Design and implement the Fairfield Jack and Bore project which will entail the installation of steel culverts under the CN/IC railroad at the Fairfield Pump Station in St. Rose.	✓			Delayed	Low	Flooding		Public Works		2015-2016	Parish Budgets/Grant Funding
S-45	66	Evaluate Engineering options and design to alleviate the flooding problem along Canal #10 and improve drainage in the Bayou Gauche community. Design will include the construction of a new Pump Station with location to be determined from the Engineering study.	✓			Complete	Low	Flooding		Public Works		2011-2016	Parish Budgets/Grant Funding
S-48	68	Complete final design work and construct the remaining recommended drainage improvements from the 2005 Montz Drainage Plan. The outstanding recommendations consist of installing culverts under Evangeline Road at the ICG Railroad and grading the ICG Canal, CC Canal, Scott Canal and KCS Canal.	✓			On schedule - work has been done on the Evangiline Road portion	High	Flooding		Public Works		2009-2014	Parish Budgets/Grant Funding
S-53	71	Design and Implement improvements to increase capacity and efficiency of the Coronado Park drainage system.	✓			Coronado #2 Complete, Coronado #1 In Progress of improving drainage	High	Flooding		Public Works		2014	Parish Budgets/Grant Funding
S-54	72	Design and implement installation of a new Pump Station for Riverbend Park.	✓			On schedule	High	Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-56	74	Design and implement improved capacity and stabilization of the Blouin Canal in order to reduce erosion and improve pumping capacity. This project is part of the West Bank Hurricane Protection Levee Project	✓			This is part of the West Bank Hurricane Protection Levee Project	Medium	Flooding		Public Works		2011-2016	Parish Budgets/Grant Funding
S-63	80	Complete final design work and implement the Primrose Canal Upgrade in order to increase efficiency and stabilization of the canal. This project will result in enhanced drainage flow for the West Bank community.	✓			On schedule - will go to bid Fall 2014	High	Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-64	81	Complete final design work and implement the New Sarpy Mid Canal and New Sarpy Midwest Canal Upgrades in order to increase efficiency and stabilization of the canal. This project will result in enhanced drainage flow for the East Bank community.	✓			Delayed - Lack of funding	Low	Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-65	82	Complete final design work and implement the Cousins Canal Upgrade in order to increase efficiency and stabilization of the canal. This project will result in enhanced drainage flow for the West Bank community. This is part of the West Bank Hurricane Protection Levee Project	✓			This is part of the West Bank Hurricane Protection Levee	Medium	Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-67	116	Boring of Rolling Canal Crossing/Distribution Lines		✓		Delayed - Lack of funding	Low	Flooding / Tropical Cyclones / Thunderstorms & Lightning / Hail		Waterworks		2015-2016	Parish Budgets/Grant Funding

Mitigation Actions Prioritization and Implementation

Mitigation Action Number	Item number in 2009 HMP	Mitigation Action Description	Action items carried over from 2005 HMP	Action items carried over from 2009 HMP	Action Items added during 2014 Update	Project Status	Priority	Hazard	Past Hazard Event Details *(List the Hazard ID that has occurred in the vicinity of the listed project)*	Lead Agency	Potential Partners	Timeframe	Funding
S-68	117	Blouin Canal Road Crossing Culvert Improvements. This is part of the West Bank Hurricane Protection Levee Project.		✓		This is part of the West Bank Hurricane Protection Levee Project	Medium	Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-71	120	NOLA Pump Station Auto Bar Screen Cleaner		✓		On schedule	High	Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-74	N/A	Design and Implement improvements to increase capacity and efficiency of the Sunset Pump Station.			✓	On schedule	High	Flooding		Public Works		2013-2016	Parish Budgets/Grant Funding
S-75	N/A	Design and construct Magnolia Pump Station. This is part of the West Bank Hurricane Protection Levee Project.			✓	This is part of the West Bank Hurricane Protection Levee Project	Medium	Flooding		Public Works		2013-2016	Parish Budgets/Grant Funding
S-76	N/A	Design and implement Mimosa drainage improvements to increase conveyance and construct new pump station.			✓	This is in Design phase	Medium	Flooding		Public Works		2013-2016	Parish Budgets/Grant Funding
S-77	N/A	Install additional culverts under railroad tracks at Highway 61 to increase drainage in the Norco area			✓	Awaiting Funding	Medium	Flooding		Public Works	Railroad	2013-2016	Parish Budgets/Grant Funding
S-78	N/A	Increase pump capacity at the Engineer's Canal pump station.			✓	Awaiting Funding	Medium	Flooding		Public Works		2013-2016	Parish Budgets/Grant Funding
Emergency Services Measures (completed)													
ES-7	87	Addition of roof straps and roof equipment tie downs on hospital facilities to withstand higher winds. This will prevent equipment from being blown off the roof or out of place, and prevent damage to equipment, interior damages and loss of health services in those areas.		✓		Completed prior to 2014 HMP Update		Flooding / Tropical Cyclones / Thunderstorms & Lightning & Hail		St. Charles Parish Hospital Service Dist No. 1		2009-2012	Parish Budgets/Grant Funding
ES-8	89	Engineer and construct an earthen berm surrounding the perimeter of the Parish Correctional facility to aid in flood protection.		✓		Completed prior to 2014 HMP Update		Flooding		Sheriff's Office		2009-2012	Parish Budgets/Grant Funding
ES-10	94	Increase generator capacity for the three services that supply the hospital.		✓		Completed prior to 2014 HMP Update		Flooding / Tropical Cyclones / Thunderstorms & Lightning & Hail		St. Charles Parish Hospital Service Dist No. 1		2009-2012	Parish Budgets/Grant Funding
ES-13	97	Addition of an emergency generator set in order to provide physician services to the community during emergency situations.		✓		Completed prior to 2014 HMP Update		Flooding / Tropical Cyclones / Thunderstorms & Lightning & Hail		St. Charles Parish Hospital Service Dist No. 1		2009-2012	Parish Budgets/Grant Funding
ES-16	100	Installation of 1 million gallon potable water storage tank to provide a back up water supply for critical facilities to continue essential operations.		✓		Completed prior to 2014 HMP Update		Flooding / Tropical Cyclones / Thunderstorms & Lightning & Hail		Waterworks		2009-2012	Parish Budgets/Grant Funding
ES-22	114	Installation of Automated Emergency Shut-off for Chlorine Cylinders		✓		Cancelled - no longer needed - there are no longer chlorine cylinders at remote locations		Flooding / Tropical Cyclones / Thunderstorms & Lightning / Hail		Waterworks		2009-2012	Parish Budgets/Grant Funding
Prevention Measures (completed)													
P-5	3	In conformance with recently adopted state regulations mandating more stringent building codes, adopt the International Building Code, 2003 Edition to minimize potential damages from water, high winds, tornados, hail, and Tropical Cyclones.	✓			Completed prior to 2014 HMP Update - 2009		Tornadoes/ Flooding / Tropical Cyclones / Thunderstorms & Lightning / Hail		Planning & Zoning		2009-2012	Staff time

Mitigation Actions Prioritization and Implementation

Mitigation Action Number	Item number in 2009 HMP	Mitigation Action Description	Action items carried over from 2005 HMP	Action items carried over from 2009 HMP	Action Items added during 2014 Update	Project Status	Priority	Hazard	Past Hazard Event Details *(List the Hazard ID that has occurred in the vicinity of the listed project)*	Lead Agency	Potential Partners	Timeframe	Funding
Property Protection Measures (completed)													
PP-2	1	Work with FEMA and the Southeast Louisiana Hurricane Task Force to develop a demolition/re-build program that would permit new construction above the base flood elevation - instead of green space only - on the sites of RL properties.	✓			Parish has determined this is not feasible		Flood		Planning & Zoning		2009-2012	Staff time
PP-3	6	Develop a new, homeowner assistance program whereby the Parish, rather than the individual homeowner, would cover the non-federal, 25% funding portion for the elevation of repetitive loss structures.	✓			Parish has determined this is not feasible		Flood		DHSEP		2009-2012	Staff Time
PP-5	126	Hahnville Wastwaster Treatment Plant Shutters Wind Retrofit	✓			Completed prior to 2009 Update		Tropical Cyclones / Thunderstorms & Lightning & Hail / Tornadoes		Public Works		2009-2012	Parish Budgets/Grant Funding
PP-6	127	Destrehan Wastewater Treatment Plant Shutters	✓			Completed prior to 2009 Update		Tropical Cyclones / Thunderstorms & Lightning & Hail / Tornadoes		Public Works		2009-2012	Parish Budgets/Grant Funding
PP-7	128	Public Works Building Wind Retrofit (Now Waterworks Bldg.)	✓			Completed prior to 2009 Update		Tropical Cyclones / Thunderstorms & Lightning & Hail / Tornadoes		Public Works		2009-2012	Parish Budgets/Grant Funding
PP-8	109	Construction of a new Emergency Operations Center that will be retrofitted with mitigation measures that protect during high wind and flood events. This may include hardening structures, installing hurricane clips, or elevating utilities.		✓		Completed - Prior to 2014 HMP Update - Sept 2013		Flooding / Tropical Cyclones / Thunderstorms & Lightning & Hail		DHSEP		2009-2012	Parish Budgets/Grant Funding
PP-17	112	Acquisition of 3 SRL Structures		✓		Completed prior to 2014 HMP Update - June 2009		Flooding		Parish President's Office		2009-2012	Parish Budgets/Grant Funding
PP-18	113	Elevation of 16 Structures		✓		Completed prior to 2014 HMP Update - Sept 2012		Flooding		Parish President's Office		2009-2012	Parish Budgets/Grant Funding
PP-19	115	Installation of Shutters on the Eastbank and Westbank Waterworks Offices		✓		Completed prior to 2014 HMP Update - Aug 2010		Tropical Cyclones / Thunderstorms & Lightning & Hail / Tornadoes		Waterworks		2009-2012	Parish Budgets/Grant Funding
PP-20	85	Harden / Retrofit the St. Charles Parish Courthouse		✓		Completed prior to 2014 HMP Update - Nov 2013		Flooding / Tropical Cyclones / Thunderstorms & Lightning & Hail		Parish President's Office		2009-2012	Parish Budgets/Grant Funding
PP-13	107	Water Plant Shutters - East Bank and West Bank		✓		Completed prior to 2014 HMP Update - Jan 2012		Tropical Cyclones / Thunderstorms & Lightning & Hail / Tornadoes		Waterworks		2009-2012	Parish Budgets/Grant Funding
PP-23	N/A	Public Works & Wastewater Office Building Wind Retrofit			✓	Completed during 2014 Update (Dec 2013)		Tropical Cyclones / Thunderstorms & Lightning & Hail / Tornadoes		Public Works		2013	Parish Budgets/Grant Funding
Structural Projects (completed)													
S-2	123	Install bar screen cleaners on the Destrehan I, Destrehan II, and Willowdale Pump Stations to improve pump station operating efficiency and to extend the useful lives of the pumps serving the Destrehan and Willowdale communities.	✓			Completed prior to 2009 HMP Update		Flooding		Public Works		2009-2012	Parish Budgets/Grant Funding
S-5	12	Implement the Oak Street Pump Station Upgrade project, comprised of upgrading an existing pump and replacing a second pump at the Oak Street Pump Station located in the St. Rose community. These improvements will significantly increase the pump station's discharge capacity.	✓			Complete		Flood		Public Works		2014-2016	Parish Budgets/Grant Funding
S-6	13	Implement improvements to Canal #10. This project will consist of dredging and widening the canal from the Crawford Canal to LA Highway 306 to Michael Street, as well as installing two precast concrete bridges. This project will result in enhanced discharge capacity in Canal #10.	✓			Completed prior to 2014 HMP Update		Flood		Public Works		2006-2010	Parish Budgets/Grant Funding
S-7	14	Implement the Destrehan Drive Jack and Bore project, which entails the installation of two 42" steel drainage culverts under the CN/IC railroad in Destrehan in order to enhance stormwater drainage in the Destrehan community.	✓			Completed prior to 2014 HMP Update		Flood		Public Works		2006-2010	Parish Budgets/Grant Funding
S-8	15	Implement the Fourth Street Pump Station Raising Project. This project will rehabilitate the pump station and improve its overall functionality by constructing a retaining wall around the pump station slab, improving the slab, and replacing the pump station sump.	✓			Cancelled		Flood		Public Works		2006-2010	Parish Budgets/Grant Funding
S-9	16	Implement the Willowdale Box Culvert Enhancement Project consisting of the construction of a concrete U-flume to provide enhanced drainage to the Willowdale Subdivision in the Luling community.	✓			Completed prior to 2014 HMP Update - Aug 2012		Flood		Public Works		2006-2012	Parish Budgets/Grant Funding

Mitigation Actions Prioritization and Implementation

Mitigation Action Number	Item number in 2009 HMP	Mitigation Action Description	Action items carried over from 2005 HMP	Action items carried over from 2009 HMP	Action Items added during 2014 Update	Project Status	Priority	Hazard	Past Hazard Event Details *(List the Hazard ID that has occurred in the vicinity of the listed project)*	Lead Agency	Potential Partners	Timeframe	Funding
S-11	18	Implement the Bar None Subsurface Phase III project, which entails the installation of subsurface drainage along Palomino Drive and Canyon Lane in the St. Rose community.	✓			Cancelled		Flood		Public Works		2014-2016	Parish Budgets/Grant Funding
S-12	19	Implement Pump Station Covers Phase II project which will improve the functionality of the Paradis, Tibby, Randolph, Schexnaydre, Lakewood, and New Sarpy Pump Stations by providing protective pump station covers. This project will result in improved drainage in the Paradis, Des Allemands, Destrehan, Luling, and New Sarpy communities.	✓			Cancelled		Flood		Public Works		2006-2011	Parish Budgets/Grant Funding
S-13	20	Implement the Hahn Street Subsurface Drainage Project, consisting of the installation of subsurface drainage along Hahn Street, in order to provide improved stormwater flow in this area of the Hahnville community.	✓			Completed prior to 2014 HMP Update		Flood		Public Works		2006-2012	Parish Budgets/Grant Funding
S-15	32	Complete final design of and subsequently construct the George Cousins Pump Station Bar Screen Cleaner and Deck. This project will entail the installation of an automatic bar screen cleaner and associated components at the George Cousins Pump Station in Luling in order to improve its overall operating functionality.	✓			Completed prior to 2014 HMP Update - March 2010		Flooding		Public Works		2009-2012	Parish Budgets/Grant Funding
S-16	33	Increase capacity of the 80 Arpent Pump Station to accommodate the flows predicted from new and future subdivision developments. Due to the age of the pump station, an Engineering review must be conducted to determine if upgrades and increases capacity can be obtained from the existing facility or if new or additional facilities should be installed.	✓			Completed prior to 2014 HMP Update - April 2012		Flooding		Public Works		2009-2012	Parish Budgets/Grant Funding
S-17	34	Complete final design of and subsequently implement the Schexnaydre Pump Station Bar Screen Cleaner and Deck project, consisting of the installation of an automatic bar screen cleaner at the Schexnaydre Pump Station serving the Destrehan community.	✓			Completed prior to 2014 HMP Update - July 2010		Flooding		Public Works		2009-2012	Parish Budgets/Grant Funding
S-18	124	Complete final planning and design work of and subsequently complete the Kellogg Pump Station Bar Screen Cleaner project. This project will entail the installation of an automatic bar screen cleaner at the Kellogg Pump Station in Luling.	✓			Completed prior to 2009 HMP Update		Flood		Public Works		2009-2012	Parish Budgets/Grant Funding
S-19	35	Complete final design of and implement the Paradis Pump Station Bar Screen Cleaner and Pump Station Cover and Deck project. This project will provide enhanced drainage to the Paradis community by installing an automatic bar screen cleaner and pump station cover at the Paradis Pump Station.	✓			Completed prior to 2014 HMP Update - May 2010		Flooding		Public Works		2009-2012	Parish Budgets/Grant Funding
S-21	125	Complete design work and implement the Davis-Barton Pump Station Bar Screen Cleaner and Pump Station Cover project, consisting of the installation of an automatic bar screen cleaner and pump station cover at the Davis-Barton Pump Station in Luling.	✓			Completed prior to 2009 HMP Update		Flood		Public Works		2009-2012	Parish Budgets/Grant Funding
S-22	36	Complete design work and subsequently implement the Ama Pump Station Bar Screen Cleaner and Pump Station Cover project. This project will entail the installation of an automatic bar screen cleaner and pump station cover at the Ama Pump Station serving the Ama community.	✓			Completed prior to 2009 HMP Update		Flooding		Public Works		2009-2012	Parish Budgets/Grant Funding
S-24	38	Plan, design, and subsequently construct the Turtle Pond Pump Station Upgrade project. This project will consist of the construction of an entirely new pump station to provide enhanced drainage in St. Rose.	✓			Complete		Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-26	40	Design and construct the Esperanza Pump Station to improve drainage in the Aston Estates Subdivision, the Sugarland Parkway Subdivision, the St. Charles Parish School Board Offices, and R. K. Smith Middle School.	✓			Cancelled		Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-27	41	Complete final design and implement critical recommendations from 2005 Montz Master Drainage Plan. This project will provide enhanced drainage to the Montz community through a) the installation of two 72" concrete culverts under Evangeline Road at the KCS Canal; b) two 48" concrete culverts under Thoroughbred Lane at the Coulee Canal; c) two 60" concrete culverts at Evangeline Road at the Coulee Canal; and d) the cleaning of the Coulee Canal.	✓			Complete		Flooding		Public Works		2009-2014	Parish Budgets/Grant Funding
S-29	43	Complete design work and subsequently implement the Upgrade to Coronado Pump Stations 1 and 2. This project will improve the pump station capacity and the structural components of these pump stations serving the Luling community.	✓			Complete		Flooding		Public Works		2014	TBD
S-31	45	Complete design work and subsequently implement the Bar None Subsurface Phase IV Through VI project, consisting of the installation of subsurface drainage along Chuckwagon Lane, Corral Lane, Cactus Lane, Horseshoe Lane, and Pony Lane. This project will provide improved stormwater drainage in the St. Rose community.	✓			Cancelled		Flooding		Public Works		2009-2012	Parish Budgets/Grant Funding
S-40	61	Design and implement the Old Kellogg Pump Station Upgrade project, consisting of increasing the pump station capacity and improving the structural components of the Old Kellogg Pump Station in Luling.	✓			Complete		Flooding		Public Works		2011-2016	Parish Budgets/Grant Funding
S-41	62	Design and implement the "Canal A" at Carriage Lane Drainage Improvements to provide for increased drainage capacity and flow along "Canal A" in Destrehan.	✓			Completed prior to 2014 HMP Update		Flooding		Public Works		2011-2016	Parish Budgets/Grant Funding
S-46	67	Design and implement the KCS Railroad at Engineers Canal Jack and Bore Upgrade to Box Culvert project. This project involves the replacement of existing culverts at Engineers Canal and the KCS Railroad with superior box culverts, resulting in improved drainage in the Norco community.	✓			Completed prior to 2014 HMP Update		Flooding		Public Works		2009-2012	Parish Budgets/Grant Funding

Mitigation Actions Prioritization and Implementation

Mitigation Action Number	Item number in 2009 HMP	Mitigation Action Description	Action items carried over from 2005 HMP	Action items carried over from 2009 HMP	Action Items added during 2014 Update	Project Status	Priority	Hazard	Past Hazard Event Details *(List the Hazard ID that has occurred in the vicinity of the listed project)*	Lead Agency	Potential Partners	Timeframe	Funding
S-49	69	Design and construct the Ormond Boulevard Bridge Construction project. This project will replace undersized culverts under Ormond Boulevard and will result in improved flow from the Ormond detention lake to Destrehan I Pump Station and improved drainage in the Ormond subdivision.	✓			Completed prior to 2014 HMP Update - Sept 2011		Flooding		Public Works		2009-2012	Parish Budgets/Grant Funding
S-52	70	Design and Implement improvements to increase capacity and efficiency of the Boutte Pump Station.	✓			Completed prior to 2014 HMP Update		Flooding		Public Works		2009-2012	Parish Budgets/Grant Funding
S-55	73	Design and Implement increased capacity of the Murry Hill Crossing, using jack and bore of culvert technology.	✓			Unnecessary due to Destrehan Jack and Bore.		Flooding		Public Works		2011-2016	Parish Budgets/Grant Funding
S-57	75	Design and implement improved capacity and efficiency with Bar Screen Cleaner technology at the New Sarpy Pump Station.	✓			Completed prior to 2014 HMP Update - Dec 2011		Flooding		Public Works		2009-2012	Parish Budgets/Grant Funding
S-59	76	Design and Implement improved capacity and efficiency with Bar Screen Cleaner technology at the Diane Pump Station.	✓			Completed prior to 2014 HMP Update - Sept 2011		Flooding		Public Works		2011-2016	Parish Budgets/Grant Funding
S-60	77	Design and Implement improved capacity and efficiency with Bar Screen Cleaner technology at the Lakewood Pump Station.	✓			Completed prior to 2014 HMP Update - Feb 2011		Flooding		Public Works		2011-2016	Parish Budgets/Grant Funding
S-61	78	Design and implement improved capacity and efficiency with Bar Screen Cleaner technology at the Boutte Pump Station	✓			Complete		Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding
S-62	79	Design and implement new Cajun Paradis Levee System in order to provide surge protection to residents and prevent levee failure.	✓			Cancelled		Flooding / Levee Failure		Public Works		2014-2016	Parish Budgets/Grant Funding
S-66	83	Design and Implement improved capacity and efficiency with Bar Screen Cleaner technology at the 80 Arpent Pump Station	✓			Completed prior to 2014 HMP Update - April 2012		Flooding		Public Works		2009-2012	Parish Budgets/Grant Funding
S-69	118	#10 Canal Road Crossing Culvert Improvements		✓		Completed prior to 2014 HMP Update - Dec 2012		Flooding		Public Works		2009-2012	Parish Budgets/Grant Funding
S-70	119	Ormond Blvd Road Crossing Culvert Improvements		✓		Completed prior to 2014 HMP Update - Sept 2011		Flooding		Public Works		2009-2012	Parish Budgets/Grant Funding
S-72	121	Engineer's Pump Station Auto Bar Screen Cleaner		✓		Completed prior to 2014 HMP Update - Nov 2011		Flooding		Public Works		2009-2012	Parish Budgets/Grant Funding
S-73	122	Tippy Pump Station Auto Bar Screen Cleaner		✓		Removed same as S-32		Flooding		Public Works		2014-2016	Parish Budgets/Grant Funding

Mitigation Action Type Legend:
ES - Emergency Services Measures
NR - Natural Resource Protection
P - Prevention Measures
PI - Public Information Activities
PP - Property Protection Measures
S - Structural Projects

FIGURES

Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Reference

Base map comprised of ESRI's World Imagery. Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset.

Base Map

Hazard Mitigation Plan

St. Charles Parish

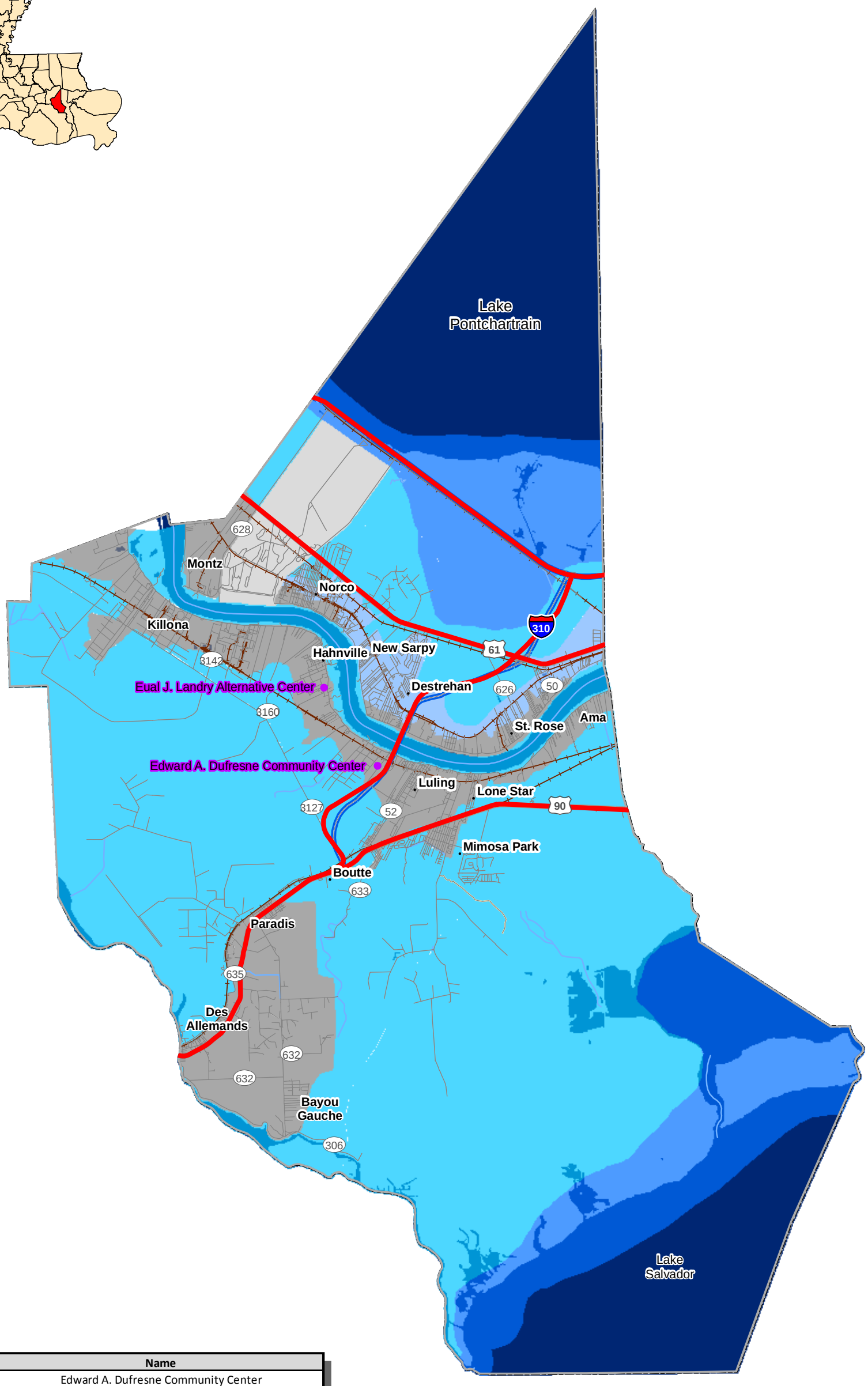
PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B061

1 Figure



Number	Name
1	Edward A. Dufresne Community Center
2	Eual J. Landry Alternative Center

Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Evacuation Route
- Emergency Shelters

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and effective FIRM data (FLDZNZA99) obtained from The St. Charles Parish Geographic Information Systems.

Emergency Shelters and Evacuation Routes

Hazard Mitigation Plan

St. Charles Parish

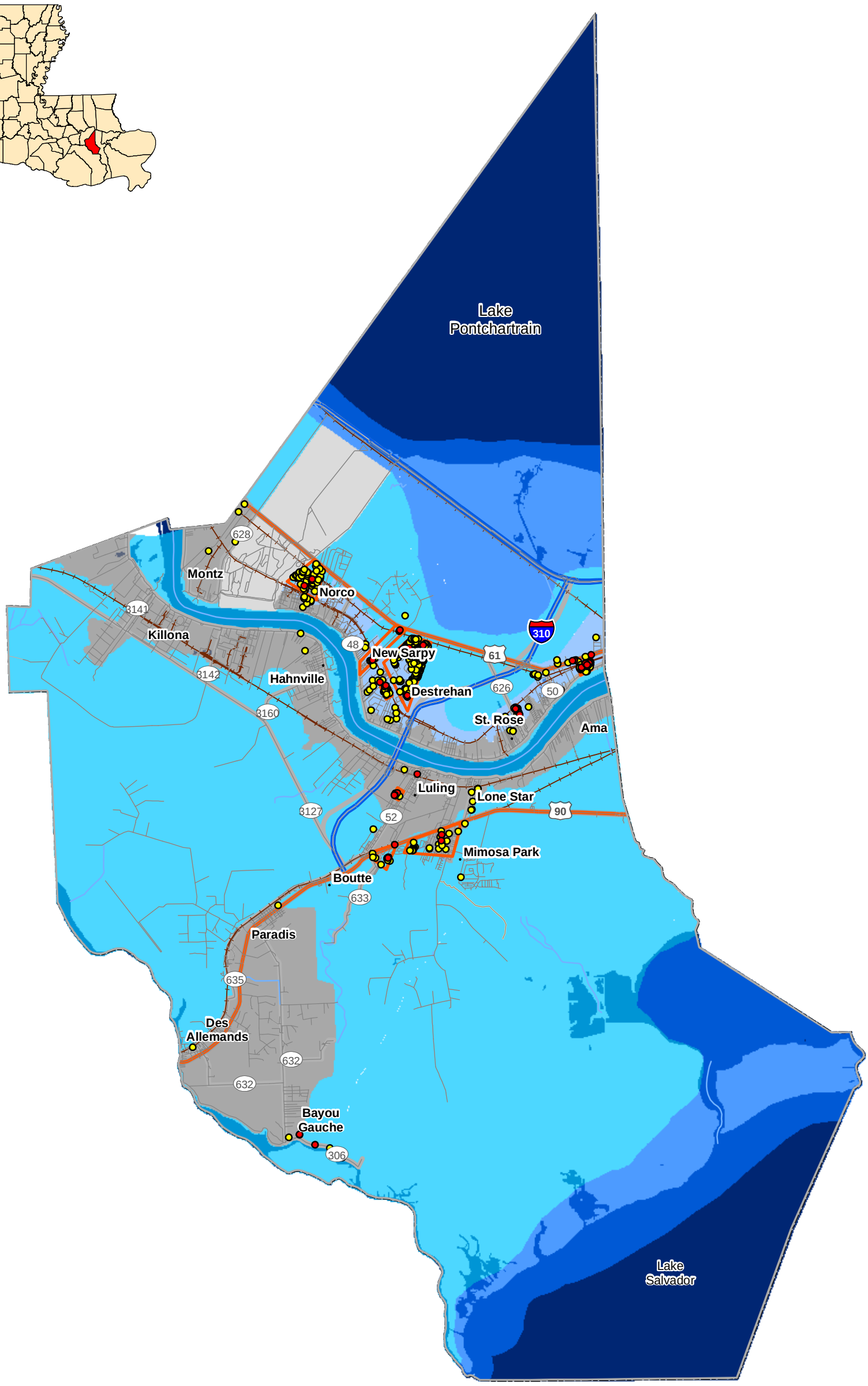
PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B037

2 Figure



Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Repetitive Loss Area
- Severe Repetive Loss Structure
- Repetive Loss Structure

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Repetitive Loss Structure locations and Effective FIRM data (FLDZNZA99) obtained from The St. Charles Parish Geographic Information Systems.

Repetitive Loss Areas

Hazard Mitigation Plan

St. Charles Parish

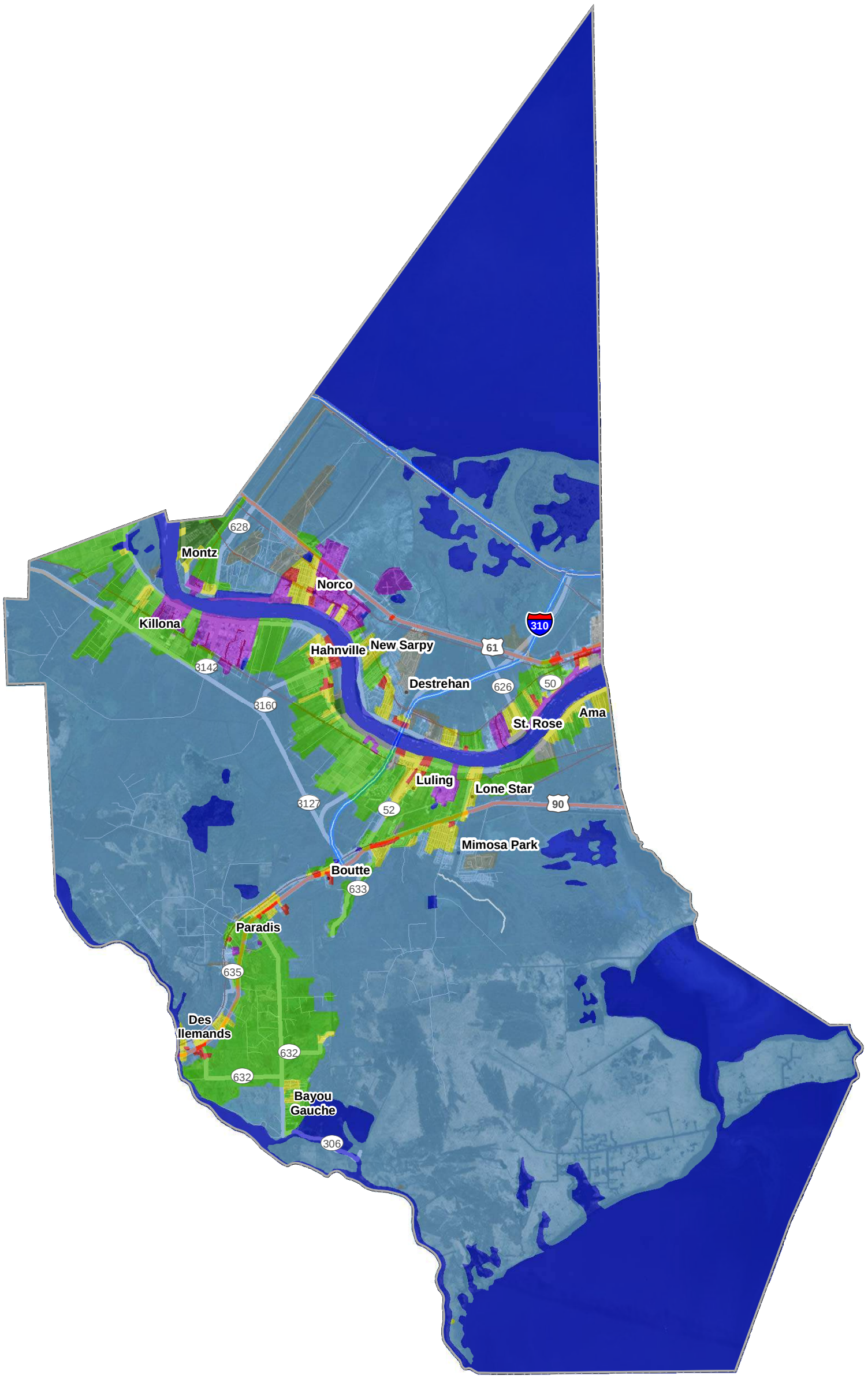
PROVIDENCE

Drawn By	LMM	09/15/14
Checked By	LMH	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B062

3 Figure



Legend

- Parish Boundary
- Water
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams

Land Use

- Lakes; Reservoirs; Streams and Canals
- Commercial and Services
- Cropland and Pasture
- Deciduous Forest Land; Evergreen Forest Land
- Forested Wetland; Nonforested Wetland
- Industrial
- Mixed Urban or Built-up Land; Other Urban or Built-up Land; Transportation, Communications, and Utilities
- Residential

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Aerial Imagery comprised of ESRI's World Imagery. Land Use Land Cover Data obtained from the United States Geological Survey (USGS) data set.

Land Use

Hazard Mitigation Plan

St. Charles Parish

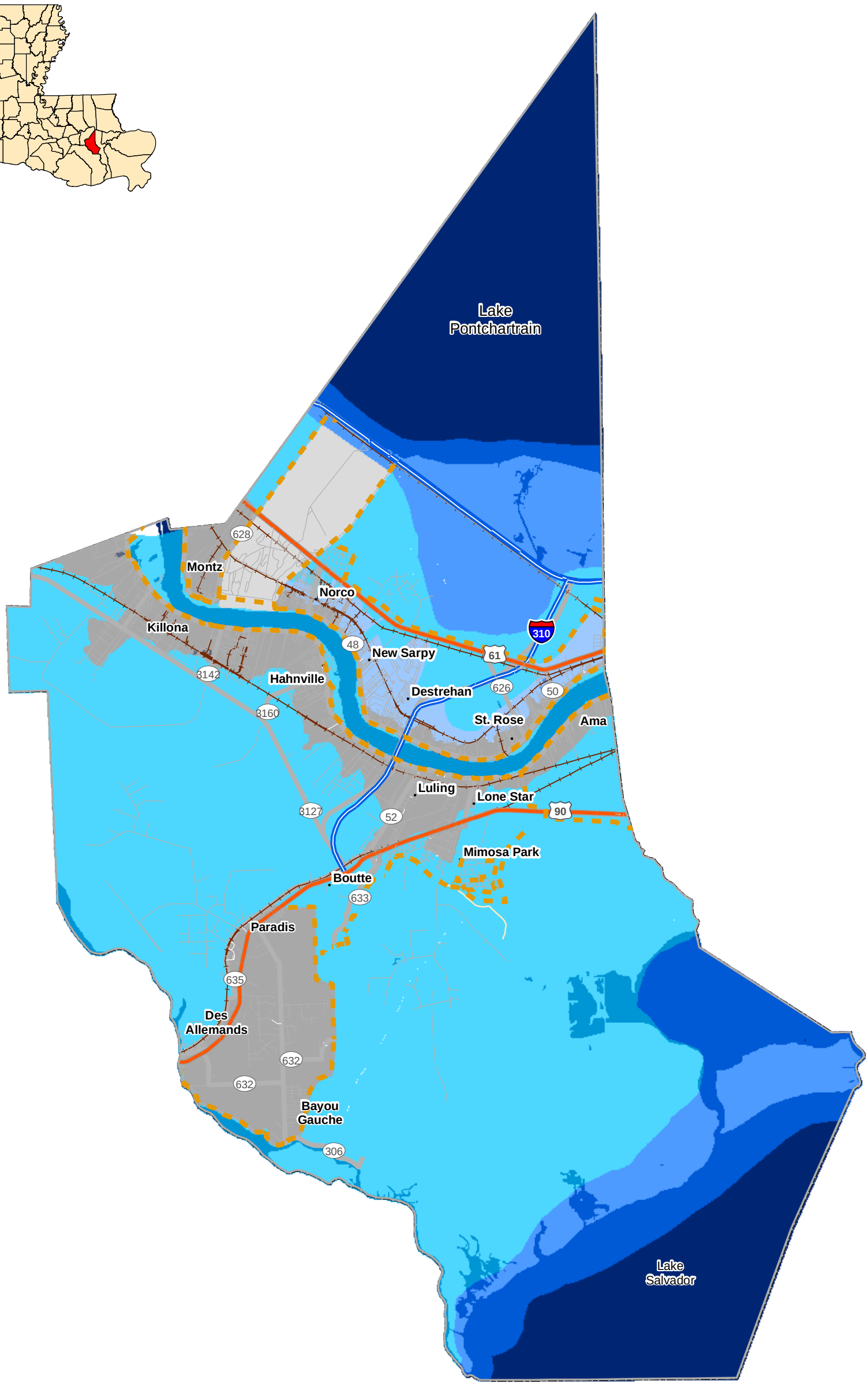
PROVIDENCE

Drawn By	LMM	09/15/14
Checked By	LMH	09/15/14
Approved By	MM	09/15/14

Project Number 447-004

Drawing Number 447-004-B059

4 Figure



3 1.5 0 3
Miles

Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X
- Levee Location

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Levee locations and effective FIRM data (FLDZNZA99) obtained from The St. Charles Parish Geographic Information Systems.

Levee Map

Hazard Mitigation Plan

St. Charles Parish

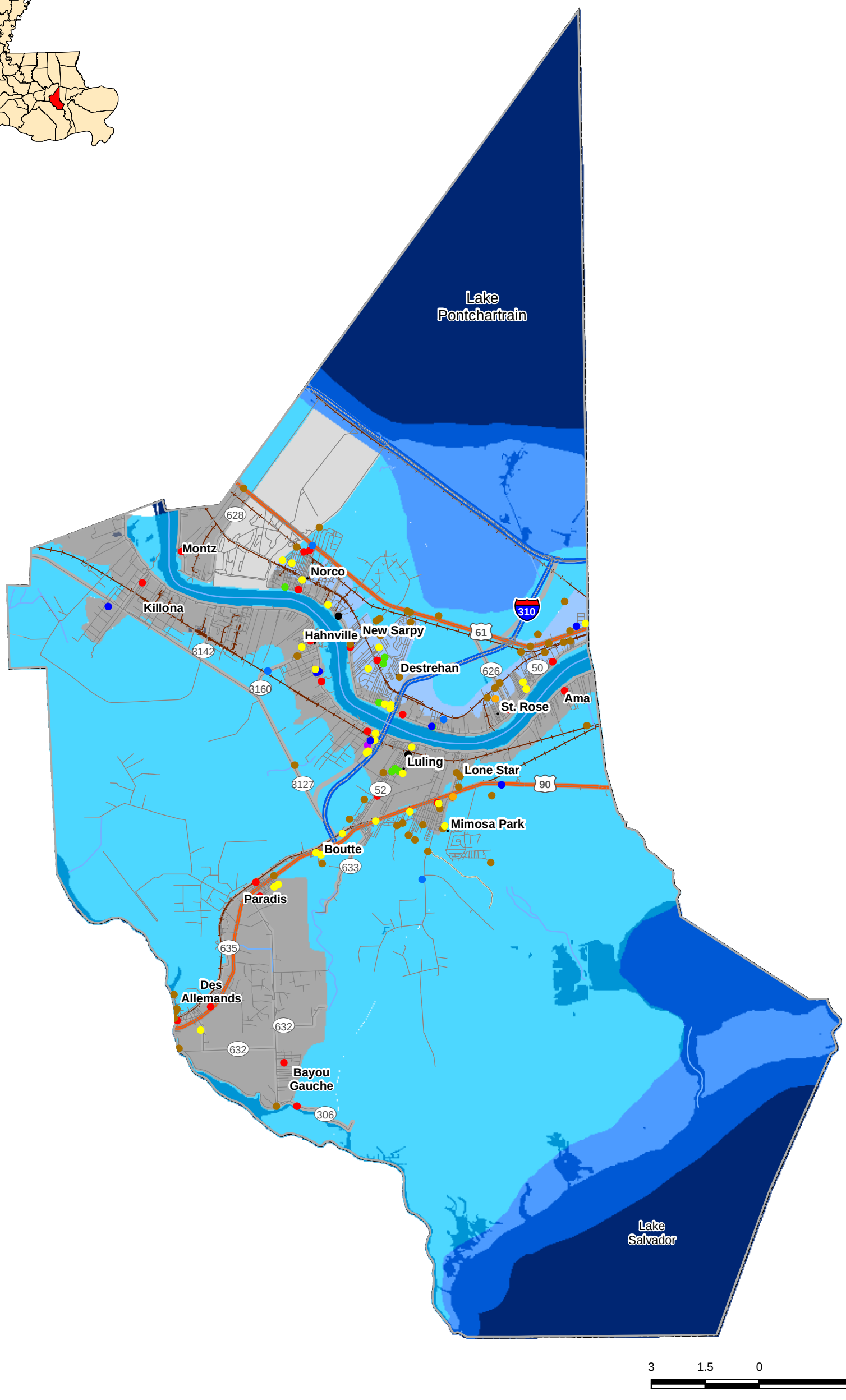
PROVIDENCE

Drawn By	LMM	09/15/14
Checked By	LMH	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B058

5 Figure



Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Emergency Shelters
- Fire Station
- Governmental Buildings
- Health Care Facilities
- Law Enforcement
- Public Works
- Schools
- Wastewater
- Water

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and effective FIRM data (FLDZNZA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities

Hazard Mitigation Plan

St. Charles Parish

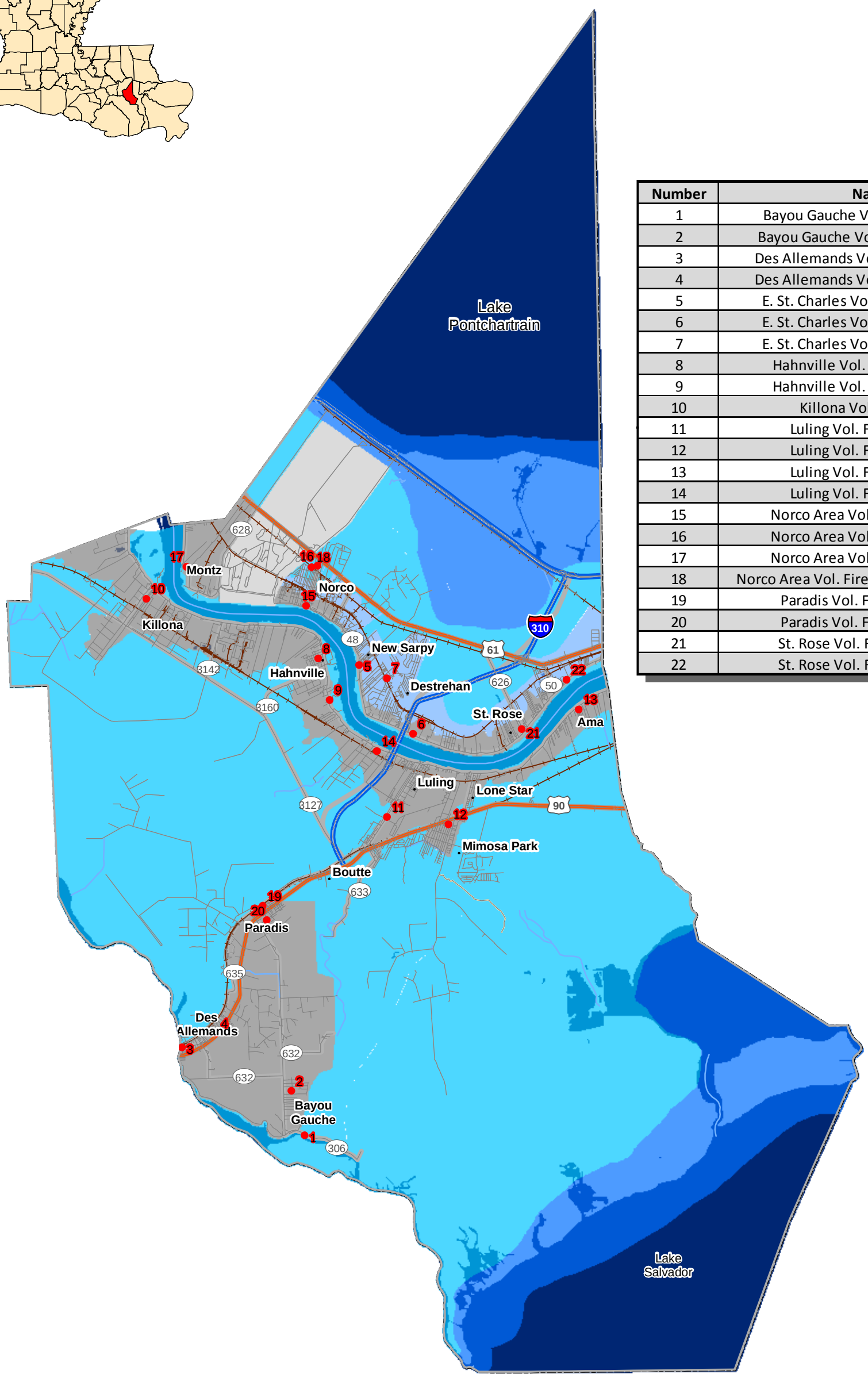
PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B036

6 Figure



Number	Name
1	Bayou Gauche Vol. Fire Dept. #92
2	Bayou Gauche Vol. Fire Station #91
3	Des Allemands Vol. Fire Station #71
4	Des Allemands Vol. Fire Station #72
5	E. St. Charles Vol. Fire Station #81
6	E. St. Charles Vol. Fire Station #82
7	E. St. Charles Vol. Fire Station #83
8	Hahnville Vol. Fire Station #31
9	Hahnville Vol. Fire Station #32
10	Killona Vol. Fire Dept.
11	Luling Vol. Fire Dept. #21
12	Luling Vol. Fire Dept. #22
13	Luling Vol. Fire Dept. #23
14	Luling Vol. Fire Dept. #24
15	Norco Area Vol. Fire Station #1
16	Norco Area Vol. Fire Station #3
17	Norco Area Vol. Fire Station #5
18	Norco Area Vol. Fire Station (Central)/ #2
19	Paradis Vol. Fire Station #61
20	Paradis Vol. Fire Station #62
21	St. Rose Vol. Fire Station #51
22	St. Rose Vol. Fire Station #52

Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Fire Station

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and effective FIRM data (FLDZNZA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Fire Stations)

Hazard Mitigation Plan

St. Charles Parish

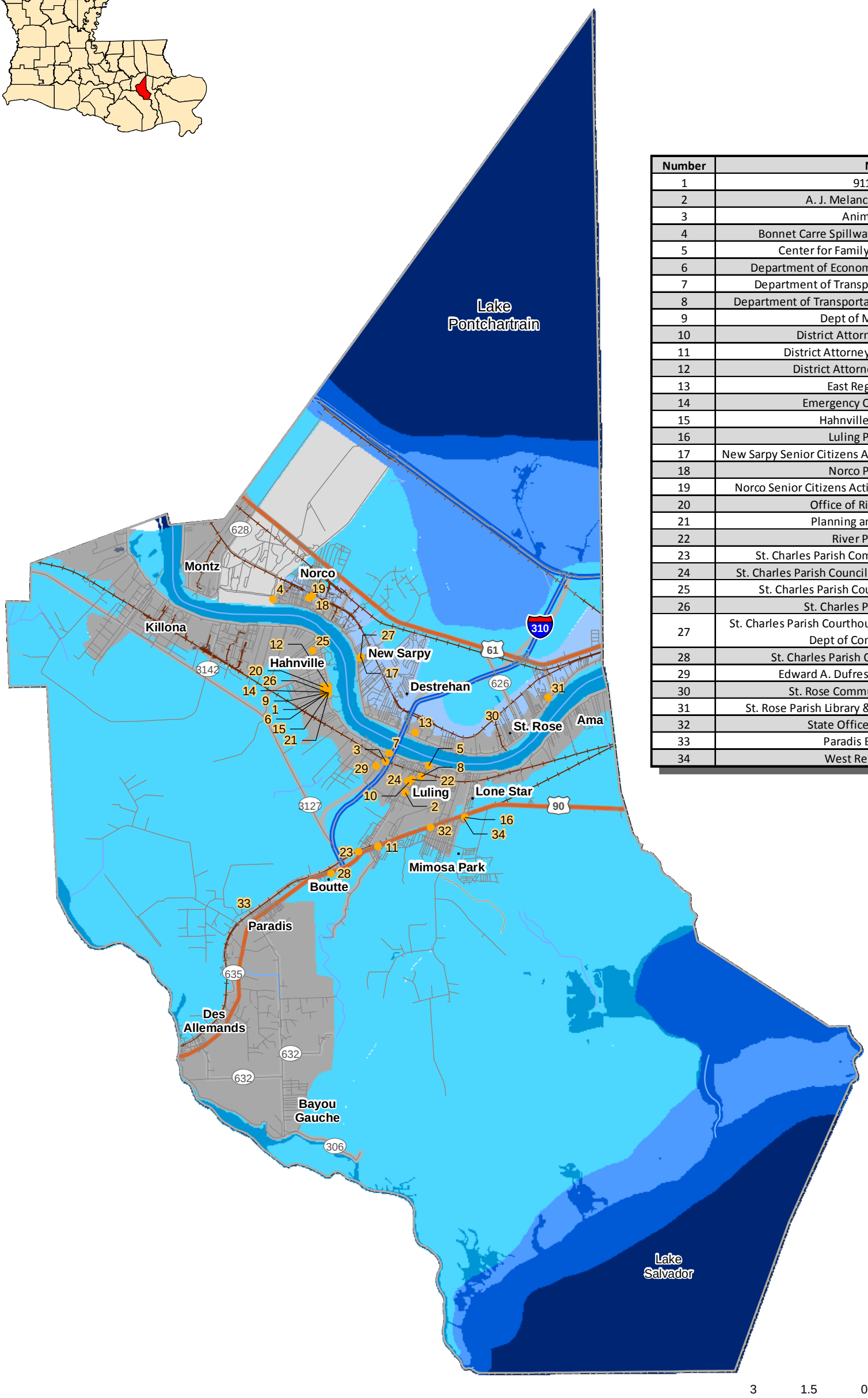
PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B038

7 Figure



Number	Name
1	911 Center
2	A. J. Melancon Senior Center
3	Animal Shelter
4	Bonnet Carre Spillway Army Corps of Engineers
5	Center for Family & Youth Services, Inc.
6	Department of Economic Development & Tourism
7	Department of Transportation and Development
8	Department of Transportation and Development (DOTD)
9	Dept of Motor Vehicles
10	District Attorney's Office - Luling
11	District Attorney Child Support Office
12	District Attorney Hahnville Annex
13	East Regional Library
14	Emergency Operations Center
15	Hahnville Parish Library
16	Luling Parish Library
17	New Sarpy Senior Citizens Activity Center & Council on Aging
18	Norco Parish Library
19	Norco Senior Citizens Activity Center & Council on Aging
20	Office of Risk Management
21	Planning and Zoning Office
22	River Parishes WIA
23	St. Charles Parish Community Outreach Program
24	St. Charles Parish Council for Prevention of Child Abuse
25	St. Charles Parish Council on Aging Main Office
26	St. Charles Parish Courthouse
27	St. Charles Parish Courthouse Annex/Arterbury Building & Dept of Community Service
28	St. Charles Parish Office of Family Support
29	Edward A. Dufresne Community Center
30	St. Rose Community Service Center
31	St. Rose Parish Library & St. Rose Community Center
32	State Office - Dept of Health
33	Paradis Branch Library
34	West Regional Library

Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone
- Zone VE
- Zone X

- Governmental Buildings

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and effective FIRM data (FLDZNZA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Governmental Buildings)

Hazard Mitigation Plan

St. Charles Parish

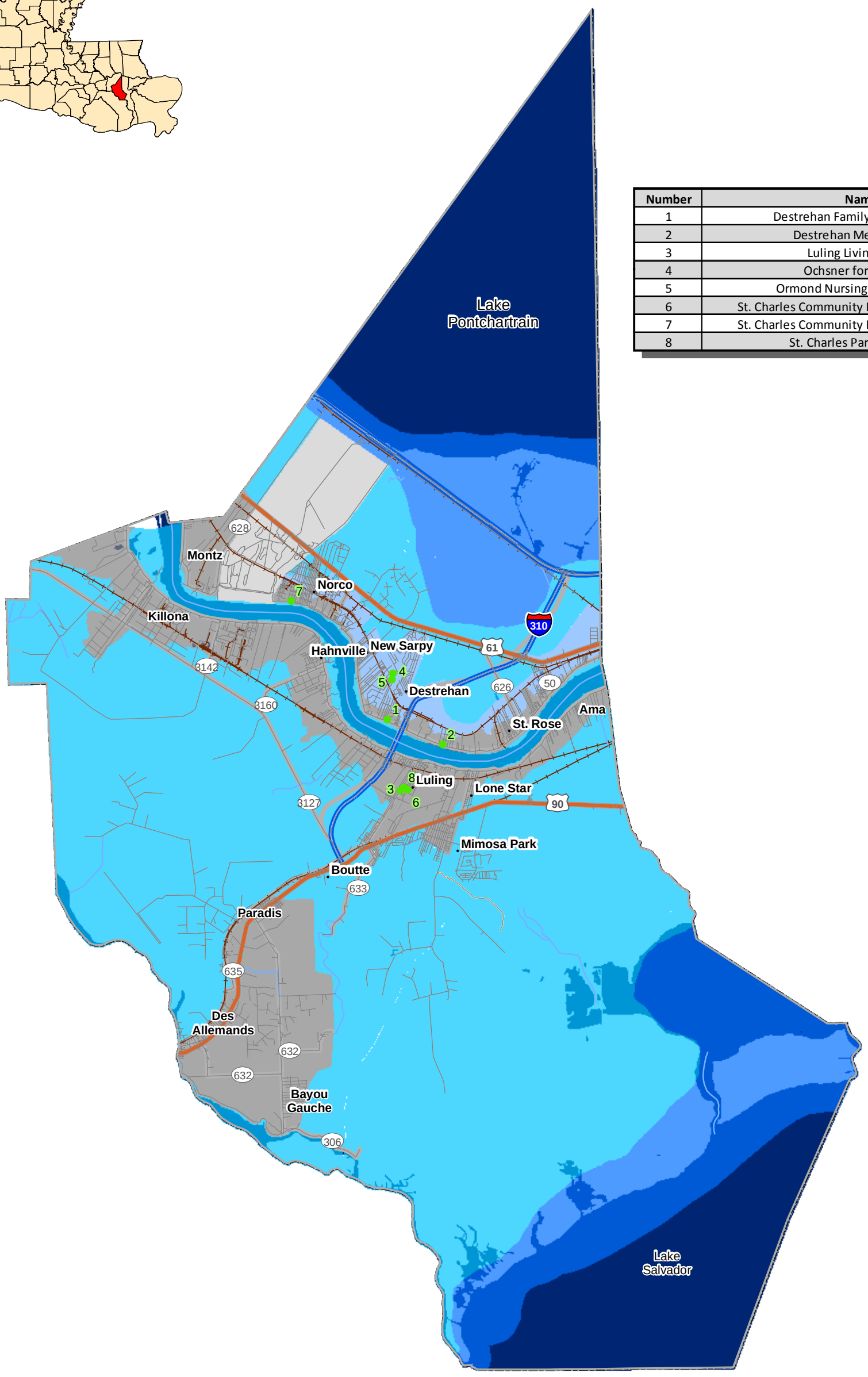
PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B039

8 Figure



Number	Name
1	Destrehan Family Health Center
2	Destrehan Medical Clinic
3	Luling Living Center
4	Ochsner for Children
5	Ormond Nursing & Care Center
6	St. Charles Community Health Center - Luling
7	St. Charles Community Health Center - Norco
8	St. Charles Parish Hospital

Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Health Care Facilities

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and effective FIRM data (FLDZNZA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Health Care Facilities)

Hazard Mitigation Plan

St. Charles Parish

PROVIDENCE

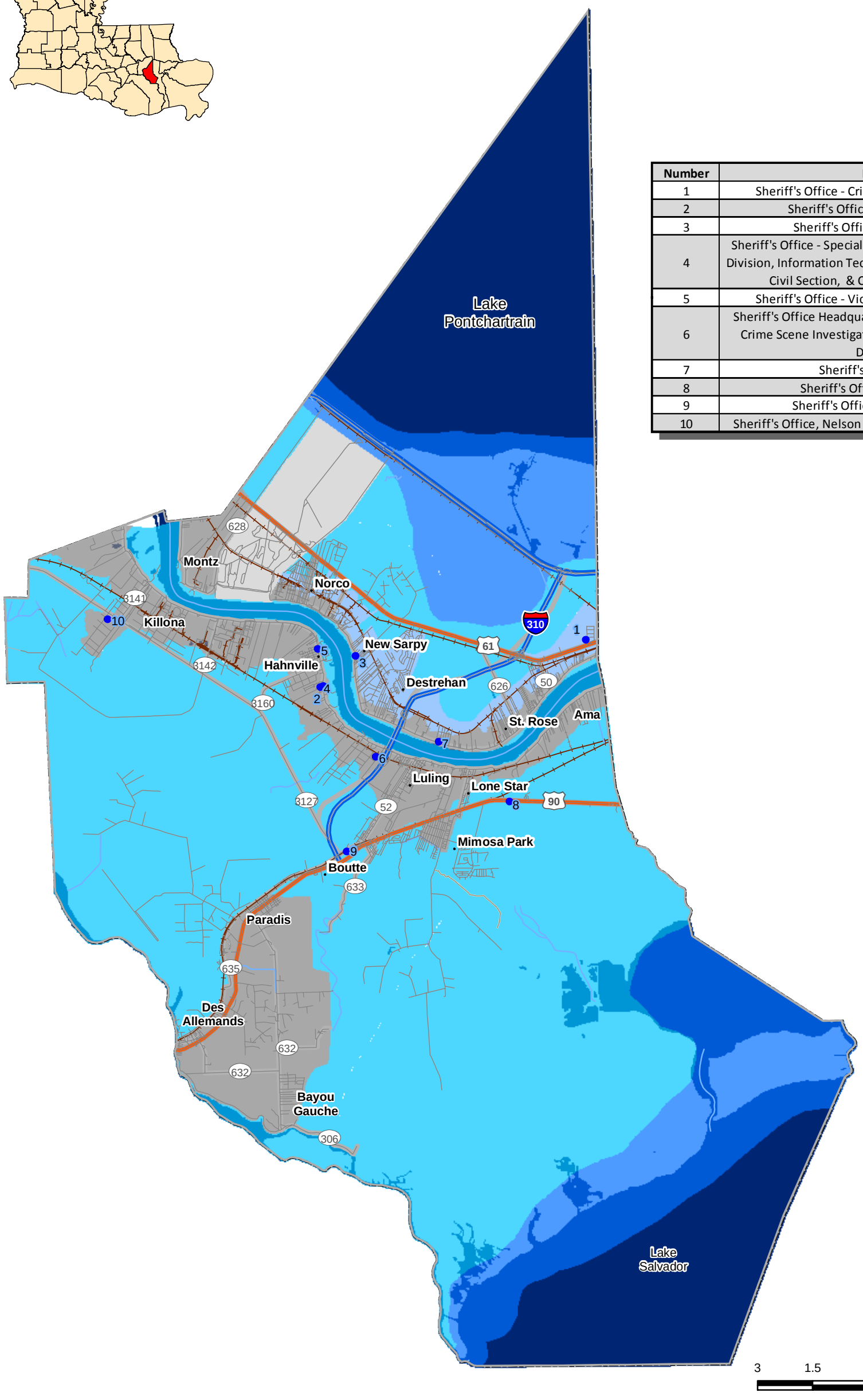
Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B040

9 Figure

Number	Name
1	Sheriff's Office - Criminal Investigations Unit
2	Sheriff's Office - Bonds and Fines
3	Sheriff's Office Second District
4	Sheriff's Office - Special Services Dept, Court Security Division, Information Technology Division, Tax Office & Civil Section, & Communications Tower
5	Sheriff's Office - Victim's Assistance Building
6	Sheriff's Office Headquarters, Special Investigations, Crime Scene Investigations, & Evidence Collection Division
7	Sheriff's Office Lodge
8	Sheriff's Office Third District
9	Sheriff's Office Training Facility
10	Sheriff's Office, Nelson Coleman Correctional Center



Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Law Enforcement

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and effective FIRM data (FLDZNZA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Law Enforcement)

Hazard Mitigation Plan

St. Charles Parish

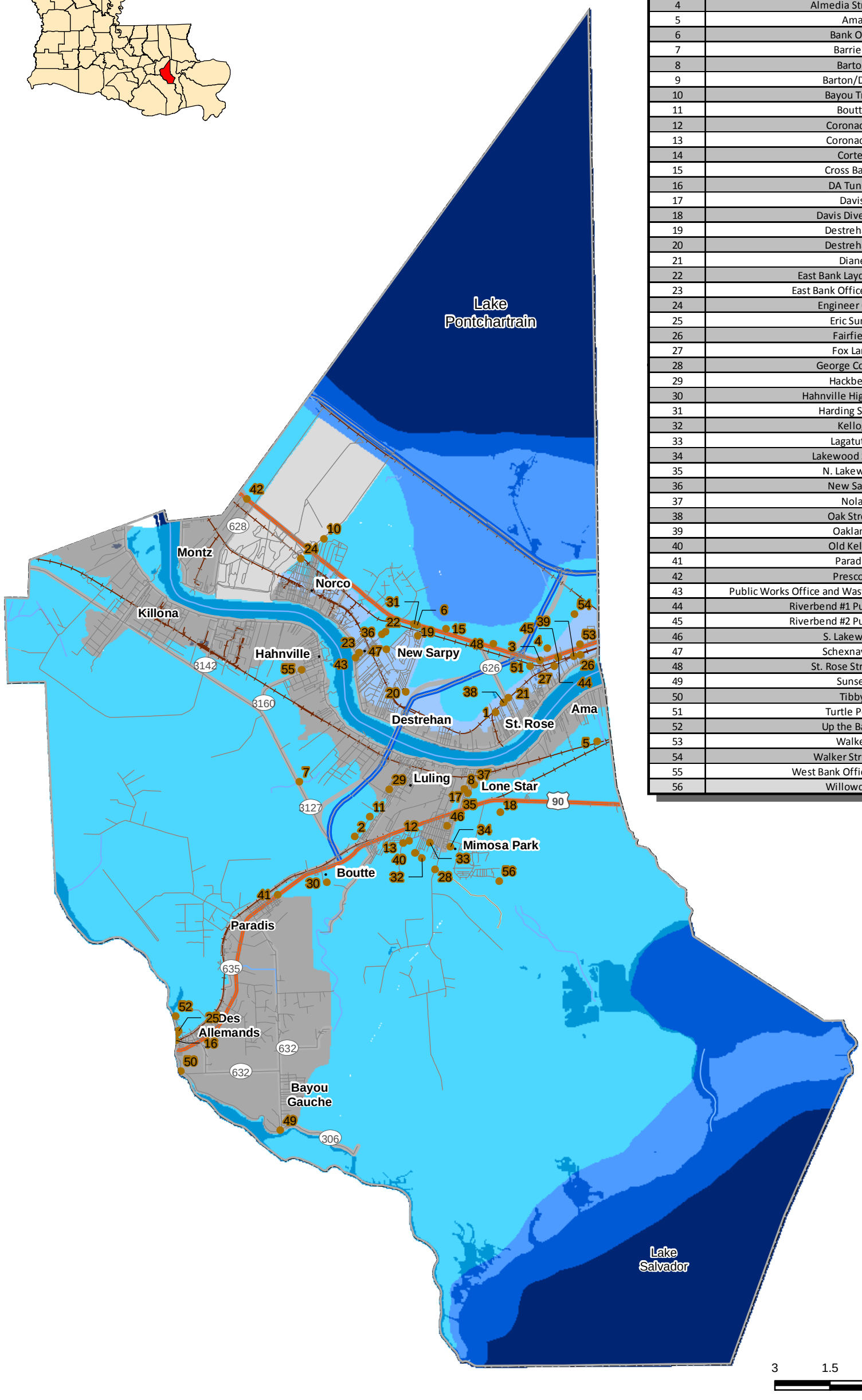
PROVIDENCE

Drawn By	LMM	09/15/14
Checked By	LMH	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B041

10 Figure



Number	Name
1	4th Street
2	80 Arpent
3	Almedia Rd.
4	Almedia Structure
5	Ama
6	Bank One
7	Barriere
8	Barton
9	Barton/Davis
10	Bayou Trep.
11	Boutte
12	Coronado 1
13	Coronado 2
14	Cortez
15	Cross Bayou
16	DA Tunnel
17	Davis
18	Davis Diversion
19	Destrehan 1
20	Destrehan 2
21	Diane
22	East Bank Laydown Yard
23	East Bank Office and Shop
24	Engineer Canal
25	Eric Sump
26	Fairfield
27	Fox Lane
28	George Cousins
29	Hackberry
30	Hahnville High School
31	Harding Street
32	Kellog
33	Lagatutta
34	Lakewood School
35	N. Lakewood
36	New Sarpy
37	Nola
38	Oak Street
39	Oakland
40	Old Kellog
41	Paradis
42	Prescott
43	Public Works Office and Wastewater Director's Office
44	Riverbend #1 Pump Station
45	Riverbend #2 Pump Station
46	S. Lakewood
47	Schexnaydre
48	St. Rose Structure
49	Sunset
50	Tibby
51	Turtle Pond
52	Up the Bayou
53	Walker
54	Walker Structure
55	West Bank Office and Yard
56	Willowdale

Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Critical Facilities

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and Effective FIRM data (FLDZNZA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Public Works)

Hazard Mitigation Plan

St. Charles Parish

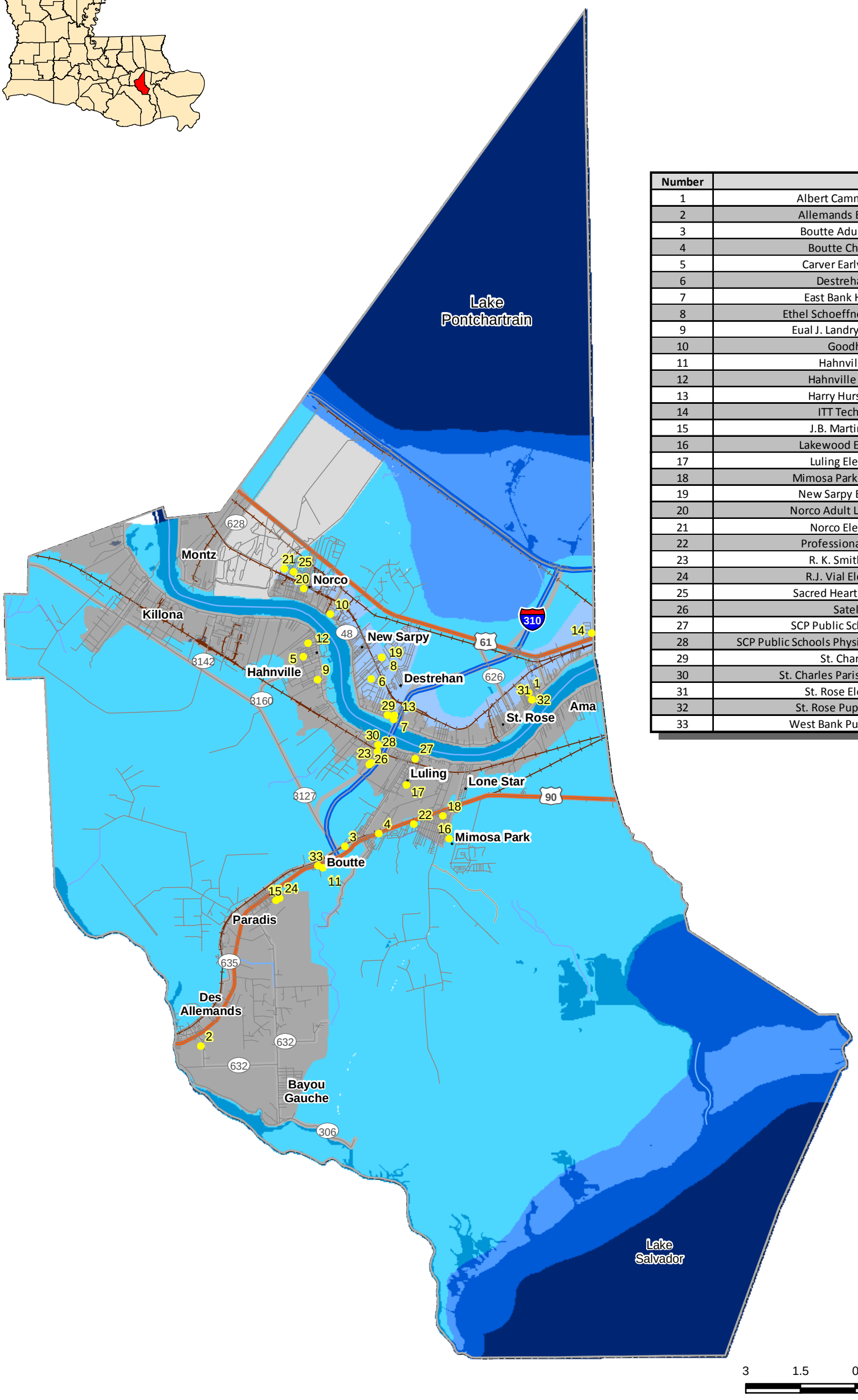
PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B042

11 Figure



Number	Name
1	Albert Cammon Middle School
2	Allemands Elementary School
3	Boutte Adult Learning Center
4	Boutte Christian Academy
5	Carver Early Learning Center
6	Destrehan High School
7	East Bank Head Start Center
8	Ethel Schoeffner Elementary School
9	Eual J. Landry Alternative Center
10	Goodhope Facility
11	Hahnville High School
12	Hahnville Learning Center
13	Harry Hurst Middle School
14	ITT Technical Institute
15	J.B. Martin Middle School
16	Lakewood Elementary School
17	Luling Elementary School
18	Mimosa Park Elementary School
19	New Sarpy Elementary School
20	Norco Adult Learning Center (NL)
21	Norco Elementary School
22	Professional Learning Center
23	R. K. Smith Middle School
24	R.J. Vial Elementary School
25	Sacred Heart Elementary School
26	Satellite Center
27	SCP Public Schools Media Center
28	SCP Public Schools Physical Plant Maintenance Facility
29	St. Charles Borromeo
30	St. Charles Parish School Board Office
31	St. Rose Elementary School
32	St. Rose Pupil Appraisal Center
33	West Bank Pupil Appraisal Center

Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Schools

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and Effective FIRM data (FLDZNSA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Schools)

Hazard Mitigation Plan

St. Charles Parish

PROVIDENCE

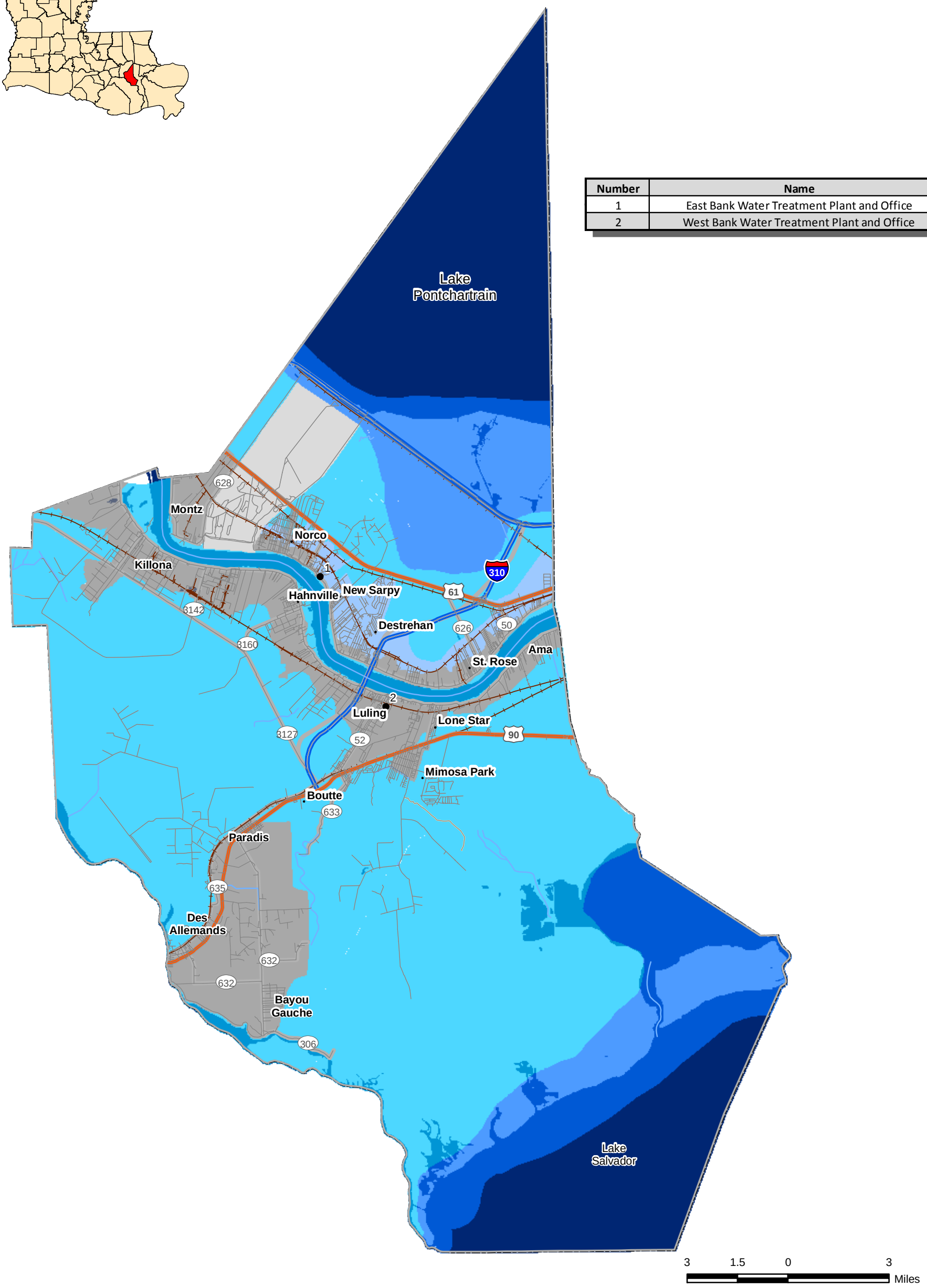
Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B043

12 Figure

Number	Name
1	East Bank Water Treatment Plant and Office
2	West Bank Water Treatment Plant and Office



Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Water

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and Effective FIRM data (FLDZNSA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Water)

Hazard Mitigation Plan

St. Charles Parish

PROVIDENCE

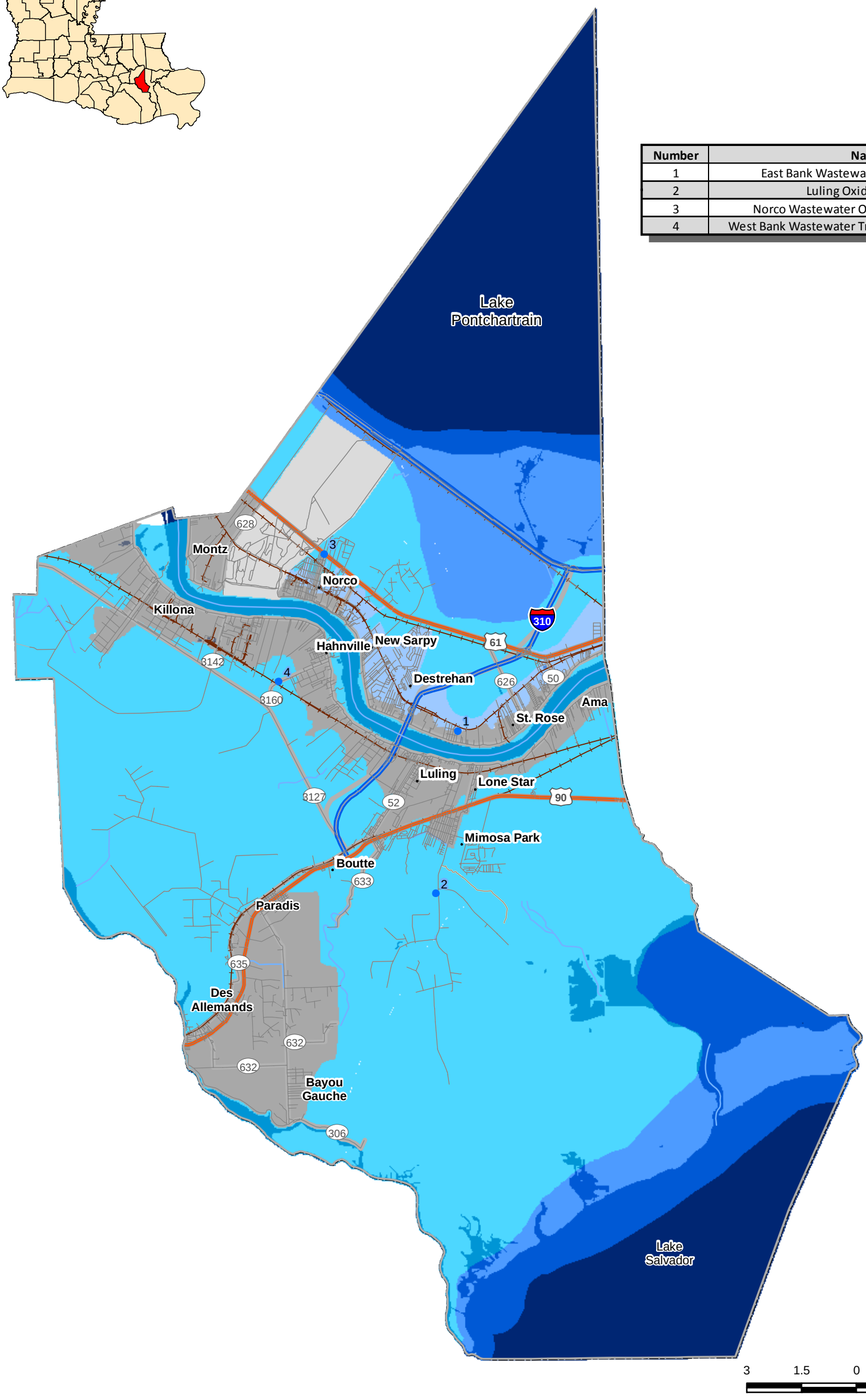
Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B044

13 Figure

Number	Name
1	East Bank Wastewater Treatment Plant
2	Luling Oxidation Pond
3	Norco Wastewater Office & Maintenance
4	West Bank Wastewater Treatment Plant and Office



Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Wastewater

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and Effective FIRM data (FLDZNSA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Wastewater)

Hazard Mitigation Plan

St. Charles Parish

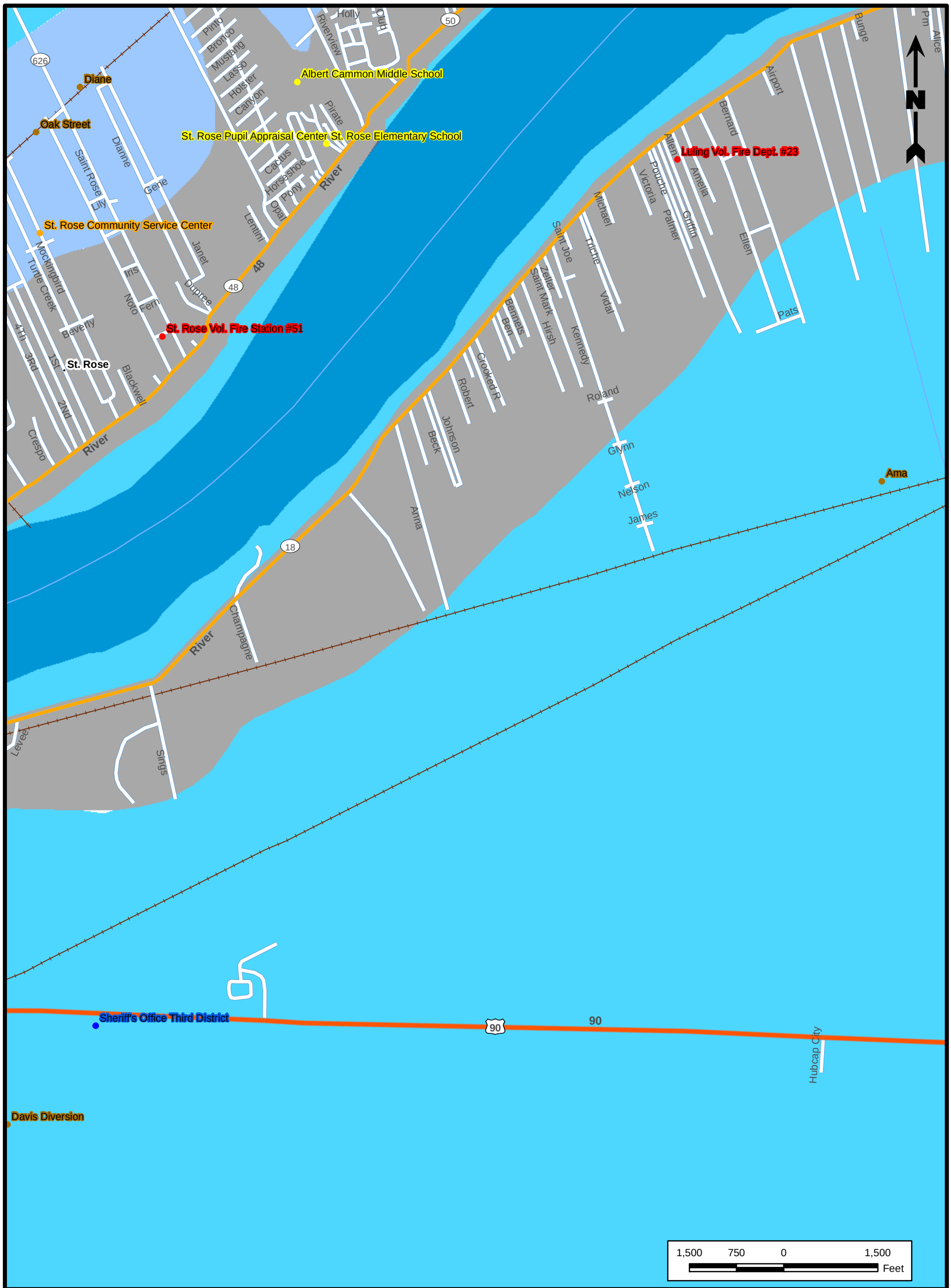
PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B045

14 Figure



Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Emergency Shelters
- Fire Station
- Governmental Buildings
- Health Care Facilities
- Law Enforcement
- Public Works
- Schools
- Wastewater
- Water

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and Effective FIRM data (FLDZNSA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Ama)

Hazard Mitigation Plan

St. Charles Parish

PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B033

15 Figure

Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Emergency Shelters
- Fire Station
- Governmental Buildings
- Health Care Facilities
- Law Enforcement
- Public Works
- Schools
- Wastewater
- Water

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and Effective FIRM data (FLDZNSA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Bayou Gauche)

Hazard Mitigation Plan

St. Charles Parish

PROVIDENCE

Drawn By	LMM	09/15/14
Checked By	LMH	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B047

16 Figure

R. K. Smith Middle School
Satellite Center
West Bank Water Treatment Plant and Office
Department of Transportation and Development (DOTD)
River Parishes WIA
St. Charles Parish Council for Prevention of Child Abuse
District Attorney's Office - Luling
St. Charles Parish Hospital
Luling
Luling Living Center
A. J. Melancon Senior Center
Hackberry
Luling Elementary School
Luling Vol. Fire Dept. #21
Boutte
80 Arpent
Professional Learning Center
Boutte Christian Academy
District Attorney Child Support Office
Coronado 1
Coronado 2
St. Charles Parish Community Outreach Program
Boutte Adult Learning Center
Sheriff's Office Training Facility
Old Kellog
St. Charles Parish Office of Family Support
West Bank Pupil Appraisal Center
Hahnville High School
Boutte
Hahnville High School
Magnolia Ridge
Paul Maillard
Hackberry
Gassen
Kinler
Jones
Borne
My Sons
Paul Fredrick
Val
Vial
Alicia
David
Oak
Canal
Blueberry Hill
Turner
Boutte Estates
Boutte Project
Timny
Alexander
Park
Goodchildren
Lily
Ash
Fir
Sharon
Locust
Woodland
River Ridge
Breaux
Zachary
Primrose
Valencia
Balboa
Santa Cruz
Coronado
Franklin
Avery
Maryland
Kellogg
Bloulin
Buras
Milling
4Th
6Th
Hall
Post
Talbot
Sugarhouse
2Nd
3Rd
Easy
Sellers
Kadax
1St
2Nd
3Rd
Tiger
310
52
90
631
633
3127
N

1,500 750 0 1,500
Feet

Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Emergency Shelters
- Fire Station
- Governmental Buildings
- Health Care Facilities
- Law Enforcement
- Public Works
- Schools
- Wastewater
- Water

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and Effective FIRM data (FLDZNSA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Boutte)

Hazard Mitigation Plan

St. Charles Parish

PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B048

17 Figure

Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Emergency Shelters
- Fire Station
- Governmental Buildings
- Health Care Facilities
- Law Enforcement
- Public Works
- Schools
- Wastewater
- Water

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and Effective FIRM data (FLDZNSA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Des Allemands)

Hazard Mitigation Plan

St. Charles Parish

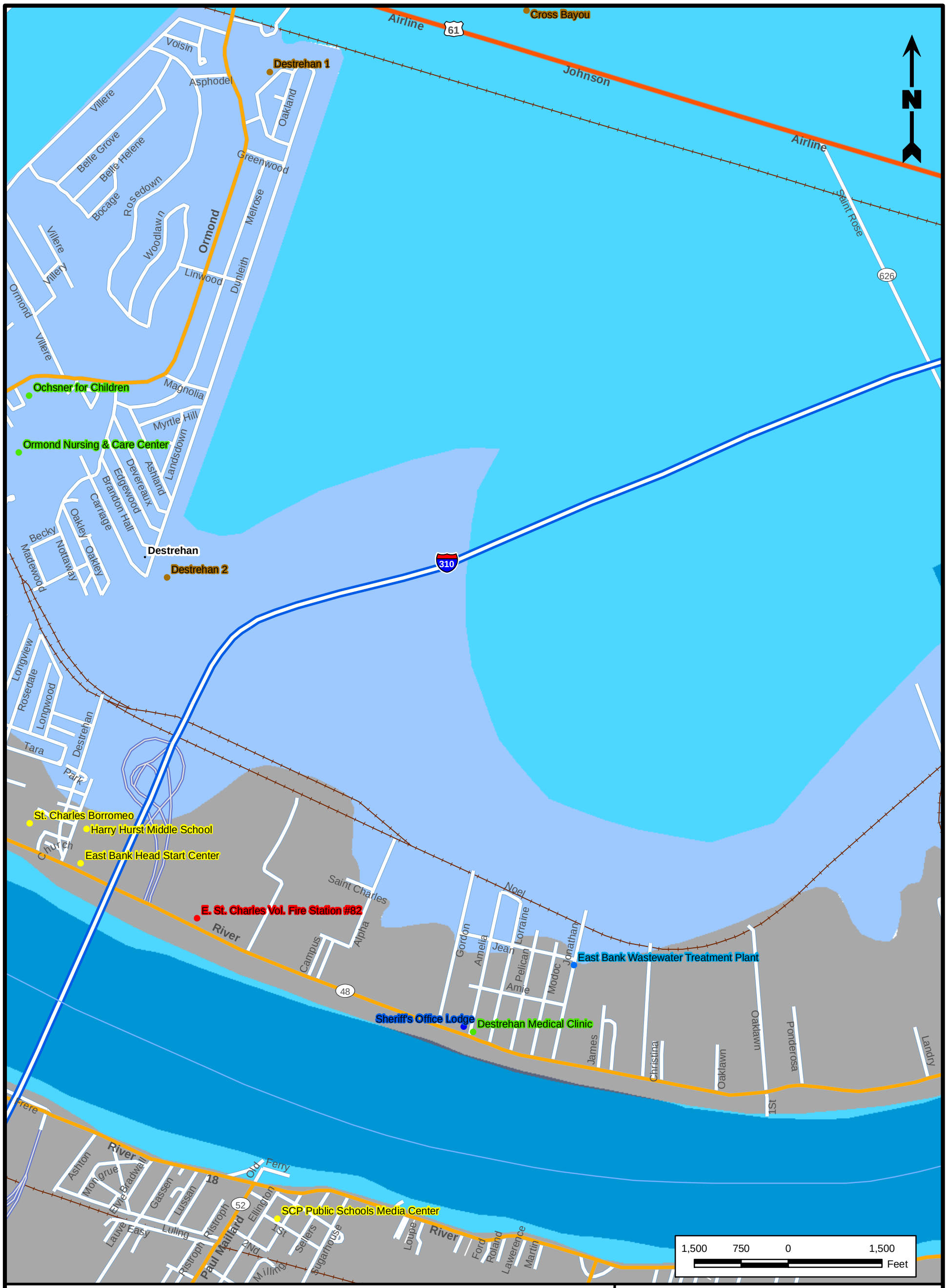
PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B034

18 Figure



Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Emergency Shelters
- Fire Station
- Governmental Buildings
- Health Care Facilities
- Law Enforcement
- Public Works
- Schools
- Wastewater
- Water

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and Effective FIRM data (FLDZNSA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Destrehan)

Hazard Mitigation Plan

St. Charles Parish

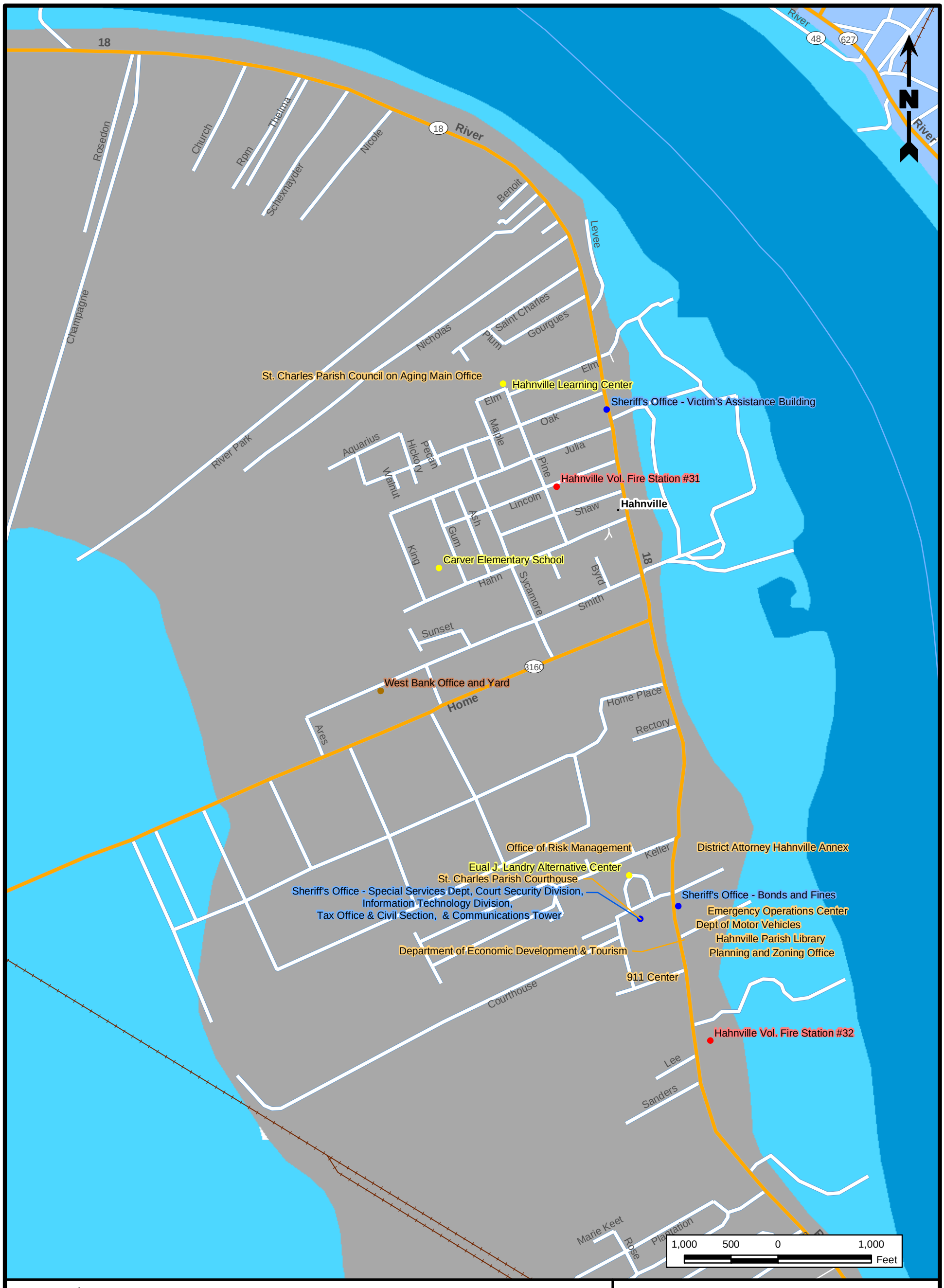
PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B049

19 Figure



Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Emergency Shelters
- Fire Station
- Governmental Buildings
- Health Care Facilities
- Law Enforcement
- Public Works
- Schools
- Wastewater
- Water

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and Effective FIRM data (FLDZNSA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Hahnville)

Hazard Mitigation Plan

St. Charles Parish

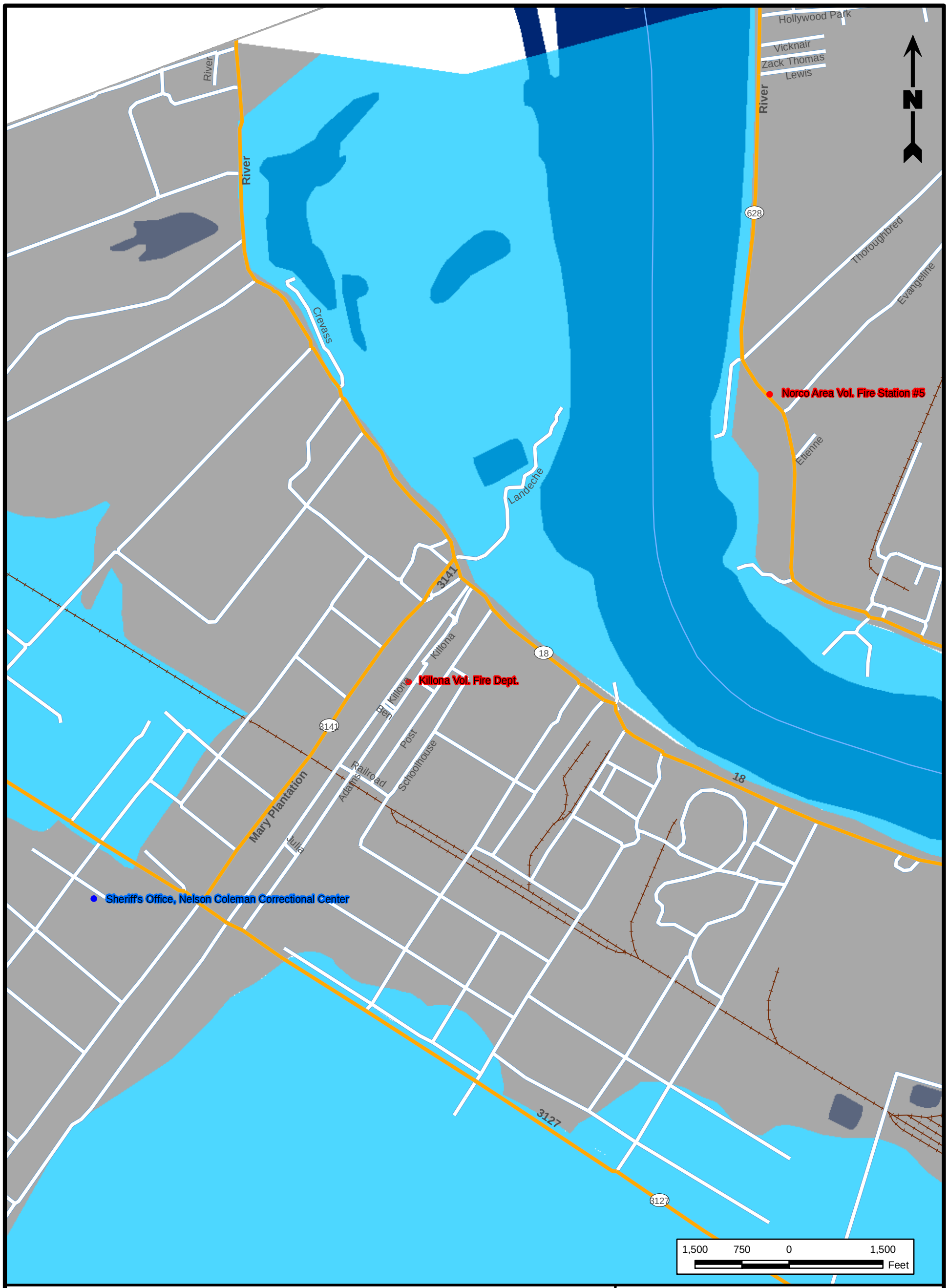
PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B032

20 Figure



Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Emergency Shelters
- Fire Station
- Governmental Buildings
- Health Care Facilities
- Law Enforcement
- Public Works
- Schools
- Wastewater
- Water

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and Effective FIRM data (FLDZNSA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Killona and Montz)

Hazard Mitigation Plan

St. Charles Parish

PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B051

21 Figure

East Regional Library
E. St. Charles Vol. Fire Station #82
East Bank Wastewater Treatment Plant
Sheriff's Office Lodge
Destrehan Medical Clinic
Luling Vol. Fire Dept. #24
Department of Transportation and Development
St. Charles Parish School Board Office
Sheriff's Office Headquarters, Special Investigations, Crime Scene Investigations, & Evidence Collection Division
SCP Public Schools Physical Plant Maintenance Facility
Animal Shelter
Edward A. Dufresne Community Center
Edward A. Dufresne Community Center
Center for Family & Youth Services, Inc.
SCP Public Schools Media Center
R. K. Smith Middle School
Satellite Center
West Bank Water Treatment Plant and Office
Department of Transportation and Development (DOTD)
River Parishes WIA
St. Charles Parish Council for Prevention of Child Abuse
District Attorney's Office - Luling
St. Charles Parish Hospital
A. J. Melancon Senior Center
Luling
Luling Living Center
St. Charles Community Health Center - Luling
Hackberry
Luling Elementary School
Nola
Barton
Davis
Lone Star
Luling Vol. Fire Dept. #21
Luling Parish Library
N. Lakewood
West Regional Library
Luling Vol. Fire Dept. #22
Mimosa Park Elementary School
State Office - Dept of Health
S. Lakewood
Professional Learning Center
Boutte Christian Academy
Coronado 1
Coronado 2
District Attorney Child Support Office
Lagatutta
Lakewood Elementary School
Lakewood School
Mimosa Park
Old Kellog
Kellog
1,500 750 0 1,500 Feet

Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Emergency Shelters
- Fire Station
- Governmental Buildings
- Health Care Facilities
- Law Enforcement
- Public Works
- Schools
- Wastewater
- Water

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and Effective FIRM data (FLDZNSA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Luling and Lone Star)

Hazard Mitigation Plan

St. Charles Parish

PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B052

22 Figure

Professional Learning Center
Coronado 1
Coronado 2
Lagatutta
Old Kellog
Kellog
George Cousins
Lakewood Elementary School
Lakewood School
Mimosa Park
Willowdale
Luling Oxidation Pond
Valencia
Balboa
Santa Cruz
Coronado
Franklin
Avery
Primrose
River Oaks
Wade
Mimosa
Wanda
Saint Maria
Camellia
Evergreen
Flowerwood
Gardenia
Heather
Saint Nicholas
Saint John
Lakewood
Maryland
Kellogg
Monsanto
Oak
Fern
Catherine
Diane
Lori
Terri
Christina
Shelia
Ivy
Asphodel
Arlington
Albania
West
East
Levert
Beaupre
Weinming
Patricia
Palmer
Zee Ann
Cathy
Michael
Cottage
Azalea
Laurel
Savanna
Magnolia
Augusta
Lafayette
Wisteria
Dogwood
Refuge
Live Oak
Tupelo
Willowridge
Cypress
Texaco

1,500 750 0 1,500
Feet

Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Emergency Shelters
- Fire Station
- Governmental Buildings
- Health Care Facilities
- Law Enforcement
- Public Works
- Schools
- Wastewater
- Water

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and Effective FIRM data (FLDZNSA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Mimosa Park)

Hazard Mitigation Plan

St. Charles Parish

PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B056

23 Figure

Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Emergency Shelters
- Fire Station
- Governmental Buildings
- Health Care Facilities
- Law Enforcement
- Public Works
- Schools
- Wastewater
- Water

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and Effective FIRM data (FLDZNSA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (New Sarpy and Goodhope)

Hazard Mitigation Plan

St. Charles Parish

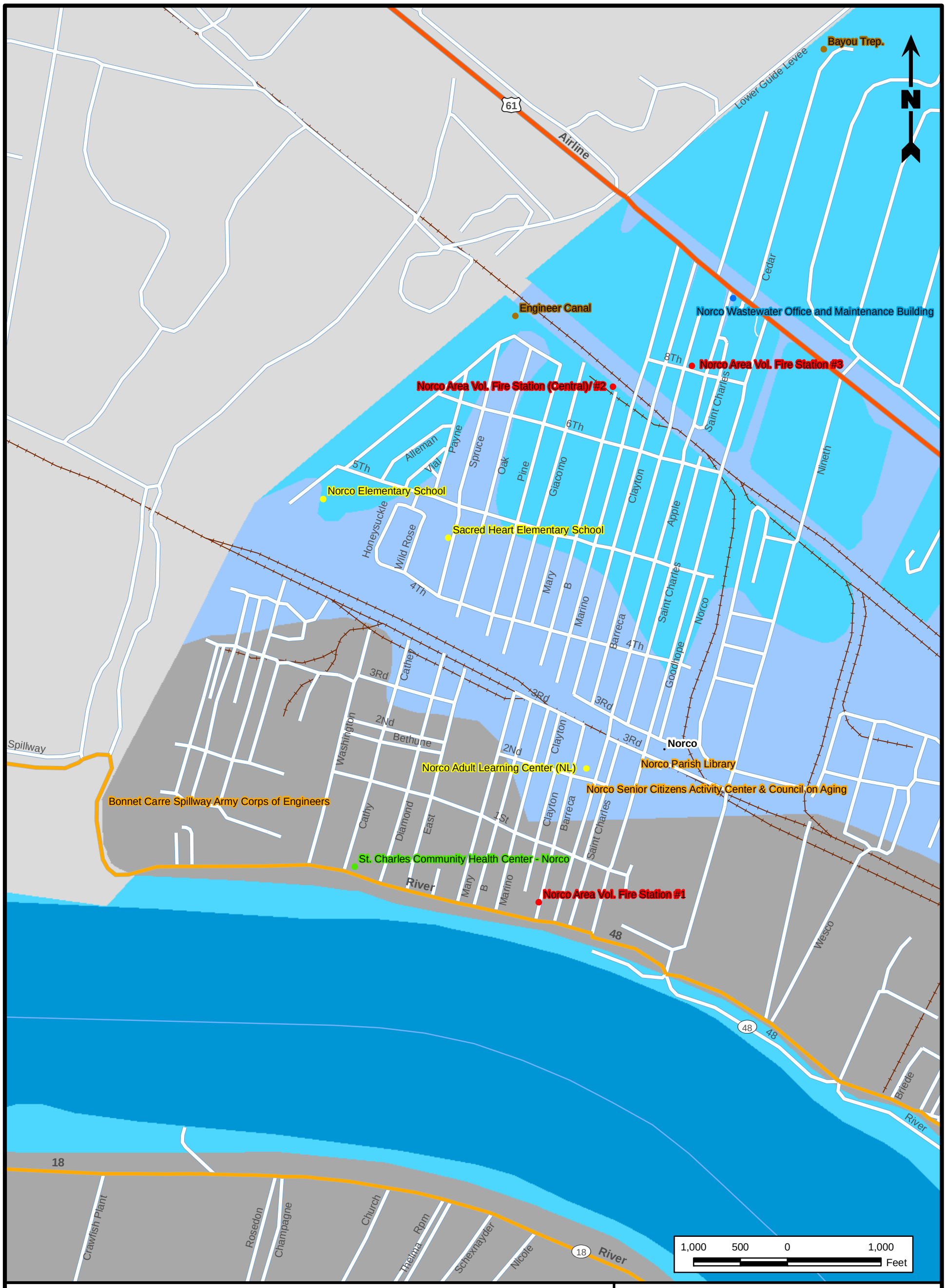
PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B050

24 Figure



Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Emergency Shelters
- Fire Station
- Governmental Buildings
- Health Care Facilities
- Law Enforcement
- Public Works
- Schools
- Wastewater
- Water

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and Effective FIRM data (FLDZNSA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Norco)

Hazard Mitigation Plan

St. Charles Parish

PROVIDENCE

Drawn By	LMH	09/15/14
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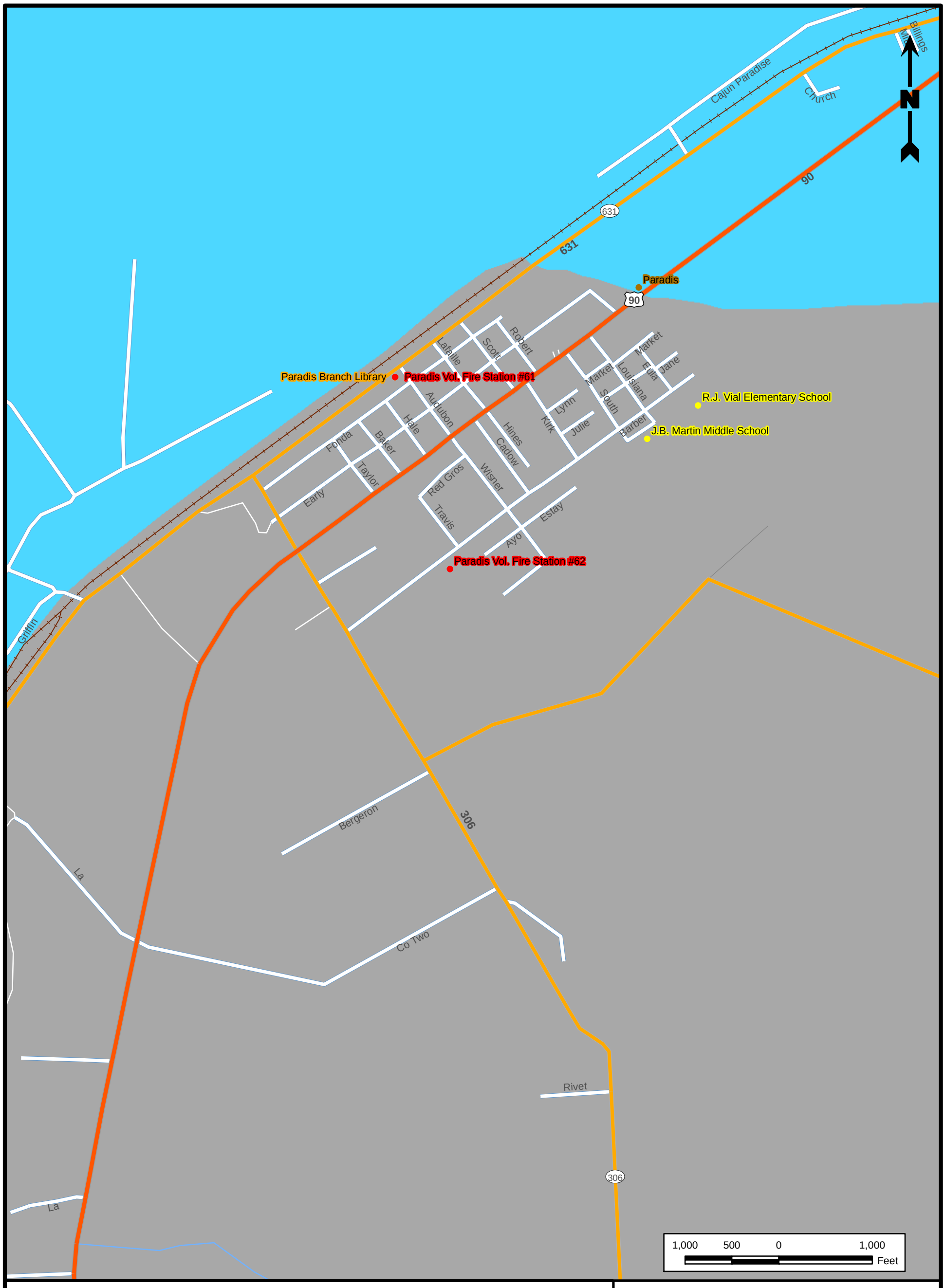
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B053

25 Figure



Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Emergency Shelters
- Fire Station
- Governmental Buildings
- Health Care Facilities
- Law Enforcement
- Public Works
- Schools
- Wastewater
- Water

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and Effective FIRM data (FLDZNSA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (Paradis)

Hazard Mitigation Plan

St. Charles Parish

PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B035

26 Figure

Legend

- Parish Boundary
- Interstate
- LA Highway
- Secondary Roads
- US Highway
- Streams
- Water

Effective FIRM

- Floodzone Not Established
- Zone A99
- Zone AE
- Zone VE
- Zone X

- Emergency Shelters
- Fire Station
- Governmental Buildings
- Health Care Facilities
- Law Enforcement
- Public Works
- Schools
- Wastewater
- Water

Reference

Parish Boundary, Cities, Roads, Streams, Water data was obtained from Louisiana Oil Spill Coordinator's Office (LOSCO) 1999 dataset. Critical facility locations and Effective FIRM data (FLDZNSA99) obtained from The St. Charles Parish Geographic Information Systems.

Critical Facilities (St. Rose)

Hazard Mitigation Plan

St. Charles Parish

PROVIDENCE

Drawn By	LMH	09/15/14
Checked By	LMM	09/15/14
Approved By	AS	09/15/14

Project Number 447-004

Drawing Number 447-004-B046

27 Figure

APPENDICES

APPENDIX A

PLANNING PROCESS WORKSHEETS

Comparison of Multi-Hazard Mitigation and CRS Planning Requirements

Check ✓ if You Meet Both CRS & Part 201	Community Rating Systems (CRS) Planning Steps (Activity 510)	Local Mitigation Planning Handbook Tasks (44 CFR Part 201)
✓	Step 1. Organize	Task 1: Determine the Planning Area and Resources Task 2: Build the Planning Team 44 CFR 201.6 (c)(1)
✓	Step 2. Involve the public	Task 3: Create an Outreach Strategy 44 CFR 201.6 (b)(1)
✓	Step 3. Coordinate	Task 4: Review Community Capabilities 44 CFR 201.6 (b)(2) & (3)
✓	Step 4. Assess the hazard	Task 5: Conduct a Risk Assessment 44 CFR 201.6 (c)(2)(i) 44 CFR 201.6 (c)(2)(ii) & (iii)
✓	Step 5. Assess the problem	
✓	Step 6. Set goals	Task 6: Develop a Mitigation Strategy 44 CFR 201.6 (c)(3)(i) 44 CFR 201.6 (c)(3)(ii) 44 CFR 201.6 (c)(3)(iii)
✓	Step 7. Review possible activities	
✓	Step 8. Draft an action plan	
✓	Step 9. Adopt the Plan	Task 8: Review and Adopt the Plan 44 CFR 201.6 (c)(5)
✓	Step 10. Implement, evaluate, revise	Task 7: Keep the Plan Current Task 9: Create a Safe and Resilient Community 44 CFR 201.6 (c)(4)

Mitigation Planning Team Worksheet

Steering Committee - The core group responsible for making decisions, guiding the planning process, and agreeing upon the final contents of the plan

Stakeholders - Individuals or groups that affect or can be affected by a mitigation action or policy

Partner Organization	Steering Committee	Stakeholder	Notes
Local Agencies			
Building Code Enforcement	✓		
City Management / County Administration	✓		Boe
Emergency Management	✓		Perry, Tastet
Fire Department / District	✓		Gaubert
Floodplain Administration	✓		Matherne
Geographic Information Systems	✓		Martinez
Parks and Recreation	✓		Foret
Planning / Community Development	✓		Marousek
Public Works	✓		Bischoff
Stormwater Management	✓		Scholle
Transportation (Roads and Bridges)	✓		Scholle
City Council / Board of Commissioners	✓		Fisher-Perrier, Fletcher, Woodruff
Planning Commission	✓		Frangella
Regional / Metropolitan Planning Organizations	✓		
City / County Attorney's Office	✓		Vial, Higdon
Economic Development Agency	✓		Faucheux
Local Emergency Planning Committee	✓		Perry
Police / Sheriff's Department	✓		Gros, Madere
Sanitation Department	✓		Clay (Wastewater)
Tax Assessor's Office	✓		Champagne
Waterworks	✓		Robert
Special Districts and Authorities			
Airport, Seaport Authorities			
Fire Control District		✓	Gaubert - Fireman's Association
Flood Control District		✓	Levee basin districts
School District	✓		Rogers, Rome, O'Malley
Transit Authority			
Utility Districts			
Non- Governmental Organizations			
American Red Cross	✓		Patecek
Chamber of Commerce		✓	River Parishes C of C
Community / Faith-Based Organizations	✓		United Way
Environmental Organizations		✓	Bucket Brigade
Homeowners Associations			
Neighborhood / Community Organizations	✓		Norco Civic Association
Utility Companies			
State Agencies			
State Emergency Management Agency	✓		Cooper, Roussel
State Dam Safety			
State Department of Transportation			
State Fire and Forestry Agency		✓	La. Coop. Ext.
State Geological Survey			
State Water Resources Agency			

Mitigation Planning Team Worksheet

Steering Committee - The core group responsible for making decisions, guiding the planning process, and agreeing upon the final contents of the plan

Stakeholders - Individuals or groups that affect or can be affected by a mitigation action or policy

Partner Organization	Steering Committee	Stakeholder	Notes
State National Flood Insurance Program Coordinator			
State Planning Office			
Federal Agencies			
Federal Emergency Management Agency			
Land Management Agencies (USFS / NPS / BLM)			
National Weather Service		✓	Bernard
US Army Corps of Engineers		✓	Brantley
US Department of Housing and Urban Development			
US Department of Transportation			
US Environmental Protection Agency			
US Geological Survey			
Other			
Tribal Officials			
Colleges / Universities		✓	Schmitt (Ag Center)
Building Code Enforcement			
Major Employers and Businesses	✓		Gares, Johnson, Songy
Professional Associations			
Neighboring Jurisdictions		✓	Verbally invited to meetings

St. Charles Parish
15045 River Road
Hahnville, LA 70057

Hazard Mitigation Public Opinion Survey

Worksheet 3.1

St. Charles Parish is in the process of updating the Hazard Mitigation Plan (HMP). The purpose of an HMP is to reduce the risk caused by natural disasters such as hurricanes or flooding. As part of this HMP update, we are requesting your participation in this survey about public perceptions and opinions regarding natural hazards in the parish. The information you provide will be used to help improve public/private coordination and risk reduction efforts in St. Charles Parish.

NATURAL HAZARD INFORMATION

First, we would like to know about your experiences involving natural hazards and your exposure to preparedness information.

1. During the past five years, have you or someone in your household directly experienced a natural disaster such as a hurricane, tornado, flood, or other type of natural disaster in St. Charles Parish?

   ☐ Yes

   ☐ No ***(If NO, skip to Question 2)***

   If Yes, which of these natural disasters have you or someone in your household experienced in the past five years?

   ☐ Drought
   ☐ Flood
   ☐ Hurricane
   ☐ Severe Thunderstorm
   ☐ Tornado
   ☐ Levee Failure
   ☐ Land Subsidence
   ☐ Winter Storm
   ☐ Extreme Heat
   ☐ Salt Water Intrusion
   ☐ Other (Specify) _____

2. How concerned are you about the following natural disasters affecting your parish?

Natural Disaster	Very Concerned	Somewhat Concerned	Neutral	Not Very Concerned	Not Concerned
Drought	☐	☐	☐	☐	☐
Flood	☐	☐	☐	☐	☐
Hurricane	☐	☐	☐	☐	☐
Severe Thunderstorm	☐	☐	☐	☐	☐
Tornado	☐	☐	☐	☐	☐
Levee Failure	☐	☐	☐	☐	☐
Land Subsidence	☐	☐	☐	☐	☐
Winter Storm	☐	☐	☐	☐	☐
Extreme Heat	☐	☐	☐	☐	☐
Salt Water Intrusion	☐	☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐

3. Have you ever received information about how to make members of your household and your home safer from natural disasters?

- ☐ Yes
- ☐ No ***(If NO, skip to Question 4)***

If Yes, how recently?

- ☐ Within the past 6 months
- ☐ Between 6 and 12 months
- ☐ Between 1 and 2 years
- ☐ Between 2 and 5 years
- ☐ 5 years or more

4. What is the most effective way for you to receive information about how to make your household and home safer from natural disasters?

(Please check up to three)

Newspapers:

- ☐ Newspaper Stories
- ☐ Newspaper Ads

Television:

- ☐ Television News
- ☐ Television Ads

Radio:

- ☐ Radio News
- ☐ Radio Ads

Internet:

- ☐ Email Newsletters
- ☐ Online News Outlets
- ☐ Social Media (e.g. Facebook)

Other Methods:

- ☐ Schools
- ☐ Outdoor Advertisements (Billboards, etc.)
- ☐ Books
- ☐ Mail
- ☐ Chamber of Commerce
- ☐ Fact Sheet / Brochure
- ☐ Public Workshops / Meetings
- ☐ Magazine
- ☐ University of research Institution
- ☐ Other (Specify

_____

5. Prior to receiving this survey, were you aware of your parish's Hazard Mitigation Plan?

- ☐ Yes
- ☐ No

6. Prior to receiving this survey, were you aware that the Federal Emergency Management Agency (FEMA) requires your parish to update the HMP every five years in order for your parish to be eligible for federal pre- and post- disaster hazard mitigation funds?

- ☐ Yes
- ☐ No

COMMUNITY VULNERABILITIES AND HAZARD MITIGATION STRATEGIES

In order to assess community risk, we need to understand which community assets may be vulnerable to natural hazards in the Parish. Vulnerable assets are those community features, characteristics, or resources that may be impacted by natural hazards (e.g. populations with functional needs, economic components, environmental resources, etc.) The next set of questions will focus on vulnerable assets in your community and your preferred strategies to mitigate risk to those assets.

7. What community assets are most important to you?
   (Check the corresponding box for each asset)

Community Assets	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important
Elder-care facilities	☐	☐	☐	☐	☐
Schools (K-12)	☐	☐	☐	☐	☐
Hospitals	☐	☐	☐	☐	☐
Major Bridges	☐	☐	☐	☐	☐
Fire/Police Stations	☐	☐	☐	☐	☐
Museums/Historic Buildings	☐	☐	☐	☐	☐
Major Employers	☐	☐	☐	☐	☐
Small Businesses	☐	☐	☐	☐	☐
College/University	☐	☐	☐	☐	☐
City Hall/Courthouse	☐	☐	☐	☐	☐
Parks	☐	☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐

8. Natural hazards can have a significant impact on a community, but planning for these events can help lessen the impacts. The following statements will help determine citizen priorities regarding planning for natural hazards in St. Charles Parish. Please tell us how important each one is to you.

Statements	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important
Protecting private property	☐	☐	☐	☐	☐
Protecting critical facilities (e.g. fire stations, hospitals, transportation)	☐	☐	☐	☐	☐
Preventing development in hazard areas	☐	☐	☐	☐	☐
Enhancing function of natural features (e.g. streams, wetlands)	☐	☐	☐	☐	☐
Protecting historical and cultural landmarks	☐	☐	☐	☐	☐
Strengthening Emergency Services	☐	☐	☐	☐	☐
Disclosing natural hazard risks during real estate transactions	☐	☐	☐	☐	☐
Promoting cooperation among agencies, citizens, non-profits and businesses	☐	☐	☐	☐	☐

MITIGATION AND PREPAREDNESS ACTIVITIES IN YOUR HOUSEHOLD

Households can mitigate and prepare for natural hazards in order to prevent damage to property, injuries, and loss of life. The precautions you take and training you receive can make a big difference in your ability to recover from a natural disaster or emergency. Access to basic services, such as electricity, gas, water, telephones, and emergency care may be cut off temporarily, or you may have to evacuate at a moment's notice. The following question focus on your household's preparedness for disaster events.

9. In the following list, please check those activities that you have done in your household, plan to do in the near future, have not done, or are unable to do.
   (Please check one answer for each preparedness activity)

In your household, have you or someone in your household:	Have Done	Plan to Do	Not Done	Unable To Do
Attended meetings or received written information on natural disasters or emergency preparedness?	☐	☐	☐	☐
Talked with members of your household about what to do in case of natural disaster or emergency?	☐	☐	☐	☐
Developed a "Household/Family Emergency Plan in order to decide what everyone would do in the event of a disaster?	☐	☐	☐	☐
Prepared a "Disaster Supply Kit" (stored extra food, water, batteries, other emergency supplies)?	☐	☐	☐	☐
	☐	☐	☐	☐
In the last year, has anyone in your household been trained in First A Aid or Cardio-Pulmonary Resuscitation?	☐	☐	☐	☐
Prepared your home by having smoke detectors on each level of the house?	☐	☐	☐	☐

If you would like to provide any additional information or comments, please do so in the space provided here:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

GENERAL HOUSEHOLD INFORMATION

Finally, we would appreciate any information you are willing to share with us about you and your household. This information will remain confidential and is for survey comparison purposes only.

10. Please indicate your age. _____

11. Gender:

- ☐ Male
- ☐ Female

12. Please indicated your level of education:

- ☐ High school graduate / GED
- ☐ Some college/trade school
- ☐ College Degree
- ☐ Postgraduate degree
- ☐ Other (Specify) _____

13. What is your household income?

- ☐ Less than $10,000
- ☐ $10,000 - $19,999
- ☐ $20,000 - $29,999
- ☐ $30,000 – $39,999
- ☐ $40,000 - $49,999
- ☐ $50,000 - $59,999
- ☐ $60,000 - $69,999
- ☐ $70,000 - $79,999
- ☐ $80,000 - $89,999t
- ☐ $90,000 - $99,999
- ☐ $100,000 - $149,999
- ☐ More than $150,000

14. Zip Code _____

15. Please specify your race:

- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Native Hawaiian or Other Pacific Islander
- ☐ White

16. Do you own or rent your home?

- ☐ Own
- ☐ Rent

Please return this form to the person that gave it to you, or mail to:

St. Charles Parish
15045 River Road
Hahnville, LA 70057

Thank you for your participation!

MITIGATION AND PREPAREDNESS ACTIVITIES IN YOUR HOUSEHOLD

Households can mitigate and prepare for natural hazards in order to prevent damage to property, injuries, and loss of life. The precautions you take and training you receive can make a big difference in your ability to recover from a natural disaster or emergency. Access to basic services, such as electricity, gas, water, telephones, and emergency care may be cut off temporarily, or you may have to evacuate at a moment's notice. The following question focus on your household's preparedness for disaster events.

9. In the following list, please check those activities that you have done in your household, plan to do in the near future, have not done, or are unable to do.
   (Please check one answer for each preparedness activity)

In your household, have you or someone in your household:	Have Done	Plan to Do	Not Done	Unable To Do
Attended meetings or received written information on natural disasters or emergency preparedness?	☐	☐	☐	☐
Talked with members of your household about what to do in case of natural disaster or emergency?	☐	☐	☐	☐
Developed a "Household/Family Emergency Plan in order to decide what everyone would do in the event of a disaster?	☐	☐	☐	☐
Prepared a "Disaster Supply Kit" (stored extra food, water, batteries, other emergency supplies)?	☐	☐	☐	☐
	☐	☐	☐	☐
In the last year, has anyone in your household been trained in First A Aid or Cardio-Pulmonary Resuscitation?	☐	☐	☐	☐
Prepared your home by having smoke detectors on each level of the house?	☐	☐	☐	☐

If you would like to provide any additional information or comments, please do so in the space provided here:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

GENERAL HOUSEHOLD INFORMATION

Finally, we would appreciate any information you are willing to share with us about you and your household. This information will remain confidential and is for survey comparison purposes only.

10. Please indicate your age. _____

11. Gender:

- ☐ Male
- ☐ Female

12. Please indicated your level of education:

- ☐ High school graduate / GED
- ☐ Some college/trade school
- ☐ College Degree
- ☐ Postgraduate degree
- ☐ Other (Specify) _____

13. What is your household income?

- ☐ Less than $10,000
- ☐ $10,000 - $19,999
- ☐ $20,000 - $29,999
- ☐ $30,000 – $39,999
- ☐ $40,000 - $49,999
- ☐ $50,000 - $59,999
- ☐ $60,000 - $69,999
- ☐ $70,000 - $79,999
- ☐ $80,000 - $89,999t
- ☐ $90,000 - $99,999
- ☐ $100,000 - $149,999
- ☐ More than $150,000

14. Zip Code _____

15. Please specify your race:

- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Native Hawaiian or Other Pacific Islander
- ☐ White

16. Do you own or rent your home?

- ☐ Own
- ☐ Rent

Please return this form to the person that gave it to you, or mail to:

St. Charles Parish
15045 River Road
Hahnville, LA 70057

Thank you for your participation!

Capability Assessment Worksheet

Jurisdiction: **St. Charles Parish, Louisiana**

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible. Complete one worksheet for each jurisdiction.

Planning and Regulatory

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction has in place.

Plans	Yes/No Year	Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	Yes 2011	***Yes to all.***
Capital Improvements Plan	Yes Annually	***Several Capital Improvement Plans; specific plans can be used to implement mitigation actions.***
Economic Development Plan	Yes	***Strategic Economic Development Plan***
Local Emergency Operations Plan	Yes 2006 2014	***Yes*** ***No*** ***No***
Continuity of Operations Plan	Yes 2014	***Yes*** ***No*** ***No***
Transportation Plan	Yes	***As both Element of St. Charles Parish Comprehensive Plan and included in N.O. Metropolitan Transportation Plan; No; No; No***
Stormwater Management Plan	Yes	***In Comprehensive Plan; also in Subdivision ordinance and recently adopted MS4 ordinance; Yes; It could; It could.***
Community Wildfire Protection Plan	No	***Not an identified hazard.***
Other special plans {e.g., brownfields redevelopment, disaster recovery, coastal zone management, climate change adaptation)	Yes	***Disaster Recovery (2014); No brownfields redevelopment; following state Coastal Zone plan and in process of writing a local plan; no climate change adaption plan.***

Worksheet 4.1

Capability Assessment Worksheet

Building Code, Permitting, and Inspections	**Yes/No**	**Are codes adequately enforced?**
Building Code	Yes	***Version/Year: State requirements/2009; adequately enforced.***
Building Code Effectiveness Grading Schedule (BCEGS) Score	No	***Score:***
Fire department ISO rating	Yes	***Rating: 9 Volunteer FDs: Three w/ 3 rating; 6 w/ 4 rating***
Site plan review requirements	Yes	***Adequately enforced.***
Land Use Planning and Ordinances	**Yes/No**	**Is the ordinance an effective measure to reducing hazard impacts?** **Is the ordinance adequately administered and enforced**
Zoning ordinance	Yes	***Yes, particularly for flood and industrial hazards.*** ***Yes, ordinance is adequately administered and enforced.***
Subdivision ordinance	Yes	***Yes*** ***Yes***
Floodplain ordinance	Yes	***Yes*** ***Yes***
Natural hazard specific ordinance (stormwater, steep slope, wildfire)	Yes Storm-water	***Yes*** ***Yes*** ***No steep slope or wildfire ordinances***
Flood insurance rate maps	Yes	***Yes*** ***Yes***
Acquisition of land for open space and public recreation uses	Yes	***Yes*** ***Yes***
Other: Privately held wetlands mitigation bank of 8,400 acres.	Yes	***Mitigates impacts*** ***Yes***
How can these capabilities be expanded and improved to reduce risk?		

Administrative and Technical

Identify whether your community has the following administrative and technical capabilities. These include staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

Administration	**Yes/No**	**Describe capability** **Is coordination effective?**
Planning Commission	Yes	***Capable of dealing with planning and related matters.*** ***Coordination is effective.***
Mitigation Planning Committee	Yes	***Coordination is effective.***
Maintenance programs to reduce risk (e.g.-, tree trimming, clearing drainage systems)	Yes	***Parish program; pro-active*** ***Yes***
Mutual aid agreements	Yes	***Capabilities with 5-Parish, Southeast Louisiana, and Industrial Mutual Aid organizations; very effective coordination.***
Staff	**Yes/No FT/PT[1]**	**Is staffing adequate to enforce regulations?** **Is staff trained on hazards and mitigation?** **Is coordination between agencies and staff effective?**
Chief Building Official	FT	***Yes*** ***Yes: Wind code*** ***Yes***
Floodplain Administrator	FT	***Yes*** ***Yes*** ***Yes***
Emergency Manager	FT	***Yes*** ***Yes*** ***Yes***
Community Planner	FT	***Yes*** ***Yes*** ***Yes***
Civil Engineer	FT	***Yes*** ***Somewhat*** ***Yes***
GIS Coordinator	FT	***Yes*** ***Somewhat*** ***Yes***
Other		

[1] Full-time (FT) or part-time (PT) position

Worksheet 4.1

Capability Assessment Worksheet

Technical	Yes/No	Describe capability Has capability been used to assess/mitigate risk in the past?
Warning systems/services (Reverse 911, outdoor warning signals)	Yes	***Very capable: outdoor sirens (tornados; nuclear); local access/gov't access TV; reverse 911; AM radio; Alert FM; Cable override; helicopters***
Hazard data and information	Yes	***Hazard data (including nuclear) updated and published annually; posted on access channels, Facebook***
Grant writing	Yes	***Three staff members assigned to this; some grants have been used to mitigate risk.***
Hazus analysis	Yes	***Used by GIS department and Engineering.***
Other: 2 NOAA tide stations	Yes	***For advance flood warning from Lake Pontchartrain and Lake Des Allemands***
How can these capabilities be expanded and improved to reduce risk?		

Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Access/ Eligibility (Yes/No)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Capital improvements project funding	Yes: Access	***Not sure*** ***Could be used in the future.***
Authority to levy taxes for specific purposes	Yes	***Property tax millages and sales taxes for fire protection, law enforcement; schools, etc.*** ***Possibly***
Fees for water, sewer, gas, or electric services	Yes	***Only for Water and Sewer.***
Impact fees for new development	Yes	***Usual items paid for by impact fees, but not future mitigation actions.***
Storm water utility fee	No	***It is being considered***
Incur debt through general obligation bonds and/or special tax bonds	Yes	***Levee construction for flood protection***
Incur debt through private activities	No	
Community Development Block Grant	Yes	***Has been used for hazard mitigation (for pumps and drainage improvements; generators, etc.***
Other federal funding programs	Yes	***For hazard mitigation; CIAP $ for shoreline stabilization, etc.***
State funding programs	Yes	***CIAP $***
Other		

How can these capabilities be expanded and improved to reduce risk?
Would like to secure hazard mitigation funding to elevate properties which are below the BFE; not yet funded.

Education and Outreach

Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program/Organization	Yes/No	Describe program/organization and how relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	***HazMat Clean-up Day; Local Emergency Planning Cmte (citizens are invited to attend these meetings); Coastal Zone Advisory Cmte. These organizations could help implement mitigation activities related to education.***
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes	***Fire Safety at schools; formal speaker program for community groups for hurricane preparedness and hazmat safety. These programs are used to educate the public.***
Natural disaster or safety related school programs	Yes	***The Parish participates in these when invited to do so.***
StormReady certification	Yes	
Firewise Communities certification	No	
Public-private partnership initiatives addressing disaster-related issues	Yes	***Industrial Mutual Aid Organization***
Other	Yes	***Informational brochures; information updated and made available daily on local government access channel***
How can these capabilities be expanded and improved to reduce risk?		

Safe Growth Audit

Use this worksheet to identify gaps in your community's growth guidance instruments and improvements that could be made to reduce vulnerability to future development.

Comprehensive Plan	Yes	No
Land Use		
1. Does the future land-use map clearly identify natural hazard areas?	✓	
Identifies inundation areas and delineates wetland areas.		
2. Do the land-use policies discourage development or redevelopment within natural hazard areas?	✓	
3. Does the plan provide adequate space for expected future growth in areas located outside natural hazard areas?	✓	
Transportation	Yes	No
1. Does the transportation plan limit access to hazard areas?	✓	
2. Is transportation policy used to guide growth to safe locations?	✓	
3. Are movement systems designed to function under disaster conditions (e.g., evacuation)?	✓	
In conjunction with Law Enforcement.		
Environmental Management	Yes	No
1. Are environmental systems that protect development from hazards identified and mapped?	✓	
Levee maps; FIRMs; GIS and LIDAR		
2. Do environmental policies maintain and restore protective ecosystems?	✓	
Yes, policies are in place and they do both.		
3. Do environmental policies provide incentives to development that is located outside protective ecosystems?	✓	
Through zoning and BMPs		
Public Safety	Yes	No
1. Are the goals and policies of the comprehensive plan related to those of the FEMA Local Hazard Mitigation Plan?	✓	
Although the goals of each align, they could be strengthened.		
2. Is safety explicitly included in the plan's growth and development policies?	✓	
Public safety is mentioned. See p. 125 of Comprehensive Plan (CF-6); and in infrastructure element of the plan.		
3. Does the monitoring and implementation section of the plan cover safe growth objectives?	✓	

P. 71, goal #7 of Comprehensive Plan and in the implementation section.		
Zoning Ordinance	Yes	No
1. Does the zoning ordinance conform to the comprehensive plan in terms of discouraging development or redevelopment within natural hazard areas?	✓	
2. Does the ordinance contain natural hazard overlay zones that set conditions for land use within such zones?		✓
Contains a wetlands zoning district with conditions, but needs strengthening.		
3. Do rezoning procedures recognize natural hazard areas as limits on zoning changes that allow greater intensity or density of use?		✓
Nothing too specific about this in the zoning ordinance.		
4. Does the ordinance prohibit development within, or filling of, wetlands, floodways, and floodplains?		✓
Zoning ordinance does not do this. No floodways in the parish, but conditions on floodplain development.		
Subdivision Regulations	Yes	No
1. Do the subdivision regulations restrict the subdivision of land within or adjacent to natural hazard areas?		✓
2. Do the regulations provide for conservation subdivisions or cluster subdivisions in order to conserve environmental resources?		✓
However, there is a policy in the Comprehensive Plan up update the code to allow this.		
3. Do the regulations allow density transfers where hazard areas exist?		✓
Capital Improvement Program and Infrastructure Policies	Yes	No
1. Does the capital improvement program limit expenditures on projects that would encourage development in areas vulnerable to natural hazards?		✓
2. Do infrastructure policies limit extension of existing facilities and services that would encourage development in areas vulnerable to natural hazards?		✓
3. Does the capital Improvement program provide funding for hazard mitigation projects identified in the FEMA Mitigation Plan?		✓
The CIP could be used in this manner if the Parish Council is willing.		
Other	Yes	No
1. Do small area or corridor plans recognize the need to avoid or mitigation natural hazards?		✓
However, the Paul Maillard Corridor Study currently in progress should do this.		
2. Does the building code contain provisions to strengthen or elevate construction to withstand hazard forces?	✓	

3. Do economic development or redevelopment strategies include provisions for mitigation natural hazards?		✓
4. Is there an adopted evacuation and shelter plan to deal with emergencies from natural hazards?	✓	
St. Charles Parish maintains in-parish evacuation/sheltering plans as well as teaming agreements with more northern parishes to receive and shelter St. Charles evacuees.		

Mitigation Action Evaluation Worksheet

Use this worksheet to help evaluate and prioritize each mitigation action being considered by the planning team. For each action, evaluate the potential benefits and/or likelihood of successful implementation for the criteria defined below.

Rank each of the criteria with a -1, 0 or 1 using the following scale:

- 1 = Highly effective or feasible
- 0 = Neutral
- -1 = Ineffective or not feasible

Example Evaluation Criteria

Life Safety – How effective will the action be at protecting lives and preventing injuries?

Property Protection – How significant will the action be at eliminating or reducing damage to structures and infrastructure?

Technical – Is the mitigation action technically feasible? Is it a long-term solution? Eliminate actions that, from a technical standpoint, will not meet the goals.

Political – Is there overall public support for the mitigation action? Is there the political will to support it?

Legal – Does the community have the authority to implement the action?

Environmental – What are the potential environmental impacts of the action? Will it comply with environmental regulations?

Social – Will the proposed action adversely affect one segment of the population? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?

Administrative – Does the community have the personnel and administrative capabilities to implement the action and maintain it or will outside help be necessary?

Local Champion – Is there a strong advocate for the action or project among local departments and agencies that will support the action's implementation?

Other Community Objectives – Does the action advance other community objectives, such as capital improvements, economic development, environmental quality, or open space preservation? Does it support the policies of the comprehensive plan?

Worksheet 6.1

Mitigation Action Evaluation Worksheet

Mitigation Action	Life Safety	Property Protection	Technical	Political	Legal	Environmental	Social	Administrative	Local Champion	Other Community Objectives	Total Score
Local Plans and Regulations											
Structure and Infrastructure Projects											
Natural Systems Protection											
Education and Awareness Programs											

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	
Project Title:	
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	
Partners:	
Potential Funding:	
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	
Priority:	
Worksheet completed by: **(Name and Department)**	

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: To Date:
Mitigation Action #	
Project Title	
Responsible Agency	
Contact Name	
Contact Phone	
Contact Email	
Project Status [check applicable box(es)]	☐ Project Completed ☐ Project Cancelled ☐ Project on Schedule ☐ Anticipated Completion Date: _____ ☐ Project Delayed Explain: _____

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Plan Update Evaluation Worksheet

Plan Section	Considerations	Explanation
Planning Process	Should new jurisdictions and/or districts be invited to participate in future plan updates?	
	Have any internal or external agencies been invaluable to the mitigation strategy?	
	Can any procedures (e.g., meeting announcements, plan updates) be done differently or more efficiently?	
	Has the Planning Team undertaken any public outreach activities?	
	How can public participation be improved?	
	Have there been any changes in public support and/or decision- maker priorities related to hazard mitigation?	
Capability Assessment	Have jurisdictions adopted new policies, plans, regulations, or reports that could be incorporated into this plan?	
	Are there different or additional administrative, human, technical, and financial resources available for mitigation planning?	
	Are there different or new education and outreach programs and resources available for mitigation activities?	
	Has NFIP participation changed in the participating jurisdictions?	
Risk Assessment	Has a natural and/or technical or human-caused disaster occurred?	
	Should the list of hazards addressed in the plan be modified?	
	Are there new data sources and/or additional maps and studies available? If so, what are they and what have they revealed? Should the information be incorporated into future plan updates?	
	Do any new critical facilities or infrastructure need to be added to the asset lists?	

	Have any changes in development trends occurred that could create additional risks?	
	Are there repetitive losses and/or severe repetitive losses to document?	
Mitigation Strategy	Is the mitigation strategy being implemented as anticipated? Were the cost and timeline estimates accurate?	
	Should new mitigation actions be added to the Action Plan? Should existing mitigation actions be revised or eliminated from the plan?	
	Are there new obstacles that were not anticipated in the plan that will need to be considered in the next plan update?	
	Are there new funding sources to consider?	
	Have elements of the plan been incorporated into other planning mechanisms?	
Plan Maintenance Procedures	Was the plan monitored and evaluated as anticipated?	
	What are needed improvements to the procedures?	

APPENDIX B

ST. CHARLES PARISH INVITEES TO PROJECT PLAN MEETING

St. Charles Parish
Hazard Mitigation Plan Update
Invitees to Project Plan Meeting

LAST NAME	FIRST NAME	TITLE	ORGANIZATION	PHONE	FAX	MAILING ADDRESS	EMAIL
Bernard	Thomas		National Weather Service			62300 Airport Rd., Slidell LA 70460	
Bischoff	Carl	QA Coordinator	Public Works	504-400-2766	985-725-2254		cbischoff@stcharlesgov.net
Black	Mart		Providence	225-766-7400	225-766-2763		martblack@providenceeng.com
Boe	Buddy	Chief Administrative Officer	St. Charles Parish - County Administration	985-783-5000	985-783-1216		bboe@stcharlesgov.net
Brantley	Chris		USACE	985-764-7484		PO Box 216, Norco LA 70079	christopher.g.brantley@usace.army.mil
Champagne	Greg	Assessor		985-783-6281	985-783-6593		assessor@stcharlesassessor.com
Chiasson	Carla	Grants Specialist II	SCP Grants Office	985-783-5165		PO Box 302, Hahnville LA 70057	cchiasson@stcharlesgov.net
Clay	Butch	Operations Manager	St. Charles Wastewater	985-783-5100	985-785-6503	100 River Oaks, Destrehan	butchclay@stcharlesgov.net
Cooper	Brenda	Hazard Mitigation	GOHSEP	225-267-2523	225-267-2605	1500 North Main St., Baton Rouge LA 70802	brenda.cooper@la.gov
Faucheux	Corey		Economic Development Agency				cfaucheux@stcharlesgov.net
Fisher-Perrier	Julia	Councilwoman	Board of Commissions	504-376-3641	985-308-0566		jperrier@stcharlesgov.net
Fletcher	Traci	Councilman	Board of Commissions				tfletcher@stcharlesgov.net
Foret	Duane	Director	Parks and Recreation	985-331-3005	985-783-5095		dforet@stcharlesgov.net
Frangella	Carmine	Planning Commissioner					bamashell@cox.net
Gares	Ross	Plant Manager	Rain CII Norco	504-301-7441	985-764-2110		rgares@raincii.com
Gaubert	Reggie	Fire Chief	Fire District	504-559-8737		169 Lincoln St., Hahnville LA 70057	reggie@hvfd.net
Gros	Darren	Sergeant	St. Charles Sheriff's Office				dgros@stcharlessheriff.org
Higdon	Dawn	Paralegal	St. Charles Parish Legal Department	985-783-5013			dhigdon@stcharlesgov.net
Johnson	Jason		Industry				jason.johnson@arkema.com
Kernan	Kacy		United Way of St. Charles	985-331-9063		13207 River Rd., Luling LA	kacyk@uwaysc.org
Louque	Herman	Board Member	NORCO Civic Association	985-764-6343		578 Marino Dr., Norco LA 70079	
Marousek	Kim	Planning Director	St. Charles Parish - Planning Community Development	985-783-5060	985-783-6447		kmarousek@stcharlesgov.net
Martin	Monica		Providence	225-766-7400	225-766-2763		monicamartin@providenceeng.com
Martinez	Luis	GIS Coordinator	St. Charles Parish - Geographic Information Systems	504-235-1902	985-703-1693	171 Keller St., Hahnville LA	lmartinez@stcharlesgov.net
Matherne	Earl	C2M Administrator	St. Charles Parish - Flood Plain Administration	985-783-5060	985-783-6447	PO Box 302, Hahnville LA 70057	ematherne@stcharlesgov.net
O'Malley	Pat		School District				pomalley@stcharles.k12.la.us
Patecek	Irvin	Disaster Specialist	American Red Cross	504-915-1823			irvin.patecek@redcross.org
Perry	Ron		Local Emergency Management				rperry@stcharlesgov.net
Robert, Jr.	Rickey	Operations Manager	St. Charles Parish Waterworks	985-783-5110		301 3rd St., Luling LA	rrobert@scpwater.org
Rogers	Kade	Coordinator of Safety, Security & Emergency Preparedness	SCPPS	985-785-3121		13855 River Road, Luling LA	krogers@stcharles.k12.la.us
Rome, Jr.	John	Executive Director of Physical Plant Services	St. Charles Parish Public Schools	985-785-3116	985-785-9686	13855 River Road, Luling LA 70070	jrome@stcharles.k12.la.us
Rousseau	Ken	EMS Director	St. Charles Hospital	504-415-4780			krousseau@stch.net

St. Charles Parish
Hazard Mitigation Plan Update
Invitees to Project Plan Meeting

LAST NAME	FIRST NAME	TITLE	ORGANIZATION	PHONE	FAX	MAILING ADDRESS	EMAIL
Roussel	Pam	Region 3 Coordinator	GOHSEP	225-439-2047	985-851-4472		pam.roussel@la.gov
Schmitt	Rene		State Agencies				rschmit@agcenter.lsu.edu
Slater	Ann		Providence	225-766-7400	225-766-2763		ann.m.slater@gmail.com
Songy	Daniel	Field Engineer	Emerald Coast Services	504-739-6625			danielsongy@cox.net; dsong90@entergy.com
Swann	Adrienne	Grants Specialist I	SCP Grants Office	985-331-3017		PO Box 302, Hahnville LA 70057	aswann@stcharlesgov.net
Tastet	Jason	Senior Emergency Coordinator	St. Charles EOC	985-783-5050	985-783-6375	PO Box 302, Hahnville LA 70057	jtastet@scpeoc.org
Trosclair	Randy	Executive Director	Lafourche Basin Levee District	225-265-7545	225-265-3095	PO Box 670, Vacherie LA 70090	rtrosclair@lbld.us.com
Vial	Sonny		Parish Attorney's Office				svial@stcharlesgov.net
Wilson	Steve		Pontchartrain Levee District			PO Box 426, Lutcher LA 70071	stevewilson@cox.net
Woodruff	Billy	Councilman	Board of Commissions				bwoodruff@stcharlesgov.net

APPENDIX C

ST. CHARLES PARISH SIGN-IN SHEETS

St. Charles Parish
Project Initation Meeting
November 19, 2013

LAST NAME	FIRST NAME	TITLE	ORGANIZATION	PHONE	FAX	MAILING ADDRESS	EMAIL	SIGNATURE
Bernard	Thomas		National Weather Service					
Black	Mart Kellow		Providence	225-766-7400	225-766-2763		martblack@providenceeng.com	
Boe	Buddy	Chief Administrative Officer	St. Charles Parish - County Administration	985-783-5000	985-783-1216		bboe@stcharlesgov.net	
Brantley	Chris		National Weather Service					
Brou	Robbie		Utility District					
Cardella	Joe		St. Charles Sheriff's Office					
Champagne	Greg		St. Charles Sheriff's Office					
Dias	Joan		United Way Community Faith Based Organization					
Faucheux	Corey		Economic Development Agency					
Fisher	J.		Board of Commissions				jperrier@stcharlesgov.net	
Fletcher	Tracy		Board of Commissions					
Foret	Duane	Director	Parks and Recreation	985-331-3005	985-783-5095		dforet@stcharlesgov.net	
Gares	Ross	Plant Manager	Rain CII Norco	504-301-7441	985-764-2110		rgares@raincii.com	
Gaubert	Reggie	FIRE CHIEF	Fire District	504 559 8737		169 Lincoln St Hahnville	Reggie@stcharlesgov.net	
Johnson	Jason		Industry					
Madere	Rodney	Major	St. Charles Parish Sheriffs Office	985-783-1135	985-783-1181	260 Judge Edward Dufresne Pkwy		
Marousek	Kim	Planning Director	St. Charles Parish - Planning Community Development	985-783-5060	985-783-6447		kmarousek@stcharlesgov.net	
Martin	Monica		Providence	225-766-7400	225-766-2763		monicamartin@providenceeng.com	
Martinez	Luis	GIS Coordinator	St. Charles Parish - Geographic Information Systems	504-235-1902	985-703-1693	171 Keller St. Hahnville, LA	lmartinez@stcharlesgov.net	
Matherne	Earl	C2M Administrator	St. Charles Parish - Flood Plain Administration	985-783-5060	985-783-6447	POB 302, Hahnville	ematherne@stcharlesgov.net	
O'Malley	Pat		School District					
Patecek	Irvin	Disaster Specialist	American Red Cross	504-915-1823			irvin.patecek@redcross.org	
Perry	Ron		Local Emergency Management					
Rome	Jim		School District					
Rome, Jr.	John	Executive Director of Physical Plant Services	St. Charles Parish Public Schools	985-785-3116	985-785-9686	13855 RIVER ROAD, LULING, LA 70070	jrome@stcharles.k12.la.us	
Rousseau	Ken		St. Charles Hospital					
Roussel	Pam	Region 3 Coordinator	GOHSEP	225-439-2047	985-851-4472		pam.roussel@la.gov	
Schmitt	Rene		State Agencies					

St. Charles Parish
Project Initation Meeting
November 19, 2013

LAST NAME	FIRST NAME	TITLE	ORGANIZATION	PHONE	FAX	MAILING ADDRESS	EMAIL	SIGNATURE
Scholle	Sam		Public Works, Storm Management, Transportation Roads & Bridges, Sanitation Dept.					
Slater	Ann below		Providence	225-766-7400	225-766-2763		ann.m.slater@gmail.com	
Songy	Daniel	Field Engineer	Emerald Coast Services	504-739-6625			danielssongy@cox.net; dsong90@entergy.com	
Tastet	Jason		Local Emergency Management	985-783-5330	985-783-6375	PO BOX 302, HAHNVILLE, 70057	jtastet@scpeoc.org	
Trosclair	Randy		Flood Control District					
Troxler	Tab		Tax Assessor's Office					
Vial	Sonny		Parish ~~City~~ Attorney's Office					
Wilson	Steve		Flood Control District					
Woodruff	Billy		Board of Commissions					
✓ LOUQUE	HERMAN	BOARD MEMBER	NORCO CIVIC ASSOCIATION	985-764-6343		578 MARINO DR. NORCO 70079		
✓ Kernan	Kacy	Director of Comm Impact	United Way of St. Charles	331-9063		13209 River Rd Luling, LA	Kacy K @ UWaysc.org	
✓ Higdon	Dawn	Paralegal	SCP Legal Dept	783-5013			dhigdon@stcharlesgov.net	
✓ ROBERT JR.	RICKEY	OPERATIONS MANAGER	SCP WATERWORKS	783-5110		301 3rd ST. LULING LA	rrobert@SCPWATER.ORG	
✓ Rogers	Kaye	Coord. of Safety, Security & Emer Prep	SCPPS	785-3121		13855 River Road, Luling LA	krogers@stcharles.k12.la.us	
✓ Chiasson	Carla	Grants Specialist II	SCP Grants office	783-5165		PO Box 302 Hahnville, LA 70057	cchiasson@stcharlesgov.net	
✓ Swann	Adrienne	Grants Specialist I	SCP Grants office	331-3017		" "	aswann@stcharlesgov.net	
✓ Black	MART	Sr. Planner	Providence	985 580-1893			martblack@providenceeng.com	
✓ Slater	Ann							
✓ CHAMPAGNE	GREG JR	(ASSESSOR) IT/GIS DIR.	ST. CHARLES ASSESSOR	783-6281	783-6593		ASSESSOR@STCHARLESASSESSOR.COM	

St. Charles Parish
Hazard Mitigation Plan Update
Hazard Profile / Risk Assessment Meeting
February 18, 2014

SIGNATURE	LAST NAME	FIRST NAME	TITLE	ORGANIZATION	PHONE	FAX	MAILING ADDRESS	EMAIL
	Bernard	Thomas		National Weather Service			62300 Airport Rd., Slidell LA 70460	
	Bischoff	Carl		Public Works	504-400-	2766		cbischoff@stcharlesgov.net
	Black	Mart		Providence	225-766-7400	225-766-2763		martblack@providenceeng.com
	Boe	Buddy	Chief Administrative Officer	St. Charles Parish - County Administration	985-783-5000	985-783-1216		bboe@stcharlesgov.net
	Brantley	Chris		USACE	985-764-7484		PO Box 216, Norco LA 70079	christopher.g.brantley@usace.army.mil
	Champagne	Greg	Assessor		985-783-6281	985-783-6593		assessor@stcharlesassessor.com
	Chiasson	Carla	Grants Specialist II	SCP Grants Office	985-783-5165		PO Box 302, Hahnville LA 70057	cchiasson@stcharlesgov.net
	Cooper	Brenda	Hazard Mitigation	GOHSEP	225-267-2523	225-267-2605	1500 North Main St., Baton Rouge LA 70802	brenda.cooper@la.gov
	Faucheux	Corey		Economic Development Agency				cfaucheux@stcharlesgov.net
	Fisher-Perrier	Julia	Councilman	Board of Commissions				jperrier@stcharlesgov.net
	Fletcher	Traci	Councilman	Board of Commissions				tfletcher@stcharlesgov.net
	Foret	Duane	Director	Parks and Recreation	985-331-3005	985-783-5095		dforet@stcharlesgov.net
	Frangella	Carmine	Planning Commissioner					bamashell@cox.net
	Gares	Ross	Plant Manager	Rain CII Norco	504-301-7441	985-764-2110		rgares@raincii.com
	Gaubert	Reggie	Fire Chief	Fire District	504-559-8737		169 Lincoln St., Hahnville LA 70057	reggie@hvfd.net
	Gros	Darren	Sergeant	St. Charles Sheriff's Office				dgros@stcharlessheriff.org
	Higdon	Dawn	Paralegal	St. Charles Parish Legal Department	985-783-5013			dhigdon@stcharlesgov.net
	Johnson	Jason		Industry				jason.johnson@arkema.com
	Kernan	Kacy		United Way of St. Charles	985-331-9063		13207 River Rd., Luling LA	kacyk@uwaysc.org
	Lougue	Herman	Board Member	NORCO Civic Association	985-764-6343		578 Marino Dr., Norco LA 70079	
	Marousek	Kim	Planning Director	St. Charles Parish - Planning Community Development	985-783-5060	985-783-6447		kmarousek@stcharlesgov.net
	Martin	Monica		Providence	225-766-7400	225-766-2763		monicamartin@providenceeng.com
	Martinez	Luis	GIS Coordinator	St. Charles Parish - Geographic Information Systems	504-235-1902	985-703-1693	171 Keller St., Hahnville LA	lmartinez@stcharlesgov.net
	Matherne	Earl	C2M Administrator	St. Charles Parish - Flood Plain Administration	985-783-5060	985-783-6447	PO Box 302, Hahnville LA 70057	ematherne@stcharlesgov.net
	O'Malley	Pat		School District				pomalley@stcharles.k12.la.us
	Patecek	Irvin	Disaster Specialist	American Red Cross	504-915-1823			irvin.patecek@redcross.org
	Perry	Ron		Local Emergency Management				rperry@stcharlesgov.net
	Robert, Jr.	Rickey	Operations Manager	St. Charles Parish Waterworks	985-783-5110		301 3rd St., Luling LA	rrobert@scpwater.org
	Rogers	Kade	Coordinator of Safety, Security & Emergency Preparedness	SCPPS	985-785-3121		13855 River Road, Luling LA	krogers@stcharles.k12.la.us
	Rome, Jr.	John	Executive Director of Physical Plant Services	St. Charles Parish Public Schools	985-785-3116	985-785-9686	13855 River Road, Luling LA 70070	jrome@stcharles.k12.la.us

St. Charles Parish
Hazard Mitigation Plan Update
Hazard Profile / Risk Assessment Meeting
February 18, 2014

SIGNATURE	LAST NAME	FIRST NAME	TITLE	ORGANIZATION	PHONE	FAX	MAILING ADDRESS	EMAIL
	Rousseau	Ken	EMS Director	St. Charles Hospital	504-415-4780			krousseau@stch.net
	Roussel	Pam	Region 3 Coordinator	GOHSEP	225-439-2047	985-851-4472		pam.roussel@la.gov
Rene' Schmitt	Schmitt	Rene		State Agencies				rschmit@agcenter.lsu.edu
	Slater	Ann		Providence	225-766-7400	225-766-2763		ann.m.slater@gmail.com
	Songy	Daniel	Field Engineer	Emerald Coast Services	504-739-6625			danielsongy@cox.net; dsong90@entergy.com
	Swann	Adrienne	Grants Specialist I	SCP Grants Office	985-331-3017		PO Box 302, Hahnville LA 70057	aswann@stcharlesgov.net
	Tastet	Jason	Senior Emergency Coordinator	St. Charles EOC	985-783-5050	985-783-6375	PO Box 302, Hahnville LA 70057	jtastet@scpeoc.org
	Trosclair	Randy		Lafourche Basin Levee District			PO Box 670, Vacherie LA 70090	rtrosclair@lbld.us.com
	Vial	Sonny		Parish Attorney's Office				svial@stcharlesgov.net
	Wilson	Steve		Pontchartrain Levee District			PO Box 426, Lutcher LA 70071	stevewilson@cox.net
	Woodruff	Billy	Councilman	Board of Commissions				bwoodruff@stcharlesgov.net
Butch Clay	Clay	Butch	Operations Manager	St. Charles Wastewater	985-783-5140	985-783-6593	100 River Oaks, Destrehan	butchclay@stcharlesgov.net

St. Charles Parish
Hazard Mitigation Plan Update
Mitigation Strategy and Maps Meeting
April 15, 2014

SIGNATURE	LAST NAME	FIRST NAME	TITLE	ORGANIZATION	PHONE	FAX	MAILING ADDRESS	EMAIL
	Bernard	Thomas		National Weather Service			62300 Airport Rd., Slidell LA 70460	
	Bischoff	Carl	QA Coordinator	Public Works	504-400-2766	985-725-2254		cbischoff@stcharlesgov.net
	Black	Mart		Providence	225-766-7400	225-766-2763		martblack@providenceeng.com
	Boe	Buddy	Chief Administrative Officer	St. Charles Parish - County Administration	985-783-5000	985-783-1216		bboe@stcharlesgov.net
	Brantley	Chris		USACE	985-764-7484		PO Box 216, Norco LA 70079	christopher.g.brantley@usace.army.mil
	Champagne	Greg	Assessor		985-783-6281	985-783-6593		assessor@stcharlesassessor.com
	Chiasson	Carla	Grants Specialist II	SCP Grants Office	985-783-5165		PO Box 302, Hahnville LA 70057	cchiasson@stcharlesgov.net
	Clay	Butch	Operations Manager	St. Charles Wastewater	985-783-5100	985-785-6503	100 River Oaks, Destrehan	butchclay@stcharlesgov.net
	Cooper	Brenda	Hazard Mitigation	GOHSEP	225-267-2523	225-267-2605	1500 North Main St., Baton Rouge LA 70802	brenda.cooper@la.gov
	Faucheux	Corey		Economic Development Agency				cfaucheux@stcharlesgov.net
	Fisher-Perrier	Julia	Councilwoman	Board of Commissions	504-376-3641	985-308-0566		jperrier@stcharlesgov.net
	Fletcher	Traci	Councilman	Board of Commissions				tfletcher@stcharlesgov.net
	Foret	Duane	Director	Parks and Recreation	985-331-3005	985-783-5095		dforet@stcharlesgov.net
	Frangella	Carmine	Planning Commissioner					bamashell@cox.net
	Gares	Ross	Plant Manager	Rain CII Norco	504-301-7441	985-764-2110		rgares@raincii.com
	Gaubert	Reggie	Fire Chief	Fire District	504-559-8737		169 Lincoln St., Hahnville LA 70057	reggie@hvfd.net
	Gros	Darren	Sergeant	St. Charles Sheriff's Office				dgros@stcharlessheriff.org
	Higdon	Dawn	Paralegal	St. Charles Parish Legal Department	985-783-5013			dhigdon@stcharlesgov.net
	Johnson	Jason		Industry				jason.johnson@arkema.com
	Kernan	Kacy		United Way of St. Charles	985-331-9063		13207 River Rd., Luling LA	kacyk@uwaysc.org
	Louque	Herman	Board Member	NORCO Civic Association	985-764-6343		578 Marino Dr., Norco LA 70079	
	Marousek	Kim	Planning Director	St. Charles Parish - Planning Community Development	985-783-5060	985-783-6447		kmarousek@stcharlesgov.net
	Martin	Monica		Providence	225-766-7400	225-766-2763		monicamartin@providenceeng.com
	Martinez	Luis	GIS Coordinator	St. Charles Parish - Geographic Information Systems	504-235-1902	985-703-1693	171 Keller St., Hahnville LA	lmartinez@stcharlesgov.net
	Matherne	Earl	C2M Administrator	St. Charles Parish - Flood Plain Administration	985-783-5060	985-783-6447	PO Box 302, Hahnville LA 70057	ematherne@stcharlesgov.net
	O'Malley	Pat		School District				pomalley@stcharles.k12.la.us
	Patecek	Irvin	Disaster Specialist	American Red Cross	504-915-1823			irvin.patecek@redcross.org
	Perry	Ron		Local Emergency Management				rperry@stcharlesgov.net
	Robert, Jr.	Rickey	Operations Manager	St. Charles Parish Waterworks	985-783-5110		301 3rd St., Luling LA	rrobert@scpwater.org
	Rogers	Kade	Coordinator of Safety, Security & Emergency Preparedness	SCPPS	985-785-3121		13855 River Road, Luling LA	krogers@stcharles.k12.la.us

St. Charles Parish
Hazard Mitigation Plan Update
Mitigation Strategy and Maps Meeting
April 15, 2014

SIGNATURE	LAST NAME	FIRST NAME	TITLE	ORGANIZATION	PHONE	FAX	MAILING ADDRESS	EMAIL
	Rome, Jr.	John	Executive Director of Physical Plant Services	St. Charles Parish Public Schools	985-785-3116	985-785-9686	13855 River Road, Luling LA 70070	jrome@stcharles.k12.la.us
	Rousseau	Ken	EMS Director	St. Charles Hospital	504-415-4780			krousseau@stch.net
	Roussel	Pam	Region 3 Coordinator	GOHSEP	225-439-2047	985-851-4472		pam.roussel@la.gov
	Schmitt	Rene		State Agencies				rschmit@agcenter.lsu.edu
	Slater	Ann		Providence	225-766-7400	225-766-2763		ann.m.slater@gmail.com
	Songy	Daniel	Field Engineer	Emerald Coast Services	504-739-6625			danielsongy@cox.net; dsong90@entergy.com
	Swann	Adrienne	Grants Specialist I	SCP Grants Office	985-331-3017		PO Box 302, Hahnville LA 70057	aswann@stcharlesgov.net
	Tastet	Jason	Senior Emergency Coordinator	St. Charles EOC	985-783-5050	985-783-6375	PO Box 302, Hahnville LA 70057	jtastet@scpeoc.org
	Trosclair	Randy	Executive Director	Lafourche Basin Levee District	225-265-7545	225-265-3095	PO Box 670, Vacherie LA 70090	rtrosclair@lbld.us.com
	Vial	Sonny		Parish Attorney's Office				svial@stcharlesgov.net
	Wilson	Steve		Pontchartrain Levee District			PO Box 426, Lutcher LA 70071	stevewilson@cox.net
	Woodruff	Billy	Councilman	Board of Commissions				bwoodruff@stcharlesgov.net
Holly Fonseca	Fonseca	Holly	Grants Officer	St. Charles Parish Grants Office	985-783-5126	985-783-2187	PO Box 302, Hahnville, LA 70057	hfonseca@stcharlesgov.net

St. Charles Parish
Hazard Mitigation Plan Update
Goal Setting Meeting
June 17, 2014

SIGNATURE	LAST NAME	FIRST NAME	TITLE	ORGANIZATION	PHONE	FAX	MAILING ADDRESS	EMAIL
	Bernard	Thomas		National Weather Service			62300 Airport Rd., Slidell LA 70460	
	Bischoff	Carl	QA Coordinator	Public Works	504-400-2766	985-725-2254		cbischoff@stcharlesgov.net
	Black	Mart		Providence	225-766-7400	225-766-2763		martblack@providenceeng.com
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	Champagne	Greg	Assessor		985-783-6281	985-783-6593		assessor@stcharlesassessor.com
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	Cooper	Brenda	Hazard Mitigation	GOHSEP	225-267-2523	225-267-2605	1500 North Main St., Baton Rouge LA 70802	brenda.cooper@la.gov
	Faucheux	Corey		Economic Development Agency				cfaucheux@stcharlesgov.net
	Fisher-Perrier	Julia	Councilwoman	Board of Commissions	504-376-3641	985-308-0566		jperrier@stcharlesgov.net
	Fletcher	Traci	Councilman	Board of Commissions				tfletcher@stcharlesgov.net
	Foret	Duane	Director	Parks and Recreation	985-331-3005	985-783-5095		dforet@stcharlesgov.net
	Frangella	Carmine	Planning Commissioner					bamashell@cox.net
	Gares	Ross	Plant Manager	Rain CII Norco	504-301-7441	985-764-2110		rgares@raincii.com
	Gaubert	Reggie	Fire Chief	Fire District	504-559-8737		169 Lincoln St., Hahnville LA 70057	reggie@hvfd.net
	Gros	Darren	Sergeant	St. Charles Sheriff's Office				dgros@stcharlessheriff.org
	Higdon	Dawn	Paralegal	St. Charles Parish Legal Department	985-783-5013			dhigdon@stcharlesgov.net
	Johnson	Jason		Industry				jason.johnson@arkema.com
	Kernan	Kacy		United Way of St. Charles	985-331-9063		13207 River Rd., Luling LA	kacyk@uwaysc.org
	Louque	Herman	Board Member	NORCO Civic Association	985-764-6343		578 Marino Dr., Norco LA 70079	
	Marousek	Kim	Planning Director	St. Charles Parish - Planning Community Development	985-783-5060	985-783-6447		kmarousek@stcharlesgov.net
	Martin	Monica		Providence	225-766-7400	225-766-2763		monicamartin@providenceeng.com
	Martinez	Luis	GIS Coordinator	St. Charles Parish - Geographic Information Systems	504-235-1902	985-703-1693	171 Keller St., Hahnville LA	lmartinez@stcharlesgov.net
	Matherne	Earl	C2M Administrator	St. Charles Parish - Flood Plain Administration	985-783-5060	985-783-6447	PO Box 302, Hahnville LA 70057	ematherne@stcharlesgov.net
	O'Malley	Pat		School District				pomalley@stcharles.k12.la.us
	Patecek	Irvin	Disaster Specialist	American Red Cross	504-915-1823			irvin.patecek@redcross.org
	Perry	Ron		Local Emergency Management				rperry@stcharlesgov.net
	Robert, Jr.	Rickey	Operations Manager	St. Charles Parish Waterworks	985-783-5110		301 3rd St., Luling LA	rrobert@scpwater.org
	Rogers	Kade	Coordinator of Safety, Security & Emergency Preparedness	SCPPS	985-785-3121		13855 River Road, Luling LA	krogers@stcharles.k12.la.us

St. Charles Parish
Hazard Mitigation Plan Update
Goal Setting Meeting
June 17, 2014

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	Rome, Jr.	John	Executive Director of Physical Plant Services	St. Charles Parish Public Schools	985-785-3116	985-785-9686	13855 River Road, Luling LA 70070	jrome@stcharles.k12.la.us
	Rousseau	Ken	EMS Director	St. Charles Hospital	504-415-4780			krousseau@stch.net
	Roussel	Pam	Region 3 Coordinator	GOHSEP	225-439-2047	985-851-4472		pam.roussel@la.gov
	Schmitt	Rene		State Agencies				rschmit@agcenter.lsu.edu
Ann Slater	Slater	Ann		Providence	225-766-7400	225-766-2763		ann.m.slater@gmail.com
	Songy	Daniel	Field Engineer	Emerald Coast Services	504-739-6625			danielsongy@cox.net; dsong90@entergy.com
	Swann	Adrienne	Grants Specialist I	SCP Grants Office	985-331-3017		PO Box 302, Hahnville LA 70057	aswann@stcharlesgov.net
	Tastet	Jason	Senior Emergency Coordinator	St. Charles EOC	985-783-5050	985-783-6375	PO Box 302, Hahnville LA 70057	jtastet@scpeoc.org
	Trosclair	Randy	Executive Director	Lafourche Basin Levee District	225-265-7545	225-265-3095	PO Box 670, Vacherie LA 70090	rtrosclair@lbld.us.com
	Vial	Sonny		Parish Attorney's Office				svial@stcharlesgov.net
	Wilson	Steve		Pontchartrain Levee District			PO Box 426, Lutcher LA 70071	stevewilson@cox.net
	Woodruff	Billy	Councilman	Board of Commissions				bwoodruff@stcharlesgov.net

APPENDIX D

ST. CHARLES PARISH RESOLUTION

ST. CHARLES PARISH

OFFICE OF THE COUNCIL

P.O. BOX 302 • HAHNVILLE, LOUISIANA 70057
(985) 783-5000 • Fax: (985) 783-2067
www.stcharlesparish-la.gov

COUNCIL OFFICE MEMORANDUM

DATE: JANUARY 15, 2016

TO: MR. RONALD J. PERRY
EMERGENCY PREPAREDNESS DIRECTOR

FROM: TIFFANY K. CLARK
COUNCIL SECRETARY

RE: PARISH WIDE HAZARD MITIGATION PLAN

On January 12, 2015, the St. Charles Parish Council adopted Resolution No. 6130 adopting the St. Charles Parish Hazard Mitigation Plan.

A copy of the resolution is enclosed for your records.

TKC/sm

Enclosure

cc: Parish Council
Mr. Grant Dussom w/enclosure
Ms. Holly Fonseca w/enclosure
✓Providence Engineering & Env. Group LLC
w/enclosure

2014-0438

INTRODUCED BY: V.J. ST.PIERRE, JR., PARISH PRESIDENT
ST. CHARLES PARISH COUNCIL

RESOLUTION NO. 6130

A resolution adopting the St. Charles Parish Hazard Mitigation Plan.

WHEREAS, the St. Charles Parish Council has received grant funds from the Federal Emergency Management Agency, through the Governor's Office of Homeland Security and Emergency Preparedness, for the update of a hazard mitigation plan; and;

WHEREAS, our community has participated in the process to update a Disaster Mitigation Act compliant Hazard Mitigation Plan based on the FEMA guidance available; and,

WHEREAS, our community wishes to participate in the Hazard Mitigation Plan Update prepared by the St. Charles Parish government under the oversight of a Steering Committee comprised of Parish - wide representatives; and,

WHEREAS, St. Charles Parish and local representatives have participated in the mitigation planning process; and,

WHEREAS, appropriate opportunity for input by public and community officials has been provided through press releases, open meetings and availability of draft documents; and,

WHEREAS, the updated Plan has been recommended for adoption by the Steering Committee; and,

WHEREAS, adoption of the updated Plan is required prior to further consideration for FEMA funding under the following programs: Pre-Disaster Mitigation, Hazard Mitigation Grant Program, and Flood Mitigation Assistance Program.

NOW, THEREFORE, BE IT RESOLVED, THAT WE, THE MEMBERS OF THE ST. CHARLES PARISH COUNCIL do hereby approve the St. Charles Parish Hazard Mitigation Plan.

The foregoing resolution having been submitted to a vote, the vote thereon was as follows:

YEAS: SCHEXNAYDRE, LEWIS, WILSON, WOODRUFF, BENEDETTO, HOGAN, COCHRAN, FLETCHER, FISHER-PERRIER
NAYS: NONE
ABSENT: NONE

And the resolution was declared adopted this 12th day of January, 2015, to become effective five (5) days after publication in the Official Journal.

CHAIRMAN: _____
SECRETARY: _____
DLVD/PARISH PRESIDENT: _____
APPROVED: _____ DISAPPROVED: _____

PARISH PRESIDENT: _____
RETD/SECRETARY: _____
AT: 1:30pm RECD BY: _____

APPENDIX E

ST. CHARLES PARISH SUMMARY OF MEETING ATTENDEES

St. Charles Parish
Hazard Mitigation Plan Update
Summary of Meeting Attendees

Meeting #1 Project Initation Meeting November 19, 2013	Meeting #2 Hazard Profile / Risk Assessment Meeting February 18, 2014	Meeting #3 Mitigation Strategy and Maps Meeting April 15, 2014	Meeting #4 Goal Setting June 17, 2014	Meeting #5 Draft Plan Review September 16, 2014	LAST NAME	FIRST NAME	ORGANIZATION
	X	X	X	X	Bischoff	Carl	Public Works
X					Boe	Buddy	St. Charles Parish - County Administration
				X	Bourque	Armond	Luling Voilunteer Fire Department - Fire Chief
X					Champagne	Greg	
X	X	X	X	X	Chiasson	Carla	SCP Grants Office
	X	X		X	Clay	Butch	St. Charles Wastewater
	X	X	X	X	Cooper	Brenda	GOHSEP
X					Fisher-Perrier	Julia	Board of Commissions
		X		X	Fonseca	Holly	St. Charles Parish Grants Office
X					Foret	Duane	Parks and Recreation
X	X		X	X	Gares	Ross	Rain CII Norco
X					Gaubert	Reggie	Fire District
	X			X	Gros	Darren	St. Charles Sheriff's Office
X					Higdon	Dawn	St. Charles Parish Legal Department
	X				Johnson	Jason	Industry
X					Kernan	Kacy	United Way of St. Charles
X	X	X	X	X	Louque	Herman	NORCO Civic Association
X					Madere	Rodney	St. Charles Parish Sheriffs Office
X					Martinez	Luis	St. Charles Parish - Geographic Information Systems
X	X	X	X		Matherne	Earl	St. Charles Parish - Flood Plain Administration
X					Patecek	Irvin	American Red Cross
X	X	X	X	X	Perry	Ron	Local Emergency Management
X					Robert, Jr.	Rickey	St. Charles Parish Waterworks
X	X	X	X	X	Rogers	Kade	SCPPS
X	X				Rome, Jr.	John	St. Charles Parish Public Schools
X					Roussel	Pam	GOHSEP
	X				Schmitt	Rene	State Agencies

St. Charles Parish
Hazard Mitigation Plan Update
Summary of Meeting Attendees

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X					Songy	Daniel	Emerald Coast Services
X		X	X	X	Swann	Adrienne	SCP Grants Office
X	X	X	X	X	Tastet	Jason	St. Charles EOC
X					Vial	Sonny	Parish Attorney's Office

APPENDIX F

ST. CHARLES PARISH MILESTONE SCHEDULE

St. Charles Parish Hazard Mitigation Plan Update
Milestone Schedule

Task	Activity	2013						2014												2015		
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1.0	Project Award and Bidding																					
1.1	Conduct Bidding to Find Contractor																					
1.2	Negotiate Contract and Conduct Kick-off																					
2.0	Project Plan Meeting (#1)																					
2.1	Pre-Meeting Activities: Form Steering Committee, Mail Invitations, Prep for Meeting, Prep Handouts, & Conduct Meeting					#1																
2.2	Post Meeting Activities: Prep & Distribute Meeting Minutes, Update Contact List, Prep & Distribute Press Release																					
3.0	Hazard Profile/Risk Assessment Mtg. (#2)																					
3.1	Pre-Meeting Activities: Prep Hazard Summaries, Hazard Loss Data, Hazard Statistics, Maps, Other Handouts, Agenda, Meeting Reminder, Sign-In Sheet, & Conduct Meeting								#2													
3.2	Post Meeting Activities: Prep & Distribute Meeting Minutes, Prep Asset Inventory, Loss Estm, Update Maps, Hazard Tables, Critical Facilities, Contact List, Prep & Distribute Press Release																					
4.0	Mitigation Strategy/Maps Meeting (#3)																					
4.1	Pre-Meeting Activities: Prep Draft Mitig Measures Table, Prep Action Plans, Agenda, Meeting Reminder, Sign-In Sheet, & Conduct Meeting										#3											
4.2	Post-Meeting Activities: Update Mitig Measures Table, Contact List, Prep & Distribute Press Release, Receive Comments & Make Revisions																					
5.0	Goal Setting Meeting (#4)																					
5.1	Pre-Meeting Activities: Prep Updated Action Plan, Agenda, Meeting Reminder, Sign-In Sheet, Conduct Meeting												#4									
5.2	Post-Meeting Activities: Prep & Dist Meeting Minutes, Revise Action Plan, Update Contact List, Prep & Dist Press Release																					
6.0	Draft Presentation Meeting (#5)																					
6.1	Pre-Meeting Activities: Prepare Draft Plan, Distribute Draft to St. Comm, Prep Sign-In Sheet, Conduct Meeting															#5						
6.2	Post-Meeting Activities: Prep & Dist Meeting Minutes, Update Contact List, Make St. Comm Revisions to Plan, Prep Crosswalk																					
6.3	Review Process: Submit to GOHSEP, Receive & Respond to Comments, Coord Adoption, Submit Final to GOHSEP																					

APPENDIX G

ST. CHARLES PARISH HMP MEETING MINUTES

MEMO

To: **Jason Tastet, St. Charles Parish**

From: **Monica Martin, Providence Technical Services, LLC**

CC: **Attendance List – Attached**

Date: **December 3, 2013**

Re: **Project Initiation Meeting – Hazard Mitigation Plan Update**

This memo documents the meeting held on Tuesday, November 19, 2013, regarding the Hazard Mitigation Plan Update, which was attended by representatives from St. Charles Parish.

Introductions

Mr. Jason Tastet initiated the meeting by introducing speaker and project manager, Monica Martin, from Providence Technical Services, LLC (Providence) located in Baton Rouge, Louisiana. Ms. Martin introduced Mart Black and Ann Slater from Providence. All other attendees introduced themselves.

Project Overview and Schedule

The purpose of this meeting is to begin the process of updating the Parish's Hazard Mitigation Plan (HMP) that was finalized in March 2010. Ms. Martin gave a brief overview of the HMP and planning process. She explained that the Parish had been awarded a Pre-Disaster Mitigation (PDM) grant funded by the Federal Emergency Management Agency (FEMA). She stated that the Parish was one of very few communities that qualified for the grant. The grant is being used to update the HMP, which must be updated every five years. Due to new federal guidelines, the updated HMP will be different from the previous plan in two major areas:

1. The plan will contain a section discussing "sustainability", which is an important new focus for FEMA to reduce reliance on funding from the federal government.
2. The plan will also contain a repetitive loss strategy.

Mr. Mart Black, Senior Planner with Providence, then gave an overview of sustainability. To be considered a sustainable plan, the hazard mitigation plan must address current needs without compromising natural and financial resources or environmental quality. It must provide actions and goals to reduce risk to people and the community while reducing future reliance on federal funding.

Ms. Martin provided information on the development of a repetitive loss strategy for the 39 severe repetitive loss (SRL) structures and 591 repetitive loss (RL) structures. Providence will query both categories of homeowners (SRL and RL) for interest in mitigation projects for their structures. A database of the properties will be created based on inspections of the homes if the owners are interested in participating in future grants. Then the Steering Committee will determine a strategy for mitigation of these repetitive loss structures.

Ms. Martin reviewed the scope of work (Handout #1) and explained that Providence's role was to facilitate this process. She also emphasized the need for input from parish and community representatives. She then discussed the milestone schedule of this project stating that the period of performance ends in March 2015 (Handout #2).

Planned Meetings

Ms. Martin informed the attendees that today's meeting was considered the project initiation meeting (Meeting #1 of 5), and its purpose was to initiate the project and begin the planning process. Issues discussed in the planning process meeting included discussing any changes/additions that need to be made to the committee and the importance of attending the meetings or sending a delegate in a committee member's place. Ms. Martin requested that if anyone knew of someone that should be invited to be on the committee to call her at 225-766-7400. Ms. Martin requested that if anyone knew of existing plans that may be helpful in updating the hazard mitigation plan to please email her at monicamartin@providenceeng.com.

The hazard history and critical facilities will be discussed in the next meeting (Meeting #2). The Risk Assessment will include verifying hazard risks, hazard profiles, potential impacts of existing or future structures, and loss estimates. Ms. Martin also requested that the attendees come to the next meeting with critical facilities in mind.

The mitigation strategy will be discussed in Meeting #3. Included in this meeting will be lessons learned from recent disasters, a comparison of current mitigation goals to the updated risk assessment, an assessment of local capabilities, an update of action items and projects, and development of an implementation strategy. A review of maps will also be included in this meeting.

Ms. Martin stated that the focus of Meeting #4 will be setting goals. The committee will see where problems fall into categories and come up with goals based on the most prominent issues. Action items will be determined. Actions taken in the past will be discussed and a determination will be made if something needs to be changed or if that action was successful.

In Meeting #5, Providence will present the final draft and receive comments back from the committee. Plan maintenance and formal adoption of the plan will be discussed.

Steering Committee Role

Ms. Martin emphasized how important it is that all communities in St. Charles be represented at these meetings. The meeting attendees were encouraged to provide their input on this project. It was also mentioned that community involvement is very important, and that members of the community can give a broader input into the lessons learned that will play an important role in the risk assessment part of the process.

Data Sources

Ms. Martin discussed what data sources would benefit this project, and asked the committee what departments have this type of information. Among them were information of past loss data, project worksheets, damage assessments, photos of storm damage, narrative descriptions of storm damage, and lessons learned. Discussion ensued that the parish would have project worksheets for all claims and loss damage data. All departments or entities within the parish that have this type of information were asked to compile the data and make it available for Providence to use in the update to the HMP.

Review of Past Hazards

Past hazards were reviewed that occurred in St. Charles Parish. Ms. Martin explained that the plan update would allow these hazards to be prioritized, based on probability and potential impact. After some discussion on each hazard, the committee categorized the hazards as follows:

Hazards Identified in St. Charles Parish Hazard Mitigation Plan

HAZARD	PROBABILITY	POTENTIAL IMPACT	COMMENTS
Coastal Erosion			Committee removed this hazard
Levee Failure	Low	High	Local mapping ongoing - Mr. Earl Matherne has studies on levees
Drought	Medium	Medium	
Flood	High	High	
Hazardous Materials	High	High	This plan will focus on natural hazards, however, to the extent that natural hazards may impact hazardous materials, they will be addressed in a manner appropriate to the plan
Hurricane	High	High	
Tornado	High	Medium-Low	
Thunderstorm	High	Medium-Low	
Winter Storm	Low	Medium	
Land Subsidence	High	High	
Extreme Heat	High	Medium	
Salt Water Intrusion	High	High	

Review of Past and Potential Critical Facilities

Ms. Martin reviewed the lists of critical facilities in the existing HMP (Handout #3), and read the definition of a critical facility. The audience pointed out that there was a lot of information on these lists that needed to be updated, particularly facility addresses and names and that there were critical facilities not listed. Ms. Martin requested that the attendees review the lists and provide corrections/additions within two weeks (by December 3, 2013). Corrections/additions can be emailed to Ms. Martin at monicamartin@providenceeng.com or faxed to her at (225) 766-7440.

Several attendees requested a copy of the current HMP. This can be downloaded from the Providence website by going to www.providenceeng.com. Scroll down to "Providence Client FTP Portal" link located in the panel on the right side. Enter the following information:

Login ID: mmartin

Password: providence

A pdf of the entire HMP may be found in this directory for committee members to copy to their computer.

Ms. Martin concluded that she was pleased with the attendance and would appreciate any input concerning this project. She explained that the next meeting will cover the hazard history/critical facility and risk assessment part of the project. A meeting notice will be mailed to everyone prior to the next meeting.

All additional meetings were subsequently scheduled by the Parish. The dates for meetings 2 through 5 are:

Meeting #2	February 18, 2014
Meeting #3	April 15, 2014
Meeting #4	June 17, 2014
Meeting #5	September 16, 2014

MEMO

To: **Jason Tastet, St. Charles Parish**

From: **Monica Martin, Providence Technical Services, LLC**

CC: **Invitee List – Attached**

Date: **February 19, 2014**

Re: **Hazard Profile / Risk Assessment Meeting**

This memo documents the public meeting held on Tuesday, February 18, 2014, attended by representatives from St. Charles Parish regarding the Hazard Mitigation Plan Update.

Introductions

St. Charles Parish's mitigation consultant, Monica Martin, Senior Project Director from Providence Technical Services, LLC (Providence), in Baton Rouge, Louisiana welcomed the meeting attendees and introduced herself and Ann Slater, Mitigation Specialist. All other attendees introduced themselves. Ms. Martin thanked all for coming to the meeting and stressed the importance of their input in these meetings. She asked all attendees to come to each meeting and, if they could not attend, to send a substitute in their place.

Project Overview and Planned Meetings

Ms. Martin reviewed with the meeting attendees the purpose of the grant and the importance of a Hazard Mitigation Plan. She also gave an overview of the last meeting for those who had not attended (i.e. review of hazards facing the parish, ranking those hazards and discussing the concept of sustainability). Ms. Martin explained the topics for the upcoming meetings: Meeting 3 - Maps, and Mitigation Strategy, Meeting 4 – Goal Setting, and Meeting 5 – Review Draft Plan. Ms. Martin explained that this meeting would present the information Providence had gathered on those hazards identified by the committee and their impact on the Parish with statistics on frequency of each hazard.

Data Review

Ms. Martin reviewed the Critical Facility handout (handout #2) and requested that any missing information in the table be provided to Providence as soon as possible. Missing information included Parish/municipal facilities, Sheriff's facilities, and Wastewater/Water treatment facilities. Providence will contact Mr. Perry and Mr. Tastet to finalize information on Parish/municipal facilities and contact Mr. Gros for Sheriff's Department facilities. Providence will also contact personnel in the wastewater and water treatment departments to update information on their facilities. Hahnville Elementary School was highlighted on the list as it no longer operates as a school but now is a warehouse for school supplies with the back portion being an office for the

Council on Aging. It was determined that this should stay on the list as a critical facility since the Council on Aging uses the building.

Ms. Martin then reviewed hazard summaries (Handout #3), hazard loss data (Handout #4), and hazard statistics (Handout #5). It was explained that the National Climatic Data Center (NCDC) database was used to determine occurrences of the hazards identified in the HMP. The handouts provide information on events that have occurred since the last HMP update in 2009. The NCDC database did not report any new occurrences in the parish for winter storms or drought. Information for long-term hazards such as extreme heat, saltwater intrusion, and land subsidence was not available in the NCDC database, but specific instances may be gathered from other sources and included in the updated HMP. Information for levee failures and hazardous materials were also not available in the NCDC database, but specific instances may be gathered and included in the updated HMP for these hazards, as well. The probabilities based on NCDC data for reported hazards were as follows: Drought – possible, Flood – highly likely, Hurricanes – highly likely, Tornadoes – possible, Thunderstorms –likely, Lightning – possible, Hail – highly likely, and Winter Storms – possible. Probabilities for Extreme Heat, Levee Failure, Hazardous Materials, Land Subsidence, and Saltwater Intrusion were not provided as these hazards are not found in the NCDC database.

It was discussed that although a winter storm had just occurred there was no evidence of it in the tables. Information on the current winter storm was not available through NCDC and, therefore, was not included in the tables. However, the information on monetary loss to the Parish is available and will be included in the HMP update. Also discussed were the thunderstorms, lightning, and hail events. It was suggested that these statistics be combined as it would not be possible to have lightning and hail without a thunderstorm occurring. It was decided that those events would be combined into one category in the Hazard summary, loss, and statistics tables as they are in the narrative of the HMP.

Ms. Brenda Cooper with the Governor's Office of Homeland Security and Emergency Preparedness commented that an additional database called SHELDUS is available with similar data to the NCDC. This will be reviewed to determine if SHELDUS may fill in some of the data gaps in the NCDC database.

Upcoming Meeting – Mitigation Strategy

Ms. Martin reviewed the Lessons Learned Handout (handout #6), to be taken to various community meetings, organizations, and associations to obtain feedback on lessons that were learned from recent disaster events. This handout provides talking points that committee members can use when they are trying to gather additional information from their other groups.

Ms. Martin then discussed the action plan from the previous HMP (handout #7). This action plan will be the main topic of discussion during the next meeting. She requested that each committee member take the action plan back with them and review it to determine what changes need to be made to it. Many of the action items on this list may have been completed or may be in progress. Some of them may have been deemed unnecessary or for some reason not achievable. The committee members were tasked with making changes to the action plan where necessary and making additions where

they knew of projects that would be beneficial for the Parish, then bringing that information to the next meeting.

It was requested that an additional column be added to the Action Plan showing other agencies involved in the task. This will be helpful when multiple jurisdictions are responsible for some portion of the project.

Ms. Martin requested that for the next meeting, the attendees review and update the list of critical facilities and the list of action items from the Action Plan, and have reports of what groups the lessons learned speech was given to and if any feedback was obtained. The next meeting was scheduled for Tuesday, April 15, 2014 at 10:00a.m.

MEMO

To: **Jason Tastet, St. Charles Parish**

From: **Monica Martin, Providence**

CC: **Invitee List – Attached**

Date: **April 17, 2014**

Re: **Mitigation Strategy and Maps Meeting**

This memo documents the public meeting held on Tuesday, April 15, 2014, attended by representatives from St. Charles Parish regarding the Hazard Mitigation Plan Update.

Introductions

St. Charles Parish's mitigation consultant, Monica Martin, Senior Project Director from Providence Technical Services, LLC (Providence), in Baton Rouge, Louisiana welcomed the meeting attendees. She thanked all for coming to the third meeting and for their input in the planning process.

Project Overview and Planned Meetings

Ms. Martin reviewed with the meeting attendees that the initiation of the project was discussed at the first meeting followed by a second meeting on risk assessment. The first handout in the steering committee's packet was the minutes from the previous meeting. Ms. Martin explained that the purpose of this meeting was to review and make revisions to the maps that will be included in the Hazard Mitigation Plan (HMP), update action items that were included in the previous plan and develop new action items for inclusion in the HMP update. Additionally, Mr. Mart Black would give an overview of sustainability and resiliency in relation to the Hazard Mitigation Plan. The fourth and fifth meetings will focus on goal setting and reviewing the draft plan.

Review of Maps

The repetitive loss maps were passed out to all in attendance. Ms. Martin explained that a repetitive loss property is defined as an NFIP-insured structure that has had at least two paid flood losses of more than $1,000 each in any 10-year period since 1978. A severe repetitive loss property is an NFIP-insured property that has, a) incurred flood-related damage at least four times with each claim exceeding $5,000 and with the cumulative amount exceeding $20,000 or, b) had at least two separate claim payments with cumulative amount exceeding the value of the building and, in both cases (a and b), at least two of the claims must be within 10 years of each other. Several attendees asked the date of the flood map depicted on these maps. Since the parish has not adopted the most recent flood insurance rate maps (FIRM), it was determined that the maps depict the 1992 FIRM. This date will be annotated on the maps included in the HMP update. A question was raised concerning the designation as a repetitive loss structure for buildings that had been protected by a drainage project and whether those structures would be removed from the repetitive loss list. There was discussion related

to this topic and the way FEMA defines a repetitive loss. Providence will review the definition and discuss with GOHSEP whether structures may be taken off the list. It was noted as well that the interstate was shown in blue and state highways shown in red. According to the legend it should be the opposite. This will be corrected in the final maps. Ms. Martin pointed out that many of the repetitive loss structures were in groups on the east bank and that, if there is a common reason for flooding in those areas, it might be an indication that some mitigation action is needed, such as a drainage project, storm drain maintenance program, or educational program.

Ms. Martin then presented the critical facilities maps which were distributed to the committee members. These maps illustrate fire stations, healthcare facilities, law enforcement facilities, parish buildings, public works facilities, water and wastewater facilities, and emergency shelters and evacuation routes, and several maps that show the critical facilities located in each community. These maps were reviewed and corrections were noted. There were several suggestions for the addition of certain facilities that were not on the map. These included urgent health care facilities, sheriff training facility, and several waste water facilities.

Mitigation Strategy

Ms. Martin reminded the steering committee of the "Lessons Learned" handout that was given at the last meeting and asked if any of the committee members had discussed the HMP with their organizations. There was no response and Ms. Martin asked that if any of the committee members had an opportunity to discuss the HMP update with their other committees or associations that they report back on any additional information they gathered concerning past disasters.

Ms. Martin then discussed the action plan that had been presented at the last meeting and sent out electronically to the committee members. She stated that all updates received would be incorporated into the action plan and it would be sent out to the lead person for each responsible agency asking them to add new action items to the list. She stressed that, with each new action item, an explanation of why the action is needed and how the action will be implemented is critical. A column has been added to the action plan for a ranking of high, medium, or low priority for that action item within the lead agency. Any action item that has been completed will move to the bottom of the list and be shown as complete so that progress will be documented.

Resiliency and Sustainability

Mr. Mart Black, Senior Planner with Providence spoke concerning the link between resiliency, sustainability and the Hazard Mitigation Plan. He stated that St. Charles Parish is preparing for future disasters through effective hazard mitigation planning and implementation. He commended the Parish on its Comprehensive Plan and Zoning Ordinances. These prior-planning activities will make St. Charles Parish a resilient/sustainable community, one that recovers quickly from disasters without over-reliance on federal funding. He concluded with recommendations that the Parish continue to look for consistency and strong support for the HMP in their ordinances and plans to ensure resiliency/sustainability in the future.

Ms. Martin reminded everyone that the next meeting was scheduled for Tuesday, June 17, 2014 at 10:00a.m.

MEMO

To: **Jason Tastet, St. Charles Parish**

From: **Monica Martin, Providence Technical Services, LLC**

CC: **Invitee List – Attached**

Date: **June 23, 2014**

Re: **Goal Setting Meeting**

This memo documents the public meeting held on Tuesday, June 17, 2014, attended by representatives from St. Charles Parish regarding the Hazard Mitigation Plan Update.

Introductions

St. Charles Parish's mitigation consultant, Monica Martin, Senior Project Director from Providence Technical Services, LLC (Providence), in Baton Rouge, Louisiana welcomed the meeting attendees. She thanked all for coming to the meeting and for their input in the planning process.

Project Overview and Planned Meetings

Ms. Martin reviewed with the meeting attendees that the goal of a Hazard Mitigation Plan is to identify natural hazards affecting the parish, determine the impact of those hazards and the parish assets that are affected by those hazards. The first handout in the steering committee's packet was the minutes from the previous meeting. Ms. Martin explained that the purpose of this meeting was to discuss the goals of the hazard mitigation plan and ways the parish will meet those goals. The last meeting will be in September and this will be the draft review meeting.

Repetitive Loss Strategy

Ms. Martin discussed with the meeting attendees that the natural hazard with the largest effect on St. Charles Parish is flooding. There has been much interest in the Parish concerning home elevations and grants that will help defray the cost of elevating homes. The cost to elevate a home is quite high; however, homeowners are motivated to go through the elevation process in order to receive a reduction in their flood insurance premiums. To many homeowners the reduction in insurance premium offsets the cost (usually a 25% match) that they have to pay to elevate their homes.

The Parish has received permission from FEMA and GOHSEP to create a repetitive loss database with information on each property. This database will be strictly confidential – names and street numbers will not be shown in a published document. Inspectors from Providence Technical Services have gone out to each repetitive loss property and taken pictures on three sides of the building documenting foundation types in order to determine cost of elevation. Generally, homes on piers are $20/square foot less to elevate than slab homes.

Ms. Martin explained that the database will include information on the height to which each building would have to be elevated. This will be obtained by determining the current elevation for each property from LIDAR data and comparing if to the regulatory elevation obtained using GIS software. The repetitive loss database will also provided an approximate cost of elevation. The Parish can then take this information to determine where the problems are and which homes need to be elevated.

Ms. Carla Chiasson asked whether there may be a severity ranking for the repetitive loss so that the Parish can determine where priorities lie in applying grant monies to mitigating these repetitive losses. Providence will look into a possible way of presenting a priority ranking.

Another question was raised concerning the regulatory elevation used in this database. Providence will contact Earl Matherne to ascertain whether the appropriate elevation is being used in the database.

It was requested that this document, the Repetitive Loss Strategy, include a guideline at the end of the document to state how the plan will be updated each year.

Additional Information Needed for Completion of HMP

Ms. Martin then stated that our next meeting would present the draft Hazard Mitigation Plan. In order to complete the plan, a variety of additional information is needed:

1. Community Rating System information – Earl Matherne is the CRS coordinator. He says that the Parish is still rated as an "8." However, under the new regulations the Parish should be a "7", and quite possibly a "6". Ms. Martin mentioned that the Hazard Mitigation Plan will work to maximize any points that the Parish can obtain to improve its CRS ranking.
2. Ms. Brenda Cooper with GOHSEP mentioned a Hazard Mitigation Grant Program workshop coming up in the near future in Luling and recommended that all attend. There is much useful information exchanged during these workshops. According to GOSHEP's website, the workshop will be held on June 26th and 27th at the Edward A. Dufresne Community Center in Luling. Please visit GOHSEP's website to register at:

   http://www.gohsep.la.gov/workshops/HM/FNL_Flyer_HM14.pdf
3. A part of the Hazard Mitigation Plan requirements is to keep the public involved in the planning process and seek their input on decisions that are made. In light of this, Providence has prepared a public opinion survey to be handed out to committee members and the public. Committee members may hand out survey forms to people they know and have those surveys returned to Providence. Copies of the surveys will also be placed in branch libraries for the public to complete and return. These forms are due back to Providence by August 1, 2014.
4. Ms. Martin then passed out a portion of the Resiliency Plan and asked the committee to review this plan and make sure that all Parish plans are included in this plan.

5. Mitigation Action Progress Forms will be completed for each action item in the Action Plan and forwarded to the responsible person for that action. Providence is asking the responsible person to fill in the missing information on the form in order to update the status of each action item.

Ms. Martin reminded everyone that the next meeting is scheduled for Tuesday, September 16, 2014 at 10:00 a.m. This meeting will be to review the draft Hazard Mitigation Plan. The draft will be made available prior to the meeting so that each committee member may be prepared to give comments during the September meeting. A CD will be sent to each committee member approximately two weeks prior to this meeting.

MEMO

To: **Jason Tastet, St. Charles Parish**

From: **Monica Martin, Providence Technical Services, LLC**

CC: **Invitee List – Attached**

Date: **October 6, 2014**

Re: **Draft Review Meeting**

This memo documents the public meeting held on Tuesday, September 16, 2014, attended by representatives from St. Charles Parish regarding the Hazard Mitigation Plan Update.

Introductions

St. Charles Parish's mitigation consultant, Monica Martin, Senior Project Director from Providence Technical Services, LLC (Providence), in Baton Rouge, Louisiana welcomed the meeting attendees. She thanked all for coming to the meeting and for their input in the planning process. Each committee member introduced themselves for the benefit of guests in attendance.

Project Overview and Planned Meetings

Ms. Martin reviewed with the meeting attendees that the goal of a Hazard Mitigation Plan is to identify natural hazards affecting the parish, determine the impact of those hazards and the parish assets that are affected by those hazards. The first handout in the steering committee's packet was the minutes from the previous meeting. Ms. Martin explained that the purpose of this meeting was to review the draft plan that had been sent to each committee member and receive comments or corrections on the updated HMP.

Hazard Mitigation Plan Overview

Ms. Martin gave a brief presentation of the contents of the hazard mitigation plan explaining the contents and purpose of each section in the Plan. She pointed out that the State Hazard Mitigation Plan published this year was used to provide an estimate of future damages from hazard events in St. Charles Parish. She also discussed the addition of a section on Plan Sustainability and Community Resiliency (Section 6.0 Community Capabilities) and the Repetitive Loss Strategy, which is a stand-alone document which will be adopted by the Parish at the time the updated Hazard Mitigation Plan is adopted.

Review of Draft Hazard Mitigation Plan

Ms. Martin then took comments from the Steering Committee on each section of the Plan. Comments were received and will be incorporated into the final draft which will be sent to FEMA upon approval by GOHSEP.

Repetitive Loss Strategy
The Repetitive Loss Strategy was handed out to each of the Committee Members and an overview was presented by Ms. Martin. The Repetitive Loss Strategy is a plan that details repetitive flooding problems and possible mitigation measures to reduce repetitive claims on flood insurance. The Repetitive Loss Strategy includes a database consisting of information on each RL property. This database will be strictly confidential – names and street numbers will not be shown in a published document.

Ms. Martin explained that the preparation of the Repetitive Loss Strategy began with site visits to each repetitive loss property with inspectors photographing three sides of each building and documenting foundation types. Then, using LIDAR data, the current elevation for each property was determined. The necessary elevation height for each building was determined by comparing current elevations to the regulatory elevation. Based on an average cost of elevation for different foundation types, an elevation cost was calculated for each building and presented in the database. The Parish can then take this information to determine a path forward to mitigate these repetitive loss properties.

Ms. Martin concluded the meeting by informing the committee of the path forward. Once comments from the Steering Committee are incorporated into the draft HMP, the plan will be forwarded to GOHSEP for review. Comments from GOHSEP will be included in the final plan that is forwarded to FEMA.

APPENDIX H

ST. CHARLES PARISH PRESS RELEASES AND PUBLIC NOTICE

PRESS RELEASE

Release Date: December 5, 2013

St. Charles Parish held a public meeting on Tuesday, November 19, 2013 with Parish staff, local agencies, and residents to discuss a grant that was recently awarded to the Parish. Mr. Jason Tastet, Senior Emergency Coordinator for St. Charles Parish, initiated the meeting by introducing Ms. Monica Martin, from Providence Technical Services, LLC of Baton Rouge, the Parish's mitigation consultant.

Ms. Martin explained that the grant, which is a Pre-Disaster Mitigation grant, will be used to update the Parish's Hazard Mitigation Plan (HMP) and to determine a repetitive loss strategy for the Parish. The goal of the HMP update is to reduce the risk to the Parish from natural hazards such as hurricanes and flooding. Ms. Martin explained that the update of the HMP will allow the Parish to be eligible for additional funding opportunities under the Hazard Mitigation Grant Program (HMGP). Funding for the grant is being provided by the Federal Emergency Management Agency (FEMA) and administered by the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) and FEMA.

The meeting was well attended as pointed out by Ms. Martin, who explained the importance of both parish and community representation. She encouraged meeting attendees to provide input concerning past disasters, critical facilities affected by those disasters (such as fire stations, schools, pump stations, etc.), and recommended that they share the message from this meeting with their respective committees, organizations, and associations.

Anyone wanting more information on this project or to be kept informed on meeting dates may call Ms. Martin at (225) 766-7400. The update to the Parish's HMP will be addressed during four additional public meetings. The topic of the next meeting will be the Risk Assessment for the Parish. Public input is invited throughout the planning process.

PRESS RELEASE

Release Date: 2/21/14

St. Charles Parish held a public meeting on Tuesday, February 18, 2014 with Parish staff and local residents to discuss the hazard profile and risk assessment for the Parish's hazard mitigation plan update.

Ms. Monica Martin from Providence Technical Services, LLC (Providence) initiated the meeting by reviewing the purpose of the grant awarded to the Parish. The grant awarded to the Parish is to be used to update the Parish's Hazard Mitigation Plan (HMP), which will help to make the parish better prepared for future disasters through mitigation projects determined through the update process. This grant allows the Parish to be prepared at the next funding opportunity to submit Hazard Mitigation Grant Program (HMGP) applications to receive funds for these mitigation projects. Funding for the grant is being provided by FEMA and administered by the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) and FEMA.

Other items discussed included: a review of critical facilities, hazard summaries, data, and statistics, and an action plan for the future.

Ms. Martin explained the importance of both parish and community representation, and encouraged meeting attendees to obtain feedback on lessons learned from past disaster events from their respective committees, organizations, and associations. These "lessons" can then be incorporated into the planning process for this project.

Anyone wanting more information on this project or to be kept informed on meeting dates can call Ms. Martin at (225) 766-7400. The update to the Parish's HMP will be addressed during three additional public meetings. The topic of the next meeting will be the maps and goals for the Parish. Public input is invited throughout the planning process.

PRESS RELEASE

Release Date: April 18, 2014

St. Charles Parish held a public meeting on Tuesday, April 15, 2014 with Parish staff and local residents to discuss mitigation strategy and maps for the Parish's hazard mitigation plan update.

Ms. Monica Martin from Providence Technical Services LLC (Providence) explained that the purpose of the grant awarded to the Parish is to update the Parish's Hazard Mitigation Plan (HMP) which will help to make the parish better prepared for future disasters through activities determined during the update process. The purpose of this meeting was to review and make revisions to the maps that will be included in the HMP and to decide on possible mitigation activities for the Parish.

Ms. Martin reviewed the updated maps of the Parish's repetitive flood loss areas, and critical facilities, such as fire stations, water and wastewater facilities, as well as emergency shelters. Next, the Steering Committee discussed the action plan for the Parish in regards to hazard mitigation activities.

Mr. Mart Black, Senior Planner for Providence discussed the resiliency of the Parish to recover from disasters. He stated hazard mitigation planning is very important to being able to bounce back from a disaster with less reliance on federal funding. He commended the Parish on its adoption of the Comprehensive Plan and Zoning Ordinances stating that "they are very strong" and would serve the Parish well.

Anyone wanting more information on this project or to be kept informed on meeting dates can call Ms. Martin at (225) 766-7400. The update to the Parish's HMP will be addressed during two additional public meetings. The topic of the next meeting will be hazard mitigation goals for the Parish. Public input is invited throughout the planning process.

PRESS RELEASE

Release Date: June 20, 2014

St. Charles Parish held a public meeting on Tuesday, June 17, 2014 with Parish staff and local residents to discuss hazard mitigation strategy and goal setting in relation to the Parrish's hazard mitigation plan update.

Ms. Monica Martin from Providence Technical Services LLC (Providence) explained that the Parish will prepare a repetitive loss strategy and database to help with documenting repetitive flood loss properties and attempt to focus efforts where they are most beneficial when Hazard Mitigation Grant Program monies become available.

Ms. Martin also presented a public opinion survey during the meeting to have committee members pass out to their friends, coworkers and neighbors. The purpose of the survey is to gather information from the public on their personal experience with natural hazards. Through the survey we hope to obtain information on what infrastructure and Parish assets the citizens believe are most impacted by natural hazards and where planning and preparedness activities should be focused. Copies of the survey may be obtained from and returned to the East and West Regional Libraries.

Anyone wanting more information on this project or to be kept informed on meeting dates may call Ms. Martin at (225) 766-7400. The update to the Parish's HMP will be addressed during one additional public meeting. During this upcoming meeting the draft plan will be reviewed and comments will be received in preparation for the final document. Public input is invited throughout the planning process.

PRESS RELEASE

Release Date: October 6, 2014

St. Charles Parish held a public meeting on Tuesday, September 16, 2014 with Parish staff and local residents to discuss the draft Hazard Mitigation Plan (HMP) Update and accept comments on the Plan.

Ms. Monica Martin from Providence Technical Services LLC (Providence) gave a brief presentation on the purpose of an HMP, which is to identify natural hazards affecting the parish, determine the impact of those hazards, identify parish assets that are affected by those hazards, and propose mitigation actions to help alleviate problems. This HMP update will allow the Parish to continue to be eligible for additional funding opportunities under the Hazard Mitigation Grant Program (HMGP).

Ms. Martin took comments on the draft plan from the Steering Committee and general public. These comments and corrections will be incorporated into the final HMP Update, which will be forwarded to the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) and the Federal Emergency Management Agency (FEMA) for review and approval.

Ms. Martin also discussed the Repetitive Loss Strategy, which is a part of the HMP. The Repetitive Loss Strategy is a plan that details repetitive flooding problems and possible mitigation measures to reduce repetitive claims on flood insurance. The Repetitive Loss Strategy includes a database consisting of information on each RL property. This database will be strictly confidential – names and street numbers will not be shown in a published document. The Repetitive Loss Strategy will help the Parish prioritize mitigation activities for reducing repetitive flood losses.

The final HMP will be available for review, after approval by FEMA, at the East and West Regional Libraries. Anyone wanting more information on this project may contact Ms. Martin at (225) 766-7400.

APPENDIX I

ST. CHARLES PARISH RESULTS OF PUBLI OPINION SURVEY

St. Charles Parish Hazard Mitigation Plan Update
Public Opinion Survey Results

1. During the past five years, have you or someone in your household directly experienced a natural disaster such as a hurricane, tornado, flood, or other type of natural disaster in St. Charles Parish?

Yes	4
No	2

If Yes, which of these natural disasters have you or someone in your household experienced in the past five years?

Drought		Land Subsidence	
Flood		Winter Storm	
Hurricane	4	Extreme Heat	1
Severe Thunderstorm	2	Salt Water Intrusion	
Tornado		Other	
Levee Failure			

2. How concerned are you about the following natural disasters affecting your parish?

Natural Disaster	Very Concerned	Somewhat Concerned	Neutral	Not Very Concerned	Not Concerned
Drought		1	1	2	1
Flood	5			1	
Hurricane	5	1			
Severe Thunderstorm	3	1	1	1	
Tornado	3	2		1	
Levee Failure	2	1	2	1	
Land Subsidence	1	1	3	1	
Winter Storm		2	2	2	
Extreme Heat	1	2	2	1	
Salt Water Intrusion	1		2	2	1
Other					

3. Have you ever received information about how to make members of your household and your home safer from natural disasters?

	Past 6 Months	6-12 Months	1 - 2 years	2-5 years	5+ Years
Yes	3	1			
No	2				

4. What is the most effective way for you to receive information about how to make your household and home safer from natural disasters?

Newspaper Stories	5	Schools	
Newspaper Commercials		Outdoor Advertisements (Billboards, etc.)	
Television News	6	Books	
Television Commercials		Mail	
Radio News	3	Chamber of Commerce	1
Radio Ads		Fact Sheet / Brochure	2
Email Newsletters	2	Public Workshops / Meetings	
Online News Outlets		Magazines	
Social Media		University of research Institution	
		Other	

5. Prior to receiving this survey, were you aware of your parish's Hazard Mitigation Plan?

Yes	2
No	4

6. Prior to receiving this survey, were you aware that the Federal Emergency Management Agency (FEMA) requires your parish to update the HMP every five years in order for your parish to be eligible for federal pre- and post- disaster hazard mitigation funds?

Yes	1
No	5

7. What community assets are most important to you?

Community Assets	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important
Nursing Homes	4		1		1
Schools (K-12)	4		2		
Hospitals	5	1			
Major Bridges	3	3			
Fire/Police Stations	5	1			
Museums/Historic Buildings		1	3	1	1
Major Employers	3	2	1		
Small Businesses	3	2	1		
College/University		2	3		
City Hall/Courthouse	1	2	3		
Parks		2	4		
Public Utilities (Water, Wastewater, etc.)	4	2			

8. Natural hazards can have a significant impact on a community, but planning for these events can help lessen the impacts. The following statements will help determine citizen priorities regarding planning for natural hazards in St. Charles Parish. Please tell us how important each one is to you.

Statements	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important
Protecting private property	5	1			
Protecting critical facilities (e.g. fire stations, hospitals, transportation)	5	1			
Preventing development in hazard areas	4	2			
Enhancing function of natural features (e.g. streams, wetlands)	3	3			
Protecting historical and cultural landmarks		4	2		
Strengthening Emergency Services	5	1			
Disclosing natural hazard risks during real estate transactions	2	3	1		
Promoting cooperation among agencies, citizens, non-profits and businesses	3	2	1		
Continuing Structural Projects	4	1	1		

9. In the following list, please check those activities that you have done in your household, plan to do in the near future, are not interested in doing, or are unable to do.

In your household, have you or someone in your household:	Have Done	Plan to Do	Not Interested	Unable to Do
Attended meetings or received written information on natural disasters or emergency preparedness?	3	2		1
Talked with members of your household about what to do in case of a natural disaster or emergency?	4	2		
Developed a "Household/Family Emergency Plan in order to decide what everyone would do in the event of a disaster?	1	4		
Prepared a "Disaster Supply Kit" (stored extra food, water, batteries, or other emergency supplies)?		6		
In the last year, has anyone in your household been trained in First Aid Aid or Cardio-Pulmonary Resuscitation?	1	1	1	2
Prepared your home by having smoke detectors on each level of the house?	6			

If you would like to provide any additional information or comments, please do so in the space provided here:

Two things that would help prevent flooding in Norco area. 1 - Install additional culvert under railroad tracks (at Hwy 61). 2 - Increase capacity of West Pine street pump that discharge water into engineers canal.

10. Zip Codes	11. Do you own or rent your home? Own	Rent	10. Zip Codes	11. Do you own or rent your home? Own	Rent
70079	x				
70079	x				
70079	x				
70079	x				
70079	x				
70070	x				

APPENDIX J

ST. CHARLES PARISH CRITICAL FACILITIES

St. Charles Parish
Hazard Mitigation Plan Update Critical Facilities

Critical Facility	Facility Type	Physical Address	Community	Latitude	Longitude
Edward A. Dufresne Community Center	Emergency Shelters	274 Judge Edward Dufresne Pkwy	Luling	29.93386501	-90.38365447
Eual J. Landry Middle School	Emergency Shelters	108 Tiger Cir	Hahnville	29.96509051	-90.40695753
Bayou Gauche Vol. Fire Dept. #92	Fire	3620 LA 306	Bayou Gauche	29.78853773	-90.41998664
Bayou Gauche Vol. Fire Station #91	Fire	410 First St	Bayou Gauche	29.80614974	-90.42566877
Des Allemands Vol. Fire Station #71	Fire	17492 Spur 631/Old US Hwy 90	Des Allemands	29.82429885	-90.47466630
Des Allemands Vol. Fire Station #72	Fire	16960 US Hwy 90	Des Allemands	29.82955307	-90.45894859
E. St. Charles Vol. Fire Station #81	Fire	14494 River Rd	New Sarpy	29.97358519	-90.39053260
E. St. Charles Vol. Fire Station #82	Fire	13092 River Rd	Destrehan	29.94604482	-90.36692295
E. St. Charles Vol. Fire Station #83	Fire	1901 Ormond Blvd	Destrehan	29.96817987	-90.37817391
Hahnville Vol. Fire Station #31	Fire	169 Lincoln St	Hahnville	29.97658222	-90.40910707
Hahnville Vol. Fire Station #32	Fire	14908 River Rd	Hahnville	29.96016621	-90.40434652
Killona Vol. Fire Dept.	Fire	216 Adams St	Killona	30.00165467	-90.48626167
Luling Vol. Fire Dept. #21	Fire	1603 Paul Maillard Rd	Luling	29.91339022	-90.37963578
Luling Vol. Fire Dept. #22	Fire	67 St Anthony St	Luling	29.91002394	-90.35200536
Luling Vol. Fire Dept. #23	Fire	104 Ellen St	Ama	29.95409900	-90.29176695
Luling Vol. Fire Dept. #24	Fire	16 Dufresne Loop	Luling	29.93953433	-90.38348507
Norco Area Vol. Fire Station #1	Fire	20 Barreca St	Norco	29.997510	-90.414000
Norco Area Vol. Fire Station #3	Fire	800 Eighth St	Norco	30.01316406	-90.40843228
Norco Area Vol. Fire Station #5	Fire	17830 River Rd	Montz	30.01394984	-90.46772212
Norco Area Vol. Fire Station (Central)/ #2	Fire	651 West B St	Norco	30.01260331	-90.41111168
Paradis Vol. Fire Station #61	Fire	601 Fonda St	Paradis	29.87909861	-90.43747048
Paradis Vol. Fire Station #62	Fire	807 Barber Rd	Paradis	29.87371597	-90.43497632
St. Rose Vol. Fire Station #51	Fire	115 Bart St	St. Rose	29.94686647	-90.31784410
St. Rose Vol. Fire Station #52	Fire	10574 River Rd	St. Rose	29.96597434	-90.29688978
911 Center	Governmental Building	222 Joe Lewis Ln	Hahnville	29.96252582	-90.40651659
A. J. Melancon Senior Center	Governmental Building	145 Angus Dr	Luling	29.92316487	-90.37098489
Animal Shelter	Governmental Building	921 Rue La Cannes	Luling	29.93553745	-90.37925919
Bonnet Carre Spillway Army Corps of Engineers	Governmental Building	16302 River Rd	Norco	30.00052033	-90.42857802
Center for Family & Youth Services, Inc.	Governmental Building	13101 River Rd	Luling	29.93353366	-90.36005415
Department of Economic Development & Tourism	Governmental Building	15012 River Rd	Hahnville	29.96313291	-90.40511804
Department of Transportation and Development	Governmental Building	13911 Frere St	Luling	29.93887359	-90.37766108
Department of Transportation and Development (DOTD)	Governmental Building	315 3rd St	Luling	29.92921989	-90.36362928
Dept of Motor Vehicles	Governmental Building	15012 A River Rd	Hahnville	29.96326958	-90.40480398
District Attorney Child Support Office	Governmental Building	13385 US Hwy 90	Boutte	29.90208503	-90.38371316
District Attorney Hahnville Annex	Governmental Building	15090 River Rd	Hahnville	29.96549875	-90.40461014
District Attorney's Office - Luling	Governmental Building	811 Ste B Paul Maillard Rd	Luling	29.92718347	-90.36926884
East Regional Library	Governmental Building	160 W Campus Dr.	Destrehan	29.94673870	-90.36578662
Edward A. Dufresne Community Center	Governmental Building	274 Judge Edward Dufresne Pkwy	Luling	29.93386501	-90.38365447
Emergency Operations Center	Governmental Building	15026 River Road	Hahnville	29.963493	-90.405405
Hahnville Parish Library	Governmental Building	14996 A River Rd	Hahnville	29.96325328	-90.40435269
Luling Parish Library	Governmental Building	105 Lakewood Dr	Luling	29.91291286	-90.34417993
New Sarpy Senior Citizens Activity Center & Council on Aging	Governmental Building	150 Troxclair Ln	New Sarpy	29.97698034	-90.38934577
Norco Parish Library	Governmental Building	187 Goodhope St	Norco	30.00141911	-90.41076254
Norco Senior Citizens Activity Center & Council on Aging	Governmental Building	157 Apple St	Norco	30.00057719	-90.41246898
Office of Risk Management	Governmental Building	171 Keller St	Hahnville	29.96552003	-90.40685972
Paradis Branch Library	Governmental Building	307 Audubon St	Paradis		
Planning and Zoning Office	Governmental Building	14996 River Rd	Hahnville	29.96287775	-90.40463704
River Parishes WIA	Governmental Building	737 Paul Maillard Rd A	Luling	29.92836282	-90.36781139
St. Charles Parish Community Outreach Program	Governmental Building	13635 Old Spanish Trail	Boutte	29.90025972	-90.39261765

St. Charles Parish
Hazard Mitigation Plan Update Critical Facilities

Critical Facility	Facility Type	Physical Address	Community	Latitude	Longitude
St. Charles Parish Council for Prevention of Child Abuse	Governmental Building	816 Paul Maillard Rd	Luling	29.92755572	-90.36971606
St. Charles Parish Council on Aging Main Office	Governmental Building	626 Elm St	Hahnville	29.97981207	-90.41124182
St. Charles Parish Courthouse	Governmental Building	15045 River Rd	Hahnville	29.96379971	-90.40661401
St. Charles Parish Courthouse Annex/Arterbury Building & Dept of Community Service	Governmental Building	14564 River Rd	New Sarpy	29.97648661	-90.38969080
St. Charles Parish Office of Family Support	Governmental Building	14041 US Hwy 90	Boutte	29.89176985	-90.40516642
St. Rose Community Service Center	Governmental Building	608 Mockingbird Ln	St. Rose	29.95152200	-90.32388100
St. Rose Parish Library & St. Rose Community Center	Governmental Building	90 E Club Dr	St. Rose	29.95927460	-90.30527493
State Office - Dept of Health	Governmental Building	107 Maryland Dr	Luling	29.90905228	-90.35989415
West Regional Library	Governmental Building	105 Lakewood Dr	Luling	29.91237800	-90.34456300
Destrehan Family Health Center	Health Care	159 Longview Dr	Destrehan	29.95104623	-90.37786450
Destrehan Medical Clinic	Health Care	105 Plantation Rd	Destrehan	29.94076491	-90.35312275
Luling Living Center	Health Care	1125 Paul Maillard Rd	Luling	29.92299395	-90.37258162
Ochsner for Children	Health Care	1970 Ste J Ormond Blvd	Destrehan	29.96921037	-90.37479566
Ormond Nursing & Care Center	Health Care	22 Plantation Rd	Destrehan	29.96671946	-90.37538442
St. Charles Community Health Center - Luling	Health Care	843 Milling Ave	Luling	29.92316321	-90.36941083
St. Charles Community Health Center - Norco	Health Care	16004 River Rd	Norco	29.99867504	-90.42017943
St. Charles Parish Hospital	Health Care	1057 Paul Maillard Rd	Luling	29.92415209	-90.37111116
Sheriff's Office - Criminal Investigations Unit	Law Enforcement	115 James Dr W	St. Rose	29.98007694	-90.28557278
Sheriff's Office - Bonds and Fines	Law Enforcement	15048 River Rd	Hahnville	29.96414729	-90.40532411
Sheriff's Office Second District	Law Enforcement	14558 LA 48 / River Rd	New Sarpy	29.97568500	-90.39025630
Sheriff's Office - Special Services Dept, Court Security Division, Information Technology Division, Tax Office & Civil Section, & Communications Tower	Law Enforcement	15045 River Rd	Hahnville	29.96379971	-90.40661401
Sheriff's Office - Victin's Assistance Building	Law Enforcement	15630 River Rd	Hahnville	29.978813	-90.407361
Sheriff's Office Headquarters, Special Investigations, Crime Scene Investigations, & Evidence Collection Division	Law Enforcement	260 Judge Edward Dufresne Pkwy	Luling	29.934170	-90.364533
Sheriff's Office Lodge	Law Enforcement	12628 Amelia St	Destrehan	29.94099973	-90.35359682
Sheriff's Office Third District	Law Enforcement	11635 US Hwy 90	Luling	29.91669943	-90.32200811
Sheriff's Office Training Facility	Law Enforcement	13771 Old Spanish Trail	Boutte	29.89840077	-90.39623175
Sheriff's Office, Nelson Coleman Correctional Center	Law Enforcement	5061 LA 3127	Killona	29.952390	-90.432711
4th Street	Public Works	571 4th St	St. Rose	29.95209560	-90.32765993
80 Arpent	Public Works	444 Tinney St	Boutte	29.90420960	-90.39275394
Almedia Rd.	Public Works	10598 Airline Dr	St. Rose	29.97239660	-90.30702993
Almedia Structure	Public Works	10408 Airline Dr	St. Rose	29.97708942	-90.30350920
Ama	Public Works	20 Pats Ct	Ama	29.93976960	-90.28187593
Bank One	Public Works	12509 Airline Dr	Destrehan	29.98737761	-90.36246493
Barriere	Public Works	1270 LA 3127 / River Parishes Hwy	Boutte	29.92651187	-90.41743422
Barton	Public Works	329 Barton Ave	Luling	29.92208060	-90.34258293
Barton/Davis	Public Works	499A Davis Dr	Luling	29.91625261	-90.34175893
Bayou Trep.	Public Works	478 Lower Guide Levee Rd	Norco	30.02237360	-90.40374794
Boutte	Public Works	150 Boutee Estates Dr	Boutte	29.91200261	-90.38571194
Coronado 1	Public Works	1058 Primrose Dr	Luling	29.90206360	-90.36820994
Coronado 2	Public Works	1088 Primrose Dr	Luling	29.90113461	-90.37088794
Cortez	Public Works	192 Up the Bayou Rd	Des Allemands	29.82792840	-90.47540678
Cross Bayou	Public Works	12149 Airline Dr	Destrehan	29.98564770	-90.34924318
DA Tunnel	Public Works	101 Up the Bayou Rd	Des Allemands	29.82518762	-90.47592253
Davis	Public Works	331A Davis Dr	Luling	29.92046361	-90.34096593
Davis Diversion	Public Works	199 Willowdale Blvd	Luling	29.91246660	-90.32655393

St. Charles Parish
Hazard Mitigation Plan Update Critical Facilities

Critical Facility	Facility Type	Physical Address	Community	Latitude	Longitude
Destrehan 1	Public Works	197 Love Ln	St. Rose	29.98321360	-90.36226693
Destrehan 2	Public Works	88 Dunleigh Ct	Destrehan	29.96107660	-90.36804194
Diane	Public Works	802 St Rose Ave	St. Rose	29.95788760	-90.32168593
East Bank Laydown Yard	Public Works	1400 E Harding St	New Sarpy	29.98502511	-90.37661584
East Bank Office and Shop	Public Works	168 Troxclair Ln	New Sarpy	29.97708568	-90.38890946
Engineer Canal	Public Works	688 West Pine Dr	Norco	30.01474560	-90.41434494
Eric Sump	Public Works	240 Up the Bayou Rd	Des Allemands	29.82892943	-90.47467980
Fairfield	Public Works	498 Steve St	St. Rose	29.97417060	-90.28861293
Fox Lane	Public Works	10424 Airline Dr	St. Rose	29.96984160	-90.30047870
George Cousins	Public Works	840 Texaco Rd	Luling	29.89038461	-90.35676594
Hackberry	Public Works	501 Hackberry St	Luling	29.92264360	-90.37660994
Hahnville High School	Public Works	375 Tiger Dr	Boutte	29.88635460	-90.40584594
Harding Street	Public Works	12731 Airline Dr	Destrehan	29.987826	-90.363746
Kellog	Public Works	540 River Oaks Dr	Luling	29.89513631	-90.36260920
Lagatutta	Public Works	301 Primrose Dr	Luling	29.90115361	-90.35878794
Lakewood School	Public Works	503 East Heather Dr	Luling	29.89933361	-90.34954893
N. Lakewood	Public Works	106 Lakewood Dr	Luling	29.91221461	-90.34488693
New Sarpy	Public Works	1075 East Harding St	New Sarpy	29.98407961	-90.37828093
Nola	Public Works	408 Nola St	Luling	29.92378261	-90.33815093
Oak Street	Public Works	821 Oak St	St. Rose	29.95594561	-90.32395193
Oakland	Public Works	301 West Oakland St	St. Rose	29.97366960	-90.29164893
Old Kellog	Public Works	523 Monsanto Ave	Luling	29.89709661	-90.36565394
Paradis	Public Works	14799 US Hwy 90	Paradis	29.88187761	-90.42840594
Prescott	Public Works	101 Prescott Dr	Montz	30.03888613	-90.43828215
Public Works Office and Wastewater Director's Office	Public Works	14530 River Rd	New Sarpy	29.97498396	-90.39051069
Riverbend #1 Pump Station	Public Works	900 River Bend Dr	St. Rose	29.973373	-90.298548
Riverbend #2 Pump Station	Public Works	923 River Bend Dr	St. Rose	29.973401	-90.298809
S. Lakewood	Public Works	188 Lakewood Dr	Luling	29.90767461	-90.35077693
Schexnaydre	Public Works	1074 East Harding St	New Sarpy	29.97811161	-90.37648794
St. Rose Structure	Public Works	11308 Airline Dr	St. Rose	29.97934610	-90.32795233
Sunset	Public Works	198 Badeaux Ln West	Bayou Gauche	29.78865965	-90.42956470
Tibby	Public Works	1057 Down the Bayou Rd	Des Allemands	29.81294892	-90.47410120
Turtle Pond	Public Works	167 I-310 Service Rd	St. Rose	29.97016161	-90.31143993
Up the Bayou	Public Works	462 Up the Bayou Rd	Des Allemands	29.83476495	-90.47585542
Walker	Public Works	10344 Airline Dr	St. Rose	29.97832860	-90.28857493
Walker Structure	Public Works	399 James Dr West	St. Rose	29.99024462	-90.29079180
West Bank Office and Yard	Public Works	166 Scorpio St	Hahnville	29.97068390	-90.41520932
Willowdale	Public Works	500A Willowdale Blvd	Luling	29.88529026	-90.32782582
Albert Cammon Middle School	Schools	234 Pirate Dr	St. Rose	29.95788739	-90.31076632
Allemands Elementary School	Schools	1471 WPA RD / LA 632	Des Allemands	29.82015458	-90.46391606
Boutte Adult Learning Center	Schools	13771 Old Spanish Trail	Boutte	29.89840077	-90.39623175
Boutte Christian Academy (AG)	Schools	13271 US Hwy 90	Boutte	29.90316782	-90.38058240
Carver Early Learning Center	Schools	337 Gum St	Hahnville	29.97426723	-90.41314783
Destrehan High School	Schools	1 Wildcat Ln	Destrehan	29.96491509	-90.38246946
East Bank Head Start Center	Schools	1 Roadrunner Ln	Destrehan	29.94857334	-90.37272889
Ethel Schoeffner Elementary School	Schools	130 Plantation Rd	Destrehan	29.97336938	-90.37730347
Eual J. Landry Alternative Center	Schools	108 Tiger Cir	Hahnville	29.96509051	-90.40695753
Goodhope Facility	Schools	15146 River Rd	Norco	29.99106570	-90.40048747
Hahnville Learning Center	Schools	626 Pine Street	Hahnville	29.977632	-90.409759

St. Charles Parish
Hazard Mitigation Plan Update Critical Facilities

Critical Facility	Facility Type	Physical Address	Community	Latitude	Longitude
Hahnville High School	Schools	200 Tiger Dr	Boutte	29.88995880	-90.40636068
Harry Hurst Middle School	Schools	170 Roadrunner Ln	Destrehan	29.95008542	-90.37239670
ITT Technical Institute	Schools	140 James Dr E	St. Rose	29.98112534	-90.28131626
J.B. Martin Middle School	Schools	434 South St	Paradis	29.87741915	-90.42823565
Lakewood Elementary School	Schools	501 E Heather Dr	Luling	29.90049899	-90.34870362
Luling Elementary School	Schools	904 Sugarhouse Rd	Luling	29.92224643	-90.36761709
Mimosa Park Elementary School	Schools	222 Birch St	Luling	29.90965863	-90.35126358
New Sarpy Elementary School	Schools	130 Plantation Rd	Destrehan	29.97336938	-90.37730347
Norco Adult Learning Center (NL)	Schools	157 Apple St	Norco	30.00140420	-90.41230553
Norco Elementary School	Schools	102 A Fifth St	Norco	30.00949859	-90.42095609
Professional Learning Center	Schools	12727 US Hwy 90	Luling	29.90657655	-90.36467890
R. K. Smith Middle School	Schools	281 Judge Edward Dufresne Pkwy	Luling	29.93149452	-90.38338791
R.J. Vial Elementary School	Schools	510 Louisiana St	Paradis	29.87837077	-90.42649546
Sacred Heart Elementary School	Schools	453 Spruce St	Norco	30.00827760	-90.41677894
Satellite Center	Schools	285 Judge Edward Dufresne Pkwy	Luling	29.93078849	-90.38425128
SCP Public Schools Media Center	Schools	209 1ST ST	Luling	29.93273900	-90.36321817
SCP Public Schools Physical Plant Maintenance Facility	Schools	215 Judge Edward Dufresne Pkwy	Luling	29.93581960	-90.38032918
St. Charles Borromeo	Schools	13396 River Rd	Destrehan	29.95039137	-90.37525821
St. Charles Parish School Board Office	Schools	13855 River Rd	Luling	29.93854310	-90.37989995
St. Rose Elementary School	Schools	230 Pirate Dr	St. Rose	29.95514144	-90.30937446
St. Rose Pupil Appraisal Center	Schools	11082 River Rd	St. Rose	29.95514144	-90.30937446
West Bank Pupil Appraisal Center	Schools	14137 US Hwy 90	Boutte	29.89088381	-90.40866045
East Bank Water Treatment Plant and Office	Water	14934 River Road	Norco	29.98643513	-90.39585684
West Bank Water Treatment Plant and Office	Water	301 Third Street	Luling	29.929718	-90.364847
East Bank Wastewater Treatment Plant	Wastewater	289 Jonathan Street	Destrehan	29.943601	-90.347975
Luling Oxidation Pond	Wastewater	199 Texaco Road	Luling	29.902654	-90.352544
Norco Wastewater Office & Maintenance Building	Wastewater	390 Cedar St	Norco	30.01529	-90.406731
West Bank Wastewater Treatment Plant and Office	Wastewater	628 La Highway 3160	Hahnville	29.964890	-90.429100

APPENDIX K

ST. CHARLES PARISH TYPES OF MITIGATION ACTIONS CONSIDERED

St. Charles Parish
Types of Mitigation Actions Considered

Mitigation Type	Description	Examples
Emergency Services Measures	These mitigation actions include coordinating with other emergency agencies; protecting critical facilities and equipment; and ensuring continuity of emergency services in the event of a disaster.	• Update/Coordination of Local Emergency Response Plan • Update/Coordinate of Evacuation Plans • Retrofit of existing critical facilities • Installing generators at emergency operations sites
Natural Resource Protection	These mitigation actions work to preserve and restore natural systems to minimize damage and loss from storm surge.	• Sediment and erosion control projects • Wetland restoration and preservation • Stream corridor restoration • Coordination with other agencies on regional coastal restoration projects
Prevention Measures	These mitigation actions are intended to reduce a community's future vulnerability.	• Comprehensive planning • Land use plans • Subdivision regulations • Building codes and enforcement • Community Rating System • Floodplain management regulations
Public Information Activities	These mitigation actions are intended to inform and educated citizens, elected officials, and property owners about hazards and potential ways to mitigate them.	• Websites with maps and information • Mailings to residents in hazard prone areas • Outreach projects • Participating in National Weather Systems StormReady program
Property Protection Measures	These mitigation actions serve to protect existing structures from natural hazards	• Elevation of structures • Acquisition of structures • Retrofit existing structures
Structural Projects	These mitigation actions are intended to lessen the impact of a hazard by the modification or construction of manmade structures.	• Floodwalls and retaining walls • Culverts • Burying utilities • Channel maintenance and modification • Pump Stations

Source: Local Mitigation Planning Handbook and Community Rating System Coordinator's Manual

APPENDIX L

ST. CHARLES PARISH MITIGATION ACTION IMPLEMENTATION WORKSHEETS

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-6
Project Title:	Raise generator and switch gear to slab level, which is plus 10'. Current elevation is plus 7'.
Background / Issue:	Hospital has to be shut down for switch gears to be replaced in the event that equipment is damaged by flood water.
Ideas for Integration:	
Responsible Agency:	St. Charles Parish Hospital Service Dist No. 1
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	The hospital can continue operations without interruption if generators and switch gear are protected from flooding.
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-11
Project Title:	Install back up satellite communications system for phone and internet in order to have access to patient medical records and to maintain communications with primary care health providers of patients who evacuate to the hospital.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	St. Charles Parish Hospital Service Dist No. 1
Partners:	
Potential Funding:	Parish Budget/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-12
Project Title:	Addition of a potable water storage system.
Background / Issue:	Loss of water will stop all surgical and dialysis services and cause an increased risk of infection in patients.
Ideas for Integration:	
Responsible Agency:	St. Charles Parish Hospital Service Dist No. 1
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-23
Project Title:	For the two diesel-only generators, add fuel storage capacity to increase amount stored to 4,000 gallons to enable the hospital to operate for 96 hours without outside assistance.
Background / Issue:	Medicare recommends that hospitals be equipped to operate withou outside assistance for a period of 96 hours.
Ideas for Integration:	
Responsible Agency:	Waterworks
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-14
Project Title:	Installation of Electric Actuators in the Distribution System to maintain essential supplies of water.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Waterworks
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	An uninterrupted water supply helps to maintain essential services and operation of critical facilities
Timeline:	2014-2016
Priority:	Low
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-15
Project Title:	Installation of distribution monitoring panels in order for the parish to provide safe drinking water to schools, hospitals, nursing homes, shelters, etc.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Waterworks
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	Medium
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-20
Project Title:	East Bank Water Plant Generator Elevation
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Waterworks
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	Medium
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-21
Project Title:	West Bank Water Plant Generator Elevation
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Waterworks
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	Medium
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PP-9
Project Title:	Addition of storm screens to the Community Health Center Loss of windows will damage the facility and render it unusable for some time. Include the addition of an emergency generator.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Community Health Center
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	P-6
Project Title:	Develop and maintain a comprehensive Geographic Information System that will include the following data: 1. All properties and parcels in the parish 2. Hazard areas 3. Service districts 4. Public works facilities 5. Transportation infrastructure 6. Special needs residents.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	GIS Department
Partners:	
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	P-8
Project Title:	Prepare a levee map with accurate information pertaining to all federal and non-federal levees within the parish.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	GIS Department
Partners:	
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-17
Project Title:	Acquisition and installation of a 30,000-gallon diesel fuel storage tank to provide a backup fuel supply for generators so that critical facilities can continue essential operations.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	School District
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	Medium
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-18
Project Title:	Acquisition and installation of 30,000-gallon unleaded fuel storage tank to provide a back up fuel supply for generators so that critical facilities can continue essential operations.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	School District
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	Medium
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	NR-4
Project Title:	Shallow-rooted tree removal at all public school sites and administrative facilities
Background / Issue:	Shallow rooted trees are oftentimes uprooted by severe winds or hurricanes causing property damage and endangering lives.
Ideas for Integration:	
Responsible Agency:	School District
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	Medium
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PP-10
Project Title:	Acquisition and installation of Hurricane Shutters on all public school sites.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	School District
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2015-2016
Priority:	High
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PP-11
Project Title:	Acquisition and installation of Hurricane Shutters on all public school administrative facilities.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	School District
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2015-2016
Priority:	High
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PP-12
Project Title:	Harden / Retrofit the public school maintenance facility, include the addition of an emergency generator set.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	School District
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2015-2016
Priority:	Low
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-1
Project Title:	Coordinate with the Southeast Louisiana Hurricane Task Force to comprehensively evaluate the effectiveness of current evacuation and emergency response procedures. Drawing upon empirical evacuation data and assembled technical expertise, improve hurricane evacuation procedures.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	DHSEP
Partners:	Neighboring Parishes, FEMA, GOHSEP
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	Protect lives of evacuating citizens by employing streamlined, efficient evacuation and emergency response procedures
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-3
Project Title:	Coordinate with the Coast Guard, Department of Homeland Security, and private industry to develop a program of regular, comprehensive evaluations of security surrounding fixed hazardous material sites.
Background / Issue:	
Ideas for Integration:	Coordinate with local, state, and federal law enforcement agencies as well as private sector security entities to implement suggested measures to improve security around these facilities.
Responsible Agency:	DHSEP
Partners:	US Coast Guard, Industry, Port of South Louisiana
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	Increased Security at hazardous materials sites may reduce chemical spills and accidents
Timeline:	Ongoing
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-4
Project Title:	Acquire the necessary infrastructure and equipment to ensure both an uninterrupted power supply at critical Parish facilities and improved surge protection for critical Parish computer and communications equipment.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	DHSEP
Partners:	
Potential Funding:	TBD
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	Ongoing
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-5
Project Title:	Improve both technological and administrative communication capabilities among fire, police, 911, and other state and local emergency operations through improved planning and the upgrading of communication infrastructure and equipment.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	DHSEP
Partners:	Fire Department, EMS, Sheriff's Office
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	Ongoing
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PI-1
Project Title:	Provide brochures and other publications through media, mail, libraries, Post Offices, and/or the Internet that explain (1) the definition of “repetitive loss structure” and (2) the options available to owners of repetitive loss structures.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	DHSEP
Partners:	
Potential Funding:	Local Funding
Cost Estimate:	$50k
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PI-2
Project Title:	Coordinate a public education campaign to keep Parish residents informed about on-going changes and improvements to the hurricane evacuation contra-flow transportation plan.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	DHSEP
Partners:	
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PI-3
Project Title:	Develop a tornado awareness brochure that includes hazard information and measures that may be taken to protect life and property during a tornado event. Make brochures available throughout the parish.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	DHSEP
Partners:	
Potential Funding:	Local Funding
Cost Estimate:	$10,000
Benefits (losses avoided):	
Timeline:	2015-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PI-4
Project Title:	Develop a public-speaking series to include topics such as types of natural disasters, how to develop a family disaster plan, how to develop a business continuity plan, and simple types of mitigation projects for homeowners. Offer these engagements to civic groups, church groups, business groups, and others throughout St. Charles Parish.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	DHSEP
Partners:	
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2010-Present
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PI-5
Project Title:	Publish and distribute pamphlets on agricultural drought management strategies.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	DHSEP
Partners:	
Potential Funding:	Local Funding
Cost Estimate:	$10,000
Benefits (losses avoided):	
Timeline:	2013-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PI-6
Project Title:	Publish and distribute information on hazardous materials routes and fixed sites so that the public becomes more aware of both the risks and recommended protective actions. Include a chart on warning symbols and terms in the publication.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	DHSEP
Partners:	
Potential Funding:	Local Funding
Cost Estimate:	$10,000
Benefits (losses avoided):	
Timeline:	2009-Present
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PI-7
Project Title:	Educate St. Charles Parish residents regarding all hazards in the form of forums, brochures, or web pages.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	DHSEP
Partners:	
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2009-Present
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	NR-3
Project Title:	Coordinate with the elected officials and relevant staff of neighboring parish governments to identify high-priority regional coastal restoration projects that are most critical to the economic and environmental well-being of the entire southeast Louisiana region. Submit final list of regional coastal restoration priorities to all relevant state and federal parties, such as the Army Corps of Engineers.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Planning & Zoning
Partners:	
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	P-1
Project Title:	Review and update the provisions and standards of Section XX, Flood Damage Prevention, of the St. Charles Parish Zoning Ordinance to devise more effective flood protection regulations, such as freeboard requirements and more stringent zoning designations for flood prone areas.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Planning and Zoning
Partners:	
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	P-2
Project Title:	Identify, schedule, and conduct activities, above and beyond those required under the National Flood Insurance Program (NFIP), to improve the Parish's ranking under the NFIP's Community Rating System. Conducting public outreach and education efforts and providing elevation certificates in non-hazard areas should be considered as potential activities to lower the Parish's CRS rating.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Planning and Zoning
Partners:	
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	P-3
Project Title:	Review and update Section IV B, Sewage Systems, of the St. Charles Parish Subdivision Regulations (Ordinance 81-8-2) in order to develop more stringent regulations requiring new and replacement sanitary sewage systems to minimize or eliminate infiltration of flood waters into the systems and discharge from the systems into flood waters.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Planning and Zoning
Partners:	
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	P-4
Project Title:	Study the feasibility of implementing an impact fee program or similar mechanism to retrofit existing sewage lift stations, sewer lines, and treatment plants to improve the effectiveness and the capacity of the existing wastewater treatment infrastructure.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Planning and Zoning
Partners:	
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	P-7
Project Title:	Maintain a database of all properties that sustain damage as a result of a hazard. Include information about the nature and extent of the damage. Incorporate this database into the Parish Geographic Information System.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Planning and Zoning
Partners:	
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PP-14
Project Title:	Consider mitigation measures that will enhance the performance of new buildings, expansions, or infrastructure during high wind and flood events, as these projects are proposed. This may include hardening structures, installing hurricane clips, or elevating utilities.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Planning & Zoning
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-9
Project Title:	Raise existing structures that will house the Parish and regional communications systems.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Sheriff's Office
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-19
Project Title:	Engineer and construct an emergency fueling pad within the perimeter of the Parish Correctional facility to allow the establishment of an emergency vehicle refueling site during disaster recovery. This will afford Emergency Services the ability to continue operations and services during disaster events when electrical
Background / Issue:	The Parish needs an emergency vehicle refueling site for use during disaster recovery.
Ideas for Integration:	
Responsible Agency:	Sheriff's Office
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	This addition will afford Emergency Services the ability to continue operations and services during disaster events when electrical utilities are not available.
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PP-15
Project Title:	Construction of new or retrofit old Communications Center with mitigation measures that protect during high wind and flood events. This may include hardening structures, installing hurricane clips, or elevating utilities.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Sheriff's Office
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-1
Project Title:	Evaluate drainage patterns throughout the Parish in the context of recent drainage improvements and in light of anticipated land use changes. Evaluate the need for additional drainage and flood control measures for both newly developing areas of the Parish and more established areas. Coordinate with the Corps of Engineers to design, fund, and implement the desired projects that result from this analysis.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-3
Project Title:	Implement the Riverbend Jack and Bores project, consisting of the installation of a 60” and 48” diameter steel drainage culvert under the KCS railroad and a 48” diameter steel culvert under the CN/IC railroad in order to improve stormwater drainage in the St. Rose community.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	Low
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-4
Project Title:	Implement the Delta Drive Jack and Bores project, consisting of the installation of two 42” diameter steel drainage culverts under the CN/IC railroad
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	Improve stormwater drainage in the St. Rose community.
Timeline:	2014-2016
Priority:	Low
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-5
Project Title:	Implement the Oak Street Pump Station Upgrade project, comprised of upgrading an existing pump and replacing a second pump at the Oak Street Pump Station located in the St. Rose community.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	These improvements will significantly increase the pump station's discharge capacity.
Timeline:	2014-2016
Priority:	Low
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-10
Project Title:	Construct the Willowdale Pump Station Canal Bank Stabilization Phase I project, consisting of embankment refurbishment, fill placement, reseeding/resodding, concrete slope paving, and splash block construction to improve stormwater flow through the canal.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	Improve stormwater flow through the canal
Timeline:	2014-2016
Priority:	High
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-11
Project Title:	Implement the Bar None Subsurface Phase III project, which entails the installation of subsurface drainage along Palomino Drive and Canyon Lane in the St. Rose community.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-14
Project Title:	Stabilization of the Dunleith Canal Bank to protect it from scouring and erosion.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	High
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-23
Project Title:	Complete design work and subsequently implement the Airline Culvert Enhancement and Replacement project.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	This project will provide enhanced drainage along US Highway 61 (Airline Highway) at Engineers Canal by installing new culverts under Highway 61.
Timeline:	2014-2016
Priority:	Medium
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-24
Project Title:	Plan, design, and subsequently construct the Turtle Pond Pump Station Upgrade project. This project will consist of the construction of an entirely new pump station.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	Provide enhanced drainage in St. Rose
Timeline:	2014-2016
Priority:	Low
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-25
Project Title:	Complete final design work and subsequently implement the “Canal A” and Dunleith Canal Intersection Upgrade in order to realign and stabilize “Canal A” at the Dunleith Canal in Destrehan.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	This project will result in enhanced drainage flow in the Destrehan community.
Timeline:	2014-2016
Priority:	High
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-26
Project Title:	Design and construct the Esperanza Pump Station
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	This project will improve drainage in the Aston Estates Subdivision, the Sugarland Parkway Subdivision, the St. Charles Parish School Board Offices, and R. K. Smith Middle School.
Timeline:	2014-2016
Priority:	Low
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-27
Project Title:	Complete final design and implement critical recommendations from 2005 Montz Master Drainage Plan. This project will consist of: a) the installation of two 72" concrete culverts under Evangeline Road at the KCS Canal; b) two 48" concrete culverts under Thoroughbred Lane at the Coulee Canal; c) two 60" concrete culverts at Evangeline Road at the Coulee Canal; and d) the realignment of the Coulee Canal.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	This project will provide enhanced drainage to the Montz community
Timeline:	2009-2014
Priority:	High
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-28
Project Title:	Design and construct the Vial Pump Station.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	This project will provide a new pump station along the Vial Canal to improve drainage capacity in the Hahnville community.
Timeline:	2014-2016
Priority:	Low
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-29
Project Title:	Complete design work and subsequently implement the Upgrade to Coronado Pump Stations 1 and 2.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	TBD
Cost Estimate:	
Benefits (losses avoided):	This project will improve the pump station capacity and the structural components of these pump stations serving the Luling community.
Timeline:	2014
Priority:	High
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-30
Project Title:	Finalize the design of and subsequently construct the Willowdale Pump Station Bank Stabilization II project, consisting of embankment refurbishment, fill placement, reseeding/resodding, concrete slope paving, and splash back construction.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	Improve pumping capacity and flow from the Willowdale Pump Station.
Timeline:	2014-2016
Priority:	High
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-32
Project Title:	Design and install the Tibby Pump Station Bar Screen Cleaner, Pump Station Cover, and Deck.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	Upgrade the functioning of the Tibby Pump Station in Des Allemands
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-33
Project Title:	Design and install the Up the Bayou Pump Station Bar Screen Cleaner, Pump Station Cover and Deck.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	Upgrade the functioning of the Up the Bayou Pump Station in Des Allemands.
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-34
Project Title:	Design and install the Des Allemands Pump Station Bar Screen Cleaner, Pump Station Cover and Deck.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	Upgrade the functioning of the Des Allemands Pump Station located in Des Allemands.
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-35
Project Title:	Design and install the Tregle Pump Station (Eric Pump Station) Bar Screen Cleaner, Pump Station Cover and Deck.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	Upgrade the functioning of the Tregle Pump Station located in Des Allemands.
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-36
Project Title:	Design and install the Cortez Pump Station Bar Screen Cleaner, Pump Station Cover and Deck.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	Upgrade the functioning of the Cortez Pump Station located in Des Allemands.
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-38
Project Title:	Design and implement the Fairfield Pump Station Upgrade project, consisting of increasing the pump station capacity and improving the structural components of the Fairfield Pump Station in St. Rose.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2015-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-39
Project Title:	Design and implement the Oakland Pump Station Upgrade project, consisting of increasing the pump station capacity and improving the structural components of the Oakland Pump Station in St. Rose.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2015-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-40
Project Title:	Design and implement the Old Kellogg Pump Station Upgrade project, consisting of increasing the pump station capacity and improving the structural components of the Old Kellogg Pump Station in Luling.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2011-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-42
Project Title:	Design and implement the Ormond Drainage Improvement project, which will entail making general drainage enhancements in the vicinity of the Ormond Nursing Home in Destrehan.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2011-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-43
Project Title:	Design and construct the Oakland Jack and Bore project, consisting of the installation of steel culverts under the CN/IC railroad.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	Improve drainage in the vicinity of Oakland Ridge Lane in St. Rose.
Timeline:	2015-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-44
Project Title:	Design and implement the Fairfield Jack and Bore project which will entail the installation of steel culverts under the CN/IC railroad at the Fairfield Pump Station in St. Rose.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2015-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-45
Project Title:	Evaluate Engineering options and design to alleviate the flooding problem along Canal #10 and improve drainage in the Bayou Gauche community. Design will include the construction of a new Pump Station with location to be determined from the Engineering study.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	Alleviate flooding along Canal No. 10 in Bayou Gauche Community.
Timeline:	2011-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-48
Project Title:	Complete final design work and construct the remaining recommended drainage improvements from the 2005 Montz Drainage Plan. The outstanding recommendations consist of installing culverts under Evangeline Road at the ICG Railroad and grading the ICG Canal, CC Canal, Scott Canal and KCS Canal.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	High
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-53
Project Title:	Design and Implement improvements to increase capacity and efficiency of the Coronado Park drainage system.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-54
Project Title:	Design and implement installation of a new Pump Station for Riverbend Park.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-56
Project Title:	Design and implement improved capacity and stabilization of the Blouin Canal in order to reduce erosion and improve pumping capacity. (Separate Projects, See Item S-63)
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2011-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-61
Project Title:	Design and implement improved capacity and efficiency with Bar Screen Cleaner technology at the Boutte Pump Station.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-62
Project Title:	Design and implement new Cajun Paradis Levee System in order to provide surge protection to residents and prevent levee failure.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-63
Project Title:	Complete final design work and implement the Primrose Canal Upgrade in order to increase efficiency and stabilization of the canal.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	This project will result in enhanced drainage flow for the West Bank community.
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-64
Project Title:	Complete final design work and implement the New Sarpy Mid Canal and New Sarpy Midwest Canal Upgrades in order to increase efficiency and stabilization of the canal.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	This project will result in enhanced drainage flow for the East Bank community.
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-65
Project Title:	Complete final design work and implement the Cousins Canal Upgrade in order to increase efficiency and stabilization of the canal.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	This project will result in enhanced drainage flow for the West Bank community.
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-67
Project Title:	Boring of Rolling Canal Crossing/Distribution Lines
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2015-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-68
Project Title:	Blouin Canal Road Crossing Culvert Improvements
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-71
Project Title:	NOLA Pump Station Auto Bar Screen Cleaner
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-73
Project Title:	Tippy Pump Station Auto Bar Screen Cleaner
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-74
Project Title:	Design and Implement improvements to increase capacity and efficiency of the Sunset Pump Station.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2013-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-75
Project Title:	Design and construct Magnolia Pump Station.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2013-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	S-76
Project Title:	Design and implement Mimosa drainage improvements to increase conveyance and construct new pump station.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Department of Public Works
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2013-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PP-1
Project Title:	At the discretion of the property owners, either acquire or elevate repetitive loss structures throughout the Parish, giving priority to “target” repetitive loss structures.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Grants Office
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PP-21
Project Title:	Elevation of 27 Repetitive Loss Structures
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	SCP Grants Office
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2013-2016
Priority:	High
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PP-22
Project Title:	Elevation of 4 Severe Repetitive Loss Structures
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	SCP Grants Office
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2013-2016
Priority:	High
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-2
Project Title:	Coordinate with the National Weather Service to improve the Parish's technical infrastructure for forecasting weather-related hazards in the Parish and improve the technical and administrative communication linkages between the Parish and the National Weather Service.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Parish President's Office
Partners:	National Weather Service, DHSEP
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	Better forecasting of weather-related hazards will protect lives and property by allowing citizens and Parish officials to prepare earlier
Timeline:	Ongoing
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	NR-1
Project Title:	Prioritize those projects outlined in the Coastal Wetlands Planning, Protection, and Restoration Act; the Louisiana Coast Area (LCA) study and the Coast 2050 Feasibility Study that address the Parish's most pressing restoration needs. This exercise should culminate in a formal plan that identifies high priority projects and justifies their priority status. Particular attention should be given to utilizing the Bonnet Carre Spillway for wetlands restoration and implementing terracing and planting projects in the LaBranche Wetlands.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Parish President's Office
Partners:	
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	NR-2
Project Title:	Conduct a comprehensive analysis of both existing and potential Parish revenue sources to identify adequate local funding mechanisms for meeting any potential local funding requirements for the coastal restoration projects outlined in the Coastal Wetlands Planning, Protection, and Restoration Act; the LCA study; and the Coast 2050 Feasibility Study. Incorporate findings into the aforementioned "priority plan" for coastal restoration in St. Charles Parish.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Parish President's Office
Partners:	
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PP-4
Project Title:	In association with Louisiana State University Cooperative Extension Services, provide technical assistance to St. Charles Parish farmers in the form of forums, brochures, or web pages regarding possible funding sources for and the installation of irrigation systems to protect crops from drought conditions.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	DHSEP
Partners:	
Potential Funding:	Staff Time
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2015-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	PP-16
Project Title:	Consider providing storm shelters at critical facilitiy sites.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	Parish President's Office
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-6
Project Title:	Raise generator and switch gear to slab level, which is plus 10'. Current elevation is plus 7'.
Background / Issue:	Hospital has to be shut down for switch gears to be replaced in the event that equipment is damaged by flood water.
Ideas for Integration:	
Responsible Agency:	St. Charles Parish Hospital Service Dist No. 1
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	The hospital can continue operations without interruption if generators and switch gear are protected from flooding.
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-11
Project Title:	Install back up satellite communications system for phone and internet in order to have access to patient medical records and to maintain communications with primary care health providers of patients who evacuate to the hospital.
Background / Issue:	
Ideas for Integration:	
Responsible Agency:	St. Charles Parish Hospital Service Dist No. 1
Partners:	
Potential Funding:	Parish Budget/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-12
Project Title:	Addition of a potable water storage system.
Background / Issue:	Loss of water will stop all surgical and dialysis services and cause an increased risk of infection in patients.
Ideas for Integration:	
Responsible Agency:	St. Charles Parish Hospital Service Dist No. 1
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

Mitigation Action Implementation Worksheet

Complete a mitigation action implementation worksheet for each identified mitigation action

Mitigation Action #:	ES-23
Project Title:	For the two diesel-only generators, add fuel storage capacity to increase amount stored to 4,000 gallons to enable the hospital to operate for 96 hours without outside assistance.
Background / Issue:	Medicare recommends that hospitals be equipped to operate withou outside assistance for a period of 96 hours.
Ideas for Integration:	
Responsible Agency:	Waterworks
Partners:	
Potential Funding:	Parish Budgets/Grant Funding
Cost Estimate:	
Benefits (losses avoided):	
Timeline:	2014-2016
Priority:	
Worksheet completed by: (Name and Department)	

APPENDIX M

ST. CHARLES PARISH MITIGATION ACTION PROGRESS REPORT FORMS

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014
Mitigation Action #	ES-2
Project Title	Coordinate with the National Weather Service to improve the Parish's capabilies to forecast weather-related hazards.
Responsible Agency	Parish President's Office
Contact Name	Buddy Boe
Contact Phone	985-783-5000
Contact Email	bboe@stcharlesgov.net
Project Status [check applicable box(es)]	☐ Project Completed ☐ Project Cancelled ☐ Project on Schedule ☐ Anticipated Completion Date: _____ ☐ Project Delayed Explain: _____

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014
Mitigation Action #	NR-1
Project Title	Prioritize those projects outlined in the Coastal Wetlands Planning, Protection, and Restoration Act; the Louisiana Coast Area (LCA) study and the Coast 2050 Feasibility Study that address the Parish's most pressing restoration needs. This exercise should culminate in a formal plan that identifies high priority projects and justifies their priority status. Particular attention should be given to utilizing the Bonnet Carre Spillway for wetlands restoration and implementing terracing and planting projects in the LaBranche Wetlands.
Responsible Agency	Parish President's Office
Contact Name	Buddy Boe
Contact Phone	985-783-5000
Contact Email	bboe@stcharlesgov.net
Project Status [check applicable box(es)]	Project Completed Project Cancelled Project on Schedule Anticipated Completion Date: _____ Project Delayed Explain: _____

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014
Mitigation Action #	NR-2
Project Title	Conduct a comprehensive analysis of both existing and potential Parish revenue sources to identify adequate local funding mechanisms for meeting any potential local funding requirements for the coastal restoration projects outlined in the Coastal Wetlands Planning, Protection, and Restoration Act; the LCA study; and the Coast 2050 Feasibility Study. Incorporate findings into the aforementioned "priority plan" for coastal restoration in St. Charles
Responsible Agency	Parish President's Office
Contact Name	Buddy Boe
Contact Phone	985-783-5000
Contact Email	bboe@stcharlesgov.net
Project Status [check applicable box(es)]	Project Completed Project Cancelled Project on Schedule Anticipated Completion Date: _____ Project Delayed Explain: _____

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014
Mitigation Action #	PP-4
Project Title	In association with Louisiana State University Cooperative Extension Services, provide technical assistance to St. Charles Parish farmers in the form of forums, brochures, or web pages regarding possible funding sources for and the installation of irrigation systems to protect crops from drought conditions.
Responsible Agency	Parish President's Office
Contact Name	Buddy Boe
Contact Phone	985-783-5000
Contact Email	bboe@stcharlesgov.net
Project Status [check applicable box(es)]	☐ Project Completed ☐ Project Cancelled ☐ Project on Schedule ☐ Anticipated Completion Date: _____ ☐ Project Delayed Explain: _____

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014
Mitigation Action #	PP-16
Project Title	Consider providing storm shelters at all critical facilitiy sites.
Responsible Agency	Parish President's Office
Contact Name	Buddy Boe
Contact Phone	985-783-5000
Contact Email	bboe@stcharlesgov.net
Project Status [check applicable box(es)]	☐ Project Completed ☐ Project Cancelled ☐ Project on Schedule ☐ Anticipated Completion Date: _____ ☐ Project Delayed Explain: _____

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	ES-14	
Project Title	Installation of Electric Actuators in the Distribution System to maintain essential supplies of water.	
Responsible Agency	Waterworks Department	
Contact Name	Rickey Robert, Jr.	
Contact Phone	985-783-5110	
Contact Email	rrobert@scpwater.org	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	ES-15	
Project Title	Installation of distribution monitoring panels for waterworks	
Responsible Agency	Waterworks Department	
Contact Name	Rickey Robert, Jr.	
Contact Phone	985-783-5110	
Contact Email	rrobert@scpwater.org	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	ES-20	
Project Title	East Bank Water Plant Generator Elevation	
Responsible Agency	Waterworks Department	
Contact Name	Rickey Robert, Jr.	
Contact Phone	985-783-5110	
Contact Email	rrobert@scpwater.org	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	ES-21	
Project Title	West Bank Water Plant Generator Elevation	
Responsible Agency	Waterworks Department	
Contact Name	Rickey Robert, Jr.	
Contact Phone	985-783-5110	
Contact Email	rrobert@scpwater.org	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	PP-9	
Project Title	Addition of storm screens to the Community Health Center Loss of windows will damage the facility and render it unusable for some time. Include the addition of an emergency generator.	
Responsible Agency	Community Health Center	
Contact Name	Mark Keiser	
Contact Phone		
Contact Email		
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	P-6	
Project Title	Develop and maintain a comprehensive Geographic Information System that will include the following data: 1. All properties and parcels in the parish 2. Hazard areas 3. Service districts 4. Public works facilities 5. Transportation infrastructure 6. Special needs	
Responsible Agency	GIS Department	
Contact Name	Luis Martinez	
Contact Phone	504-235-1902	
Contact Email	lmartinez@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	P-8	
Project Title	Prepare a levee map with accurate information pertaining to all federal and non-federal levees within the parish.	
Responsible Agency	GIS Department	
Contact Name	Luis Martinez	
Contact Phone	504-235-1902	
Contact Email	lmartinez@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	ES-17	
Project Title	Acquisition and installation of a 30,000-gallon diesel fuel storage tank for school district.	
Responsible Agency	St. Charles Parish Public Schoosl	
Contact Name	Kade Rogers	
Contact Phone	985-785-3121	
Contact Email	krogers@stcharles.k12.la.us	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	ES-18	
Project Title	Acquisition and installation of 30,000-gallon unleaded fuel storage tank for school district.	
Responsible Agency	St. Charles Parish Public Schoosl	
Contact Name	Kade Rogers	
Contact Phone	985-785-3121	
Contact Email	krogers@stcharles.k12.la.us	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	NR-4	
Project Title	Shallow-rooted tree removal at all public school sites and administrative facilities.	
Responsible Agency	St. Charles Parish Public Schoosl	
Contact Name	Kade Rogers	
Contact Phone	985-785-3121	
Contact Email	krogers@stcharles.k12.la.us	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	PP-10	
Project Title	Acquisition and installation of Hurricane Shutters on all public school sites.	
Responsible Agency	St. Charles Parish Public Schoosl	
Contact Name	Kade Rogers	
Contact Phone	985-785-3121	
Contact Email	krogers@stcharles.k12.la.us	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	PP-11	
Project Title	Acquisition and installation of Hurricane Shutters on all public school administrative facilities.	
Responsible Agency	St. Charles Parish Public Schoosl	
Contact Name	Kade Rogers	
Contact Phone	985-785-3121	
Contact Email	krogers@stcharles.k12.la.us	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	PP-12	
Project Title	Harden / Retrofit the public school maintenance facility, include the addition of an emergency generator set.	
Responsible Agency	St. Charles Parish Public Schoosl	
Contact Name	Kade Rogers	
Contact Phone	985-785-3121	
Contact Email	krogers@stcharles.k12.la.us	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

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2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	ES-1	
Project Title	Coordinate with the Southeast Louisiana Hurricane Task Force to evaluate evacuation and emergency response procedures.	
Responsible Agency	DHSEP	
Contact Name	Jason Tastet	
Contact Phone	985-783-5050	
Contact Email	jtastet@scpeoc.org	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	ES-3	
Project Title	Coordinate with the Coast Guard, Department of Homeland Security, and private industry to develop a periodic security evaluation program surrounding fixed haz mat sites.	
Responsible Agency	DHSEP	
Contact Name	Jason Tastet	
Contact Phone	985-783-5050	
Contact Email	jtastet@scpeoc.org	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	ES-4	
Project Title	Acquire the necessary infrastructure to ensure an uninterruped power supply and improved surge protection at critical facilities.	
Responsible Agency	DHSEP	
Contact Name	Jason Tastet	
Contact Phone	985-783-5050	
Contact Email	jtastet@scpeoc.org	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	ES-5	
Project Title	Improve both technological and administrative communication capabilities among state and local emergency operations through improved planning and the upgrading of communication	
Responsible Agency	DHSEP	
Contact Name	Jason Tastet	
Contact Phone	985-783-5050	
Contact Email	jtastet@scpeoc.org	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	PI-1	
Project Title	Provide brochures and other publications through media, mail, libraries, Post Offices, and/or the Internet that explain (1) the definition of “repetitive loss structure” and (2) the options available to owners of repetitive loss structures.	
Responsible Agency	DHSEP	
Contact Name	Jason Tastet	
Contact Phone	985-783-5050	
Contact Email	jtastet@scpeoc.org	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	PI-2	
Project Title	Coordinate a public education campaign to keep Parish residents informed about on-going changes and improvements to the hurricane evacuation contra-flow transportation plan.	
Responsible Agency	DHSEP	
Contact Name	Jason Tastet	
Contact Phone	985-783-5050	
Contact Email	jtastet@scpeoc.org	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	PI-3	
Project Title	Develop a tornado awareness brochure that includes hazard information and measures that may be taken to protect life and property during a tornado event. Make brochures available throughout the parish.	
Responsible Agency	DHSEP	
Contact Name	Jason Tastet	
Contact Phone	985-783-5050	
Contact Email	jtastet@scpeoc.org	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	PI-4	
Project Title	Develop a public-speaking series to include topics such as types of natural disasters, how to develop a family disaster plan, how to develop a business continuity plan, and simple types of mitigation projects for homeowners. Offer these engagements to civic groups, church groups, business groups, and others throughout St. Charles Parish.	
Responsible Agency	DHSEP	
Contact Name	Jason Tastet	
Contact Phone	985-783-5050	
Contact Email	jtastet@scpeoc.org	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date: _____
	☐	Project Delayed
		Explain: _____

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	PI-5	
Project Title	Publish and distribute pamphlets on agricultural drought management strategies.	
Responsible Agency	DHSEP	
Contact Name	Jason Tastet	
Contact Phone	985-783-5050	
Contact Email	jtastet@scpeoc.org	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	PI-6	
Project Title	Publish and distribute information on hazardous materials routes and fixed sites so that the public becomes more aware of both the risks and recommended protective actions. Include a chart on warning symbols and terms in the publication.	
Responsible Agency	DHSEP	
Contact Name	Jason Tastet	
Contact Phone	985-783-5050	
Contact Email	jtastet@scpeoc.org	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	PI-7	
Project Title	Educate St. Charles Parish residents regarding all hazards in the form of forums, brochures, or web pages.	
Responsible Agency	DHSEP	
Contact Name	Jason Tastet	
Contact Phone	985-783-5050	
Contact Email	jtastet@scpeoc.org	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	NR-3	
Project Title	Coordinate with elected officials and relevant staff of neighboring parish governments to identify high-priority regional coastal restoration projects that are most critical to the economic and environmental well-being of the entire southeast Louisiana region. Submit final list of regional coastal restoration priorities to all relevant state and federal parties, such as the Army Corps of Engineers.	
Responsible Agency	Planning & Zoning	
Contact Name	Earl Matherne	
Contact Phone	985-783-5060	
Contact Email	ematherne@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	P-1	
Project Title	Review and update the provisions and standards of Section XX, Flood Damage Prevention, of the St. Charles Parish Zoning Ordinance to devise more effective flood protection regulations, such as freeboard requirements and more stringent zoning designations for flood prone areas.	
Responsible Agency	Planning & Zoning	
Contact Name	Earl Matherne	
Contact Phone	985-783-5060	
Contact Email	ematherne@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	P-2	
Project Title	Identify, schedule, and conduct activities, above and beyond those required under the National Flood Insurance Program (NFIP), to improve the Parish's ranking under the NFIP's Community Rating System. Conducting public outreach and education efforts and providing elevation certificates in non-hazard areas should be considered as potential activities to lower the Parish's CRS rating.	
Responsible Agency	Planning & Zoning	
Contact Name	Earl Matherne	
Contact Phone	985-783-5060	
Contact Email	ematherne@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	P-3	
Project Title	Review and update Section IV B, Sewage Systems, of the St. Charles Parish Subdivision Regulations (Ordinance 81-8-2) in order to develop more stringent regulations requiring new and replacement sanitary sewage systems to minimize or eliminate infiltration of flood waters into the systems and discharge from the systems into flood	
Responsible Agency	Planning & Zoning	
Contact Name	Earl Matherne	
Contact Phone	985-783-5060	
Contact Email	ematherne@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	P-4	
Project Title	Study the feasibility of implementing an impact fee program or similar mechanism to retrofit existing sewage lift stations, sewer lines, and treatment plants to improve the effectiveness and the capacity of the existing wastewater treatment infrastructure.	
Responsible Agency	Planning & Zoning	
Contact Name	Earl Matherne	
Contact Phone	985-783-5060	
Contact Email	ematherne@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

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4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	P-7	
Project Title	Maintain a database of all properties that sustain damage as a result of a hazard. Include information about the nature and extent of the damage. Incorporate this database into the Parish Geographic Information System. Increase communication between EOC and	
Responsible Agency	Planning & Zoning	
Contact Name	Earl Matherne	
Contact Phone	985-783-5060	
Contact Email	ematherne@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

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Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	PP-14	
Project Title	Consider mitigation measures that will enhance the performance of new buildings, expansions, or infrastructure during high wind and flood events, as these projects are proposed. This may include hardening structures, installing hurricane clips, or elevating utilities.	
Responsible Agency	Planning & Zoning	
Contact Name	Earl Matherne	
Contact Phone	985-783-5060	
Contact Email	ematherne@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	ES-9	
Project Title	Raise existing structures that will house the Parish and regional communications systems.	
Responsible Agency	Sheriff's Office	
Contact Name	Darren Gros	
Contact Phone	985-783-1135	
Contact Email	dgros@stcharlessheriff.org	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	ES-19	
Project Title	Engineer and construct an emergency fueling pad within the perimeter of the Parish Correctional facility.	
Responsible Agency	Sheriff's Office	
Contact Name	Darren Gros	
Contact Phone	985-783-1135	
Contact Email	dgros@stcharlessheriff.org	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	PP-15	
Project Title	Construction of new or retrofit old Communications Center with mitigation measures that protect during high wind and flood events. This may include hardening structures, installing hurricane clips, or elevating utilities.	
Responsible Agency	Sheriff's Office	
Contact Name	Darren Gros	
Contact Phone	985-783-1135	
Contact Email	dgros@stcharlessheriff.org	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014
Mitigation Action #	S-1
Project Title	Evaluate drainage patterns throughout the Parish in the context of recent drainage improvements and in light of anticipated land use changes. Evaluate the need for additional drainage and flood control measures for both newly developing areas of the Parish and more established areas. Coordinate with the Corps of Engineers to design, fund, and implement the desired projects that result from this analysis.
Responsible Agency	Department of Public Works
Contact Name	Carlton Bischoff
Contact Phone	985-783-5102
Contact Email	cbischoff@stcharlesgov.net
Project Status [check applicable box(es)]	☐ Project Completed ☐ Project Cancelled ☐ Project on Schedule ☐ Anticipated Completion Date: _____ ☐ Project Delayed Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-3	
Project Title	Implement the Riverbend Jack and Bore project, consisting of the installation of a 60” and 48” diameter steel drainage culvert under the KCS railroad and a 48” diameter steel culvert under the CN/IC	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date: _____
	☐	Project Delayed
		Explain: _____

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014
Mitigation Action #	S-4
Project Title	Implement the Delta Drive Jack and Bore project, consisting of the installation of two 42" diameter steel drainage culverts under the CN/IC railroad.
Responsible Agency	Department of Public Works
Contact Name	Carlton Bischoff
Contact Phone	985-783-5102
Contact Email	cbischoff@stcharlesgov.net
Project Status [check applicable box(es)]	☐ Project Completed ☐ Project Cancelled ☐ Project on Schedule ☐ Anticipated Completion Date: _____ ☐ Project Delayed Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014
Mitigation Action #	S-5
Project Title	Implement the Oak Street Pump Station Upgrade project, comprised of upgrading an existing pump and replacing a second pump at the Oak Street Pump Station.
Responsible Agency	Department of Public Works
Contact Name	Carlton Bischoff
Contact Phone	985-783-5102
Contact Email	cbischoff@stcharlesgov.net
Project Status [check applicable box(es)]	☐ Project Completed ☐ Project Cancelled ☐ Project on Schedule ☐ Anticipated Completion Date: _____ ☐ Project Delayed Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-10	
Project Title	Construct the Willowdale Pump Station Canal Bank Stabilization Phase I project, consisting of embankment refurbishment, fill placement, reseeding/resodding, concrete slope paving, and splash block construction.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-11	
Project Title	Implement the Bar None Subsurface Phase III project, which entails the installation of subsurface drainage along Palomino Drive and Canyon Lane.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-14	
Project Title	Stabilization of the Dunleith Canal Bank to protect it from scouring and erosion.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-23	
Project Title	Complete design work and subsequently implement the Airline Culvert Enhancement and Replacement project.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-24	
Project Title	Plan, design, and subsequently construct the Turtle Pond Pump Station Upgrade project.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-25	
Project Title	Complete final design work and subsequently implement the "Canal A" and Dunleith Canal Intersection Upgrade in order to realign and stabilize "Canal A" at the Dunleith Canal in Destrehan.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-26	
Project Title	Design and construct the Esperanza Pump Station.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-27	
Project Title	Complete final design and implement critical recommendations from 2005 Montz Master Drainage Plan. This project will consist of: a) the installation of two 72" concrete culverts under Evangeline Road at the KCS Canal; b) two 48" concrete culverts under Thoroughbred Lane at the Coulee Canal; c) two 60" concrete culverts at Evangeline Road at the Coulee Canal; and d) the cleaning of the Coulee Canal.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-28	
Project Title	Design and construct the Vial Pump Station.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-29	
Project Title	Complete design work and subsequently implement the Upgrade to Coronado Pump Stations 1 and 2.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014
Mitigation Action #	S-30
Project Title	Finalize the design of and subsequently construct the Willowdale Pump Station Bank Stabilization II project.
Responsible Agency	Department of Public Works
Contact Name	Carlton Bischoff
Contact Phone	985-783-5102
Contact Email	cbischoff@stcharlesgov.net
Project Status [check applicable box(es)]	☐ Project Completed ☐ Project Cancelled ☐ Project on Schedule ☐ Anticipated Completion Date: _____ ☐ Project Delayed Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-32	
Project Title	Design and install the Tibby Pump Station Bar Screen Cleaner, Pump Station Cover, and Deck.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-33	
Project Title	Design and install the Up the Bayou Pump Station Bar Screen Cleaner, Pump Station Cover and Deck.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-34	
Project Title	Design and install the Des Allemands Pump Station Bar Screen Cleaner, Pump Station Cover and Deck.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-35	
Project Title	Design and install the Tregle Pump Station (Eric Pump Station) Bar Screen Cleaner, Pump Station Cover and Deck.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-36	
Project Title	Design and install the Cortez Pump Station Bar Screen Cleaner, Pump Station Cover and Deck.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-38	
Project Title	Design and implement the Fairfield Pump Station Upgrade project.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-39	
Project Title	Design and implement the Oakland Pump Station Upgrade project.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-40	
Project Title	Design and Implement the Old Kellogg Pump Station Upgrade project	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-42	
Project Title	Design and implement the Ormond Drainage Improvement project.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-43	
Project Title	Design and construct the Oakland Jack and Bore project.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-44	
Project Title	Design and implement the Fairfield Jack and Bore project.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-45	
Project Title	Evaluate Engineering options and design to alleviate the flooding problem along Canal #10.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-48	
Project Title	Complete final design work and construct the remaining recommended drainage improvements from the 2005 Montz Drainage Plan. The outstanding recommendations consist of installing culverts under Evangeline Road at the ICG Railroad and grading the ICG Canal, CC Canal, Scott Canal and KCS Canal.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-53	
Project Title	Design and Implement improvements to increase capacity and efficiency of the Coronado Park drainage system.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-54	
Project Title	Design and implement installation of a new Pump Station for Riverbend Park.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-56	
Project Title	Design and implement improved capacity and stabilization of the Blouin Canal.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-61	
Project Title	Design and implement improved capacity and efficiency with Bar Screen Cleaner technology at the Boutte Pump Station	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-62	
Project Title	Design and implement new Cajun Paradis Levee System in order to provide surge protection to residents and prevent levee failure.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-63	
Project Title	Complete final design work and implement the Primrose Canal Upgrade in order to increase efficiency and stabilization of the canal.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-64	
Project Title	Complete final design work and implement the New Sarpy Mid Canal and New Sarpy Midwest Canal Upgrades.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-65	
Project Title	Complete final design work and implement the Cousins Canal Upgrade in order to increase efficiency and stabilization of the canal.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-67	
Project Title	Boring of Rolling Canal Crossing/Distribution Lines	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-68	
Project Title	Blouin Canal Road Crossing Culvert Improvements	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-71	
Project Title	NOLA Pump Station Auto Bar Screen Cleaner	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-73	
Project Title	Tippy Pump Station Auto Bar Screen Cleaner	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-74	
Project Title	Design and Implement improvements to increase capacity and efficiency of the Sunset Pump Station.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-75	
Project Title	Design and construct Magnolia Pump Station.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	S-76	
Project Title	Design and implement Mimosa drainage improvements to increase conveyance and construct new pump station.	
Responsible Agency	Department of Public Works	
Contact Name	Carlton Bischoff	
Contact Phone	985-783-5102	
Contact Email	cbischoff@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	PP-1	
Project Title	At the discretion of the property owners, either acquire or elevate repetitive loss structures throughout the Parish, giving priority to "target" repetitive loss structures.	
Responsible Agency	SCP Grants Office	
Contact Name	Carla Chiasson	
Contact Phone	985-783-5165	
Contact Email	cchiasson@stcharlesgov.net	
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: January 2014 To Date: August 2014	
Mitigation Action #	PP-21	
Project Title	Elevation of 27 Repetitive Loss Structures	
Responsible Agency	SCP Grants Office	
Contact Name	Carla Chiasson	
Contact Phone	985-783-5165	
Contact Email	cchiasson@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: January 2014 To Date: August 2014	
Mitigation Action #	PP-22	
Project Title	Elevation of 4 Severe Repetitive Loss Structures	
Responsible Agency	SCP Grants Office	
Contact Name	Carla Chiasson	
Contact Phone	985-783-5165	
Contact Email	cchiasson@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	ES-2	
Project Title	Coordinate with the National Weather Service to improve the Parish's capabilies to forecast weather-related hazards.	
Responsible Agency	Parish President's Office	
Contact Name	Buddy Boe	
Contact Phone	985-783-5000	
Contact Email	bboe@stcharlesgov.net	
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014
Mitigation Action #	NR-1
Project Title	Prioritize those projects outlined in the Coastal Wetlands Planning, Protection, and Restoration Act; the Louisiana Coast Area (LCA) study and the Coast 2050 Feasibility Study that address the Parish's most pressing restoration needs. This exercise should culminate in a formal plan that identifies high priority projects and justifies their priority status. Particular attention should be given to utilizing the Bonnet Carre Spillway for wetlands restoration and implementing terracing and planting projects in the LaBranche Wetlands.
Responsible Agency	Parish President's Office
Contact Name	Buddy Boe
Contact Phone	985-783-5000
Contact Email	bboe@stcharlesgov.net
Project Status [check applicable box(es)]	Project Completed Project Cancelled Project on Schedule Anticipated Completion Date: _____ Project Delayed Explain: _____

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014
Mitigation Action #	NR-2
Project Title	Conduct a comprehensive analysis of both existing and potential Parish revenue sources to identify adequate local funding mechanisms for meeting any potential local funding requirements for the coastal restoration projects outlined in the Coastal Wetlands Planning, Protection, and Restoration Act; the LCA study; and the Coast 2050 Feasibility Study. Incorporate findings into the aforementioned "priority plan" for coastal restoration in St. Charles
Responsible Agency	Parish President's Office
Contact Name	Buddy Boe
Contact Phone	985-783-5000
Contact Email	bboe@stcharlesgov.net
Project Status [check applicable box(es)]	Project Completed Project Cancelled Project on Schedule Anticipated Completion Date: _____ Project Delayed Explain: _____

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014
Mitigation Action #	PP-4
Project Title	In association with Louisiana State University Cooperative Extension Services, provide technical assistance to St. Charles Parish farmers in the form of forums, brochures, or web pages regarding possible funding sources for and the installation of irrigation systems to protect crops from drought conditions.
Responsible Agency	Parish President's Office
Contact Name	Buddy Boe
Contact Phone	985-783-5000
Contact Email	bboe@stcharlesgov.net
Project Status [check applicable box(es)]	☐ Project Completed ☐ Project Cancelled ☐ Project on Schedule ☐ Anticipated Completion Date: _____ ☐ Project Delayed Explain: _____

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014
Mitigation Action #	PP-16
Project Title	Consider providing storm shelters at all critical facilitiy sites.
Responsible Agency	Parish President's Office
Contact Name	Buddy Boe
Contact Phone	985-783-5000
Contact Email	bboe@stcharlesgov.net
Project Status [check applicable box(es)]	☐ Project Completed ☐ Project Cancelled ☐ Project on Schedule ☐ Anticipated Completion Date: _____ ☐ Project Delayed Explain: _____

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	ES-6	
Project Title	Raise generators and switch gear to slab level, which is plus 10'. Current elevation is plus 7'.	
Responsible Agency	St. Charles Parish Hospital Service Dist No. 1	
Contact Name	Blake Boudreaux	
Contact Phone	985-785-6242	
Contact Email		
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	ES-11	
Project Title	Install back up satellite communications system for phone and internet at hospital.	
Responsible Agency	St. Charles Parish Hospital Service Dist No. 1	
Contact Name	Blake Boudreaux	
Contact Phone	985-785-6242	
Contact Email		
Project Status [check applicable box(es)]	☐	Project Completed
	☐	Project Cancelled
	☐	Project on Schedule
	☐	Anticipated Completion Date:
	☐	Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	ES-12	
Project Title	Addition of a potable water storage system.	
Responsible Agency	St. Charles Parish Hospital Service Dist No. 1	
Contact Name	Blake Boudreaux	
Contact Phone	985-785-6242	
Contact Email		
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments

Mitigation Action Progress Report Form

Complete a mitigation action progress report form for each mitigation action

Progress Report Period	From Date: March 2009 To Date: August 2014	
Mitigation Action #	ES-23	
Project Title	For the two diesel-only generators, add fuel storage capacity to increase amount stored to 4,000 gallons.	
Responsible Agency	St. Charles Parish Hospital Service Dist No. 1	
Contact Name	Blake Boudreaux	
Contact Phone	985-785-6242	
Contact Email		
Project Status [check applicable box(es)]		Project Completed
		Project Cancelled
		Project on Schedule
		Anticipated Completion Date:
		Project Delayed
		Explain:

Summary of Project Progress for this Report Period

1. What was accomplished for this project during the reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other Comments