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Section 5
Infrastructure Improvement Alternatives

5.1 Development and Evaluation of Alternatives

Stakeholders throughout the Gulf Region participated in an extensive involvement process, through which they identified infrastructure needs and improvement projects to meet those needs. Stakeholders included such groups and individuals as elected federal, state, county and municipal officials; state and federal agencies; local engineers; water, wastewater and stormwater operators; business and community development groups; and land developers. The stakeholders identified over 300 needs throughout the planning area by means of fax- back surveys, letters, e-mail messages, and involvement meetings.

Alternatives were prepared for each of the infrastructure improvement projects identified. In each area of need, the capacities for both near-term and long-term conditions were determined from projections of population growth. The condition of existing facilities was considered in determining the extent of upgrades, or whether new facilities or components were to be proposed. Environmental considerations included the ability to obtain or modify an NPDES permit, Total Maximum Daily Loads (TMDLs) on streams, scenic streams, impaired waters, and actual use of the waters. Opinions of development cost were prepared based on actual costs of similar projects. Various alternatives were considered and evaluated as appropriate. In general, three options were available for consideration of each need identified, as defined hereafter:

- "*No Action.*" No construction is proposed beyond what FEMA is funding to replace destroyed or damaged facilities. If this action is taken, then facilities should have the same capacity as before Katrina. For projects proposing new construction, the "no action" alternative will result in no new facilities.
- *Local alternatives.* In most cases, there are one or more options to serve customers in the local jurisdiction. Usually less costly than regional options, no benefits will accrue to the economies of scale usually associated with larger projects. Sewer collection and water distribution systems usually have only local options as they typically serve a smaller area. Collected wastewater can be transported through a transmission system to either a local or regional treatment facility. Water distribution systems can be supplied by local utilities.
- *Regional Alternatives.* Pumping to or from facilities inside counties and across county lines are both considered, where appropriate, in order to evaluate the most efficient use of resources.

Alternative improvement projects generally included three categories, including:

- *Treatment and transmission facilities.* Projects were considered for areas with no central facilities, and areas whose facilities are inadequate for growth. Both local

and regional facilities were considered, where possible. Pump stations and transmission mains were considered, where appropriate, to transport to or from regional facilities.

- *Existing sewer collection and water distribution systems.* Many stakeholders have proposed expansion of existing collection and distribution systems. Corridors around existing urban areas will grow as residents and businesses relocate away from vulnerable areas. Many of these areas do not have adequate water or wastewater service and will be unable to sustain growth without adequate infrastructure capacity.

- *Areas with no infrastructure.* Many areas in the six-county region do not have sewer or water service. Individual onsite wastewater disposal systems (IOWDS) are installed to provide wastewater treatment and disposal for houses and businesses, and individual private wells are used for drinking water. Because of the potential for contamination of private water wells and the high failure rate of IOWDS, decentralized systems or connection to central water or sewer systems were considered for these areas. In some instances IOWDS may be appropriate if the soil conditions, water table, and land area are conducive and can perform adequately.

5.2 Criteria for Evaluation of Alternatives

Following hereafter are the criteria developed for the evaluation of alternative improvements to meet the infrastructure needs identified throughout the planning area. To facilitate a systematic process of evaluation, a matrix was developed for comparing and evaluating the relative merits of multiple alternatives. This matrix provided the basis for developing the program of recommended projects for both short-term and long-term implementation.

5.2.1 Credible Costs

Methodology for developing capital costs for construction components (plant, equipment, piping, etc.) included reviewing recent construction bid data and discussions with contractors and suppliers. It was noted that land and construction costs have increased considerably since hurricane Katrina. Capital costs were augmented with annual operation and maintenance (O&M) costs for each alternative. Total costs were divided by the population expected to receive benefit from a given system improvement, in order to determine cost per customer.

5.2.2 Time to Implement Projects

The "Time to Implement" criterion evaluated the time required for completion of technical design, bid and award, and construction for a selected project, or consolidated project, under normal conditions. This criterion was particularly important in evaluating the feasibility of project implementation.

5.2.3 Quality of Life / Storm Resistance

Evaluation for this criterion included a ranking system ranging from "Greatly Improved" to "Diminished" capacity. The intent was to assess the project's potential impact on quality of life, and particularly whether it would reduce flooding and potential for future storm damage, limit health and safety risks, provide greater access for human use, and improve aesthetics.

5.2.4 Economic Development Impact

The economic development impact ranking system ranged from "Greatly Increased Opportunities" to "Decreased Opportunities." This criterion was intended to evaluate a project's potential to impact seafood, industrial, commercial, and residential development; tourism and water sport activities; and opportunity for continued private, public and commercial growth.

5.2.5 Environmental Issues

In a practical sense, environmental issues might be considered an integral part of the quality-of-life criterion. However, the scope of regulatory agency oversight; municipal ordinances; development standards; and federal, state, and local rules and regulations necessitate that a separate category be included for environmental evaluation. Assessment of each project's environmental issues ranged from "Greatly Improved" to "Diminished" capacity and addressed such issues as potential improvement(s) to water quality, reduction of stream impairment, and improvement(s) to wetland conditions.

5.2.6 Project Benefits

Utilizing previous rankings from environmental, economic development, and quality-of-life criteria, the "Benefits" column represented an overall value for each stand-alone project, or consolidation of compatible projects, that would provide utility services to a common customer base. The intent was to identify the alternative project(s) with the greatest potential benefit upon implementation.

5.3 Water Treatment and Distribution Alternatives

Water supply, treatment, and distribution alternatives to address needs in the Gulf Region were developed through a multi-faceted approach. Steps included collecting input from the various public agencies responsible for such services in the region (e.g., municipalities, county authorities, water supply districts, water associations, etc.); examining existing planning documents from the various agencies; evaluating demographic changes in the region to predict area(s) of potential need; and quantifying the magnitude of water supply, treatment, and distribution infrastructure necessary to address the identified needs. Inherent in this process was the concept of maximizing the benefit derived from the available resources.

5.3.1 Infrastructure Requirements to Support Growth

Public agencies responsible for supplying potable water to residential, commercial, and industrial facilities were solicited for input regarding their anticipated needs for providing sufficient potable water to their customer base. Respondents identified needs which included increasing water supply capacity in the service area, through the addition of a new well and/or elevated storage tank; upgrading and expansion of existing water distribution networks within the service area; addition of advanced treatment processes to remove aesthetically unpleasing characteristics; and infrastructure to improve the overall reliability of the water supply and distribution system, especially during times of emergency. In addition, planning documents prepared by the various agencies were examined to incorporate potential needs identified during the normal agency planning process into the alternative evaluation. **Table 5-1** summarizes the needs identified during the data collection process.

5.3.2 Evaluation of Alternatives

The construction of new projects will provide infrastructure in underserved areas and promote economic development. Each alternative was evaluated for the impact on quality of life, storm resistance, economic development, and environmental impacts. Alternatives having higher benefits and fewer, if any, negative impacts were preferred. A preferred alternative was selected for each project. **Table 5-2** summarizes the selected alternative for the identified needs presented in **Table 5-1**.

County	Area	Identified Need
George	Lucedale	Lucedale water main extension, upgrades, and improvements
George	Southern George County	Combined utilities expansion
George	Industrial Park	Multi-Mart utilities expansion to include the industrial park
George	Rocky Creek	Rocky Creek water supply well
George	County	Plum Bluff Estates water distribution system
Hancock	Bay St. Louis	Bay St. Louis water supply well
Hancock	Bay St. Louis	Bay St. Louis ozone water treatment system
Hancock	Bay St. Louis	Water distribution system at I-10 and MS 603
Hancock	Waveland	Water distribution system expansion
Hancock	Hancock Water & Sewer District	Water wells and tanks to serve currently unserviced areas of the District
Hancock	Diamondhead	Diamondhead water supply well
Hancock	Diamondhead	Diamondhead elevated storage tank
Hancock	Diamondhead	Pump station and tank south of I-10
Hancock	Diamondhead	Distribution system expansion
Hancock	Pearlington	Pearlington water supply and distribution system
Hancock	Shoreline Park	Shoreline Park water supply an distribution system
Hancock	Kiln	Kiln water supply well
Hancock	Kiln	Kiln elevated storage tank
Hancock	Kiln	Kiln water distribution system expansion
Hancock	Standard Dedeaux	Water distribution system expansion
Harrison	Orange Grove	Orange Grove water supply and distribution system improvements
Harrison	Gulfport	Water distribution system expansion (Northeast Gulfport)
Harrison	Gulfport	Water distribution system for Carter Place Subdivision and Village of Jefferson
Harrison	Gulfport	Water line to serve marine animal facility
Harrison	Gulfport	Water supply and distribution system improvements south of CSX railroad
Harrison	D'Iberville	D'Iberville water supply well
Harrison	D'Iberville	D'Iberville storage tank
Harrison	D'Iberville	D'Iberville distribution system expansion
Harrison	D'Iberville	Water supply and transmission to serve Seafood Industrial Park
Harrison	Delisle	Delisle water supply and distribution system
Harrison	Biloxi	Biloxi water supply and distribution system expansion
Harrison	Lizana	Lizana water supply and distribution system
Harrison	Landon Road	Water distribution system improvements

Table 5-1 Summary of Potable Water Supply Needs Identified

County	Area	Identified Need
Harrison	Woolmarket (Biloxi)	Woolmarket water supply and distribution system
Harrison	Saucier	Saucier water supply and distribution system expansion
Harrison	Menge Avenue	Menge Avenue water distribution system upgrade
Harrison	Palmer Creek Utility	Water main extension - East Wortham Road
Harrison	Palmer Creek Utility	Distribution system expansion - Mill Ridge South Subdivision
Harrison	East Central Harrison County PUD	Water supply and distribution system - Tradition Village 1
Harrison	Long Beach	Water distribution system along 28th Street from Beatline Rd. to Klondyke
Harrison	Long Beach	Water supply and distribution system upgrade to supply beachfront development
Harrison	Robinwood / Riverbend area	Water distribution system improvements
Harrison	Riverbend Utilities	Water distribution system for West Magnolia Heights
Harrison	County	Water supply and distribution system for planned development along MS 605 north of I-10
Harrison	Countywide	Upgrade water supply and distribution systems to support high-density development in municipalities
Jackson	Ocean Springs	Ocean Springs water distribution system expansion
Jackson	East Ocean Springs	Eastern Ocean Springs water supply system
Jackson	Ocean Springs	Water supply and transmission system improvements
Jackson	Ocean Springs	Distribution system upgrade
Jackson	Ocean Springs	Water main extension - US 90 and MS 57
Jackson	Gautier	Gautier elevated storage tank
Jackson	Gautier	Gautier water supply well
Jackson	Gautier	Old Spanish Trail area distribution system enhancements
Jackson	Gautier	Allen Road area distribution system enhancements
Jackson	Gautier	Gautier distribution system enhancements
Jackson	Big Hills Acres	Big Hills Acres water supply and distribution system
Jackson	Vancleave	Water supply and distribution system
Jackson	WJCUD	Lemoyne water distribution system
Jackson	WJCUD	Extend water distribution along Jim Ramsey Road
Jackson	Helena	Water distribution system

Table 5-1 Summary of Potable Water Supply Needs Identified (Continued)

County	Area	Identified Need
Jackson	Wade	Water supply and distribution system
Jackson	Hurley	Water supply and distribution system
Jackson	Big Point	Water supply and distribution system
Jackson	Pascagoula	Pascagoula distribution system upgrades (Beach Boulevard)
Jackson	Moss Point	Moss Point Elder Street Tank Replacement
Jackson	Moss Point	Moss Point water main upgrades - Elder, Bellview, and Earl Streets
Jackson	Moss Point	Moss Point water main replacements - Escatawpa River/Hwy 63 Crossing
Jackson	Moss Point /EUD	Moss Point/Escatawpa Utility District water main upgrade - Hwy 63 main extension, Hwy 613 main extension
Jackson	Moss Point	Moss Point elevated storage tank
Jackson	Moss Point	Moss Point water supply well revisions
Jackson	Moss Point/EUD	Moss Point/Escatawpa Utility District storage tank
Jackson	Escatawpa	Escatawpa pumping station upgrades
Pearl River	County - Center Water Association	Distribution system upgrade - Round Rock Subdivision; water main extension - Pecan Grove Road
Pearl River	County - Nicholson Water & Sewer	Distribution system upgrade - Red Hills Estates Subdivision
Pearl River	County - Pearl River Central Water Association	Distribution system upgrade - Knoll Creek, Bay Meadows, North Hill, Wild Wood, and Flint Farms Subdivisions
Pearl River	County - Pearl River Central Water Association - Henleyfield	Water supply, storage, and distribution system improvements
Pearl River	County - Spring Hill Water Association	Distribution system upgrade - La-Renaissance Subdivision
Pearl River	Hwy 43 & Rock Road, Donley Burkes, Ogden Booke, and Hwy 43 Combs	Water supply and distribution system
Pearl River	Lake Historia	New water well
Pearl River	Picayune	New elevated storage tank
Pearl River	Picayune	Distribution system upgrades
Pearl River	Picayune	Picayune area water supply project - phase I
Pearl River	Picayune	Picayune area water supply project - phase II

Table 5-1 Summary of Potable Water Supply Needs Identified (Continued)

County	Area	Identified Need
Pearl River	Picayune	Picayune area water supply project - phase III
Pearl River	Poplarville	Poplarville area water supply project - phase I
Pearl River	Poplarville	Poplarville area water supply project - phase II
Pearl River	Poplarville	Poplarville area water supply project - phase III
Pearl River	Poplarville	Poplarville area water supply project - phase IV
Pearl River	Poplarville	New 1000 gpm well/ new 250000 gallon elevated tank/ new water treatment plant
Pearl River	Poplarville	North Lumberton Water System Upgrades
Pearl River	Poplarville	Hillsdale Area Public Water Authority
Stone	County	New water distribution for Oak Ridge Estates Subdivision
Stone	McHenry	New water distribution for Nan's Oak Subdivision
Stone	McHenry	Distribution improvements along East McHenry Rd
Stone	Sunflower	New water distribution for Deer Wood Subdivision
Stone	Sunflower	Phase 2 water distribution for Spring Lake Subdivision
Stone	County Water Associations	Sunflower, McHenry, Stone Utility, New Zion, Flint Creek, and Big Level - wells and elevated tanks
Stone	County Water Associations	Water distribution system improvements
Stone	County Water Associations	Interconnection of county water associations
Stone	Wiggins	City of Wiggins distribution system upgrades
Stone	Wiggins	Water line extention along Cobb Rd

Table 5-1 Summary of Potable Water Supply Needs Identified (Continued)

County	Project Name	Selected Alternate
George	George County Regional Water System	Water supply, storage, and transmission to serve Combined Utilities and City of Lucedale
George	George County Regional Water System	Water supply, storage, and transmission to serve Rocky Creek and Industrial Park
George	George County Distribtuion System Expansion	Lucedale water main extension, upgrades, and improvements
		Combined Utilities distribution system expansion
George	George County New Distribution System	Plum Bluff Estates water distribution system
Hancock	Eastern Hancock Regional Water System	Water supply, storage, and transmission to serve Bay St. Louis and Waveland
Hancock	Eastern Hancock Regional Water System	Water supply, storage, and transmission to serve Diamondhead Community
Hancock	Eastern Hancock Regional Water System	Water supply, storage, and transmission to serve Hancock County Water and Sewer District
Hancock	Eastern Hancock Regional Water System	Water supply, storage, and transmission to serve Kiln Community
Hancock	Western Hancock County Regional Water System	Water supply, storage, and transmission to serve Pearlington Community
Hancock	Distribution system expansion	Water distribution system at I-10 and MS 603
		Waveland water distribution system expansion
		Diamondhead water distribution system expansion
		Kiln water distribution system expansion
		Standard Dedeaux water distribution system expansion
Hancock	New water distribution system	Pearlington water distribution system
		Shoreline Park water distribution system
Harrison	South Harrison County Regional Water System	Provide water supply and transmission upgrades to South Gulfport along US 90
Harrison	Western Harrison County Regional Water System	Provide water supply, storage, and transmission to Delisle, Long Beach, and Pass Christian
Harrison	Eastern Harrison County Regional Water System	Provide water supply, storage, and transmission to Biloxi/Woolmarket and D'Iberville area
Harrison	North Harrison County Regional Water System	Provide water supply, storage, and transmission to Saucier Community
Harrison	Central Harrison County Regional Water System	Provide water supply, storage, and transmission to North Gulfport and Lyman area

Table 5-2 Selected Alternatives for Potable Water Projects

County	Project Name	Selected Alternate
Harrison	Harrison County distribution system expansion	Menge Avenue distribution system upgrade
		Landon Road water distribution system improvements
		Biloxi water supply and distribution system expansion
		D'Iberville distribution system expansion
		Water supply and distribution system improvements south of CSX railroad (Gulfport)
		Water distribution system expansion (Northeast Gulfport)
		Orange Grove water distribution system improvements
		Water distribution system upgrade to supply beachfront development (Long Beach)
		Saucier water distribution system expansion
Harrison	Harrison County new water distribution system	Water supply and distribution system for planned development along MS 605 north of I-10
		Water distribution system for West Magnolia Heights
		Water distribution system along 28th Street from Beatline Rd. to Klondyke
		Woolmarket water supply and distribution system
		Lizana water supply and distribution system
		Saucier water supply and distribution system
		Water distribution system for Carter Place Subdivision and Village of Jefferson (Gulfport)
		Delisle water distribution system
Jackson	Western Jackson County Regional Water System	Provide water supply, storage, and transmission to Big Hill Acres (Jim Ramsey Road)
	Western Jackson County Regional Water System	Provide water supply, storage, and transmission to Vancleave
	Western Jackson County Regional Water System	Provide water supply, storage, and transmission to Gautier
	Western Jackson County Regional Water System	Provide water supply, storage, and transmission to Ocean Springs
Jackson	Moss Point Elder Street Tank Replacement	Install new 1,000,000 gallon elevated storage tank
Jackson	Moss Point elevated storage tank	Install 1,000,000 gallon elevated storage tank
Jackson	Moss Point water supply well revisions	Provide revisions to water supply well to increase capacity to 1,400 gpm
Jackson	Moss Point/Escatawpa Utility District storage tank	Install 1,000,000 gallon elevated storage tank
Jackson	Escatawpa pumping station upgrades	Upgrade booster station, feeder, and transmission lines

Table 5-2 Selected Alternatives for Potable Water Projects (Continued)

County	Project Name	Selected Alternate
Jackson	Distribution System Upgrades	Old Spanish Trail area distribution system enhancements
		Allen Road area distribution system enhancements
		Gautier distribution system enhancements
		Ocean Springs distribution system enhancements
		Pascagoula distribution system upgrades (Beach Boulevard)
		Moss Point water main upgrades - Elder, Bellview, and Earl Streets
		Moss Point water main replacements - Escatawpa River/Hwy 63 Crossing
		Moss Point/Escatawpa Utility District water main upgrade - Hwy 63 main extension, Hwy 613 main extension
		WJCUD - Shoreline Development distribution system upgrade
Jackson	New Distribution Systems	Big Hills Acres water distribution system
		Vancleave distribution system
		Lemoyne water distribution system
		Extend water distribution along Jim Ramsey Road
		Wade water distribution system
		Hurley water distribution system
		Big Point water distribution system
Pearl River	Southern Pearl River County Regional Water System	Develop Picayune area water supply and transmission
Pearl River	Northern Pearl River County Regional Water System	Develop Poplarville area water supply and transmission
Pearl River	Distribution System Upgrades	Round Rock Subdivision
		Red Hills Estates Subdivision
		Knoll Creek Subdivision
		Bay Meadows Subdivision
		North Hill Subdivision
		Wild Wood Subdivision
		Flint Farms Subdivision
		La-Renaissance Subdivision
		Hwy 43 & Rock Road
		Donley Burkes
		Ogden Booke
		Hwy 43 Combs
		City of Picayune
		North Lumberton Water System
		Hillsdale Water Authority
Pearl River	Water Main Extension	Pecan Grove Road
Stone	Stone County Regional Water System	Provide water supply system along US 49 to McHenry area

Table 5-2 Selected Alternatives for Potable Water Projects (Continued)

County	Project Name	Selected Alternate
Stone	New water distribution system	Nan's Oak Subdivision Deer Wood Subdivision
Stone	Distribution system upgrade	Spring Lake Subdivision City of Wiggins
Stone	Water Main Extension	City of Wiggins - Cobb Road East McHenry Road

Table 5-2 Selected Alternatives for Potable Water Projects (Continued)

The following paragraphs present the long-term projects developed to address needs identified through local input, as well as through evaluation of demographic projections for the Gulf Region.

LW1 - Pearl River – Northern Pearl River County Regional Water System

Northern Pearl River County is anticipated to experience a substantial increase in population over the 20-year planning period. To address the water demand associated with this growth, as well as provide a more resilient water network, it is proposed to develop a regional water supply and transmission system encircling the City of Poplarville, primary population center in northern Pearl River County. This system will include a mechanism for interconnection of rural water systems serving customers in the outlying areas around Poplarville at multiple possible locations to increase redundancy in available supply and minimize service interruptions to customers. The proposed system would encompass the area generally bounded on the west by the West Hobolochitto Creek, on the east by Gumpond-Beall Road, on the north by Bilbo Holston / Hillsdale Road, and on the south by Dupont Harts Chapel Road, with a southward extension along Interstate 59 to Savannah-Millard Road.

$65.3 Million

LW2 - Pearl River – Southern Pearl River County Regional Water System

Southern Pearl River County is anticipated to experience a substantial increase in population over the 20-year planning period. To address the water demand associated with this growth, as well as provide a more resilient water network, it is proposed to develop a regional water supply and transmission system encircling the City of Picayune, primary population center in southern Pearl River County. This system will include a mechanism for interconnection of rural water systems serving customers in the outlying areas around Picayune at multiple possible locations to increase redundancy in available supply and minimize service interruptions to customers. The proposed system would encompass the area generally bounded on the west by the West Hobolochitto Creek, on the east and south by the Pearl River / Hancock County boundary, and on the north by Savannah-Millard Road.

$59.3 Million

LW3 - Hancock – Pearlington/Port Bienville Regional Water System

The residents in and around the Pearlington community in southwestern Hancock County have relied on individual wells to provide domestic supply. The proposed

regional water supply system would provide water supply, storage and transmission to the Pearlington community, along with outlying communities along the coastline. Additionally, the proposed regional water system would incorporate the Port Bienville Industrial Park east of Pearlington, providing an opportunity to augment available water supplies at the industrial park as well as maximize the benefit derived from existing water supply infrastructure available in the area. In addition to the Pearlington community and the Port Bienville Industrial Park, the proposed regional water system would extend eastward to approximately the Ansley area along the Hancock County.

$34.3 Million

LW4 - Hancock – Eastern Hancock County Regional Water System

Eastern Hancock County is projected to experience significant growth over the next 20 years. To facilitate this growth, a regional water supply and transmission system has been developed to accommodate demand for potable water by both residential and industrial customers. The proposed Eastern Hancock County Regional Water System provides water supply and transmission along the major growth corridors. These include US 90 from Bay St. Louis to Lakeshore Drive, east of Waveland, MS 603 from US 90 to approximately Hancock North Central High School north of the Kiln community, and Interstate 10 eastward through the Diamondhead community to the Hancock / Harrison County line. The proposed regional water system will enhance the reliability of the water supply and distribution in local communities in eastern Hancock County, provide additional redundancy to local water distribution networks, and strengthen the distribution of water supply throughout the region.

$40.8 Million

LW5 - Stone – Stone County Regional Water System

Stone County is projected to experience growth in several areas over the next 20 years. With this growth come additional demands placed on the individual water supply systems throughout the county to satisfy the need for potable water. The proposed Stone County Regional Water System provides for an interconnection between the rural water service providers in the county as well as with the City of Wiggins. In addition to addressing potential water supply needs along US 49, a major transportation corridor through the county, the proposed regional water system extends eastward and westward to provide interconnection capabilities to the rural water supply and distribution systems. Forming a series of looped systems around the City of Wiggins, the primary population center in Stone County, these interconnections improve the resiliency of individual water supply systems, maximizing water availability to residential and industrial customers.

$72.0 Million

LW6 - Harrison – Harrison County Regional Water System

Harrison County had experienced marked growth prior to landfall of Hurricane Katrina and this trend is expected to continue through the planning period. Harrison County is anticipated to experience significant growth during the planning period. To address the demand for potable water associated with this growth, it is

proposed to develop a Harrison County Regional Water Supply and Transmission System. In addition to providing a source of potable water to augment available supply in the cities, communities, and water service providers in Harrison County, the proposed regional water system addresses anticipated potable water demands in areas of the county where growth is projected to occur. The proposed regional water system provides supply and transmission along the major transportation corridors in Harrison County – Interstate 10, Interstate 110, US 49, US 90, MS 53, MS 67, and proposed MS 605 (Lorraine-Cowan Road), as well as principle county transportation routes. Each of these routes are projected to be areas of significant growth within Harrison County.

$148.0 Million

LW7 - George – George County Regional Water System

George County is projected to experience growth in several areas over the next 20 years. With this growth come additional demands placed on the individual water supply systems throughout the county to satisfy the need for potable water. The proposed George County Regional Water System provides for an interconnection between the rural water service providers in the county as well as with the City of Lucedale. In addition to addressing potential water supply needs along US 98 and MS 63, major transportation corridors through the county, the proposed regional water system extends eastward and westward to provide interconnection capabilities to the rural water supply and distribution systems. Forming a series of looped systems around the City of Lucedale, the primary population center in George County, these interconnections improve the resiliency of individual water supply systems, maximizing water availability to residential and industrial customers.

$27.2 Million

LW8 - Jackson – Western Jackson County Regional Water System

Western Jackson County, including the cities of Ocean Springs and Gautier, as well as the communities of Latimer, St. Martin, Big Hill Acres, and Vancleave are anticipated to experience significant growth through the 20-year planning period. An adequate supply of potable water is essential in sustaining this growth. To insure such a supply is available, it is proposed to develop the Western Jackson County Regional Water System. The proposed regional water system would provide supply to augment availability in local water distribution systems, as well as address potential demand in areas of anticipated growth. The regional water system would include transmission along major transportation corridors in the region – Interstate 10, US 90, MS 57, and MS 609. Transmission would also be provided along principle county routes in western Jackson County, including Jim Ramsey Road, Humphrey Road, and Gautier-Vancleave Road.

$84.8 Million

LW9 - Jackson – Eastern Jackson County Regional Water System –

The proposed Eastern Jackson County Regional Water System incorporates existing and proposed (by the Jackson County Board of Supervisors) water supply and transmission infrastructure with additional transmission and storage to provide an

available supply of potable water to customers east of the Pascagoula River. Specifically, the Regional Water System will utilize the proposed surface water treatment plant near the intersection of MS 63 and MS 613 as a supply source and incorporate the proposed water transmission main extending to Singing River Island south of Pascagoula to address demands for potable water. Potable water needs in northeast Jackson County will be addressed through a transmission loop from the proposed plant and encompassing the communities of Big Point, Hurley, and Wade.

$23.4 Million

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Figure 5- 1
Long-Term Water Projects

Legend

- Interstate Highway
- US Highway
- State Highway
- Railroad
- Rivers
- Stennis Space Center
- NASA
- City Limits
- County Boundary
- Existing Water Line
- Water Tank / Well Supply Source
- Water Tank
- Water Junction
- Water Transmission Line

Pearl River
Stone
George
Hancock
Harrison
Jackson
LW1
LW2
LW3
LW4
LW5
LW6
LW7
LW8
LW9
Lumberton
Poplarville
Wiggins
Lucedale
Picayune
Kiln
Diamondhead
Shoreline Park
Bay St. Louis
Waveland
Scarlington
Gulfport
Biloxi
Long Beach
Pass Christian
Lyman
Latimer
Ocean Springs
Gautier
Pascagoula
Moss Point
Gulf Hills
Gulf Park Estates
Hurley
Wade
Big Point
Escatawpa
Helena
Hickory Hills
Tiblerville
St. Martin
Gulf of Mexico
STENNIS SPACE CENTER
West Hobolochitto Creek
Red Creek
Hobolochitto Creek
Black Creek
Flint Creek
Big Creek
Big Cedar Creek
Brushy Creek
Escatawpa River
Tchoutacabouffa River
Bluff Creek
Mourning Creek
Pascagoula River
Big Creek
Fish Creek
Hickory Creek
Catahoula Creek
Biloxi River
Little Biloxi River
Bayou Bernard
Turkey Creek
Jourdan River
Wolf River
Tuttle Creek
Stanley Creek
Hurricane Creek
Stanley Creek
Stanie Creek
0 2.5 5 10 15 20 Miles

MISSISSIPPI GULF REGION - RECOMMENDED LONG-TERM WATER PROJECTS

MSEG
MISSISSIPPI ENGINEERING GROUP, INC.
143-A LeFleurs Square • Jackson, MS 39211
601-355-3518 • Fax 601-352-3945

MDEQ

5.4 Wastewater Collection and Treatment Alternatives

The wastewater needs of the Gulf Region must be addressed before growth can resume both on near-term and long-term horizons. Residents and businesses will be slow to relocate in areas where the current infrastructure is inadequate or nonexistent. Existing treatment, transmission, and collection facilities in some cases will require upgrading before growth can occur. Wastewater treatment, transmission, and collection alternatives to address needs in the region were developed through a multi-faceted approach, which included collecting input from the various public agencies responsible for wastewater services in the region (e.g., municipalities, county authorities, certificated service providers, etc.); examining existing planning documents from the various agencies; evaluating demographic changes in the region to predict area(s) of potential need; and quantifying the magnitude of wastewater treatment, transmission, and collection infrastructure necessary to address the identified needs. The process also included the concept of maximizing the benefit derived from the available resources.

5.4.1 Infrastructure Requirements to Support Growth

Public agencies responsible for wastewater treatment, transmission, and collection from residential, commercial, and industrial facilities were solicited for input regarding their anticipated needs for providing sufficient wastewater service to their customer base. Feedback was received from groups such as municipalities, counties, county utility authorities, county economic development agencies, school districts, consulting engineers, developers, and business people. Facility plans for existing and proposed wastewater systems were reviewed to determine what recommendations had previously been made. **Table 5-3** summarizes the needs identified during the data collection process.

5.4.2 Evaluation of Alternatives

The construction of new projects will provide infrastructure in underserved areas and promote economic development. Each alternative was evaluated for the impact on quality of life, storm resistance, economic development, and environmental impacts. Alternatives having higher benefits and fewer, if any, negative impacts were preferred. A preferred alternative was selected for each project.

County	Area	Identified Need
George	George County	Collection and Treatment for rural George County
George	Industrial Park	Collection System
George	Lucedale	Collection System Expansion
George	Lucedale	Transmission System Expansion
George	Plum Bluff Estates	Collection System for Plum Bluff
Hancock	Bay St Louis	City of Bay St. Louis Force Main Extension
Hancock	Diamondhead	Diamondhead Sewage Collection System
Hancock	Diamondhead	Expand WWTF
Hancock	Hancock County	Western WWTF and Northern WWTF
Hancock	Hancock County Water and Sewer District	Collection System Expansion
Hancock	Kiln	Kiln Collection System
Hancock	Kiln	Kiln WWTF
Hancock	Pearlington	Pearlington Collection System
Hancock	Pearlington	Pearlington WWTF
Hancock	Port Bienville	WWTF and Collection System Expansion
Hancock	Standard Dedeaux District	Collection System
Hancock	Stennis Airport	Collection System Expansion
Hancock	Waveland	WWTF discharge location moved to NASA Buffer Zone
Harrison	Biloxi	Collection System Expansion
Harrison	Biloxi/South Woolmarket	Collection System
Harrison	Biloxi/South Woolmarket	WWTF
Harrison	Biloxi/Sunkist	Collection System
Harrison	DeLisle	DeLisle Collection System Expansion
Harrison	DeLisle	WWTF Expansion
Harrison	D'Iberville	D'Iberville Collection System Expansion
Harrison	D'Iberville	D'Iberville WWTF expansion
Harrison	D'Iberville	Transmission System along Lamey Bridge Road
Harrison	D'Iberville	WWTF north of D'Iberville
Harrison	Gulfport	Gulfport Collection System Expansion
Harrison	Gulfport and area west of existing City Limits	Gulfport North WWTF Expansion and Decommission Gulfport South WWTF
Harrison	Gulfport and Area west of existing City Limits	Transmission System

Table 5-3 Summary of Wastewater Needs Identified

County	Area	Identified Need
Harrison	Harrison County	Seafood Industrial Park
Harrison	Lizana	Collection System
Harrison	Long Beach	Long Beach Collection System Expansion
Harrison	Long Beach	Long Beach Harbor Expansion
Harrison	Long Beach	North Long Beach Interceptor
Harrison	Long Beach/Pass Christian	Menge Avenue Transmission and Collection Systems
Harrison	North Woolmarket	North Woolmarket Collection System
Harrison	Northwest Harrison County	Treatment, Transmission, and Collection Systems
Harrison	Pass Christian	Pass Christian Collection System Expansion
Harrison	Pass Christian	Pass Christian Harbor Expansion
Harrison	Riverbend	Extend regional transmission to Riverbend
Harrison	Riverbend/Robinwood	Collection System
Harrison	Robinwood	Extend regional transmission to Robinwood
Harrison	Saucier	Saucier Collection System
Harrison	Saucier	Saucier WWTF
Harrison	South of Back Bay	Biloxi Collection System Expansion
Harrison	Tradition	WWTF
Harrison	West Harrison County	WWTF
Harrison	West Orange Grove	WWTF
Jackson	Big Hill Acres	Collection System
Jackson	Big Point, Hurley, and Wade	Collection Systems
Jackson	Escatawpa Utility District	Escatawpa WWTP Improvements
Jackson	Escatawpa Utility District	Transmission System Expansion
Jackson	Gautier	Old Spanish Trail Transmission System Expansion
Jackson	Gautier	Gautier WWTP Improvements
Jackson	Gulf Park Estates/Ocean Beach Estates	Tranmsission System Improvements
Jackson	Helena	Collection System
Jackson	Joe Batt and Jim Ramsey Roads	Collection System
Jackson	Joe Batt and Jim Ramsey Roads	Transmission System
Jackson	Northeast Jackson County	WWTF and Transmission System
Jackson	Ocean Beach Estates	Collection System
Jackson	Ocean Springs	Transmission System Improvements along Hwy 90 and Hwy 57
Jackson	Vancleave	Expand West Jackson WWTF or Vancleave WWTF
Jackson	Vancleave	Vancleave Collection System

Table 5-3 Summary of Wastewater Needs Identified (Continued)

County	Area	Identified Need
Jackson	West Jackson County Utility District	Collection System Expansion
Jackson	West Jackson County Utility District	Transmission System Expansion
Jackson	West Jackson County Utility District	West Jackson WWTF 4 MGD Expansion
Pearl River	Lake Historia	WWTF
Pearl River	Picayune	Collection System Expansion
Pearl River	Picayune	Picayune Area Wastewater Project - Phase I
Pearl River	Picayune	Picayune Area Wastewater Project - Phase II
Pearl River	Picayune	Picayune Area Wastewater Project - Phase III
Pearl River	Picayune	Picayune Area Wastewater Project - Phase IV
Pearl River	Picayune	Picayune Area Wastewater Project - Phase V
Pearl River	Picayune	Picayune Area Wastewater Project - Phase VI
Pearl River	Poplarville	Poplarville Area Wastewater Project - Phase I
Pearl River	Poplarville	Poplarville Area Wastewater Project - Phase II
Pearl River	Poplarville	Poplarville Area Wastewater Project - Phase III
Pearl River	Poplarville	Poplarville Area Wastewater Project - Phase IV
Pearl River	Poplarville	Poplarville Area Wastewater Project - Phase V
Stone	Bond	Collection System
Stone	South Stone County	Collection Systems
Stone	South Stone County	South Stone County WWTP
Stone	Wiggins Area	Wiggins Collection System Expansion
Stone	Wiggins Area	WWTF and Transmission System Improvements

Table 5-3 Summary of Wastewater Needs Identified (Continued)

As a result of the hurricane many wastewater treatment plants received extensive damage to mechanical and electrical equipment, and support facilities. Coast communities and county utility authorities have requested that several wastewater treatment facilities be relocated out of the surge zone. In most situations, FEMA has agreed to repair damage, and with the use of local and FEMA funding, most facilities have been restored to pre-Katrina conditions. FEMA does have latitude to relocate facilities out of the floodplain that have been significantly damaged by floodwaters. Within the Gulf Region, however, it appears that FEMA has only agreed to relocate one such facility, though other facilities should also qualify for FEMA relocation.

In evaluating requests for treatment plant relocation as part of the current Plan, it was determined that constructing new treatment plants and conveyance systems to move the wastewater to upland areas would consume the majority of the available CDBG Disaster Recovery Grant funds. Secondly, in reviewing the flows and capacity of the existing treatment plants, it was determined that all but one of the plants appear to be sufficient to treat wastewater during the planning period. Therefore, it was determined that the more critical needs existed for the recovery of the Gulf Region and that funding this request, where treatment capacity currently is adequate, would not be the most efficient use of the CDBG funds. **Table 5-4** displays the selected long-term alternate for each identified need.

County	Project Name	Selected Alternate
George	Lucedale WWTF and Transmission System Improvements	Expand existing transmission system along Hwy 98 and Hwy 63 and WWTF Improvements
George	Southeast George County Decentralized WWTF	Decentralized WWTF to serve area near intersection of Hwy 612 and Hwy 613
George	George County Collection System Expansion	Lucedale Collection System Expansion
George	George County Unsewered Areas	Plum Bluff Collection System
		Industrial Park Collection System
Hancock	Hancock County Collection System Expansions	City of Bay St. Louis Force Main Extension
		Diamondhead Collection System Expansion
		Port Bienville and Stennis Airport & Airpark Sewer System Expansion
Hancock	Hancock County Unsewered Areas	Pearlington Collection System
		Hancock County Water and Sewer District
		Kiln Collection System
Hancock	Hancock County (Kiln) Regional WWTF	WWTF and transmission system to serve Kiln, Pearlington, and areas south of I-10 including Hancock County Water and Sewer District, newly annexed areas of Bay St. Louis and Waveland, Diamondhead, and Pass Christian
Harrison	DeLisle/Long Beach/Pass Christian WWTF and Transmission Mains	Expand DeLisle WWTF, North Long Beach Interceptor, and transmission system to serve area north of I-10
Harrison	D'Iberville WWTF and Transmission System	WWTF and transmission system from existing D'Iberville WWTF
Harrison	East Biloxi WWTF Relocation	No Action - (Leave WWTF at existing location)
Harrison	East Central Harrison County Regional WWTF	WWTF to serve East Central Harrison County Public Utility District and North Woolmarket
Harrison	Gulfport North WWTF	WWTF Expansion
Harrison	Harrison County Collection System Expansions	Biloxi - South of Back Bay - Collection System Expansion
		Biloxi Collection System Expansion for South Woolmarket and unincorporated area north of Biloxi & D'Iberville
		D'Iberville - Collection System Expansion
		Gulfport - Collection System Expansion
		Pass Christian - Collection System Expansion
		Long Beach - Collection System Expansion

Table 5-4 Selected Long-Term Wastewater Alternates

County	Project Name	Selected Alternate
Harrison	Harrison County Unsewered Areas	Saucier - Collection System
		North Woolmarket - Collection System
		Lizana - Collection System
		DeLisle - Collection System
Harrison	Saucier WWTF and Riverbend/Robinwood Forest Transmission System	Two Interim WWTFs and transmission system to transport Riverbend/Robinwood Forest wastewater to East Central Harrison County WWTF
Harrison	South Gulfport Regional Transmission System	Transmission system to serve US 90 area
Harrison	South Woolmarket WWTF and Transmission System	WWTF and transmission system to serve the South Woolmarket/Biloxi area
Harrison	West Biloxi WWTF Relocation	No Action - (Leave WWTF at existing location)
Harrison	West Gulfport Regional Interceptor	Interceptor to serve area south of of Hwy 53 and west of Hwy 49
		Interceptor to serve area west of Gulfport and north of Landon Road
Harrison	West Gulfport Regional Transmission System	Transmission system to serve area west of Gulfport along Landon Road and I-10 area
Jackson	Bayou Casotte Parkway	Transmission System for industrial area
Jackson	Escatawpa Regional WWTF Improvements	Upgrade Sludge Handling Capabilities to expand capacity at existing WWTF
Jackson	Escatawpa Utility District/Moss Point - Transmission System	Wastewater transmission along Hwy 63
		Wastewater transmission along Hwy 613
Jackson	Gautier Regional WWTF Improvements	Add Clarifier to handle additional flow to expand capacity at existing WWTF
Jackson	Gautier Transmission Expansion	Expand transmission system along Old Spanish Trail
Jackson	Gulf Park and Ocean Beach Areas Transmission System Improvements	Transmission System Improvements

Table 5-4 Selected Long-Term Wastewater Alternates (continued)

County	Project Name	Selected Alternate
Jackson	Jackson County Unsewered Areas	Vancleave - Collection System
		Big Hill Acres - Collection System
		Joe Batt and Jim Ramsey Roads - Collection System
		Gulf Park and Ocean Beach Estates - Collection System
		Big Point, Hurley, and Wade - Collection Systems
Jackson	Jackson County Collection System Expansions	West Jackson County Utility District Sewer Expansion to Joe Batt and Jim Ramsey Roads (Shoreline Park Development)
		West Jackson County Utility District Collection System expansion
		Expand Collection System to Helena
		Moss Point Collection System Expansion
Jackson	North Jackson County Decentralized WWTFs	Four Decentralized WWTF's and transmission system
Jackson	Ocean Springs Transmission System Expansions	Expand Transmission System along Hwy 90
		Expand Transmission System along Ocean Springs Road
Jackson	Relocate Pascagoula WWTF	No Action - (Leave WWTF at existing location)
Jackson	West Jackson Regional WWTF Improvements and Transmission System	Expand Existing WWTF and Transmission System
Pearl River	Picayune Regional WWTF and Transmission System	WWTF and Transmissions System
Pearl River	Picayune	Collection System Expansion
Pearl River	Poplarville Regional WWTF and Transmission System	Expand Existing WWTF and Transmission System
Stone	South Stone WWTF and Transmission System	WWTF and Transmission System
Stone	Stone County Collection System Expansion	Wiggins Collection System Expansion
Stone	Stone County Unsewered Areas	Bond Collection System
		South Stone County Collection System
Stone	Wiggins WWTF and Transmission System	WWTF and Transmission System

Table 5-4 Selected Long-Term Wastewater Alternates (continued)

A brief summary of each selected alternate follows hereafter. **Figure 5-2** shows the approximate location of each project.

S1 - Pearl River – Poplarville Regional Wastewater Treatment Facility (WWTF) and Transmission System

The existing Poplarville WWTF is a lagoon system that is not adequate to meet the projected needs of the area. In order to provide for this growth in the Poplarville area, the selected plan is to construct a 2.6 MGD expansion of the existing WWTF and transmission mains to serve the growth area around the City.
$48.7 Million

S2 - Pearl River – Picayune Regional WWTF and Transmission System

The existing Picayune WWTF is currently exceeding its 2 MGD capacity, due to population shifts caused by Hurricane Katrina. Additionally, the areas surrounding the city currently have no municipal sewer service. In order to accommodate the growth the City has already received and the projected growth, the selected plan is the construction of a new 5.2 MGD WWTF and transmission mains to serve the surrounding areas.
$82.8 Million

S3 - Hancock - Hancock County Wastewater Treatment Facility (WWTF) and Transmission System

The Waveland WWTF, serving Waveland, Bay St. Louis, and surrounding areas, and the Diamondhead WWTF, serving the Diamondhead community, were both inundated by Katrina. Other areas of the county have no municipal sewerage facilities and are served by primarily individual onsite wastewater disposal systems (IOWDS). Central facilities are needed to promote the repopulation of some areas, such as Pearlington, and to allow growth of other areas, such as Kiln, to continue. A 9.5 MGD WWTF will be constructed southwest of Kiln. The facility will discharge effluent into a wetland inside the NASA buffer zone, thereby enhancing the existing wetlands. The existing WWTF at Waveland and the proposed Interim Pearlington WWTF will be converted to pumping stations, and transmission systems will be constructed from these areas as well as from Kiln and Pearlington. Transmission systems from the Clermont Harbor/Lakeshore area west of Waveland will be constructed to serve anticipated growth.
$86.2 Million

S4 - Stone – Wiggins Regional WWTF and Transmission System

Since Katrina, the City of Wiggins has experienced residential growth and an explosion of commercial growth. The existing WWTF and collection system are unable to handle the intensity of expected residential and commercial development. In order to meet the wastewater needs of the City and surrounding community, a 1.0 MGD zero-discharge WWTF will be constructed to replace the West WWTF. Transmission systems will be extended to serve surrounding areas south of Wiggins.
$24.9 Million

S5 - Stone – South Stone County WWTF and Transmission System

Several large residential developments are currently being proposed in South Stone County. There is currently no centralized sewer service in Stone County outside the City of Wiggins. Two wastewater treatment plants are proposed. In the southwestern part of the county, a 0.5 MGD facility is proposed on the Biloxi River. A 0.5 MGD facility is proposed on Saucier Creek in the southeastern part of the county. Transmission systems will be constructed to pump wastewater from existing and proposed developments in the Biloxi River, Mill Creek, McHenry Branch, Saucier Creek, Boggy Branch, and Tuxachanie Creek basins to the treatment facilities.

$39.9 Million

S6 - Harrison – Saucier, Robinwood Forest, and Riverbend Transmission System

The Saucier community currently has no municipal sewer service and is part of the area of central Harrison County that is expected to rapidly develop over the next few years. The developments of Robinwood and Riverbend have collection systems and lagoon treatment systems; however, the lagoons do not have the needed treatment capacity to accommodate the expected development. Regional wastewater treatment is needed for this rapidly developing area. The selected plan includes construction of two 200,000 gpd Interim WWTF's to meet immediate needs in the area. One Interim WWTF will serve the Saucier community and the other will serve the Robinwood and Riverbend developments. Additionally, a transmission system will be constructed to transport these wastewater flows to the proposed East Central Harrison WWTF adjacent to the Tradition development.

$13.3 Million

S7 - Harrison – East Central Harrison County Regional WWTF

The area of Harrison County along the corridor of US 49 and MS 67, which includes Saucier, the East Harrison County Public Utility District, and North Woolmarket, is expected to rapidly develop over the next few years. Currently this area has no municipal sewer services. In order to accommodate the rapid development of this area, a regional WWTF is needed. The regional WWTF is a more cost-effective and environmentally friendly solution than multiple small plants located at each development. The selected plan is construction of a 6.5 MGD WWTF located adjacent to the Tradition development.

$52.6 Million

S8 - Harrison – DeLisle WWTF, Long Beach/Pass Christian WWTF, and Transmission System

The West Harrison WWTF (at DeLisle) is in need of expansion to accommodate post-Katrina residential, commercial, and casino development. The western I-10 corridor of Harrison County is also expected to rapidly develop in the post-Katrina era. In order to provide the needed wastewater service to this area, the selected plan is to expand the West Harrison WWTF and construct a transmission system to transmit flow from north of I-10. Additionally, the North Long Beach Interceptor will be

constructed to serve the area north of Long Beach and transport flow to the Long Beach/Pass Christian WWTF.
$16.9 Million

S9 - Harrison – West Gulfport Interceptor I

The area south of MS 53 and west of US 49 is projected to experience rapid growth in the next few years. In order to accommodate development in this area and to provide well-managed wastewater treatment systems, the selected plan is a gravity main in western Harrison County to the existing Gulfport City Limits. This gravity main will deliver wastewater to the existing Gulfport North WWTF.
$3.8 Million

S10 - Harrison – West Gulfport Interceptor II

The area south of MS 53, west of US 49, and north of I-10 is projected to experience rapid growth in the next few years. In order to accommodate development in this area and to provide well-managed wastewater treatment systems, the selected plan is a gravity main in western Harrison County south of MS 53 and north of Landon Road. This gravity main will deliver wastewater to the existing Gulfport North WWTF.
$10.3 Million

S11 - Harrison – West Gulfport Transmission System

The I-10 corridor is projected to experience rapid growth in the next few years, including the area in western Harrison County. In order to accommodate development in this area and to provide well-managed wastewater treatment systems, the selected plan is a transmission system along Landon Road in western Harrison County to the area south of the US 49/I-10 Interchange. This transmission main will deliver wastewater to the existing Gulfport North WWTF.
$7.9 Million

S12 - Harrison – Gulfport North WWTF Expansion

The service area for the Gulfport North WWTF is projected to experience rapid growth in the next few years. Some flows in the area are currently served by the Gulfport South WWTF, which is planned to be decommissioned in the planning period. In order to accommodate development in this area and to provide well-managed wastewater treatment systems, the selected plan is a 14 MGD expansion of the WWTF and a transmission system to transport wastewater from the existing Gulfport South WWTF.
$122 Million

S13 - Harrison – South Gulfport Regional Transmission System

The US 90 corridor is expected to experience rapid, high density development in the next few years. In order to accommodate development in this area and to provide

well-managed wastewater treatment systems, the selected plan is a transmission system along US 90 to transport flows to the existing Gulfport North WWTF.
$5.5 Million

S14 - Harrison – South Woolmarket Regional WWTF and Transmission System

The South Woolmarket area of Biloxi has had limited development due to lack of infrastructure. In the post-Katrina area, as the residential population shifts north, this area is expected to rapidly increase in population. In order to provide for well-managed wastewater treatment systems a regional wastewater treatment facility is needed. The Eagle Point area is currently served by an existing lagoon, which is nearing capacity. The selected plan is construction of a 200,000 gpd Interim WWTF and transmission system. Additionally, the plan includes construction of a 3.75 MGD WWTF, transmission system to serve the South Woolmarket area, and a transmission system to send the Eagle Point wastewater flows to the new WWTF.
$54.2 Million

S15 - Harrison – D'Iberville Regional WWTF and Transmission System

The existing D'Iberville WWTF is currently limiting development in the area due to a lack of treatment capacity and a lack of room for expansion. Currently large commercial developments would not be possible due to this lack of treatment capacity. Additionally, the WWTF was completely submerged during Hurricane Katrina. A transmission system will be constructed from the existing WWTF to the new WWTF, located outside the storm surge zone, to treat wastewater flows from the existing City and newly developing surround areas. The selected plan is to construct a 3.5 MGD WWTF and a transmission system to transport flow from the existing WWTF, which will be decomissioned.
$23.1 Million

S16 - George – Lucedale WWTF and Transmission System Improvements

The area surrounding Lucedale does not currently have centralized sewer service. In order to promote growth in this area and provided enhanced management opportunities of wastewater service in this area, these wastewater flows should be treated at the existing City of Lucedale WWTF. The selected plan is the construction of transmission mains and improvements at the WWTF to assist in meeting design capacity.
$3.3 Million

S17 - George – Southeast George County Decentralized WWTF

Southeast George County currently has no centralized sewer service. In order to promote growth in this area and provided enhanced management opportunities of wastewater service in this area, the selected plan is the construction of a decentralized WWTF near the intersection of MS 612 and MS 613.
$3.0 Million

S18 - Jackson – West Jackson Regional WWTF and Transmission System

Many areas of West Jackson County, including Vancleave, Latimer, Big Hill Acres, Gulf Park Estates, developments along Joe Batt Road and Jim Ramsey Road, St. Andrews, Ocean Beach Estates, and other areas, have no centralized sewer systems. These areas are projected to rapidly develop, partially caused by the construction of a new five-lane highway to I-10 in the area. A regional wastewater treatment system is necessary to accommodate new development this growth. Expansion of the existing West Jackson WWTF is the most cost-effective and environmentally friendly method of creating this regional system. In order to accommodate this growth, the selected plan is a 4 MGD expansion of the existing West Jackson WWTF and transmission mains to the Vancleave area.

$46.2 Million

S19 – Jackson - Gulf Park and Ocean Beach Areas Transmission System Improvements

The area located between Ocean Springs and Gautier and south of US 90 is commonly referred to as Gulf Park Estates to the west and Ocean Beach/St. Andrews to the east. In order to provide improved wastewater transportation service and for collection systems to be installed in these devastated areas, the selected plan is provide a regional transmission system to the area.

$3.9 Million

S20 - Jackson – Ocean Springs Transmission System Expansion I

The area along Ocean Springs Road between US 90 and MS 57 is projected to experience rapid growth over the next few years. In order to accommodate the wastewater needs of this area the selected plan is a transmission system along Ocean Springs Road.

$1.5 Million

S21 - Jackson – Ocean Springs Transmission System Expansion II

The area along US 90 in the Ocean Springs area, including the intersection with MS 57, is projected to experience rapid growth over the next few years. In order to accommodate the wastewater needs of this area the selected plan is a transmission system along Hwy 90.

$3.4 Million

S22 – Jackson – North Jackson Decentralized WWTF's

The communities of Big Point, Wade, and Hurley, and the area north of Vancleave, including other nearby areas have no centralized sewer service; and, each of these areas is projected to increase in population. Because of the lack of wastewater facilities, growth is being hindered in these areas. Therefore, an immediate need for access to wastewater facilities is needed to accommodate the demand for new housing.

The selected plan for this area is the construction of four decentralized WWTF's and transmission mains. The WWTF's will have a capacity of approximately 0.125 MGD. The WWTF sites will be identified to accommodate the highest density of development in an area, and the transmission mains will follow existing roads to allow for connection of subdivisions to the decentralized system.

$14.9 Million

S23 - Jackson – Escatawpa Utility District/Moss Point – Transmission System Expansion along MS 613

The Escatawpa Utility District needs to expand its transmission system in order to accommodate projected growth in the Moss Point area. One of the projected growth corridors is along MS 613. The selected plan is expansion of the transmission system.

$6.5 Million

S24 - Jackson – Escatawpa Utility District/Moss Point – Transmission System Expansion along MS 63

In order to meet the projected wastewater needs along the growth corridor of MS 63, the Escatawpa Utility District needs to expand its transmission system. The selected plan is expansion of the transmission system.

$6.5 Million

S25 - Jackson – Escatawpa WWTF

The existing Escatawpa WWTF serves the community of Escatawpa and a portion of the City of Moss Point. This complete mix conventional aeration facility has a capacity of 3 MGD; however, the facility produces more sludge than typically expected and cannot meet the design capacity.

The selected plan is to expand the sludge handling facilities at the existing WWTF. This improvement will accommodate the increased flow in the area, from the community of Helena, and growth anticipated along MS 63 and MS 613.

$1.5 Million

S26 – Jackson – Wastewater Improvements along Bayou Cassotte Parkway

A new Parkway was recently constructed to serve a developing industrial area in Pascagoula. The new parkway begins near Orchard Avenue and parallels Louise Street for a distance of approximately 6,500 feet. This area is prime for industrial development and will assist the local and regional economy in its struggle to recovery from the recent setbacks of Katrina. Sewer infrastructure are needed to support the development.

$1.6 Million

S27 - Jackson – Gautier WWTF

Wastewater from the City of Gautier and surrounding area is collected and transported to the Gautier WWTF for treatment. This area is projected to experience

rapid growth. The clarification system is limiting the facilities ability to meet the 4 MGD design capacity by at least 1 MGD.

The proposed project includes construction of a new clarifier at the existing WWTF. The upgrade to the clarifier will ensure that the WWTF can continue to handle future growth.
$1.5 Million

S28 – Old Spanish Trail Transmission System
In order to meet the projected wastewater needs along the growth corridor of Old Spanish Trail, the existing transmission system requires expansion. The selected plan is expansion of the transmission system.
$1.5 Million

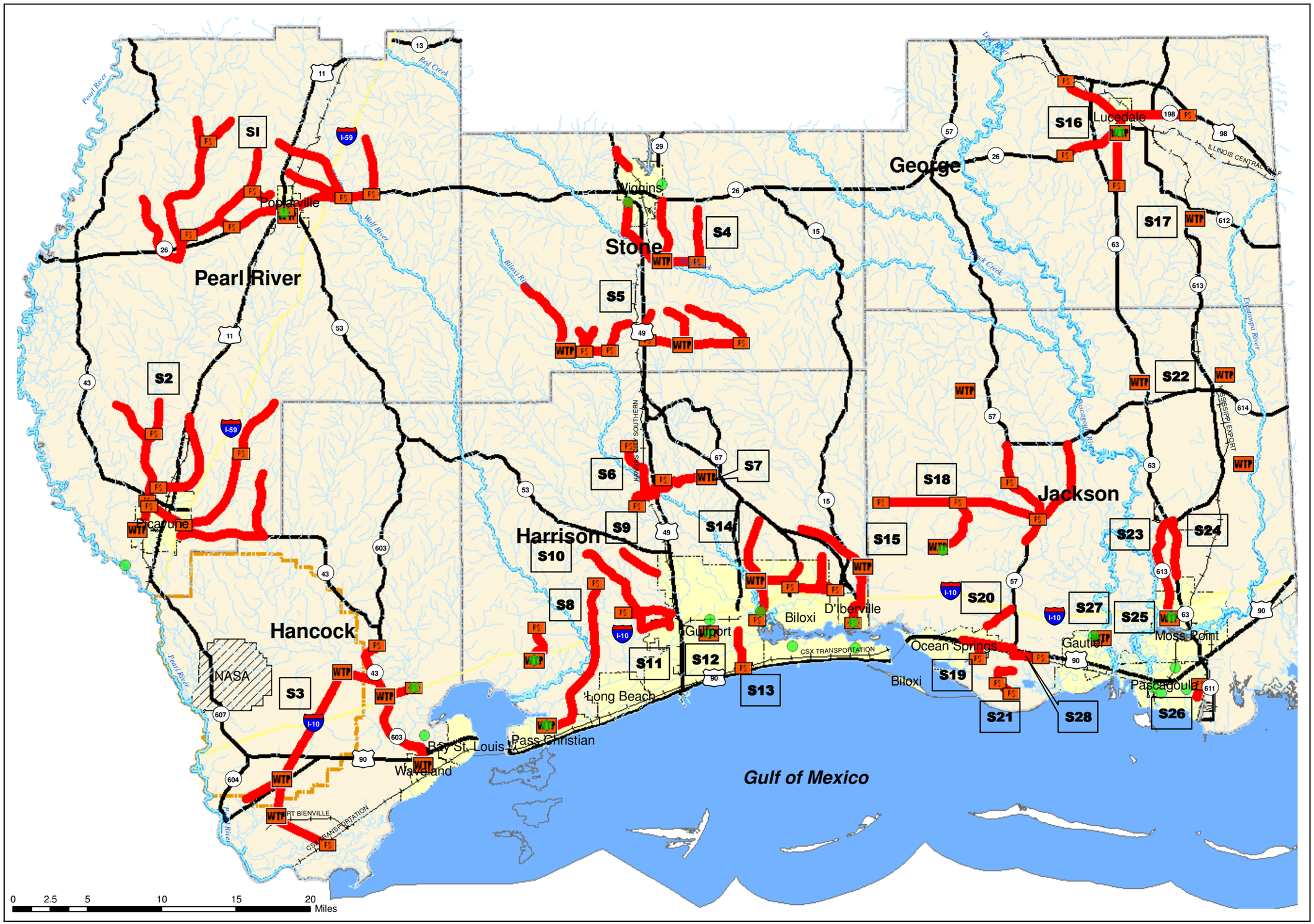

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Figure 5-2
Long Term Wastewater Projects

Legend

- Interstate
- UShwy
- StateHwy
- Railroads
- County Boundary
- City Limits
- NASA
- Stennis Space Center
- Rivers
- Intermittent / Annual Streams
- Municipal (WWTF)
- WWPS, Long Term
- WWTP, Long Term
- Long Term

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MDEQ

5.4.3 Economic Development Projects

Three projects in Harrison County were proposed for providing water and wastewater service for economic development projects. These projects include expansion of the harbors at Long Beach and Pass Christian and a new industrial park for seafood processors in the northern part of the county. The projects were evaluated by the process described previously, and the selected alternatives are shown in **Table 5-5.**

Project Name	Selected Alternate
Long Beach Harbor	Water and wastewater infrastructure
Pass Christian Harbor	Water and wastewater infrastructure
Seafood Industrial Park	Connect to regional water and sewer

Table 5-5 Selected Long-Term Economic Development Alternatives

Harrison – Long Beach Municipal Smallcraft Harbor

The existing Long Beach Municipal Smallcraft Harbor has served the Long Beach area for many years. With projected development in this area, the existing facilities will not be adequate to meet the anticipated recreational needs. The selected plan is the construction of water and wastewater facilities in conjunction with the harbor expansion.

$0.5 Million

Harrison – Pass Christian Municipal Smallcraft Harbor

The existing Pass Christian Municipal Smallcraft Harbor has served the Pass Christian area for many years. With the projected level of development, the existing facilities will not be adequate to meet the recreational needs of those in area. The selected plan is the construction of water and wastewater facilities in conjunction with the harbor expansion.

$0.5 Million

Harrison – Seafood Industrial Park

The seafood processing industry in Harrison County is composed of approximately twenty-five privately owned companies operating along coastal waters. All of the processing facilities are located in flood zones and sustained major damage from Hurricane Katrina. The loss of revenue from the industry was a serious economic hardship to the coastal counties and cities. The intent of this project is to allow the seafood processing industry to move inland to an area less susceptible to natural disasters. The selected plan is to connect to regional water and wastewater systems.

$10 Million

5.5 Flood Control, Drainage, and Stormwater Management Alternatives

The long-term economic development and quality of life within the six counties depends in part on the system of flood control, drainage, and stormwater management facilities serving these areas. Hurricane Katrina presents a unique opportunity to reconstruct and enhance these facilities to address historic flooding and water quality issues that historically have impacted economic opportunities and quality of life. The approach to defining stormwater management issues and alternatives to address those issues included the four classifications related to condition and scope of impact for stormwater facilities, as defined hereafter.

- ***Local drainage systems with extensive storm-related damage*** will undergo extensive rebuilding of both properties and the drainage infrastructure serving these properties. Unique opportunities exist within these areas to leverage funds established for rebuilding to solve historical drainage problems and incorporate stormwater quality control into the reconstructed drainage systems.

- ***Local drainage systems with limited storm-related damage*** require less extensive rebuilding and cleaning of Katrina-related debris. As a result, solutions to pre-existing drainage system problems will be more challenging to implement, because less property redevelopment and infrastructure rebuilding is envisioned. This limits opportunities to incorporate improved stormwater conveyance and to establish stormwater quantity/quality control facilities within these areas.

- ***Local drainage systems for areas of new development*** are anticipated in largely undeveloped areas that will be settled by entities displaced by Katrina and new entities moving into the Gulf Region. Opportunities exist in these areas to organize the development away from sensitive and flood-prone areas as well as install appropriate stormwater quantity and quality control measures.

- ***Regional drainage systems*** are the systems of canals, streams, bayous, and other major watercourses that convey local drainage to the major rivers and coastal waters within the Gulf Region. Regional drainage issues often involve adjoining jurisdictions, requiring regional coordination to develop effective solutions. As a result, several intercommunity drainage problems have been identified, but only a few have been resolved.

Following is a discussion of alternative stormwater management strategies for both local drainage systems in areas of new development, and regional drainage systems, including suggested solutions to known drainage problems and system-wide projections of operation, maintenance, and renewal.

5.5.1 Local Drainage Infrastructure for Areas of New Development

Residents displaced by Katrina have dispersed throughout the Gulf Region and beyond, while new residents are expected to relocate to the region as rebuilding proceeds. Immediate, rapid development is projected over the next five years outside the existing urbanized area, where new subdivisions and rural residential development is anticipated. Development in these areas will continue at a slower pace as new residents move to the region. In addition, development at a slower pace is projected in areas of extensive Katrina-related destruction, where resort-oriented, multi-family residential units are projected to increase development density. Following are general descriptions of the stormwater management issues within areas of new development, key considerations that stormwater management solutions should consider, and a summary of alternative stormwater management strategies for areas of new development.

The key issues affecting stormwater management include the following:

- ***Dramatic population growth will increase stormwater runoff.*** Prior to Katrina, the population of the Gulf Region was approximately 460,000, with development covering approximately 240,000 acres. Projections prepared for the Plan indicate that the population of the Gulf Region will approach 800,000 by 2025, with a population increase from pre-Katrina levels of over 100,000 by 2010. Increased population will necessitate an increase in building construction, which, in turn, will result in increase runoff due to loss of pervious land area.

- ***Regulations requiring proper stormwater management for development projects*** Stormwater quantity and quality control facilities should be incorporated into many of the anticipated projects under existing regulations and/or permits. For example, new development projects that disturb one acre or more are subject to state and federal stormwater permitting for discharges from construction, both during and after construction. In addition, local stormwater management regulations require, to varying degrees, additional control of the quantity and quality of stormwater runoff from development and redevelopment projects.

- ***Resource limitations for enforcement of stormwater permits and regulations may impede the pace of economic development and growth.*** Local regulations are not consistent throughout the region; and resource limitations may impede enforcement of stormwater permits and regulations, potentially affecting the pace of economic development and growth. Many local jurisdictions subject to MDEQ general permits for stormwater discharges from municipal separate storm sewer systems have not fully implemented required regulations.

Construction and enhancement of storm drainage systems in areas of new development are vital to balance the economic benefits of population growth in the region with the potential impacts of this growth on historical economic drivers, such as the tourism and seafood industries, as well as to prevent increased flooding in

areas of existing development. The key considerations for new stormwater systems are as follows:

- ***Regulatory and Environmental***. Environmental degradation negatively impacts tourism and seafood production, the two major economic drivers in the Gulf Region. Strict compliance with existing regulations pertaining to stormwater management, wetland and watercourse protection, and control of illicit discharges to storm drainage systems should govern new development projects. In addition, enhanced local regulations to control the quantity of stormwater runoff and to strictly control development within flood hazard zones are needed to minimize damage during future storm events. To achieve this, every alternative incorporates stormwater quantity and quality control facilities into new drainage systems.

- ***Economic and Community.*** Proper controls for the quantity and quality of storm-water runoff are needed to support the economic development of the tourism and seafood industries, as well as to enhance the quality of life of residents as they return to the region.

5.5.1.1 Stormwater Management Requirements for Areas of New Development

Drainage infrastructure to support areas of new development will be provided largely by developers, either directly within their development or through a "fee-in-lieu-of" charge for off-site improvements to support increased runoff from the development. The greatest barrier to effective stormwater management in areas of new development is the lack of enactment and enforcement of pertinent regulations and design criteria. The following recommendations are made to support the rapid development within the region over the next five to ten years:

- ***Development of Regulations, Design Criteria, and Compliance Guidelines.*** Gulf Region communities were in the process of developing enhanced stormwater regulations under their Phase II stormwater permits when Katrina occurred. Current regulations could be enhanced and complemented by a regional design manual and compliance guide.

- ***Enforcement Assistance.*** Human resources are needed to support regulation of stormwater management. Assistance would include site plan reviews and construction site inspections.

- ***Facility Maintenance.*** The annual maintenance required for drainage infrastructure associated with new development is estimated at approximately $4 million. Phase II regulations require that jurisdictions establish binding maintenance agreements for stormwater control facilities to maintain their effectiveness as stormwater quality control facilities. Maintenance responsibilities must be established and enforcement and provided for privately-owned facilities.

5.5.2 Regional Drainage Systems

Regional drainage systems consist of the major rivers, streams, and open channels that receive runoff from more than one community and/or from areas larger than one square mile. The intensive rainfall associated with Katrina exposed many pre-existing drainage problems. Historically, these drainage problems have been difficult to solve, because they occur in areas of relatively intense development. Issues facing effective regional stormwater management are discussed hereafter.

- ***Regional drainage systems impact the effectiveness of local drainage systems.*** Some regional drainage systems historically do not have adequate capacity to receive flows from the local drainage systems without flooding structures and vital infrastructure. In addition, local drainage systems cannot provide their full conveyance capacity if subjected to backwater flooding from a regional drainage system. As a result, inadequate capacity within regional drainage systems affects the ability of local drainage systems to relieve flooding.

- ***Many regional drainage systems are clogged with debris from Katrina.*** This debris limits hydraulic capacity, including flooding both along the regional system and in local systems subject to backwater.

- ***Encroachment into the floodplain of regional drainage systems causes repetitive flooding of structures and erosion of property.*** There are nearly 2,800 repetitive flooding properties defined by FEMA in the six-county area, many coinciding with the floodplain of rivers, streams, and canals. Encroachment of development into floodplains increases the risk of structure and property flooding and may result in bottlenecks that constrict the carrying capacity of these streams, particularly in areas with dated floodplain delineations. Also, encroachment of development into riparian zones along major streams is known to cause water quality degradation, destabilizing streambanks, reducing trees that shade receiving waters, and diminishing the natural pollutant filtering capability of these riparian zones.

- ***Few hydrologic / hydraulic studies have been conducted of the major drainage systems in the Gulf Region.*** Limited information was available about regional drainage system problems and the hydrologic/hydraulic conditions along most major drainage systems. A notable exception is the Turkey Creek watershed, where chronic drainage problems have been studied for years by the USACE-Mobile and others. In addition, many of the available studies were conducted many years ago and may not represent current conditions. However, as a part of FEMA's and the State of Mississippi's Flood Map Modernization Initiative, new flood studies currently are underway in all of the Gulf Region counties, except Stone.

- ***Development may impact the hydrology and hydraulics of regional drainage systems in unforeseen ways.*** The extensive development projected within the Gulf Region will dramatically alter the region's hydrology and hydraulics,

increasing the rate and volume of stormwater runoff and affecting the magnitude and duration of stream hydrographs. Several communities have regulations requiring that the peak discharges from development projects not exceed peak discharges under pre-development conditions. While these types of standard detention rules are effective at preventing increased flooding in the vicinity of the detention facility discharge, the increased imperviousness of these developments increases the volume of runoff, causing the duration of peak discharges to increase. As more and more detention facilities are built within a watershed, extended peak discharges from individual basins begin to add up as watershed size increases. As a result, the severity and frequency of flooding at downstream locations increases, a phenomenon that is difficult to predict without dynamic hydrologic/hydraulic modeling. Such modeling can be coupled with projected development densities to demonstrate the effectiveness of watershed – specific detention volume/release rate rules that achieve desired peak water surface elevations throughout the regional drainage system. Developers can be provided with these rules to size their stormwater control facilities, improving the effectiveness of stormwater controls while minimizing site plan review times and project delays. These same rules can be provided to jurisdictions seeking to resolve local drainage problems, providing guidance on where conveyance improvements can be provided without exacerbating downstream flooding and where detention can be provided to address downstream capacity limitations.

- ***Regional drainage systems are also receiving waters that must meet environmental regulations.*** Most regional drainage system must also function as healthy aquatic habitat in order to meet Federal and State water quality regulations. Extensive channelization and/or alteration of streams is subject to Section 404 watercourse fill and dredging permits from the USACE-Mobile, limiting the feasibility and/or increasing the costs of traditional conveyance improvements. TMDL studies more clearly define the waterbodies that do not meet water quality standards, and drainage improvements within these waterbodies often cause further water quality and habitat degradation unless natural stream restoration techniques are incorporated. These potential barriers to conveyance improvements increase the feasibility of detention alternatives that can also incorporate stormwater quality controls, as well as "smart growth" floodplain management methods that more effectively separate development from watercourses as a way to minimize future flood damage.

Budget-level system rebuilding, enhancement, and maintenance alternatives were obtained from local jurisdictions and from studies or reports provided during preparation of the Plan. Where solutions to regional drainage problems had already been addressed by others, the estimated cost was adjusted to be consistent with the basis of cost used elsewhere in the Plan. In addition, costs for property buyouts and localized floodproofing options were developed, where not available from other sources.

5.5.2.1 Existing Facilities

The regional drainage system within the Gulf Region consists of over 5,700 miles of rivers, streams, open channels, and canals, and nearly 4,000 stream crossings for roadways, railroads, and pipelines. Limited information exists about the streambank erosion and aquatic habitat quality in the region. A stream crossing maintenance program based on annual removal of obstructions and periodic minor repairs is estimated to cost approximately $4 million annually. The ultimate cost of debris removal, aquatic habitat restoration, streambank stabilization, and riparian area protection could approach $1 billion, based upon an average stream restoration cost of $300 per linear foot and an assumption that 10 percent of the streams may ultimately require such restoration.

5.5.2.2 Key Considerations

Maintaining both the drainage and natural resource function of watercourses is vital to the economic vitality and the environmental integrity of the entire Gulf Region. Key considerations related to these functions are summarized hereafter.

- ***Regulatory and Environmental***. Environmental degradation negatively impacts tourism and seafood production, two major economic drivers in the Gulf Region. Strict compliance with existing regulations pertaining to wetland and watercourse protection should govern the management of the regional drainage system. In addition, enhanced local regulations to control the quantity of storm-water runoff and to strictly control redevelopment within flood hazard zones is needed to minimize damage during future storm events. To achieve this, at least one alternative for each stormwater project incorporates stormwater quantity and quality-control facilities into drainage system repair and enhancement projects. In addition, the extensive degree of property redevelopment presents a unique opportunity to require developers to install stormwater quantity and quality control facilities into their development projects.

- ***Economic and Community.*** Proper controls for the quantity and quality of storm-water runoff are needed to support the economic development of the tourism and seafood industries, as well as to enhance the quality of life of residents as they return to the region.

The regional drainage issues reported fall into four major categories, including:

- Regional, intercommunity flooding caused by inadequate drainage capacity;

- Repetitive flood loss properties within floodplains;

- Acquisition (through purchase or conservation easements) or protection (through regulation) of riparian areas along streams; and

- Habitat restoration and renewal.

Regional drainage improvement projects encompass large, multi-jurisdictional drainage areas served by creeks, canals, and bayous. Since the hydraulics that cause regional drainage problems are usually complex, the current Plan relied upon alternative capacity enhancements provided by stakeholders who had previously performed hydraulic evaluations. In areas of extensive damage there may be opportunities to address reduced runoff and enhance water quality by adding stormwater control facilities, either as conditions of development or through public agency capital improvement projects. Stormwater control alternatives were based on retrofitting the entire drainage area, in order to produce a conservative estimate.

5.5.2.3 Evaluation of Alternatives

The construction of new projects will provide infrastructure in underserved areas and promote economic development. Each alternative was evaluated for the impact on quality of life, storm resistance, economic development, and environmental impacts. Alternatives having higher benefits and fewer, if any, negative impacts were preferred. A preferred alternative was selected for each project, and **Table 5-6** displays those selected alternatives.

County	Area	Project Name	Selected Alternative
Hancock	Hancock County	Bayou Caddy Ecosystem Restoration	Habitat Renewal
Hancock	Hancock County	Beach Pipe Improvements	Aesthetic and Stormwater Control Improvements
Harrison	Harrison County	Beach Pipe Improvements	Drainage Improvements
Harrison	Long Beach	Turkey Creek Flood Damage Reduction	Drainage Improvements
Jackson	Moss Point, Pascagoula, Jackson County	Bayou Casotte Drainage System Improvements	Drainage Improvements
Jackson	Ocean Springs	Cypress Creek Stormwater Drainage System Improvements	Drainage Improvements
Pearl River	Picayune	Hobolochitto Creek Flooding	Drainage Improvements

Table 5-6 Selected Long-Term Stormwater Alternatives

A summary of each selected alternative follows, and the approximate location of each is shown in **Figure 5-3**.

SW1 - Pearl River- Hobolochitto Creek Flood Damage Reduction

This effort will include drainage improvements to address flooding of Hobolochitto Creek for approximately 250 acres of the drainage area.

$9.0 Million

SW2 - Hancock – Bayou Caddy Ecosystem Restoration

This effort will include protection of an existing marsh from further erosion by installing an earth dike and creating a saltwater marsh habitat.

$5.8 Million

SW3 - Hancock – Beach Pipes Improvements

This effort will include a demonstration project to enhance water quality in the Mississippi Sound and aesthetics along the beach. This project will consist of using the discharge water from the beach outfalls to nourish and enhance wetlands in the vicinity.

$15 Million

SW4 - Harrison – Turkey Creek Flood Damage Reduction

This effort will include drainage improvements to reduce flooding in the Turkey Creek Basin during heavy rainfalls along rehabilitation of Hurricane related damage and removal of debris in the Long Beach Canals.

$15.3 Million

SW5 - Harrison – Beach Pipes Improvements

This effort will include a demonstration project to enhance water quality in the Mississippi Sound and aesthetics along the beach. This project will consist of using the discharge water from the beach outfalls to nourish and enhance wetlands in the vicinity.

$15 Million

SW6 - Jackson – Cypress Creek Stormwater Drainage Improvements

This effort includes drainage improvements to reduce flooding of properties along Hwy 609/Tucker Road and Cook Road during periods of heavy rainfall.

$4.3 Million

SW7 - Jackson – Bayou Casotte Drainage Improvements

This effort includes drainage improvements to reduce flooding of multi-jurisdictional areas which hinders residential and commercial development in those areas.

$50.5 Million

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Figure 5-3
Long Term Stormwater Projects

Legend

- Interstate
- USHwy
- StateHwy
- Railroads
- County Boundary
- City Limits
- Stennis Space Center
- NASA
- Rivers
- Intermittent / Annual Streams
- Stormwater Projects

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MISSISSIPPI GULF REGION - LONG TERM STORMWATER PROJECTS

5.6 Development and Evaluation of Reservoir Alternatives

5.6.1 Purpose and Need for Reservoirs

Reservoirs or surface water impoundments serve many functions, one of which is provision of water supply for domestic or industrial consumption. Further, many reservoir sites have the potential to induce economic development in the surrounding area. The current Plan initially evaluated development of reservoirs in the Gulf Region as a means both of providing water supply and generating economic development activity. The dual goals for initial site evaluation included the identification of location(s) suitable for use as a water supply for domestic or industrial consumption and location(s) that have the potential to induce and encourage economic development opportunities for Gulf Region residents. As preparation of the various Plan components progressed, including particularly the evaluation of water supply conditions throughout the planning area, it was concluded that reservoirs would not represent a cost-effective source of water supply, given the relative abundance and availability of high-quality groundwater throughout the Gulf Region. Consequently, primary goal of the reservoir analysis became identifying site(s) with the potential to induce and encourage economic development opportunities.

5.6.2 Previous Reservoir Investigations

Published reports and other available information on previously studied reservoir locations in the region were collected from several sources. These previous studies considered sites within the three distinct geohydrologic basins comprising the six coastal counties and included the Pascagoula River Basin, the Pearl River Basin, and the Coastal and Independent Streams Basin.

An assessment of sites previously and currently investigated as potential reservoir sites was then conducted. The assessment identified 23 separate sites among the 3 geohydrologic basins that had been studied previously and found that, of those sites, only the Flint Creek Water Park had been developed into a surface water impoundment.

5.6.3 Reservoir Siting Process

While the prime consideration for the potential reservoirs was their ability to serve as economic stimuli, secondary benefits also were taken into account. Consideration was given to the following potential benefits for each of the locations recommended for further evaluation:

- The potential for each impoundment to provide recreational and economic development opportunities for reservoir area residents as well as for people who are not a part of the local community; and

- The potential for each reservoir to have the capacity to serve as a flood control pool that would mitigate the impact of below pool flooding.

5.6.4 Summary and Conclusions of Initial Investigation

Sites were evaluated throughout the Gulf Region for development as surface water impoundments, and the criteria for consideration were that the site provided a source of recreation, and a mechanism for stimulating economic development. To the extent practicable, reservoir development costs including, but not limited to, engineering, legal, land acquisition, and construction costs were developed.

A multifaceted approach was used to accomplish evaluation. The approach included researching approximately 60 U.S. Geological Survey 7½ minute Quadrangles in an attempt to identify obvious sites for further review and evaluation, as well as consulting with numerous federal, state, and local entities and gathering information from previous research on surface water impoundments in the area.

These efforts resulted in the identification of 23 potential areas with sites for further consideration. One of those areas is the existing Flint Creek Water Park near Wiggins in Stone County. **Figure 5-4** presents a general area map of the Gulf Region illustrating the approximate location of each investigated site.

Reservoir Site No	Site Name
PR-1	Lake Troy
PR-2	FRS 1A
PR-3	MPS 2
PR-4	MPS 3
PR-5	Picayune Reservoir
CI-1	Old Fort Bayou
CI-2	Rec. Str. 62
CI-3	Rec. Str. 63
CI-4	Rec. Str. 64
CI-5	Rec. Str. 61
CI-6	Rec. Str. 61A
CI-7	Biloxi Reservoir
CI-8	Wolf Creek Site 1
PAR-1	Big Cedar Crk. Res.
PAR-2	Big Cedar Crk. Alt.
PAR-3	Harleston Reservoir
PAR-3A	Harleston Alternate
PAR-4	Lake George Dam 1
PAR-5	Lake George Dam 2
PAR-6	Big Creek Res. 1
PAR-7	Big Creek Res. 2
PAR-8	Bluff Creek Res.
PAR-9	Sweetwater Creek

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Figure 5-4
Previously Studied Reservoir Sites

Legend

- Reservoir Pool Area
- Interstate Highway
- U.S. Highway
- State Highway
- City Limits
- Railroad
- Drainage Basins
- Stennis Space Center
- NASA
- County Boundary

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5.6.4.1 Conclusions

The reservoir siting evaluation began with the goal of identifying potential source of surface water supply for the Gulf Region. It was determined early in the siting process that there is an abundance of potable groundwater throughout the planning area. For that reason, the primary goal of the surface water impoundments was to stimulate area wide economic development opportunities.

The process of siting a large surface water impoundment is very time consuming and costly. The *Mississippi Gulf Region Water and Wastewater Plan* is specifically intended to provide currently needed assistance to this part of the State that was devastated by Hurricane Katrina. While reservoirs can induce economic development, such development is fairly limited in aereal extent. The costs associated with the development, operation and management of reservoirs had to be weighed carefully against the costs to develop vitally needed water and wastewater infrastructure throughout the impacted area. It was not necessary to perform a formal needs assessment to realize that the limited amount of funding available for this effort would be better spent on water and wastewater infrastructure.