

ST. CHARLES PARISH WEST BANK MASTER DRAINAGE PLAN

Scope of Services Proposal

Revision 1
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Prepared for:



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I. INTRODUCTION

The purpose of this document is to outline the tasks necessary to support the development of a comprehensive Master Drainage Plan (MDP) for the West Bank of St. Charles Parish, Louisiana for the St. Charles Parish Department of Public Works and Wastewater (SCP or Parish). T. Baker Smith, LLC (TBS), has prepared this proposal based upon our understanding of the goals and objectives for this MDP as discussed on 5/21/2020.

In general, the MDP will analyze the existing gravity and forced drainage networks within the West Bank of St. Charles Parish and provide recommendations for improvements to these systems aimed towards mitigating flooding both for the existing conditions and due to future planned development. The West Bank of St. Charles Parish comprises of approximately 21,000 acres of land (excluding marsh/swampland) and consists generally of eleven (11) primary drainage basins, which will be analyzed separately in phases based upon their locations and similarities. The improvements recommended for each basin will be prioritized using multiple factors including implementation time, cost and anticipated benefit to their respective area, which when compiled into the MDP, can be utilized to prepare a comprehensive Capital Improvements Program. The results of each primary basin's analysis will be delivered via several "interim" reports, and once all are completed, these will be compiled into the comprehensive MDP. In addition to specific project improvements, the MDP will also discuss general recommendations for consideration such as modifications to codes and/or ordinances necessary to sustain these drainage systems.

A detailed scope of services has been provided below.

II. SCOPE OF SERVICES

Data Gap Analysis

Prior to starting the Hydrologic and Hydraulic modeling, TBS will gather and review existing information available from the Parish and conduct site visits to determine any additional data that may be required to perform the analysis. The Parish will provide all existing and required survey data required for the analysis to TBS using existing in-house data or new data collected via third party. TBS' effort shall include the following:

- a. Obtain and review existing studies, reports, development plans, land use information, GIS data, and other information made available by the Parish to assist in the model development and analysis.
- b. Site visits conducted by TBS' engineering staff to review the condition of drainage structures and major conveyance channels, basic channel geometry, and overall basin characteristics for each watershed.
- c. Prepare list of supplemental field data and any other additional information needed to support the modeling effort for the Parish. Discuss alternatives and/or assumptions that may be required with Parish based on availability and/or budgetary limitations.
- d. Review of all supplemental data provided by the Parish.

Hydrologic and Hydraulic Analysis

TBS will use the data provided by the Parish, publicly available data and supplemental data collected as a result of the data gap analysis to develop a hydrologic and hydraulic model of the watersheds. The modeling will focus on the 4%, 2%, and 1% annual exceedance probability rainfall events (25, 50, and 100-year rainfall events). The model development and analysis will include the following tasks:

- a. Hydrologic Modeling
 - i. Drainage basin(s) will be delineated using publicly available 2017 USGS LiDAR and supplemented with available survey data, as needed.
 - ii. Obtain rainfall data for the selected recurrence intervals from NOAA ATLAS 14 Point Precipitation Frequency Estimates and/or National Weather Service, Technical Paper No. 40.
 - iii. Determine land use, impervious area, soil type and time of concentration for each drainage basin for existing conditions.
 - iv. Development of runoff hydrographs for each drainage basin for the selected recurrence intervals to represent existing conditions.
 - v. Update land use and impervious area to account for future development and revise runoff hydrographs for each drainage basin for the selected recurrence intervals.

- b. Hydraulic Modeling
 - i. Building the model schematic and identifying all major drainage channels, culverts, and other features that are to be included in the model and how they will be represented.
 - ii. Entering the model geometry from the LiDAR and Parish GIS data and supplementing with survey data where necessary.
 - iii. Determining roughness factors for channel, channel overbanks, and culverts.
 - iv. Establish downstream boundary conditions (tailwater) based on publicly available gauge data.
 - v. Depending on the extent of the model domain for the watershed, the existing conditions model results may be calibrated to a known rainfall event. The model results will be validated by reviewing with the Parish, landowners, and other stakeholders and checking against verifiable observed data.
 - vi. Review and establish criteria and objectives with the Parish for the improvements to be evaluated as part of the proposed conditions hydraulic modeling.
 - vii. Development of a proposed conditions hydraulic model that incorporates improvements to channels, culverts, detention, or other drainage related features required to meet the established objectives.
 - viii. Review of the proposed conditions modeling results including the alternatives considered throughout the modeling process with the Parish.
 - ix. Address and incorporate comments received by the Parish on the existing and proposed conditions modeling results.

Watershed Report Preparation

Upon completion of the H&H Analysis, TBS will prepare a report that summarizes the results of the modeling for each watershed. Included in the report will be conceptual level cost estimates, project priority list, and other recommendations for implementing the proposed improvements included in the proposed conditions modeling.

- a. The report will cite the sources of the data used to develop the model, software programs used for the modeling, limitations and assumptions, the methodologies used to develop the model, proposed improvements, estimated cost and project prioritization, and other recommendations or future considerations.
- b. Conceptual level cost estimates will be summarized in the body of the report and any supporting documentation will be included in appendices. The level of detail will be that of a desktop study and costs for features will be approximated on linear foot basis or other high-level unit or measure for a given improvement.
- c. Preliminary environmental considerations such as wetland mitigation and permitting costs will be included in the cost for each improvement, where applicable. Depending on the scope and locations of the improvements, right-of-way and utility relocations may be required. Where information is available and the impacts are apparent, TBS will note as such. It may not be practical to obtain all required information to accurately estimate right-of-way or utility relocation costs and in such cases, it will be noted as such in the cost estimate.
- d. Once costs are estimated, TBS will prepare a prioritized list of improvements, or a combination of improvements, based upon the cost and anticipated benefit of each item. Implementation time may also be factored into the prioritization.
- e. Provide a list of general recommendations and other future considerations that may include suggested modifications to codes or ordinances. These will be general in scope for the interim basin reports until a more detailed discussion can be prepared in the final MDP.

Master Drainage Plan Compilation

TBS will compile the information from the individual watershed reports into an overall Master Drainage Plan for the West Bank of St. Charles Parish. The reports developed for each watershed will have more detail that is required for the body of the Master Drainage Plan report. This task will reduce the data from the individual watersheds down to an executive summary level while keeping the detailed analysis in appendices. As the Parish proceeds with subsequent phases of the MDP, the information from each watershed will be formatted for inclusion in the overall report.

III. DELIVERABLES

Watershed Reports

Individual reports for the primary watersheds/basins will include report body, figures, tables and exhibits. The following will be included in the deliverables:

- 1 bound hard copy (body, figures, exhibits)

- Exhibits shall include the following:
 - Existing and Proposed Inundation Maps
 - Proposed Drainage Improvements
- 1 USB storage drive containing the entire report and appendices
- Modeling inputs and results data in GIS format
- Proposed improvements in GIS format

IV. EXCLUSIONS

Items which are excluded from this Scope of Services, but can be provided as an Additional Service, if necessary, based upon a mutually executed amendment to the Agreement include, but are not limited to:

1. Cost for topographic surveying, survey data collection, environmental field work (such as onsite wetland delineation) as a result of the study objectives changing during this scope of services.
2. Detailed design of recommended improvements
3. Any and all environmental permit submittals such as initial permits, wetland permits, after the fact permit submittal, as-build survey/quantity submittal, etc.
4. Any and all mitigation costs and associated fees, beneficial use costs and dredge costs that could be required.
5. Any other agency permitting, fees or associated costs.
6. Coordination or costs associated with pipeline or utility encroachments, LADOTD encroachment/permitting, railroad encroachment costs, design or permitting.

V. PARISH'S RESPONSIBILITY

The Parish shall:

1. Provide T. Baker Smith, LLC with all criteria and full information as to the Parish' requirements for the Project, including all project objectives and any known constraints.
2. Arrange for safe access to and make all provisions for T. Baker Smith, LLC to enter upon public and private property as required to perform the professional services herein.
3. Provide review and approvals of the professional services provided.

VI. COMPENSATION

Compensation for services rendered for this scope of services shall be paid to T. Baker Smith, LLC on a Time & Material basis, monthly, with maximum amounts not to exceed the following:

PHASE	WATERSHEDS	AMOUNT
1	Ama-Sellers, Hahnville 1 & Hahnville 2	\$218,493.35
2	Luling & Luling I-310	\$TBD
3	Des Allemands, Sunset, Paradis, Mimosa/Willowdale	\$TBD
4	Killona, Taft	\$TBD

VII. SCHEDULE

Based on the Scope of Work detailed in Section II, TBS estimates the following schedule to complete the scope of work presented herein. This time does not include additional time for collection of data via third party or circumstances that are out of TBS's control. In order to keep the project team updated on the project's progression, a monthly progress report will be provided to the Parish.

Phase I Tasks	Calendar Days (from NTP or previous task completion)
Data Gap Analysis	30
Hydrologic and Hydraulic Analysis	90
Watershed Report(s) Preparation	40
MDP Compilation	Continuous - Ongoing