

**Drainage Impact Study
Grand Point/Bourbon Subdivision
St. James Parish, Louisiana**

Prepared for:

St. James Parish
P.O. Box 106
Convent, Louisiana 70723

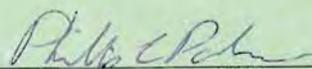
Prepared by:

GSE Associates, LLC
Engineers • Architects • Planners • Surveyors
991 Grand Caillou Road
Houma, Louisiana 70363

September 9, 2010

Project No. 531-013-GSE




Phillip L. Parker, P.E.
Civil Engineer
La. Reg. No. 29387

9-14-10
Date



GSE Project No. 531-013-GSE

September 7, 2010

Mr. Jody Chenier, Director of Operations
St. James Parish
P. O. Box 106
Convent, LA 70723

Re: Drainage Impact Study
Grand Point/Bourbon Subdivision and
Longview Canal Drainage Improvements
St. James Parish, Louisiana

Dear Mr. Chenier:

As per your request, we have prepared a hydraulic model for the Grand Point/Bourbon Subdivision and Longview Canal watershed area. The model was developed to analyze impacts relative to proposed drainage improvements along the watershed. GSE Associates, LLC (GSE) performed a survey of the drainage along Amy Street, Wendy Street, Maura Street, and drainage conveyances within Grand Point/Bourbon Subdivision that identified existing culverts and provided information on the current conveyances. Figure 1 provides information and layout of the limits of the watershed with sub-drainage areas for the watershed. The main existing drainage channels used to prepare this model can also be seen in Figure 1. Figure 2A-2E displays the current culvert inverts and types, obtained from the site survey, used to prepare the model. At this time the model addresses the proposed upgrades to the drainage structure along Amy Street, Wendy Street, Maura Street, cross drains, and discharge conveyances which can be seen in Figure 1.

The basic parameters used in the analysis included a 25-year storm event and a fixed pre-storm tail water of approximately +0.5 feet. The calculated tail water based upon the analysis affects the maximum stages and final discharge through the drainage conveyances on the east side along LA Highway 642 and west side of Grand Point/Bourbon Subdivision to the north. GSE performed a topographic survey of the drainage area to identify location, size and invert elevations of the drainage conveyances. Other parameters within the existing condition model include development densities, which affects the runoff factors, storage volumes and times of concentration. Appendix "E" is the spreadsheet used in calculating each sub-area's time of concentration based on the SCS lag method.

An analysis was made to determine maximum existing stages in the Grand Point/Bourbon Subdivision area. This analysis was used as a bench mark to make comparisons of proposed modifications. A table showing maximum stages under the present conditions is shown at the end of this write-up. The calculated peak stages in roadside drainage ditch along LA Highway 642 for a 25-year storm event range from +14.94 near Sugar House Street to +4.12' near LA Highway 3125. These peak stages under the existing conditions can cause street flooding and minor house flooding in this watershed.

Design and Analysis

The proposed improvements are replacing 7 existing culverts, whose locations and descriptions can be seen in Figure 3 and the following Table 1. In addition, the main drainage channel along the east side of the watershed will be widened its entire length from Sugar House Street, across LA 3125, to the secondary drainage channel where it empties. This length can be

seen in Figure 3. This channel should be excavated to have an 8 foot bottom with 2 to 1 side slopes. The Parish has previously dredged both this secondary and main drainage channels to be able to readily receive the increased drainage. No additional excavation shall be necessary. All culverts and ditches in the watershed area should also be cleaned, swept and properly cut to the proposed or existing flow lines. The table below displays the 25 year flood stages currently and with the proposed mitigations.

TABLE OF PEAK STAGES

Stage Location	Existing Condition (25yr/24hr event)	Proposed Modifications (25yr/24hr event)
LA 642		
@ Sugar House Street	14.72	14.71
@ Maura Street	11.68	11.63
@ Wendy Street	11.20	11.19
@ Amy Street	10.70	10.70
@ LA 3125	4.12	4.12
Cross Drain "A"		
@ Sugar House Street	12.58	12.56
@ Maura Street	11.69	11.58
@ Wendy Street	11.48	11.36
@ Amy Street	11.10	10.85
Cross Drain "B"		
@ Maura Street	12.18	11.47
@ Wendy Street	11.40	11.31
@ Amy Street	11.13	10.84
@ Nicole Lane	11.15	10.63
Eastern Drainage Conveyance		
Near Sugar House Street	13.91	12.72
Near Maura Street	13.73	12.57
Near Wendy Street	12.55	11.31
Near Nicole Lane	11.31	10.05
Near LA 3125	7.36	6.81

Conclusions and Recommendations

The proposed replacement of existing culverts as identified above in Grand Point/Bourbon Subdivision would provide a reduction in 25 year flood stage events for the drainage ditches within the watershed. The proposed modifications will have minimal impact to the stages along LA 642, but would provide significant stage reductions along the eastern drainage conveyance. The stages in the existing and proposed models can be seen in "Appendix A" and "Appendix B" respectively. The modifications would be negligible to the 25 year maximum flood stages downstream of the proposed modifications. These flows can be seen in the hydrographs in "Appendix C" and "Appendix D". (Existing condition hydrographs, and proposed condition hydrographs)

Should you have any questions concerning this analysis or should you need additional information, please do not hesitate to contact me at 991 Grand Caillou Road, Houma, Louisiana, 70363, phone number (985) 876-6380, fax number (985) 876-0621.

Sincerely,

GSE Associates, LLC



Phillip L. Parker, P.E.

cc: Mr. Clay Breaud - CSE Associates, LLC

8-STEP PROCESS

DATE: 7/29/11

PREPARED BY: Laurel A. Rohrer, Environmental Specialist

PROJECT: NEMIS 1603-0221 St. James Parish – Longview Canal Drainage Improvement Project/Grand Point Bourbon Subdivision

LOCATION: Paulina, LA

EO 11988-FLOODPLAIN MANAGEMENT EO 11990-WETLAND PROTECTION

STEP 1 Determine whether the proposed action is located in a wetland and/or The 100-yr floodplain (500-year floodplain for critical actions [44 CFR 9.4]), or whether it has the potential to affect or be affected by a floodplain or a wetland (see 44 CFR 9.7).

St. James Parish enrolled in the National Flood Insurance Program on 07/13/1982. The project is located within a FEMA mapped floodplain. The project area is located within zone “shaded X”, per DFIRM panel 22093C 0115C, with a preliminary date of June 10, 2009. The preliminary DFIRM will become effective on July 4, 2011.

STEP 2 Notify the public at the earliest possible time of the intent to carry out an action in a floodplain or wetland, and involve the affected and interested public in the decision making process (see 44 CFR 9.8).

A cumulative public concerning the Hazard Mitigation Grant Program (HMGP) Assistance in floodplain and wetland areas will be or has been published in the New Orleans Times-Picayune, Baton Rouge Advocate, Lafayette Daily Advertiser, Lake Charles American Press, Hammond Star, Monroe News-Star, Shreveport Times, and the Alexandria Daily Town Talk.

STEP 3 Identify and evaluate practicable alternatives to locating the proposed action in a floodplain or wetland (including alternative sites, actions and the "no action" option) [see 44 CFR 9.9]. If a practicable alternative exists outside the floodplain or wetland, FEMA must locate the action at the alternative site.

ALTERNATIVE 1: WIDENING AND ENLARGEMENT OF LONGVIEW CANAL AND ENLARGEMENT OF SEVEN CULVERTS WITHIN THE GRAND POINT BOURBON SUBDIVISION (Proposed Action): This alternative proposes the widening of Longview Canal on both sides of LA State Highway 3125 (north and south) to expand its drainage capacity and increase the channel's ability to remove water. The Parish has previously dredged both this channel and the main receiving drainage channels to be able to readily accommodate the increased drainage; therefore, no additional excavation or dredging of the Longview Canal would be necessary for this alternative. Approximately 7,400 linear feet (approximately 1.4 mile) of Longview Canal would be widened to increase its capacity and provide the proper design flow. The Parish would purchase an additional 30 feet of right-of-way on the east side of the Longview Canal that would be required to widen the channel by 20 feet to provide future access to the Parish for proper maintenance and grass cutting. The total land area that would be impacted is approximately three (3) acres. The channel would have an 8-foot bottom and 2 to 1 side slopes. The widening of Longview Canal would provide not only a quicker means to remove the floodwater, but since the Parish recently dredged the primary drainage channel that leads into Blind River and Lake Maurepas, it would allow the subdivision's drainage channel to flow better without causing flooding to another area of the Parish. The Parish also proposes to remove seven (7) existing undersized culverts within the subdivision and replace them with larger and more adequate culverts.

Dismissed Alternatives:

ALTERNATIVE 2: NO ACTION: Under this alternative, the homes in the Grand Point Bourbon subdivision of Paulina would continue to flood during severe storms, tropical storms, and hurricanes. Additionally, traffic delays and delays for emergency response vehicle would continue to plague the area due to future street flooding.

ALTERNATIVE 3: ELEVATION OF STREETS AND FLOODPRONE STRUCTURES WITHIN THE SUBDIVISION: This alternative would create some hardships for commuters and residents within the subdivision due to the extensive amount of work associated with raising an existing asphalt street. Approximately 45 homes and 30 detached structures would need to be elevated to eliminate flood damages. The remaining 42 residents would require some elevation of utility equipment, such as air conditioning and heating units and phone service jacks. The Parish estimates the cost of this alternative would exceed \$1 million. The cost to raise 50 homes, with 95% presently slab-on-grade, brick structures would cost over \$6.2 million. Finally, elevating the utility equipment on the remaining property would cost approximately \$100,000. Therefore, this alternative was not selected, although it would eliminate the flood risk.

STEP 4 Identify the full range or potential direct or indirect impacts associated with, the occupancy or modification of floodplains and wetlands and the potential direct and indirect support of floodplain and wetland development that could result from the proposed action (see 44 CFR 9.10).

The widening of the Longview Canal and associated culvert replacement drainage improvements will be coordinated and comply with the local floodplain administration. All required permits will be obtained and kept for permanent documentation. The proposed activities will have minimal potential to impact the floodplain.

STEP 5 Minimize the potential adverse impacts and support to or within floodplains and wetlands to be identified under step # 4, restore and preserve the natural and beneficial values served by floodplains, and preserve and enhance the natural and beneficial values served by wetlands (see 44 CFR 9.11).

ALTERNATIVE 1: WIDENING AND ENLARGEMENT OF LONGVIEW CANAL AND ENLARGEMENT OF SEVEN CULVERTS WITHIN THE GRAND POINT BOURBON SUBDIVISION (Proposed Action): This alternative proposes the widening of Longview Canal on both sides of LA State Highway 3125 (north and south) to expand its drainage capacity and increase the channel's ability to remove water. The Parish has previously dredged both this channel and the main receiving drainage channels to be able to readily accommodate the increased drainage; therefore, no additional excavation or dredging of the Longview Canal would be necessary for this alternative. Approximately 7,400 linear feet (approximately 1.4 mile) of Longview Canal would be widened to increase its capacity and provide the proper design flow. GSE Associates, LLC performed a drainage study for the project area (September 2010), which included rainfall-runoff simulation and modeling. According to Phillip L. Parker, LLC P.E., of GSE Associates, LLC, the proposed drainage the project would provide 25-year flood stage protection for the drainage ditches within the watershed. The proposed modifications will have minimal impact to the stages along Highway 642, but would provide significant stages reductions along the eastern drainage conveyance. The proposed modifications would be negligible to the 25-year maximum flood stages downstream of the proposed modifications.

STEP 6 **Reevaluate the proposed action to determine first, if it is still practicable in light of its exposure to flood hazards, the extent to which it will aggravate the hazards to others. And its potential to disrupt floodplain and wetland values and second, if alternatives preliminarily rejected at step # 3 are practicable in light of the information gained in steps # 4 and # 5. FEMA shall not act in a floodplain or wetland unless it is the only practicable location (see 44 CFR 9.9).**

The actions proposed are located in the only practicable location. There are no other practicable alternate locations outside the floodplain available.

STEP 7 **Prepare and provide the public with a finding and public explanation of any final decision that the floodplain or wetland is the only practicable alternative (see 44 CFR 9.12).**

The EA went out for public review from August 5, 2011 to August 24, 2011.

STEP 8 **Review the implementation and post-implementation phases of the proposed action to ensure that the requirements of the order are fully implemented. Oversight responsibility shall be integrated into existing processes.**

APPROVAL CONDITIONED ON REVIEWS OF IMPLEMENTATION AND POST IMPLEMENTATION PHASES TO INSURE COMPLIANCE OF THE ORDER(S).

Project has been reviewed for compliance with 44 CFR Part 9.