

STATEMENT OF QUALIFICATIONS

Professional Engineering and Supplemental Services for a
Drainage Master Plan for **the East Bank of Jefferson Parish**
SOQ No. 22-014

Resolution No. 138896

Jefferson Parish, Louisiana



Submitted To:

Jefferson Parish Council
Attn: Eula Lopez, Parish Clerk
General Government Building
200 Derbigny Street, Suite 6700
Gretna, LA 70053

Submitted By:

ECM Consultants, Inc.

1301 Clearview Parkway, Suite 200,
Metairie, Louisiana 70001

Telephone: 504-885-4080 • Fax: 504-885-1439

kazem@ecmconsultants.com

In Association with:

Ardurra Group, Inc.

BFM Corporation, LLC

March 23, 2022

ECM Consultants, Inc.

Engineers • Architects • Construction Managers

Email: mail@ecmconsultants.com Web: www.ecmconsultants.com

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March 23, 2022

Via: <http://www.jeffparishbids.net>

Jefferson Parish Council
General Government Building
200 Derbigny Street, Suite 6700
Gretna, LA 70053

Re: **Letter of Interest and Statement of Qualifications to provide Professional Engineering and Supplemental Services for a Drainage Master Plan for the East Bank of Jefferson Parish Resolution No. 138896 | SOQ No. 22-014**

Jefferson Parish Council:

ECM Consultants, Inc. (ECM) is pleased to submit one original of our Statement of Qualifications electronically via the Parish's eProcurement system, www.jeffparishbids.net in response to your Request for Qualifications for the subject project. ECM Consultants, Inc. is an established, Metairie-based engineering firm highly qualified to provide professional engineering and supplemental services for preparation of a Drainage Master Plan for Jefferson Parish Department of Drainage.

ECM has provided relevant services including H&H analysis and modeling, Master Plan preparation, investigations of flood events, data collections, evaluations, report preparation as well as engineering design for drainage systems improvements/upgrades for numerous drainage-related projects for Jefferson Parish and surrounding areas.

Our team includes Ardurra Group, Inc for providing support in Modeling and BFM Corporation, LLC for surveying services both of these firms are local (Jefferson Parish) and have extensive knowledge in their respective fields.

Our TEC questionnaire demonstrates our specialized experience in H&H analysis, modeling and preparation of Drainage Master plan. Our team includes [Cecil Soileau, PE as Project/QAQC Manager](#) and [John Rasi, PE as the Lead H& H Engineer and Modeler](#), both are experts in H&H Engineering, Modeling and Preparation of Drainage Master Plans.

We hope our submittal will receive favorable consideration. Should you have any questions or require any additional information, please contact me.

Sincerely,



Kazem Alikhani, P.E.
Chief Executive Officer

TABLE OF CONTENTS

Letter of Interest and Statement of Qualifications
Professional Engineering and supplemental services for a Drainage Master Plan
for the East Bank of Jefferson Parish
Resolution No.138896 I SOQ No. 22-014

Item	Section
Letter of Transmittal	
ECM Consultants, Inc. <i>TEC Professional Services Questionnaire</i>	1
Ardurra Group, Inc. <i>TEC Professional Services Questionnaire</i>	2
BFM Corporation, LLC. <i>TEC Professional Services Questionnaire</i>	3

Section 1

ECM Consultants, Inc.

TEC Professional Services Questionnaire

A. Project Name and Advertisement Resolution Number:

**Professional Engineering and Supplemental Services for a Drainage Master Plan for the
East Bank of Jefferson Parish
Resolution No. 138896 | SOQ No. 22-014**

B. Firm Name & Address:

ECM Consultants, Inc.
1301 Clearview Parkway, Suite 200
Metairie, LA 70001

C. Name, title and contact information of Principal, as defined in Section 2-926 of the Jefferson Parish Code of Ordinances, who is a registered, licensed architect, professional engineer, or surveyor in the State of Louisiana:

Principal:
Kazem Alikhani, P.E., Chief Executive Officer
Louisiana Licensed Professional Engineer
P.E. License No. 25073
Tel: (504) 885-4080 Fax: (504) 885-1439
Email: kazem@ecmconsultants.com

D. Name and contact information of employee who is a registered and licensed architect, professional engineer, or surveyor in the State of Louisiana in the applicable discipline. A subcontractor may be substituted here only if the advertised Project requires more than one discipline.

Professional in Charge of Project:
Cecil Soileau, P.E., Senior H&H Engineer
Louisiana Licensed Professional Engineer
P.E. License No. 18950
Tel: (504) 885-4080, Fax: (504) 885-1439
Email: mail@ecmconsultants.com

E. Please provide the number of employees whose primary function corresponds with each category:

<u>8</u> Administrative	<u>0</u> Estimators	<u> </u> Specification Writers
<u>1</u> Architects (Licensed)	<u>0</u> Geologists	<u>2</u> Structural Engineers
<u>0</u> Chemical Engineers	<u>0</u> Geotechnical Engineers	<u> </u> Graduate Engineers
<u>13</u> Civil Engineers	<u>0</u> Interior Designers	<u>4</u> Project Managers
<u>25</u> Construction Inspectors	<u>0</u> Landscape Architects	<u>0</u> Clerical
<u>0</u> Ecologists	<u>0</u> Land Surveyor	<u>1</u> Grant/Funding Specialist
<u>1</u> Electrical Engineers	<u>2</u> Mechanical Engineers	<u>0</u> Sanitary Engineers
<u>2</u> Engineer Intern	<u>0</u> Environmental Engineers	
<u>0</u> Professional Land Surveyors	<u>3</u> CAD Technicians	<u>62</u> TOTAL

F. Is this submittal by a JOINT-VENTURE? Please check: YES _____ NO _____
If marked "No" skip to Section I. If marked "yes" complete Sections G-H.

G. If submittal is by JOINT-VENTURE, list the firms participating and outline specific areas of responsibility (including administrative, technical, and financial) for each firm. Please attach additional pages if necessary.

1. N/A

2. N/A

H. Has this JOINT-VENTURE previously worked together? Please check:
 YES _____ NO _____ N/A

I. List all subcontractors anticipated for this Project. Please note that all subcontractors must submit a fully completed copy of this questionnaire, applicable licenses, and any other information required by the advertisement. See Jefferson Parish Code of Ordinances, Sec. 2-928(a)(3). Please attach additional pages if necessary.

Name & Address:	Specialty:	Worked with Firm Before (Yes or No):
1.  ARDURRA 3012 26 th Street Metairie, LA 70002	H & H modeling and analysis support	YES
2. BFM Corporation 15 Veterans Blvd. Kenner, LA 70062	Surveying Services	YES
3.		

J. Please specify the total number of support personnel that may assist in the completion of this Project:

16

TEC Professional Services Questionnaire

K. List the professional in charge, key persons, specialists, and individual consultants anticipated for this Project and provide their relevant information below. If necessary, please attach additional documentation (i.e. resume) that demonstrates the employment history and experience of the Firm's key persons that may assist in the completion of this Project. Please attach additional page if necessary.

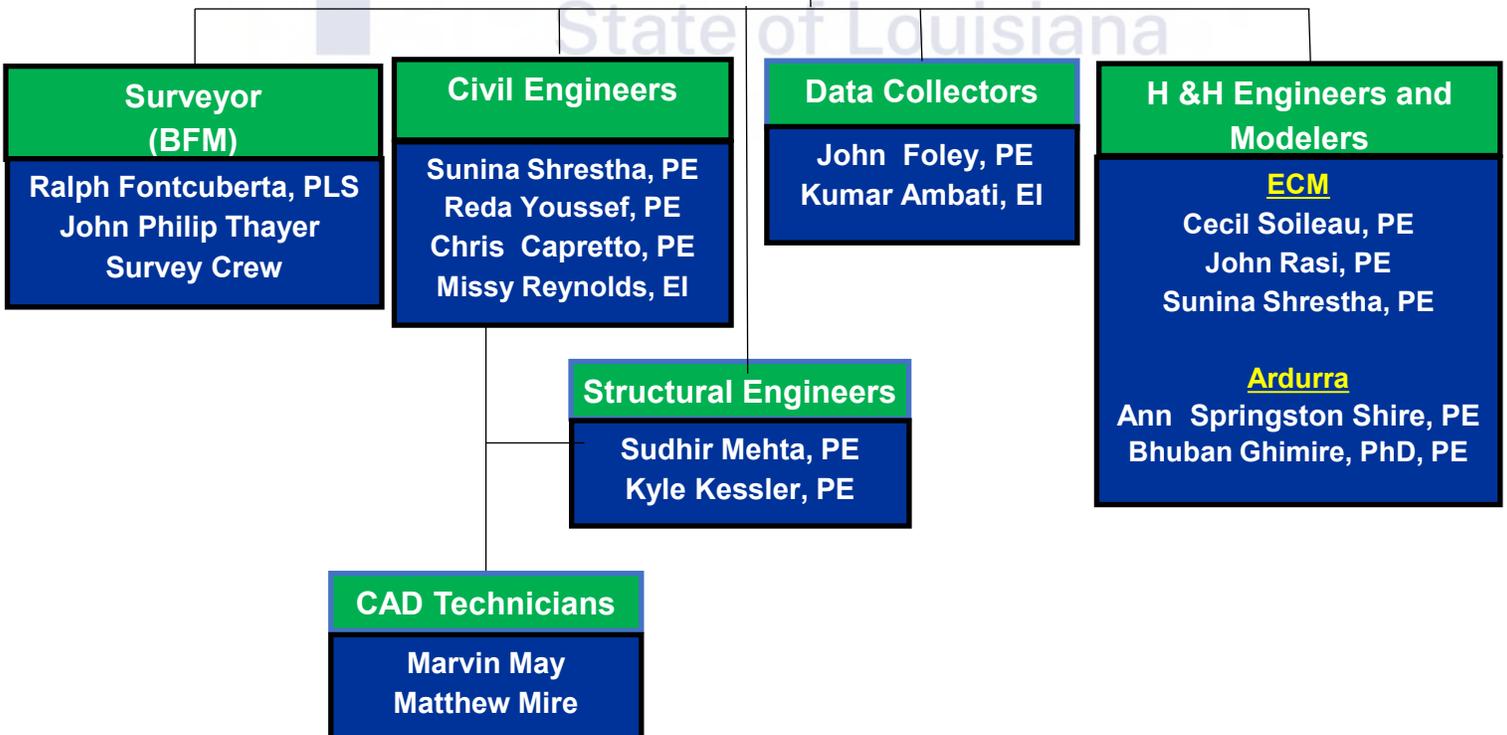


ECM Consultants, Inc.
(Prime)

Principal/P.O.C
Kazem Alikhani, P.E.

Professional-in-Charge
Cecil Soileau, PE, PLS

Lead H&H Modeler
John Rasi, PE



PROFESSIONAL IN CHARGE OF PROJECT:

Name & Title:

Cecil Soileau, P.E., P.L.S., Senior Hydraulic & Hydrology Engineer

Project Assignment:

Project Manager/QAQC Manager

Name of Firm with which Associated:

ECM Consultants, Inc.

Years' experience with this Firm:

2

Education: Degree(s)/Year/Specialization:

BS/ 1962/ Civil Engineering, Coastal Engineering and Water Resources Engineering

Active registration: Year first registered/discipline:

1980/Civil Engineering/LA License No. 18950

Other experience and qualifications relevant to the proposed Project:

Mr. Soileau has more than 53 years of experience in hydraulic and hydrologic design, analysis and modeling for flood control, masterplanning and major drainage projects. He was previously employed by the U.S. Army Corps of Engineers (USACE), New Orleans District from 1963 to 1993 as a hydraulic engineer, where he served in the following capacities: Chief, Hydrology and Hydraulics Branch (12 years); Chief, Hydraulic Design Section (4 years); Chief, Coastal Engineering Section (10 years); and Chief, Hydrology Section (1 year). Mr. Soileau also served as the Executive Secretary of the Corps of Engineers Committee on Tidal Hydraulics from 1983 to 1993.

Cecil also worked in the Private Sector as a senior engineer for 23 years after retiring from his position with the USACE.

Cecil has been working with ECM performing various modeling and hydraulic design assignments for the last couple of years.

Employment History:

- ECM Consultants Inc, LA, *Senior H&H Engineer (2019 to date)*
- Brown, Cunningham, and Gannuch/Ardurra Senior *H&H Engineer/Project Manager (2006-2018)*
- USACE, Chief Hydraulics Engineer (1963-1993)

Project Experience:

Hydraulic/Hydrologic Engineering Chief, USACE New Orleans Hydrology Section, LA. From 1968 to 1993 Cecil was responsible for all stream gaging, flow, and sediment data collection programs in the New Orleans District. He published stage discharge, and sediment data; performed statistical analyses on hydraulic

data and provided real time 10-dayriver forecast on Red, Mississippi and Atchafalaya Rivers to support the National Weather Service River Forecast Center and the New Orleans flood fighting efforts. He used basin wide rainfall, travel time, reservoir storage and releases and flow diversion.

Chief of Hydraulics, USACE New Orleans Chief of Hydraulics Section, LA. From 1977-1981 Cecil was responsible for the hydraulic design of flood control projects and navigation projects in a riverine environment. In that capacity, he computed **flow lines for local flood protection projects**, designed drainage and pump station projects and completed **hydrologic basin wide flow-frequency/benefit studies** in connection with USACE projects. Cecil was responsible for: developing design flood flow lines in the Mississippi, Atchafalaya, Red, Pearl, Comite, Amite, and Sabine Rivers in Louisiana for flood control; hydraulic design, sizing and operation, and sediment diversion at the Old River Auxiliary Control Structure at Old River, Louisiana. He was responsible for design, management and coordination of **physical and mathematical model studies** conducted at Waterways Experiment Station in Vicksburg and the Sogreah Hydraulic Laboratory in Grenoble, France.

Project Engineer, Various Projects, Southeast United States. Cecil completed various studies, including feasibility studies, to improve **urban drainage in large urban settings** such as the cities of Shreveport, Baton Rouge, Lake Charles, New Orleans, and Slidell and the **Parishes of Jefferson, St. Bernard, and St. Tammany, Louisiana.** He applied **numerous modeling methods**, such as **HEC-RAS, HEC-HMS, UNET, FASTTABS, FESWMS, XP-SWMM and SMS** to urban areas including drainage improvements to the City of New Orleans with the Sewerage and Water Board of New Orleans, the metropolitan New Orleans area for USACE New

Orleans District. **The work was modeled in a 2-D numerical model known as SMS.**

USACE – Mobile Engineer District – Village Creek and Valley Creek Watershed Study, Birmingham, Alabama.

The scope included the development of a calibrated HEC-RAS model with feed back to the Mobile District to provide for Modified Puls routing of a **HEC-HMS model** and an iterative flow adjustment process, the collection and analysis of bed samples, the determination of stable channel regimes using SAM, detention pond design and the preparation of a report including means to mitigate floods and improve water quality.

Urban Flood Control, Various Urban Locations, Louisiana. Cecil performed feasibility studies to improve urban drainage in large urban settings such as Shreveport, Baton Rouge, Lake Charles, New Orleans, Slidell and the Parishes of Jefferson, St. Bernard, and St. Tammany. He utilized UNET, FESWMS, and SMS to coastal areas. He routinely utilized HEC-RAS, HEC-HMS, FASTTABS, SMS FESWMS, and XP-SWMM to urban areas.

Hydraulic Modeling for Jefferson Parish Drainage Basin 33 for Jefferson Parish, LA:

Mr. Soileau performed hydraulic analysis and modeling for validating capacities needed for two pumping stations to be located in at the end of West Esplanade Avenue and Pine Street for discharging into the 17th canal. **He modelled 5 different scenarios using SWMM 5** to find the most effective approach for reducing flooding in the drainage sub-areas. He analyzed two areas, one for the West Esplanade pump station with contributing area of 264 acres and another one, Pine Street pump station with contributing area of 99 acres. In addition to the pump stations, he modelled and performed hydraulic analysis for the existing subsurface drainage system to determine needed pipes size increase in various areas to lower the water surface profile by about 2 ft for reducing flooding in the areas.

Hydraulic Engineer, Sewerage & Water Board of New Orleans Modeling of Transient Flood Waves, New Orleans, Louisiana.

He was responsible for HEC-RAS unsteady flow analyses of hydraulic effects of partial and complete, and instantaneous failure of tandem pump systems in outfall canals in Orleans Parish. This was done to compute the expected maximum height of transient waves in the canals due to sudden stoppage of pumps downstream. Evaluated the results for potential floodwall and levee failure due to increased hydrostatic and dynamic wave loading and flooding due to dam breaks.

He performed the following hydraulic tasks for various projects:

1. He has prepared analyses/modeling for the Corps' Southeast Louisiana Project and the Cities of Atlanta and Birmingham. In addition, he has applied **HEC-RAS, FASTTABS, FESWMS, SMS, SWMM 5, RMA-2** and Small-Scale Physical Model to coastal restoration and wetland rehabilitation projects such as East Timbalier Island gap closure, the Cutoff Canal and Bayou Bleu water shed to control saltwater intrusion and enhance freshwater distribution; the Atchafalaya River and East Grand Lake Circulation Study; the Big Island Mining and Atchafalaya Sediment Delivery project, the Hopedale Marsh Hydrologic Restoration; and Castille Pass Sediment Diversion. He recently assisted in the preparation of the Louisiana Comprehensive Coastal Master Plan and is currently providing engineering support to CPRA on several Mississippi River Diversion Projects and the Mississippi Delta Small Scale Physical Model.

2. He also developed hydraulic design requirements for a 1,200 cfs urban storm water pumping station in Harahan that will discharge into the **Mississippi River through three 84" diameter force mains 8,700 feet long known as "Pump To the River" project.** He has modeled various areas in **Jefferson Parish to determine runoff and required improvement.** He managed a **master drainage study** for S&WB Urban Flood Control.

3. He has developed and directed feasibility studies to improve freshwater circulation and prevent adverse drainage in large marsh and coastal settings. Mr. Soileau applied numerous modeling methods, such as HEC-1, HEC-2, UNET, STORMCAD, FESWMS, and SWMM, to coastal areas.

4. Cecil's recent experience includes Numerical Modeling and the application of **2-D and 1-D unsteady flow models, FASTABS, RMA-2 SMS, HEC-HMS, HEC-RAS, and XP-SWMM** to diversion projects ranging in scope from 1,200 cfs to 150,000 cfs for the USACE New Orleans District, Louisiana Department of Natural Resources, and the Ascension Parish Department of Public Works. He applied RMA-2 to a 2,000 cfs pumping station design expansion in New Orleans and modeled an urban watershed in Jefferson Parish with XP-SWMM to reduce the number of repetitive losses due to frequent flooding and established the flood reduction benefits of a 2,400 cfs pump station. In 2008, Cecil designed a 25,000; 20,000; 16,000; and 12,000 cfs pump station intake and outflow basin for a hurricane protection project.

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:**Name & Title:****Kazem Alikhani, P.E., Chief Executive Officer****Project Assignment:****Principal/P.O.C.****Name of Firm with which Associated:*****ECM Consultants, Inc.*****Years' experience with this Firm:****5****Education: Degree(s)/Year/Specialization:****M.S./1984/Civil, H&H Engineering; B.S./1980/Mechanical Engineering****Active registration: Year first registered/discipline:****1992/Mechanical & Environmental Engineering/LA License No. 25073****Other experience and qualifications relevant to the proposed Project:**

As CEO of ECM, Mr. Alikhani serves as Point of Contact and Project Manager for a variety of infrastructure projects, overseeing staff, budgets, timeline and working with owners, consulting firms and subconsultants to ensure a timely and accurate project delivery.

Mr. Alikhani has **over 39 years of experience** in public works projects including planning, design, and construction management. He spent a majority of his career working with the Jefferson Parish Department of Public Works where he served in a number of management roles including Drainage Director and Director of Public Works. As Drainage Director, he initiated numerous studies and designs for management of stormwater and rainwater, including identifying and leading application processes for FEMA, HMGP, State Capital Outlay and other federal and state funding/grant sources, Benefit-Cost Analyses for State and Federal projects. Mr. Alikhani served as Parish point of contact for the National Disaster Resilience Competition where he managed a team to research, plan and develop post-disaster-related stormwater management and resiliency projects for the Parish's submittal. As Director of Public Works, Mr. Alikhani was responsible for all public works functions and overseeing an annual operating budget of \$200 million and a capital budget of over \$100 million. He managed a number of departments that included drainage (canals, subsurface, pump stations, levees, detention ponds), sewerage, water, streets (over 3,200 lane miles), parkways, environmental, floodplain management and hazard mitigation, engineering; capital projects including planning, managing engineering and construction of capital project improvements.

Employment History:

- ECM Consultants, Inc., *Chief Executive Officer (2016-Present)*
- Jefferson Parish DPW, *Director of Public Works*

- Jefferson Parish DPW, *Asst. Director of Water (1995-2004)*
- Jefferson Parish DPW, *Drainage Dept. Engr. (1982-1994)*
- Guillot & Vogt Engineering, *Engineer (1980-1982)*

East and West Bank Internal drainage system Master Plan & Hydraulic modeling:

As a drainage director Mr. Alikhani initiated and managed Hydraulic modeling and study of East and West Bank drainage system post Katrina to identify vulnerable areas that experienced frequent flooding. Study identified numerous drainage improvement projects on East & West Banks of Jefferson Parish. Mr. Alikhani with the help of Jefferson Parish Administration funded approximately \$200 M drainage improvement projects that included subsurface drainage improvements, drainage pump stations, retention ponds and channel improvements.

Example of some of the projects listed below:

Maplewood-Paillet Drainage Improvements, Jefferson Parish, LA:

As Director of the Drainage Department for Jefferson Parish, Mr. Alikhani identified this \$11 million drainage improvement project. The area of Maplewood-Paillet was subject to flooding from storm events. An H&H study of the drainage basin revealed that drainage and flood mitigation improvements would benefit the neighborhood and reduce the severe repetitive loss (SRL) and repetitive loss (RL) and future flooding of structures. He assisted in preparing the application for HMGP funding and the determination of Benefit-Cost Analysis. The project received GOHSEP and HMGP approval and was funded through HMGP. A number of improvements were explored in the Study Phase and the Department ultimately decided on subsurface drainage improvements.

(2010-2016)

- Jefferson Parish DPW, *Director of Drainage (2004-2010)*

these activities involved installing concrete drainpipe, concrete catch basins, and manholes with the replacement/adjustment of asphaltic drives, asphaltic pavement, concrete walks and drives, Concrete pavement, light poles, sewer mains, sewer manholes, and water mains.

Oakwood-Terrytown Drainage Improvements, Jefferson Parish, LA: Mr. Alikhani identified this \$5.5 million drainage project for mitigation by implementing subsurface drainage improvements and installing new subsurface drain lines in the neighborhood in order to significantly reduce the future potential for flood damage to homes and businesses. A number of improvement options were explored in the H&H Study Phase, and improving subsurface drainage was selected to prevent severe repetitive loss (SRL) and repetitive loss (RL) Flooding. The funding application was submitted for a HMGP application. Mr. Alikhani assisted in preparing the application for funding, determination of Benefit-Cost Analysis and also provided support documentation. The application received approval and the project was funded and constructed.

Taft/North Pump Station:

As a Director of Drainage Department for Jefferson Parish, Mr. Alikhani commissioned a drainage study with hydraulic analysis that concluded installation of a drainage pump station was necessary to direct the stormwater from this area to the nearby outfall canal. Mitigation activity involved the development of a forced drainage plan. Mr. Alikhani assisted with preparation of application for HMGP funding, benefit cost analysis and provided technical supporting documents. The application was approved, and the project was funded.

A vacant lot was purchased to house a new three-pump system that will function alongside the existing system which will be tasked as a common collector system of sub-surface pipes to collect excess water from Turnbull, Belmont and Taft via 33rd Street and channel the water to the new pump station. The project benefits the area in Metairie, LA bounded by I-10 to the North, Neyrey Drive on the East, 41st Street on the South and Danny Park on the West.

Midway Street Area Drainage Improvements, Jefferson Parish, LA: Under Mr. Alikhani's leadership, the Drainage Department of Jefferson Parish designed and funded construction of a small drainage pump station to improve the drainage system in this area. Once the pump stations were constructed the drainage subsurface needed to be upgraded in order to convoy the storm runoff to the station. Mr. Alikhani identified this \$3 million subsurface drainage improvement project for HMGP funding. He assisted with the application

The subsurface drainage improvements significantly reduced future potential for homes to sustain flood damage, especially repetitive flood damage. The methodology for implementing preparation, Benefit-Cost Analysis and provided technical supporting documents. Charlotte, Marsha and Wildwood Drives within the drainage basin have repeatedly suffered street flooding and flooding of homes during rain events. High intensity storms exceeded the design capacity of the existing surface drainage, especially repetitive flood damage. Wildwood Drives within the drain basin have repeatedly suffered street flooding and flooding of homes during rain events. High intensity storms exceeded the design capacity of the existing surface drainage system. The area suffered severe repetitive loss (SRL) and repetitive loss (RL) due to flooding from rain and storm events. The funding through HMGP was approved.

Earhart Expy & Clearview Blvd. Drainage Improvements & Detention Ponds:

The intersection of Earhart Expressway and Clearview had experienced habitual flooding for many years, impacting travelers and businesses in the Elmwood area. To eliminate flooding, Jefferson Parish Public Works proposed the creation of detention ponds within the intersection to store rainwater in the ponds during heavy rain events. The project involved construction of the ponds and connectivity to the Clearview drainage system to discharge into the newly created ponds, and slow release into downstream drainage systems. This project has improved the drainage for this major thoroughfare drastically and allows traffic flow during most rain events. Fountains and lights were added later to beautify the project. The lights were designed to allow change of colors seasonally (Christmas, Mardi Gras and Fourth of July). This project is a good example of mitigating stormwater and a community living with water and enjoying the beautification of a water management project.

Pontiff Playground Detention Area: Mr. Alikhani was the program manager for this \$5 million project involving design and construction of a stormwater detention pond and small pump stations. This project involved utilizing the Pontiff playground as a detention pond during a storm event to store rainwater. This project included constructing a ring levee around the playground with a strategically placed small pump stations to pump rainwater from the surrounding neighborhoods into the playground. Benefits of this project were reduced flooding in the area neighborhood and slow release of the water into the downstream drainage system. The project did not impact the function of the playground in such that the playground was functional within hours after the rain events.

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:**Name & Title:****John Rasi, P.E., Senior Hydraulic & Hydrology Engineer****Project Assignment:****Lead H&H Engineer & Modeler****Name of Firm with which Associated:*****ECM Consultants, Inc.*****Years' experience with this Firm:****8****Education: Degree(s)/Year/Specialization:****B.S./Civil Engineering/1978****Active registration: Year first registered/discipline:****Civil Engineering: LA #20841****Other experience and qualifications relevant to the proposed Project:**

Mr. Rasi has 38 years of hydraulic and hydrologic engineering experience that includes a **25-year career with LADOTD** and a 4-year career with Louisiana Department of Natural Resources. **He is highly proficient in the use of HEC-RAS, HEC-HMS, SWMM 5, DAMBREAK, and FLOODWAVE** for hydrologic and hydraulic analyses and modeling of watersheds. He also has extensive experience working with US Army Corps of Engineers on projects such as Comite River Diversion to the Mississippi River.

Employment History:

- ECM Consultants, Inc., LA, *Hydraulic Engineer (2012-to date)*
- LADOTD, *Hydraulic Manager (2002-2011)*
- Louisiana Department of Natural Resources (Coastal Restoration Division), *Hydraulic Engineer (1990-1994)*

Hydraulic Manager & Senior Hydraulic Engineer

LADOTD, Statewide, LA: Mr. Rasi served as Hydraulic Manager and was responsible for managing groups of engineers and engineering technicians in the review and design of projects from the Port Priority Program, the **Statewide Flood Control Program**, the Dam Safety Program, and Federal projects funded in part by the State of Louisiana. He was also responsible for review and approval of levee board permits within Louisiana. Prior to his position as Hydraulic Manager, Mr. Rasi served as Senior Hydraulic Engineer and was responsible for approving hydraulic designs of projects in the Louisiana Statewide Flood Control Program as well as the approval **model** of the 17th Street. ECM was required by the US Corps of Engineers to show that these stations, if built, would not cause flooding within this major discharge canal

of dam designs that fall under Louisiana Dam Safety Program. He also generated flood studies, rainfall analysis, stream flow analysis, dam yield studies, and dam break analyses.

Strain Road Design, City of Baton Rouge, LA: Mr. Rasi reviewed the preliminary design of Strain Road, noting that the area frequently flooded due to backwater from the Amite River. Strain Road crosses over an unnamed tributary that discharges into the Amite River and is about 1.5 miles upstream of the confluence of the unnamed tributary and the Amite River. The slope of the Amite River flattens just upstream of Interstate 10 which results in backwater into this unnamed stream. Mr. Rasi used a USGS Gage Station on the Amite River at US 190 which is about two miles upstream of Interstate 10 and **spatially moved the Discharge versus Stage hydrograph downstream to the Amite River at Interstate 10. He then used this spatially corrected rating curve to run several profiles for the 25, 50 and 100-year storm events** with and without backwater to determine if raising the road several feet would cause flooding upstream.

Master Drainage Study, LADOTD, St. Bernard Parish, LA: Mr. Rasi developed a master drainage study for two urban areas in St. Bernard Parish. Since St. Bernard Parish's urban systems had an interlocking channel system with numerous pump stations scatter through the system, traditional methods using HEC-1 and HEC-2 were not adequate. **Mr. Rasi used the Storm Water Management Model (SWMM) to develop the model** instead. This model allowed for unsteady flow analysis.

17th Street Canal (Veterans Blvd), Jefferson Parish, LA: Mr. Rasi performed hydraulic analysis for proposed pump

which services a significant drainage basin located in New Orleans. Mr. Rasi developed discharge hydrographs for each pump station and routed each singularly and as a group into the 17th Street Canal as it was passing its peak flow using the unsteady US Corps of Engineers **HEC-RAS** computer model. Mr. Rasi successfully showed that these pump stations would not cause any issues regardless of how they were operated either together or separately.

Master Drainage Study, LADOTD, St. Bernard Parish, LA: Mr. Rasi developed a master drainage study for two urban areas in St. Bernard Parish. Since St. Bernard Parish's urban systems had an interlocking channel system with numerous pump stations scatter through the system, traditional methods using HEC-1 and HEC-2 were not adequate. **Mr. Rasi used the Storm Water Management Model (SWMM) to develop the model** instead. This model allowed for unsteady flow analysis

Hydraulic Engineer, Louisiana Department of Natural Resources (Coastal Restoration Division), Statewide, LA: Mr. Rasi provided **hydraulic modeling of coastal estuaries of southern Louisiana** to study the effects of freshwater diversions from the Mississippi River. The modeling consisted of investigations of salinity, temperature, stage changes, tidal effects, and sediment transport. The results of modeling were used to control the diversion of water through gated structures along the Mississippi River levee as well as diverted water through siphons over the Mississippi River to affect stabilizing changes through Louisiana's deteriorating wetlands.

Hydraulic Engineer for LADOTD (Office of Public Works): Mr. Rasi provided hydraulic design for pump stations, channels, dams, and bridges as well as **watershed flood studies, flood forecasting along streams**, and the review and correction of Federal Emergency Management Agency flood map.

Hydraulic Engineer, LADOTD, Baton Rouge, LA: Mr. Rasi served as the **Hydraulic Engineer** and actively designed numerous channel improvements in the City of Baton Rouge. He would set the requirements for the field surveys and reviewed the results, when he received the field books. Once he corrected the channel survey, he started the water surface elevation either from the records of a nearby gage station, FEMA flood studies or the City Engineer. Once he obtained the client's design storm, he would proceed to size up the channel using normal

backwater calculations.

Safety Inspections of State Regulated Dams

LADOTD, Louisiana Statewide: Mr. Rasi served as a Senior Hydraulic Engineer for conducting safety inspections for several state- and privately-owned dams under the State Dam Safety Program. This included **hydrologic and hydraulic modeling of watersheds using LIDAR survey data** and preparation of EAP reports for 22 dams throughout Louisiana. Mr. Rasi is currently reviewing the models and the reports. Preparation of these reports also involve field reconnaissance, dam breach analysis, and preparation of inundation maps.

Lake Bennett Watershed in Arkansas for state of Arkansas parks and tourism Department for Development of a Watershed plan and environmental document. Mr. Rasi served as a **lead hydraulic engineer** for this project that involves preparation of watershed plan for Lake Bennett watershed in Arkansas. The project involved the **hydraulic and hydrologic analysis** for both existing and new dam condition. HEC-HMS and HEC-RAS software were utilized to determine the water surface elevation of the area for 1, 2, 5, 10-, 50-, 100- and 500-years storm events. Lidar data was utilized to get the topographic elevation.

Louisiana Watershed Initiatives: Mr. Rasi is providing guideline and framework for Louisiana Watershed Initiative (LWI) for statewide flood plan watersheds. As part of his task John has **provided complete hydraulic and hydrologic modeling requirements for each assigned watershed to follow**. He has established and outlined specific requirements in the study that included:

1. Modeling Requirements (Primary & Secondary)
2. Data Collection (Land Survey, LiDAR, Bathymetry, Pump Stations, dams, High water marks, Gage stations, Flood events, Rain stations)
3. Projection and Datum
4. FEMA Modeling Requirements
5. Watersheds (Inland)
6. Watershed (Coastal and Transition Zones)
7. Boundary Conditions
8. Calibration
9. Design Storms
10. Model Deliveries

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Sunina Shrestha, P.E., Engineering Manager (Civil and H&H Engineer)

Project Assignment:

Civil / H&H Engineer

Name of Firm with which Associated:

ECM Consultants, Inc.

Years' experience with this Firm:

14

Education: Degree(s)/Year/Specialization:

M.S./2008/Civil Engineering

Active registration: Year first registered/discipline:

2013/Civil Engineering/LA License No. 37901

Other experience and qualifications relevant to the proposed Project:

Ms. Shrestha has 14 years of experience in hydraulic, hydrologic that includes preparation of **hydrologic models of various watersheds**, river basins, water surface profiles, retention pond feasibility study, hydraulic analysis for canals, and reservoirs, flood protection system including levees and dams. Her experience also includes civil engineering design and analysis for roadways, bridges, drainage systems, water resources projects. Ms. Shrestha is trained in use of **HEC-RAS, HEC-HMS, SWMM, SWAT, ArcGIS, AutoCAD, SAP, and WINSLAMM**. Her expertise also includes advanced hydrology & hydraulics, open channel hydraulics, GIS and quality control of deliverables

Employment History:

- ECM Consultants Inc, LA, *Civil Engineer (2009-to date)*
- UAH, *Graduate Research Assistant in Civil Engineering (2007)*
- RITI Consultancy Pvt. Ltd., Nepal, *Field Engineer (2005)*

Project Experience:

Ward 1 & Ward 3 Master Drainage Plan, Calcasieu Parish, LA:

Phase I of this project included a detailed hydrologic and hydraulic modeling of several drainage areas around major waterways in Calcasieu Parish, located near the northeast corner of the Ward I drainage basin and several other tributaries on the southern end of the Ward 1 Drainage Basin. Phase II **involved hydrologic and hydraulic modeling of the drainage basin** at the McNeese Street extension, which will link Highway 14 and Highway 397. In addition to detailed analysis of several drainage basins, she performed regional flood frequency analysis to verify the **hydrologic models are representative of Ward 1 basin response to rainfall events.**

The project also included **development of a Master Drainage Plan**. Ms. Shrestha conducted GIS, HEC-RAS, HEC-HMS for all phases, and contributed to the development of a Master Drainage Plan. Results of the hydraulic models were compared with FEMA Base Flood Elevations as well as with aerial photographs and high-water marks from a previous flood event.

East McNeese Street Basin Stormwater Modeling, Calcasieu Parish, LA:

The main objective of the East McNeese Street Basin Stormwater Master Plan project was to **complete hydrologic and hydraulic models for the area to better understand the drainage system and to evaluate existing and future drainage issues.** Using the model results, this Plan was developed to identify channel cleaning needs, assess structure capacities, develop a maintenance plan, develop alternatives to remediate localized flooding, and to recommend areas for future development within the East McNeese Street Basin. Ms. Shrestha providing engineering and modeling services to develop a hydrologic and hydraulic model which included data collection and compilation, research of existing data from other agencies, research of previous studies, hydraulic and hydrologic numerical computer modeling, analyses of known flood prone areas, watershed deficiencies, development and modeling of watershed improvements, and GIS mapping. This project included GIS, HEC-HMS, Steady and Unsteady HEC-RAS.

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Reda Youssef, P.E., Civil Engineer Supervisor

Project Assignment:

Civil Engineer Supervisor

Name of Firm with which Associated:

ECM Consultants, Inc.

Years' experience with this Firm:

2

Education: Degree(s)/Year/Specialization:

MS1980/Civil Engineering; B.S./1976/Civil Engineering

Active registration: Year first registered/discipline:

1982/Civil Engineering/LA License No. 20341

Other experience and qualifications relevant to the proposed Project:

Mr. Youssef has 44 years of experience in the public and private sectors providing professional engineering services. He worked in the Private Sector for 26 years and in the public sector for 18 years where he served as Director of Capital Projects for Jefferson Parish Department of Public Works.

Employment History:

- ECM Consultants Inc, *Engineer Supervisor*
- (2019-to date)
- Jefferson Parish, *Director of Department of Capital Projects (2001-2019)*
- Pepper and Associates, Inc., *Project Engineer & Project Manager (1977-2001)*

Jefferson Parish Master Drainage Plan for the east bank and west bank of the Parish: after hurricane Katrina it was determined that a master drainage plan for the internal drainage system of the Parish is necessary for creating a priority list for improving the secondary (internal) drainage system in the parish. This is in addition to the Master plan for major drainage such as main canals and pump stations which already exist. This plan included the location of all trouble spots, needed improvements, cost and priorities. Project costs varied from \$2M to \$30M. Mr. Youssef assisted the Drainage department in determining the scope, negotiated the fees, prepared the contract then managed the development of the master plan until completion of this task.

Funding, design and construction of projects identified in the Parish's internal master drainage Plan: Funding was applied for and obtained from the following sources: 1. Drainage bond program (\$50M), 2. Statewide flood control (\$60M), 3. Community Development (\$50M), 4. Capital Outlay program

(\$80M), 5. Drainage department Capital Projects budget (\$80M), 6. FEMA (\$80M), 7. State funds managed by the RPC (\$20M). As director of the Department of Capital projects Mr. Youssef assisted in applying and securing the required funds, establishing scope of work, negotiating fees and preparing contracts with design engineers, managing the design and construction of all projects involved. The following are some of the projects that were constructed as per the master drainage plan's recommendation

- A) Ave. D Drainage improvements: Multi phase project involved upgrading existing drainage in the vicinity of Ave. D. Project was funded by combination of Statewide flood control agency and Jefferson Parish (\$25M).
- B) Canal 10 Drainage Improvements. Improvements involved upgrading the canal cross section at West esplanade and canal 10 (\$1.5M).
- C) N. Sibley Drainage Pump Station: Project involved subsurface drainage improvements and a pump station at West Napoleon (\$1.8M).
- D) St. Peters Ditch drainage Improvements: . The project involved the improvements of the existing ditch between Clearview and West Metairie canal and new pump station at the Clearview end of the project. Project involved several funding sources from RPC, local drainage funds and FEMA funding (\$20M).
- E) Sena Dr. Drainage improvements: this was a two-phase project that improved the subsurface drainage along Sena Dr. from Veterans Blvd. to West Esplanade Ave. (\$5M).

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:**Name & Title:****Chris Capretto, P.E., Civil Engineer****Project Assignment:****Civil Engineer****Name of Firm with which Associated:*****ECM Consultants, Inc.*****Years' experience with this Firm:****7****Education: Degree(s)/Year/Specialization:****B.S./2009/Civil Engineering****Active registration: Year first registered/discipline:****2014/Civil Engineering/LA License No. 38641****Other experience and qualifications relevant to the proposed Project:**

Mr. Capretto has 13 years of experience in storm water drainage, drainage pumping stations, utility system, roads and bridge design. His participation in representative projects includes project management, design of steel structures, design of concrete foundations, roadways and drainage design for urban and rural highways and streets.

Employment History:

ECM Consultants Inc, LA, *Civil Engineer (2014-to date)*
 Atlas Engineering, Inc./S&B Infrastructure, Ltd., *Civil Engineer (2008-2014)*

Veterans Blvd. Drainage Pump Stations, Jefferson Parish-DPW, Jefferson Parish, LA: Mr. Capretto is providing project coordination and civil engineering services for design of two new drainage pump stations that will discharge into the 17th Street Canal. Included in the design of this project are two 28,000 GPM and one 38,000 GPM drainage pump stations with concrete wet well and two submersible pumps at each station. The design includes two 30" and 36" discharge piping system that discharges into the Canal. The project also includes **hydraulic analysis for design of new subsurface drainage system and structures from the drainage area** to divert flows to the new pump stations.

Drainage Improvements for FEMA Recovery Roads, St. Bernard & City Park Neighborhoods, City of New Orleans, LA: Mr. Capretto provided civil design services for FEMA eligible repairs in the St. Bernard and City Park neighborhoods. Work included **hydraulic analysis conforming to LADOTD hydraulic manual for drainage improvements**, replacement of water lines, roadway rehabilitation involving base repairs, asphalt leveling course and overlay, curb and sidewalk repairs.

LA Highway 1091, Robert Road Intersection Improvements, St. Tammany Parish, LA: Mr. Capretto served as project designer for the conversion of a signalized intersection to roundabout. He was involved in traffic analysis, asphaltic and Portland cement concrete pavement design, **drainage design**

and environmental permitting. Work also included location of utilities using subsurface utility engineering and coordination of improvements to minimize utility relocation and right-of-way acquisition costs. Mr. Capretto prepared drainage maps, plan and profile sheets, and geometric details, and designed concrete "splitter islands" per the U.S. Department of Transportation manual.

Off-System Bridge Replacements, LADOTD S. P. No. 700-26-0293, Jefferson Parish, LA: Mr. Capretto provided engineering design services for preparation of preliminary plans for two concrete bridges, including **hydraulic and structural calculations** and plans. He identified waterline and gas utility conflicts for the projects, coordinated utility relocation for the new design and the project included drafting structural sections, plan and profile sheets and a vicinity map.

LADOTD Safety Inspections of State Regulated Dams, Statewide, LA: Mr. Capretto performed inspections including **data collections** of ten earthen and concrete dams throughout central and southeast Louisiana. Inspections focused on structural stability of dams – particularly noting any seepage, leakage, erosion, settlement, cracking, etc. noting overall existing condition of principal and emergency spillways. Findings were discussed with dam owners at the sites as well as included in reports submitted to LADOTD

US 190 Collins Bridge over LA 21 and Bogue Falaya River Feasibility Study, Regional Planning Commission, St. Tammany Parish, Louisiana: Assisted the Bridge Engineer in the preparation of structural and geometric alternatives for replacement of a two-lane bridge with a four-lane bridge in an environmentally sensitive area. Performed **site inspection and documentation of existing bridge and surrounding area.**

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Missy L. Reynolds, Senior Project Manager

Project Assignment:

Project Management Support

Name of Firm with which Associated:

ECM Consultants, Inc.

Years' experience with this Firm:

4

Education: Degree(s)/Year/Specialization:

B.S./1994/Civil Engineering

Active registration: Year first registered/discipline:

1995/ E.I./LA License No. 16639

Other experience and qualifications relevant to the proposed Project:

Ms. Reynolds has 27 years of experience in project management, hydraulic study and drainage system analysis including drainage structures, canals and water resource facilities and engineering design for roadways & bridges.

Employment History:

- ECM Consultants Inc., LA, *Deputy Program Mgr. (2017-present)*
- Barowka & Bonura Engineering & Consultants, LLC, LA, *Sr Project Manager (2008-2017)*
- URS Corporation, LA, *Project Manager (1998-2008)*
- Frederic R. Harris, *Project Engineer (1996-1998)*
- C&S Consultants, *Project Engineer (1994-1996)*

Project Experience:

Waggaman Hydraulic Study, Jefferson Parish, LA: Ms. Reynolds performed a hydrologic study for several subdivisions in Waggaman and South Kenner. LA. Each subdivision was approximately 200-600 acres and included residential, industrial and unimproved areas. Ms. Reynolds utilized the **Storm Water Management Model (EPA SWMM)** to evaluate existing conditions and performed hydrologic and hydraulic design model for each subdivision and recommendation for drainage improvements to reduce flooding. She also presented a detailed Hydraulic and Hydrology Report to show existing conditions and proposed improvements.

Cypress Park & Erindale Subdivisions Hydraulic Study, St. Tammany Parish, LA: Ms. Reynolds performed a hydrologic study for two residential subdivisions utilizing **Storm Water Management Model (EPA SWMM)** to evaluate the existing drainage capacities and contributions to bayous. She developed a hydrologic and hydraulic design model for each area and presented a detailed report showing existing and proposed design conditions along with associated probable construction costs.

Jean Lafitte Drain Line Replacement, St. Bernard Parish, LA: Ms. Reynolds designed 4,500 LF of major drain line and an outfall in conjunction with the **Parish Drainage Master Plan** and FEMA funding guidelines. The plans also included design for several large junction boxes, catch basins, roadway restoration, and redirection of smaller drain lines to intercept runoff and tie directly into the junction boxes.

Congressman Hebert Canal Widening & Stabilization, St. Bernard Parish, LA: Ms. Reynolds served as Project Manager, examining existing drainage capacity and bank stabilization for a major outfall canal in St. Bernard, which was adjacent to residences and schools. She utilized Autodesk SWMM to size the approximately 3,000 LF proposed earthen canal, box culverts, and concrete U-channel in accordance with the Parish Drainage Master Plan. The design also included relocation of several subsurface utilities, tying in existing drainage culverts, and roadway rehabilitation.

Program and Construction Management for 2017 Jefferson Parish Road Bond Project, Jefferson Parish, LA :Ms. Reynolds is serving as Senior Project Manager for the 2017 Jefferson Parish Road Bond Project on the Eastbank of Jefferson Parish. This project currently has \$200 M of construction projects and includes the design and construction of roadways, bridges, utilities and pedestrian bike paths and bridges. Ms. Reynolds is responsible for reviewing consultants' plans, specifications and engineers' cost estimates to ensure conformity with latest local and State guidelines and attending meetings with local and State entities. Her duties include working with **several consulting firms to resolve design and construction issues** and coordinating with private businesses and utilities entities.

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:**Name & Title:****John Foley, III, P.E., Civil Engineer****Project Assignment:****Civil Engineer / Data collection****Name of Firm with which Associated:*****ECM Consultants, Inc.*****Years' experience with this Firm:****3****Education: Degree(s)/Year/Specialization:****B.S./2014/Civil Engineering****Active registration: Year first registered/discipline:****2018/Civil Engineering/LA License No. 42740****Other experience and qualifications relevant to the proposed Project:**

Mr. Foley is a Registered Professional Engineer **with 8 years of experience** designing public works projects including feasibility studies, environmental assessments, roadway, and drainage improvements.

Employment History:

- ECM Consultants Inc., Metairie, LA, *Civil Engineer (2019-to date)*
- Bucharth Horn, Inc., Kenner, LA, *Project Engineer (2014-2019)*
- HNTB, Baton Rouge, LA, *Engineering Intern (2013-2014)*
- Louisiana State University, Baton Rouge, LA, Senior Design Project Manager and CAD Tech, *(2013-2014)*

Citrus Boulevard and Greg Court Drainage Improvements, Jefferson Parish, River Ridge, LA. Mr. Foley prepared design plans to replace the existing **drainage system** along Greg Court and Citrus Boulevard from Greg Court to Jefferson Highway.

Reserve Drainage Improvements, Phase III, St. John the Baptist Parish, Reserve, LA. Mr. Foley served as a project designer and assisted in providing bid phase services, permitting, and construction phase services for the installation of drainage improvements.

Program Management for 2017 Jefferson Parish Road Bond Issue, East Bank of Jefferson Parish, LA: Mr. Foley is serving as Project Engineer for the 2017 Jefferson Parish Road Bond Projects on the East bank of Jefferson Parish. This Program currently has \$200 million of construction projects that includes the design and construction of roadways, bridges, **drainage**, utilities, and pedestrian bike paths. Mr. Foley reviews consultants' plans and specifications for conformance with Jefferson Parish Standards and technical specifications. He also reviews engineering construction cost estimates prepared by the

consultants for accuracy and compliance with the project's budgets.

Transit Improvement Design for District 3, Jefferson Parish, LA:

Mr. Foley served as Project Engineer for design for improvements to 317 bus stops within Council District 3 for Jefferson Parish. Scope of work included **field investigations, data collection** for existing conditions, preparing detailed construction plans and technical specifications with the latest LA DOTD criteria. He prepared plans that included locations of all utilities affected by proposed construction, improvements to the bus stops and adjacent intersections.

Lake Terrace Oaks, Group-C, Neighborhood Roadway Improvements, City of New Orleans, LA:

Mr. Foley is serving as project Civil Engineer and providing design services for this \$10 million project that involves complete reconstruction of 17 blocks of neighborhood residential roadway including **subsurface drainage system**, replacement of water distribution systems, and sewer systems as required. Work includes PCC paving, new base, concrete curb, sidewalks, driveway aprons and ADA compliant ramps at roadway intersection.

MOVEBR Roadway Enhancement Program,

Parish wide Synchronization and Communication Traffic Signal Connection and Communications, Phases 2 and 3, Parish of East Baton Rouge, LA: Under the \$330 million MOVEBR Roadway Enhancement program, he is providing engineering design services for this \$8 million project involving installation of over 100 miles of fiber optic lines within streets ROW for connecting to signals scattered all over the Parish, for ECM as subconsultant to Stantec. He visited sites with city utility maps for **field investigations to determine approximate location of all existing utilities** within the ROWs and to locate best alignments for fiber optic lines to avoid conflicts with other utilities.

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:**Name & Title:****Kumar Ambati, EIT****Project Assignment:****Data Collections****Name of Firm with which Associated:****ECM Consultants, Inc.****Years' experience with this Firm:****3****Education: Degree(s)/Year/Specialization: B.S./2015/Civil Engineering****M.S./2018/Civil Engineering****Active registration: Year first registered/discipline:****TX / Engineer in training / 64508****Other experience and qualifications relevant to the proposed Project:**

Mr. Ambati has three years' experience in preparing and reviewing construction drawings, specifications, and reports. His project experience includes quality control plans, site visit inspections, condition assessments and addressing client issues. Certifications: Certified ATSSA Flagger; Traffic Control Technician; Traffic Control Supervisor; OSHA-10

Employment History:

- ECM Consultants, Inc., (2019-Present)
- Vertex Companies, Inc. (2019)
- Pyramid Consultants (2013-2016)

LADOTD Safety Inspections of State Regulated Dams, Statewide, LA: Mr. Ambati is currently working on dam inspection project for state of Louisiana. Inspections focused on structural stability of dams – particularly noting any seepage, leakage, erosion, settlement, cracking, etc. noting overall existing condition of principal and emergency spillways. Findings were discussed with dam owners at the sites as well as included in reports submitted to LADOTD.

MOVEBR Roadway Enhancement Program, Parish wide Synchronization and Communication Traffic Signal Connection and Communications, Phases 2 and 3, Parish of East Baton Rouge, LA: Under the \$330 million MOVEBR Roadway Enhancement program, Mr. Ambati assisted in providing engineering design services for this \$8 million project involving installation of over 100 miles of fiber optic lines within streets ROW for connecting to signals scattered all over the Parish, for ECM as subconsultant to Stantec. He visited sites with city utility maps for field investigations to determine approximate location of all existing utilities within the ROWs and to locate best alignments for fiber optic lines to avoid conflicts with other utilities during installation. He assisted in preparing plans and specifications conforming to City of Baton Rouge design standard.

Lake Terrace Oaks, Group-C, Neighborhood Roadway Improvements, City of New Orleans, LA: Mr. Ambati assisted in providing design services for this \$10 million project that involves

residential roadway including **subsurface drainage system**, replacement of water distribution systems, including house connections and sewer systems as required. Work includes PCC paving, new base, concrete curb, sidewalks, driveway aprons and ADA compliant ramps at roadway intersection.

West Shore Lake Ponchartrain Flood Risk Reduction Project Segments WSLP 102 and 106, St. Charles Parish, LA: The purpose of this project is to construct a 100-year level flood risk reduction system for the residents of the three parishes. The WSLP 102 and WSLP 106 of approximately 2 miles, is a part of 18.5 miles long West Shore Lake Pontchartrain project at its east approach. The salient features of this contract are earthen Levees, T-walls, and a Drainage Structure in the Montz canal with four (4) stainless steel sluice gates. The **flood mitigation configuration** is such that a portion of T-wall construction in this reach crosses the existing I-10 alignment and must be constructed under the I-10 east bound and west bound bridges. Mr. Ambati assisted in performing structural modelling and design computations for Flood walls, and gated drainage structure in Montz canal for both the segments under supervision of the Project Structural engineer Mr. Mehta.

Low Sill Old River Gated Water Control Structure Dewatering Design, Concordia Parish, LA

USACE-New Orleans District Contract No. W912-P8-16-D-0005, TO 0009: Mr. Ambati assisted in analyzing the 60-foot retaining walls for stability in dewatering operation and analyzed Stilling Basin and Monolith structures using finite element method and USACE manuals. Emergency repairs consisted of backfilling this enormous hole with boulders and ripraps. The hole under the structure was backfilled with cement grout. The grout bottom was 35 to 40 feet below the bottom of the base slab of the structure. USACE wants to inspect this critical structure for condition assessment that requires dewatering 30'-45' water after construction of the designed earthen containment dikes on both sides of the structure.

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:**Name & Title:****Marvin May, Sr. CAD Technician****Project Assignment:****CAD Technician****Name of Firm with which Associated:*****ECM Consultants, Inc.*****Years' experience with this Firm:****16****Education: Degree(s)/Year/Specialization:****AutoCAD Drafting/1999****Active registration: Year first registered/discipline:****Other experience and qualifications relevant to the proposed Project:**

Mr. May has over **17 years of experience** in AutoCAD drafting. His experience includes preparation of plan and profiles, cross sections and miscellaneous details for roadway, drainage and utilities projects. He is trained in both AutoCAD 2014 and Microstation V8.2.

Improvements to B&C Canal, Jefferson Parish Dept of Public Works, Marrero, LA: Mr. May provided CAD Support of the design and construction of an 8'x12' and 2500 L.F. concrete box culvert for B&C Canal, a major drainage canal. The project involved hydraulic analysis, backwater profile computation, new subsurface drainage designs and structural designs for the box culvert.

Glen Oaks Drive Reconstruction, City of Baton Rouge DPW; Baton Rouge, LA: Mr. May provided CAD drafting for this \$10 million reconstruction project that included design for construction of a three-lane concrete curb and gutter roadway with shared space for bicyclists, 6' sidewalks and subsurface drainage improvements along a one-mile existing Urban Collector roadway. The project also included improvements to several intersections and green space on both sides of the roadways.

Gravier Street Improvements, City of New Orleans-DPW, New Orleans, LA: Mr. May provided CAD support for this project. City of New Orleans project that involved reconstruction of the roadway and sidewalks and all new sewer lines, water lines, and drainage lines.

Napoleon Avenue (Between S. Claiborne and Carondelet Street), Sewerage and Water Board of New Orleans and USACE, New Orleans, LA: Mr. May provided CAD drafting services for the reconstruction of Napoleon Avenue between South Claiborne Avenue and Carondelet Street, in connection with construction of a drainage box canal at the median of Napoleon Avenue. He

provided CAD drafting for roadways, intersections, as well as a new subsurface drainage system

Causeway Boulevard Overpass Complex, Jefferson Parish, LA: Mr. May served as a CAD Technician for preparation of plans and specifications for the overpass approach slab and bridge over Causeway Boulevard, as part of the Lake Pontchartrain and Vicinity Hurricane Protection projects.

Duncan Canal Breakwater Bridges, USACE-New Orleans District, Jefferson Parish, LA: Mr. May provided CAD services for this project that involved preparation of plans, profiles, and details of two concrete girder bridges. Project included piles, pile caps, prestressed concrete girders, concrete slab, concrete barrier, and wing walls.

S. Claiborne Ave Manifold Canal, Sewerage and Water Board of New Orleans, New Orleans, LA: Mr. May was involved in CAD drafting for roadway, drainage, and utility system for this project. Work included preparation of plan and profile, x-sections and various details. This project was designed conforming to USACE CAD standards, and S&WB of New Orleans and DPW-City of New Orleans requirements.

Jefferson Avenue (S. Claiborne to Dryades), USACE-NOD; New Orleans, LA: Mr. May provided CAD services for this project extending from S. Claiborne Avenue to Dryades Street. The project involved a concrete drainage box culvert and improvements to roadways, intersections, and utility relocation.

Latigue Road, JPDPW, Jefferson Parish, LA: Mr. May provided CAD Support on this project that involved preparation of plans and details for a new two-lane asphalt roadway and reconstruction of existing roadways with asphaltic concrete roadway, curb and gutters, and drainage.

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Matthew Mire, Engineering Intern

Project Assignment:

CADD

Name of Firm with which Associated:

ECM Consultants, Inc.

Years' experience with this Firm:

1

Education: Degree(s)/Year/Specialization:

B.S./2020/Civil Engineering

Active registration: Year first registered/discipline:

2020/Civil Engineering Intern/LA License No. 0034666

Other experience and qualifications relevant to the proposed Project:

Employment History:

- ECM Consultants Inc, *Engineering Intern*, (2021-to date)
- Modjeski & Masters, *Field Engineer*, (2020-2021)
- Cajun Industries, *Intern*, (2019)
- MAPP Construction, *Intern*, (2018)
- Wharton-Smith Construction, *Intern*, (2017)
- JB James Construction, *Intern*, (2016)

Project Experience:

Jefferson Parish District 2 Transit Stop Improvement

Study: Mr. Mire preforms conceptual design and cost analysis for the Jefferson Parish Transit Stop Improvement Plan. The improvement plan aims at updating the transit stops, adjacent sidewalks, and crossings to all current ADA and accessibility requirements. The conceptual design is being performed using AutoCAD.

South Central Florida Express System Wide Bridge Inspection, Clewiston, Florida:

Mr. Mire performed a quality assessment inspection identifying defects for 34 bridges for SCFE RR near Clewiston Florida and the surrounding area. The inspection provided the client with the current condition of the bridges and highlighted areas for repair. The bridges under inspection included timber, concrete, steel, and two movable bridges.

Canadian National Bridge Replacement, Bonnet Carre Spillway:

Mr. Mire was an **on-site field engineer/quality assurance inspector** for the \$60 million bridge replacement project for CN near Laplace, Louisiana. The project consisted of installing a double voided concrete box girder bridge supported by reinforced concrete piles approximately 2.5 miles long in order to replace the adjacent existing timber bridge. Mr.

Mire collected field data such as pile driving logs and grout cube compressive strength test, tracked quantity of material installed, and recorded daily construction activities in the form of reports.

Kansas City Southern Structural Steel Repairs: Shreveport, LA and Cason, TX

Mr. Mire was an on-site field engineer/quality assurance inspector for repairs of three orthotropic bridges for KCS located in Shreveport, LA and Cason, TX. The project consisted of installing bolted reinforcement plates, welding, and replacement of bearings at various locations where cracks and corrosion were present. Mr. Mire crafted daily reports and tracked quantity of material installed to verify the contractor installed welds and reinforcement plates at the appropriate locations. Mr. Mire identified issues that would arise on-site during construction and coordinated with the design team directly in order to determine a solution.

Kansas City Southern Fender Replacement, Beaumont, TX

Mr. Mire was an on-site field engineer/quality assurance inspector for the \$8 million fender replacement project for KCS in Beaumont, TX. The project consisted of installing a new prefabricated steel fender with composite timber walers supported by steel pipe pile ranging from 60" to 84' diameter. The new fender replaced the existing timber fender structure. Mr. Mire was responsible for recording daily construction activities, quantity of material installed, and pile driving logs. In addition, Mr. Mire reviewed plans and specifications in order to verify the contractor installed material according to the project contract.

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Sudhir Mehta, P.E., Structural Engineer

Project Assignment:

Structural Engineer

Name of Firm with which Associated:

ECM Consultants, Inc.

Years' experience with this Firm:

5

Education: Degree(s)/Year/Specialization:

M.S./1972/Civil Engineering; B.S./1970/Civil Engineering

Active registration: Year first registered/discipline:

1980/Civil Engineering/LA License No. 18950

Other experience and qualifications relevant to the proposed Project:

Mr. Mehta has over 49 years of experience in the design, analysis and construction of major hydraulic structures such as pumping stations, floodwalls, floodgates, sector gates and other flood control structures for multiple USACE districts, states and municipalities.

Employment History:

- ECM Consultants Inc, LA, *Senior Structural Engineer*, (2016-to date)
- BCG Engineering & Consulting, Inc. *Structural Engineer*. (2006-2016)
- URS Corporation, *Senior Structural Engineer* (2005-2006)
- Pepper & Associates, *Senior Structural Engineer*, (1975-2005)

Project Experience:

Low Sill Old River Gate Structure Dewatering Design, Concordia Parish, LA Contract No. W912-P8-16-D-0005, Task Order 0009: Structural Engineer. Performed structural stability investigation and analysis of pile foundation using CPGA program 3D pile analysis for the grouted Low Flow, Transition and Weir Monoliths, which are supported by steel H piles. He was also responsible for determining the stability of the existing wingwalls as well as ascertaining that an adequate factor of safety exists with respect to flotation of the stilling basin. Project concept involved construction of two earthen cofferdams across the width of the channel on either side of the low sill gated water control structure and simultaneously dewatering between the cofferdams to permit inspection by USACE. He prepared DDR, assisted in design development of Plans & Specs for sand cofferdam, design of access to the site on either side of the channel, developing

design to dewater inflow and outflow simultaneously as well as coordination with Geotech engineers and USACE Shore Lake Pontchartrain.

Drainage Box culvert, Phase I of Mounes Street (Dickory Avenue to Elmwood Park Blvd.), DPW-Jefferson Parish, LA Project Structural Engineer. Mr. Mehta performed structural analysis and design for the phase 1 of this four-phase project that includes 4,900 LF of 10'x8' box culvert from Dickory Ave. to Crochet Ditch. This first phase included approximately 1,280 linear feet precast 10'x8' box culverts which will tie-in to the existing box culverts from the Pump-to-the-River (PTTR) project. He also provided analysis and design for the concrete junction boxes and conflict boxes.

West Shore Lake Pontchartrain Flood Risk Reduction Project Segments WSLP 102 and 106 - St. Charles, St. John the Baptist and St. James Parish, Louisiana Structural Engineer. The scope of work of the WSLP 102 & 106 contracts includes Engineering & Design for all civil, structural, mechanical, electrical, cost estimating and geotechnical consideration required to provide plans, specifications and design for this project, preparation of this DDR, Engineering Considerations and Instructions to field personnel (ECIFP), PowerPoint presentation consisting of investigation and study of three different alternative solutions and their associated costs for the construction of T-wall under I-10 bridges, the development of plans and specifications (P&S), Design of access road and coordination with Local, State and Federal authorities whose interests, operations and facilities may be affected by the work under this contract.

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Kyle Kessler, P.E., Junior Structural Engineer

Project Assignment:

Structural Engineer

Name of Firm with which Associated:

ECM Consultants, Inc.

Years' experience with this Firm:

2

Education: Degree(s)/Year/Specialization:

B.S./2015/Civil Engineering

Active registration: Year first registered/discipline:

2014/Civil Engineering/LA License No. 32474

Other experience and qualifications relevant to the proposed Project:

Mr. Kessler is a registered professional Civil Engineer with more than 8 years of engineering experience in roads & bridges and drainage design and project coordination. His project experience included design and preparation of plans, specifications, and estimates (PS&E) for roadway rehabilitation, drainage repair and enhancements, bridges, pump station, and foundations for various structures. His duties and responsibilities for construction administration services included, site inspections, submittal reviews, responding to RFIs, review of change order requests and attending progress meetings as part of construction phase services.

Employment History:

- ECM Consultants Inc, LA, *Junior Structural Engineer, (2020-to date)*
- Worley, *Civil Engineer. (2019-2020)*
- BKI, *Structural Engineering Intern (2015-2019)*
- DOTD, *Engineering Student Worker, (2014)*

Project Experience:

Improvements to the West Napoleon Sewer Lift Station (F6-2) Jefferson Parish, LA: Project Engineer for the replacement of the electrical system, pumps, motors, various piping, valves, controls, and other general rehabilitation items. Additionally, the existing 4160 power system was demolished and replaced with 480/240 V system. Provide detailed design, plans, specifications, cost estimates and contract documents.

West Shore Lake Pontchartrain Flood Risk Reduction Project Segments WSLP 102 and 106 St. Charles Parish, LA: Junior Structural Engineer. The purpose of this project is to construct a 100-year level flood risk reduction system for the residents of the three parishes. The WSLP 102 and WSLP 106 of

approximately 2 miles, is a part of 18.5 miles long West Shore Lake Pontchartrain project at its east approach. The salient features of this contract are earthen Levees, T-walls, and a Drainage Structure in the Montz canal with four (4) stainless steel sluice gates. The flood mitigation configuration is such that a portion of T-wall construction in this reach crosses the existing I-10 alignment and must be constructed under the I-10 east bound and west bound bridges. The scope of work of the WSLP 102 & 106 contracts includes engineering design, preparation of PS&E for all civil, structural, mechanical, electrical, and geotechnical engineering considerations. Mr. Kessler performing structural modelling and design computations for Flood walls, and gated drainage structure in Montz canal for both the segments. Construction Cost: \$70 million (E), Fees: \$4.0 million

West Roadway Drainage Improvements New Orleans, LA

This project included repairs to the drainage system underneath a roadway section that frequently flooded. Scope of work included removal of the existing pavement, installation of new drainpipes on aggregate bedding and new drainage structures including outfall structure. New roadway section included scarifying, grading, and compacting aggregate base including additional base material, and new asphaltic concrete pavement. Mr. Kessler served as Project Engineer and performed design and prepared plans, specifications, and quantity/cost estimates. During the construction phase, Mr. Kessler provided project oversight including, site visits, review, and approval of submittals, RFIs and change orders etc. as construction phase services.

L. Work by Firm or Joint-Venture members which best illustrates current qualifications relevant to this Project. Please include any and all work performed for Jefferson Parish. Please attach additional pages if necessary.

PROJECT NO. 1

Project Name, Location and Owner's contact information:

Storm Water Master Drainage Plan for Ward 1 and East McNeese Basins, Calcasieu Parish, LA

**Calcasieu Parish Police Jury
Division of Engineering & Public Works
1015 Pithon Street
Lake Charles, LA 70602**

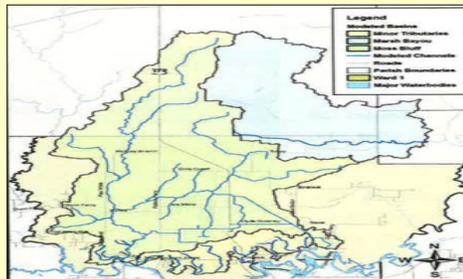
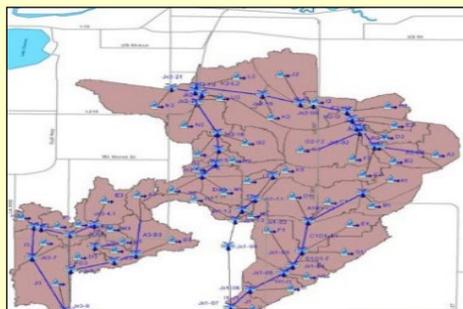
**Allen Wainwright, P.E.
337-721-3700
awainwright@cppj.net**

Relevance to Scope of Services:

Flood Mitigation Project, H&H analysis, modeling and Master Drainage plan.

Services Provided:

- ✓ H & H Analysis and Modeling
- ✓ Drainage Analysis and studies
- ✓ Flood Study
- ✓ GIS Mapping



Nature of Firm's Responsibility:

This project demonstrates ECM's ability to perform hydrologic and hydraulic analysis and modeling of all the watersheds and development of a master drainage plan.

ECM performed watershed Planning, modeling and hydrologic and hydraulic analysis, for the following Drainage Basins:

Ward 1 Basin Master Drainage Plan: This project included detailed hydrologic and hydraulic analysis of all streams in the watershed and development of regional frequency analysis, and of a master drainage plan for Ward 1 basin, bound by the West Fork Calcasieu River, the Calcasieu River, and northern Calcasieu Parish boundary. The Ward was divided into three drainage areas: Moss Bluff (55 square mi); Marsh Bayou (24.82 square mi); and the Minor Tributaries (10.15 square mi). ECM carefully investigated the channel system, and hydraulic structures, and gathered and compiled photographs and arials to ensure the resulting hydrologic and hydraulic models were credible. ECM performed rigorous hydrologic and hydraulic analyses using HEC-HMS and Steady and Unsteady HEC-RAS. In the absence of rainfall, stage, and discharge gages, ECM performed regional flood frequency analysis to verify the hydrologic models are representative of Ward 1 basin response to rainfall events. Results of the hydraulic models were compared with FEMA Base Flood Elevations and with the aerial photographs and highwater marks from the October 2006 flood event. ECM presented alternatives such as detention/retention ponds, channel modifications, ditch modifications as well as associated projected costs.

East McNeese Street Basin Master Drainage Plan: ECM completed hydrologic and hydraulic models for the area to better understand the drainage system and evaluate existing and future drainage issues. Using the model results, this Stormwater Master Plan was developed to identify channel cleaning needs, assess structure capacities, develop a maintenance plan, develop alternatives to remediate localized flooding, and to recommend areas for future development within the East McNeese Street Basin. With the future completion of East McNeese Street, there is the potential for future development along this corridor, which would cause increases in runoff. Therefore, one of the major objectives of this project was to determine the impact of this development and growth on the existing drainage system and to determine what possible solutions could be developed to minimize the impact on the surrounding areas.

KEY PERSONNEL

Ujjal Dasgupta, P.E. Sunina Shrestha, P. E., Marvin May

Completion Date: (Actual or Estimated):

2011

Estimated Cost:

Entire Project:

\$378,668.00 (Study and Report)

Work for which Firm was Responsible:

\$378,668.00 (Study and Report)

PROJECT NO. 2

Project Name, Location and Owner's contact information:

**Choupique-Sulphur Basin
Drainage Master Plan
Improvement Analysis, Calcasieu
Parish, LA**

**Calcasieu Parish Police Jury
Division of Engineering & Public
Works
1015 Pithon Street
Lake Charles, LA 70602**

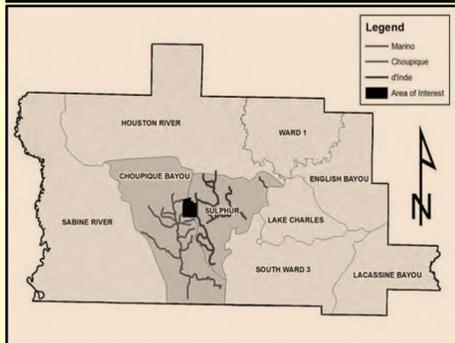
**Allen Wainwright, P.E.
337-721-3700
awainwright@cppj.net**

Relevance to Scope of Services:

**Flood Mitigation Project , H&H analysis,
modeling and Master Drainage plan update**

Services Provided:

- ✓ H & H Analysis and Modeling
- ✓ Drainage Analysis and studies
- ✓ Design of Storm Water
Detention/Retention Facility
- ✓ GIS Mapping



Nature of Firm's Responsibility:

This project demonstrates ECM's ability to perform hydrologic and hydraulic analysis and modeling of the watersheds and updating an existing master drainage plan.

ECM performed watershed Planning, modeling and hydrologic and hydraulic analysis, for the following Drainage Basins:

Choupique-Sulphur Basin Drainage Master Plan Improvement Analysis: The Choupique-Sulphur Basins were divided into four separate studies based on geographic location and type of analysis. A series of preliminary drainage improvement alternatives for each study area were selected for review by our team. These alternatives were identified jointly by our team, CPPJ personnel, drainage district employees, and local engineers; and are based on current knowledge of the local flooding issues. The overall goal of this feasibility analyses was to quantify the potential benefits gained by implementing the proposed drainage improvement alternatives. This project also included analysis and design of a storm water detention pond to reduce the impact of severe flooding events. Four separate studies for the Choupique-Sulphur Basins were performed based on geographic location and type of analysis. These four studies, which included HEC-HMS and Steady and Unsteady HEC-RAS models, are referred to as:

Marino

HEC-RAS Model of Bayou Marino

Choupique

HEC-RAS Model of Bayou Choupique and its tributaries

d'Inde

HEC-RAS Model of Bayou d'Inde and its tributaries

Area of Interest

Analysis to determine the effects of future development within specified region

A series of preliminary drainage improvement alternatives for each study area were selected for review by our team. These alternatives, based on current knowledge of the local flooding issues, were identified jointly by our team, CPPJ personnel, drainage district employees, and local engineers. The overall goal of this feasibility analysis was to quantify the potential benefits gained by implementing the proposed drainage improvement alternatives.

KEY PERSONNEL

Ujjal Dasgupta, P.E. Sunina Shrestha, P. E., Marvin May

Completion Date: (Actual or Estimated):

2011

Estimated Cost:

Entire Project:

\$78,005.00 (Study and Report)

Work for which Firm was Responsible:

\$78,005.00 (Study and Report)

PROJECT NO. 3

Project Name, Location and Owner's contact information:

**Louisiana Watershed Initiative
East Baton Rouge Parish, Louisiana**

**State of Louisiana OCD
Michael Donahue
734-646-4638
michael.donahue@aecom.com**

**Relevance to Scope of Services:
Flood Risk Management Project**

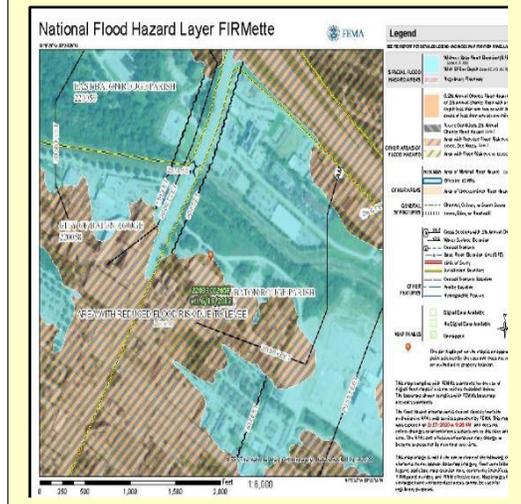
Services Provided/Providing:

- ✓ Engineering analyses, computations, and studies
- ✓ Policy and Program Development
- ✓ Technical Support
- ✓ Project Management
- ✓ Watershed Modeling and
- ✓ Coordination

Project Value:

\$1.2 billion from US HUD Community Development Block Grant

ECM will perform 20% of total project.



Nature of Firm's Responsibility:

This project demonstrates ECM's ability and expertise in policy and program development for OCD for LWI program, project management, Technical support and watershed modeling and analysis for Flood Mitigation.

ECM is providing policy and program development and watershed modeling support for the Louisiana Watershed Initiative (LWI) which is a state program that was created to address Louisiana's continuing problems with flooding. The great flooding of 2016 demonstrated how susceptible our communities are to severe flooding. The frequency of severe flooding and damages as the result of storm and hurricane events have been on the rise in the past years and has affected every parish in our state. LWI goal is to proactively plan against future flood risk.

The LWI management program is based on statewide floodplain watersheds tied to land use, policies, infrastructure improvements and priorities among all parishes in the state of Louisiana. The goal of the LWI to coordinate effort by state, federal, or parish governments as a group to address the ongoing flooding issues within the state. That includes multiple state departments and agencies that operate independently of each other in addressing flooding issues unique to their agency and local communities.

Louisiana Watershed initiative currently creating accurate hydraulic and hydrologic one and two-dimensional computer models to better understand flood risk and help with selection of projects for each watershed region.

ECM is serving as a subconsultant to AECOM for program management of \$1.2 billion from US HUD Community Development Block Grant mitigation for the Louisiana Watershed initiative to identify watershed improvements, planning, policy and fund qualified project for design and construction.

ECM will continue to provide policy and program development, technical support and evaluation, project management for data and modeling activities and coordination.

Key Personnel:

Kazem Alikhani, PE, Sunina Shrestha, PE, John Rasi, PE

Completion Date: (Actual or Estimated):

On going

Estimated Cost:

Entire Project:

\$1.2 billion

Work for which Firm was Responsible:

TBD

PROJECT NO. 4

Project Name, Location and Owner's contact information:

Modeling, Flood Mitigation & Design for Drainage Improvement of Sims Creek and Haven Subdivision, Tangipahoa Parish, LA

**Tangipahoa Parish, LA
Kiley Bates
985-542-4292
kiley@tangipahoadrainage.org**

Relevance to Scope of Services:

H&H analysis, modeling, Flood mitigation and Drainage design

Services Provided/Providing:

- ✓ H & H Analysis and Modeling
- ✓ Engineering Study and report
- ✓ Design Reports
- ✓ Prepare Construction plans and technical Specifications for bidding
- ✓ Cost estimates
- ✓ Benefit-Cost-Analysis



Nature of Firm's Responsibility:

This project demonstrates ECM's ability and expertise in watershed modeling and analysis for Flood Mitigation, alternative analysis including BCA and watershed drainage improvement design.

ECM is performing engineering study and design for flood mitigation of the Haven subdivision which is located just south of Interstate 12 and off LA 445 in Tangipahoa Parish. The results have been in the and now ECM completed final H&H analysis and modeling and presented findings to Parish administration and public meeting to recommend alternatives for selection. The subdivision is located adjacent to Sims Creek which ultimately flows into the Tangipahoa River. Streets and homes near Sims Creek experience frequent and significant flooding.

The drainage basin just upstream of the subdivision and north of Interstate 12 on Sims Creek is between 700 to 800 acres. This upstream sub-catchment has a significant slope which produces a quick runoff. Sims Creek at the Haven subdivision has a relatively flat slope. As a result, the headwater arrives with no place to go which pushes into the subdivision. The subdivision experiences both head water issues within the subdivision caused by the swales, and it experiences serious backwater flooding from Sims Creek which causes significant flooding of homes and streets especially those near Sims Creek.

Based on modeling and H&H analysis and public input there are two possible solutions. The first solution would be to improve Sims Creek downstream of the Haven subdivision. The second solution would be to isolate the Havens subdivision with a ring levee and a pump station.

The existing Sims Creek is undersized and overgrown with trees and all road crossings downstream cause significant backwater problems upstream. Currently, Sims Creek for a 10 year rain return event with no improvements overtops about fifty percent of the streets within the subdivision. The initial study shows that improvements to Sims Creek, road crossings over Sims Creek, right-of-way acquisition, and the removal of several homes too close to Sims Creek downstream of the Haven. These improvements would drop the water surface of Sims Creek near the Haven subdivision about 2.5'.

Another alternative solution is construction of ring levee with a pump station. There is an existing lake within the subdivision that can be used as sump for the pump station. The lake can be enlarged for the pump station. The soil from the enlarged lake can be used to create the levee system efficiently. Additionally, ECM recommended improvements to the subsurface gravity system. The project is funded through FEMA and ECM is assisting in preparation of Benefit-Cost-Analysis to secure FEMA grant for flood mitigation to improvements of drainage system.

Key Personnel:

Kazem Alikhani, PE, John Rasi, PE, Sunina Shrestha, PE

Completion Date: (Actual or Estimated):

On going

Estimated Cost:

Entire Project:

\$4 - \$6 million (E)

Work for which Firm was Responsible:

\$4 million (E)

PROJECT NO. 5

Project Name, Location and Owner's contact information:

Planning, Hydraulic modeling for PCCP at Outfall Canals at 17th Street, Orleans Avenue, and London Avenue.
Orleans Parish, LA.
USACE-New Orleans District
7400 Leake Avenue
New Orleans, LA 70160
Dan Bradley, PE
504-862-2201

Relevance to Scope of Services:

H&H analysis, modeling and Flood mitigation

Services Provided:

- ✓ H & H Analysis and Modeling
- ✓ Conceptual design of Pump Stations
- ✓ Process management Plan



Nature of Firm's Responsibility:

This project demonstrates ECM's ability in Planning, Project scoping, conceptual design, Technical analysis, perform hydrologic and hydraulic analysis and modeling for PCCP.

This flood damage risk reduction project is located near the juncture of Lake Pontchartrain and three drainage outfall canals (17th Street, Orleans Avenue, and London Avenue) serving the portions of New Orleans and Jefferson Parish. As Managing Partner for this 5-year \$90 million (fees), ECM-GEC Joint Venture IDIQ Contract. The scopes of work provided a progressive, intelligent development process of Process Management Plan, Technical Support, Alternatives Review, Outfall Canal Capacity Technical Analysis, and 17th Street Canal Upgrade Review. ECM also assisted in preparation of Design-Build RFP packages in association with ECM's subconsultant Black & Beach for construction of 17th St. (12,600 cfs), Orleans Ave. (2,700 cfs) and London Ave. (9,000 cfs) Permanent Canal Closure & Pump (PCCP) stations. Concept design included gated water control structures to prevent back flow from the lake to the canals during storm surge and large capacity pump stations including intake and discharge structures. Estimated construction cost was \$700 million.

Tasks included establishing performance driven design criteria for site selection including analyses, canal hydraulic reviews, incorporation of existing reports and available data, and interactive meetings with sponsors. These scopes of work provided a progressive, intelligent development process of the planning of the project. ECM also performed monitoring and collection of rainfall and discharge data for the entire watershed, calibration of hydraulic models, analysis of safe water elevations and evaluation and costing of several scenarios.

ECM worked with the Hurricane Protection Office to review the government furnished numerical hydraulic model developed by the Corps using HEC-HMS and unsteady HEC-RAS numerical models of the Orleans East Basin to handle the basin inflow as well as the pump function and the open channel flow through all pertinent hydraulic structures. Based on these reviews, ECM provided recommendations for model revisions and usage in addition to facilitating modeling workshops.

KEY PERSONNEL

Ujjal Dasgupta, P.E. Sunina Shrestha, P. E., John Rasi, PE

Completion Date: (Actual or Estimated):

2014

Estimated Cost:

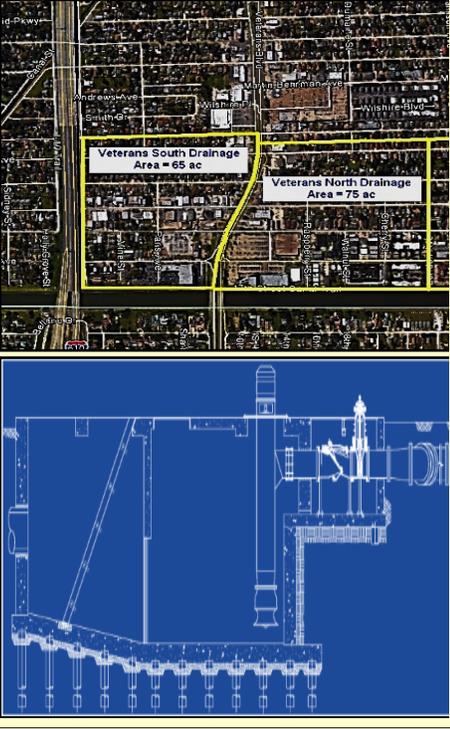
Entire Project:

\$6.2 million (Fees)

Work for which Firm was Responsible:

\$3 million (Fees)

PROJECT NO. 6

<p>Project Name, Location and Owner's contact information:</p>	<p align="center">Nature of Firm's Responsibility:</p>					
<p>Hydraulic Modeling for Veterans Boulevard (North & South) Pump Stations Drainage Basin, Metairie, LA</p> <p>Jefferson Parish-DPW 1221 Elmwood Park Blvd., Jefferson, LA 70123</p> <p>Gary Lehmann, Project Manager Work phone: 504.736.6779 Gary.Lehmann@jeffparish.net</p>	<p>This project demonstrates ECM's ability and expertise in watershed modeling and analysis for Flood Mitigation, and Pump stations design.</p> <p>The purpose of this project is to minimize recurring flooding in the area along the west bank of the 17th Street Canal between Lake Pontchartrain and the north side of Interstate 10 (I-10). ECM has performed hydrologic and hydraulic analysis and modeling for two watersheds. As required by USACE, ECM also conducted a full hydrologic evaluation of the canal system under various scenarios to study the impact of discharge from these two pump stations on the 17th street canal maximum operating water level (MOWL). The evaluation included developing synthetic hydrographs for each pump station and routing them through the canal and calibrating USACE hydraulic model for 17th Street canal. The hydraulic analysis and modeling was also performed for validating capacities needed for the pumping stations. ECM's engineers modelled 5 different scenarios using SWMM to find the most effective approach for reducing flooding in the drainage sub-areas. The contributing areas for the veteran North and South pump stations two sub basins are 298 acres. In addition to the pump stations, both the basins were modelled, and hydraulic analysis was performed for the existing subsurface drainage system to determine needed pipes size increase in various areas to lower the water surface profile by about 2 ft for reducing flooding.</p> <p>ECM provided civil, structural, mechanical design, prepared plans, specifications, and Estimates (PS&E) for these two (2) new drainage pump stations that discharge into the 17th Street Canal. The approximate pumping capacity for these pump stations are 60 cfs (Veterans North) and 85 cfs (Veterans South)</p> <p>Included in the design of these two pump stations are concrete intake structure with trash screens, wet well, multiple axial flow pumps and piping system with manifold force mains that discharge into the 17th Street Canal. The power and control system is designed by IMC, our sub-consultant. Work includes layout of the pump stations and geometrics of the suction chamber based on pumps and Hydraulic Institution (HI) standards; design of concrete pump station structure on timber piles, suction and discharge piping, timber pile supported generator foundation, etc. Work also includes emergency diesel generator with automatic transfer switch, control systems with automatic operations and sequencing, integrated level control systems, and remote monitoring with SCADA.</p>					
<p>Relevance to Scope of Services: H&H analysis, modeling, Flood mitigation and Pump Station design</p> <p>Services Provided/Providing:</p> <ul style="list-style-type: none"> ✓ H & H Analysis and Modeling ✓ Engineering design ✓ Prepare Construction plans and technical Specifications ✓ Cost estimates ✓ Permitting 	<p>KEY PERSONNEL</p> <p>Ujjal DasGupta, PE, Sunina Shrestha, PE, Cecil Soileau, PE, Sudhir Mehta, PE</p>					
<p>Completion Date: (Actual or Estimated):</p> <p align="center">2022(E)</p>	<p align="center">Estimated Cost:</p> <table border="1"> <tr> <td align="center">Entire Project:</td> <td align="center">Work for which Firm was Responsible:</td> </tr> <tr> <td align="center">\$10 Million</td> <td align="center">\$9.4 Million</td> </tr> </table>		Entire Project:	Work for which Firm was Responsible:	\$10 Million	\$9.4 Million
Entire Project:	Work for which Firm was Responsible:					
\$10 Million	\$9.4 Million					

PROJECT NO.7

Project Name, Location and Owner's contact information:

Hydraulic Analysis, Modeling and Safety inspection of State-Regulated Dams, Statewide, Louisiana

**Louisiana Department of Transportation & Development (LADOTD)
PO Box 94248
Baton Rouge, LA 70604**

**Edward Knight, P.E
225-379-3007
edward.knight@la.gov**

Nature of Firm's Responsibility:

This project demonstrates ECM's in-depth understanding of H&H modeling, Dam breach analysis, prepare inundation maps and Emergency Action Plans

ECM has been performing hydrologic and hydraulic modeling of watersheds using LiDAR survey data and prepared EAP reports for significant dams throughout Louisiana as required by the State Dam Safety Rules and Regulations and the Federal Emergency Management Agency (FEMA). The Emergency Action Plans (EAPs) were prepared/updated on several significant hazard category dams using LiDAR images and a simplified hydrologic analysis to develop flood inundation maps. This is done as part of dam safety inspections, assessments, evaluations, and reporting for Louisiana Department of Transportation for the past ten years, for a total of over 1,200 dams scattered all over the state.

On an average of 200 publicly and privately owned dams are inspected by ECM each year to ensure that the impoundment structures and the water control devices are functioning to design capabilities. The inspections are performed in accordance with the Louisiana Dam Safety Program to make certain that public safety is not compromised by the presence of dams, and to minimize potential flooding to downstream life and property in the event of a dam failure.

The scope of work involves the following: notifying the dam owner, local public officials, USDA-NRCS, and DOTD of impending inspections; reviewing available plans, previous DOTD Dam Evaluation Reports, and documents; performing safety inspections of high hazard category, significant hazard category, and low hazard category dams; preparing and submitting Dam Assessment and Evaluation Reports to DOTD for review and inclusion in the National Inventory of Dams, and performing follow ups on recommended repair actions.

In preparation of the Emergency Action Plan report using the Simplified Engineering Analysis Method, ECM performed field reconnaissance, dam breach analysis, analysis of drainage structures, and preparation of an inundation map. The dam breach analysis was calculated from "sunny day" conditions with resulting flow routed downstream.

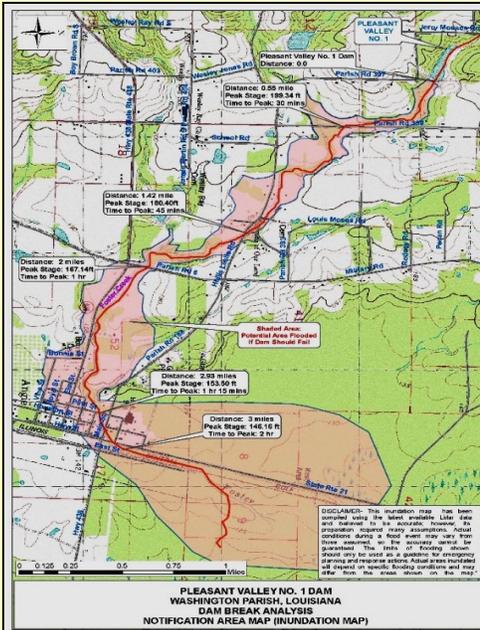
Hazard classifications are also evaluated and recommendations for revisions are made to LADOTD. ArcGIS, HEC-RAS, and HEC-GeoRAS software were used in the analysis.

Relevance to Scope of Services:

H&H analysis, modeling, and Dam safety inspection

Services Provided/Providing:

- ✓ Safety Inspection
- ✓ Engineering Analysis
- ✓ Hydrologic & Hydraulic Modeling
- ✓ Breach analysis
- ✓ Flood inundation mapping
- ✓ Emergency Action Plans



Key Personnel:
Kazem Alikhani, PE, John Rasi, PE, Sunina Shrestha, PE

Completion Date: (Actual or Estimated):

On going

Estimated Cost:

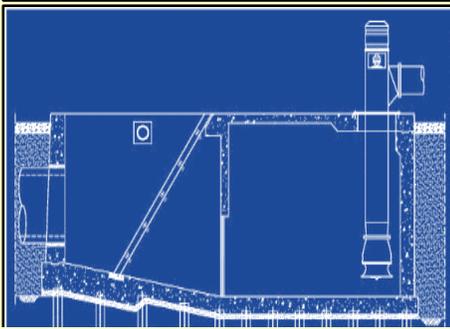
Entire Project:

\$5 million (Fees)

Work for which Firm was Responsible:

\$5 million (Fees)

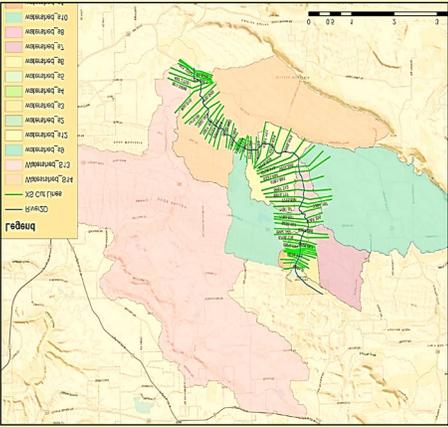
PROJECT NO. 8

<p>Project Name, Location and Owner's contact information:</p>	<p align="center">Nature of Firm's Responsibility:</p>			
<p>Hydraulic Modeling for Jefferson Parish Drainage Basin 33 and West Esplanade Drainage Pump Station, Metairie, LA</p> <p>Jefferson Parish-DPW 1221 Elmwood Park Blvd., Jefferson, LA 70123</p> <p>Gary Lehmann, Project Manager Work phone: 504.736.6779 Gary.Lehmann@jeffparish.net</p>	<p>This project demonstrates ECM's ability and expertise in watershed modeling and analysis for Flood Mitigation and Pump stations design.</p> <p>This project involved hydraulic analysis and modeling for validating capacities needed for two pumping stations to be located at the end of West Esplanade Avenue and Pine Street for discharging into the 17th canal. Five different scenarios were modelled using SWMM to find the most effective approach for reducing flooding in the drainage sub-areas. Analysis was done for two areas, one for the West Esplanade pump station with contributing area of 264 acres and another one, Pine Street pump station with contributing area of 99 acres.</p>			
<p>Relevance to Scope of Services: H&H analysis, modeling, Flood mitigation and Pump Station design</p> <p>Services Provided/Providing:</p> <ul style="list-style-type: none"> ✓ H & H Analysis and Modeling ✓ Engineering design ✓ Prepare Construction plans and technical Specifications ✓ Cost estimates ✓ Permitting  	<p>As required by USACE, ECM conducted a full hydrologic evaluation of the 17th street canal system under various scenarios to study the impact of discharge from this pump station on the 17th street canal maximum operating water level (MOWL). The evaluation included developing synthetic hydrographs for the pump station and routing it through the canal and calibrating USACE hydraulic model for 17th Street canal. Because Jefferson Parish wanted to eliminate Pine street pump station and build only one at West Esplanade Ave pump station, hydraulic analysis was performed to determine required capacity of the W. Esplanade pump station for the total combined contributing areas of 363 acres. In addition to the pump stations, both the subbasins were modelled, and hydraulic analysis was performed for the existing subsurface drainage system to determine needed pipes size increase in various areas to lower the water surface profile by about 2 ft for reducing flooding.</p> <p>ECM provided civil, structural, mechanical design, prepared plans, specifications, and Estimates (PS&E) for this new drainage pump station that will discharge into the 17th Street Canal. The approximate pumping capacity for this pump station is 180 cfs.</p> <p>Pump station structure includes concrete intake structure with trash screens, wet well, multiple axial flow pumps and piping system with force mains that discharge into the 17th Street Canal. Work includes layout of the pump stations and geometrics of the suction chamber based on pumps and Hydraulic Institution (HI) standards, design of concrete pump station structure on timber piles. Work also includes emergency diesel generator with ATS, control systems and remote monitoring with SCADA.</p>			
<p align="center">Estimated):</p>	<p align="center">KEY PERSONNEL</p> <p>Ujjal DasGupta, PE, Kazem Alikhani, PE, Cecil Soileau, PE, Sunina Shrestha, PE, Sudhir Mehta, PE</p>			
<p align="center">2022(E)</p>	<p align="center">Estimated Cost:</p> <table border="1"> <tr> <td data-bbox="581 1770 1068 1833"> <p align="center">Entire Project:</p> <p align="center">\$7.5 Million</p> </td> <td data-bbox="1068 1770 1555 1833"> <p align="center">Work for which Firm was Responsible:</p> <p align="center">\$6.5 Million</p> </td> </tr> </table>		<p align="center">Entire Project:</p> <p align="center">\$7.5 Million</p>	<p align="center">Work for which Firm was Responsible:</p> <p align="center">\$6.5 Million</p>
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PROJECT NO. 9

PROJECT NO. 9		
Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:	
<p>H&H analysis for replacement of Strain Road Bridge Over Drainage Bayou, Baton Rouge Contract No. 14-BR-PT-0020</p> <p>City of Baton Rouge 1100 Laurel Ave. Baton Rouge, LA 70802</p> <p>Mark Stevens Phone: (225) 379-1205 mstevens@br.gov</p> <p><u>Relevance to Scope of Services:</u> H&H analysis and modeling,</p> <p>Services Provided/Providing:</p> <ul style="list-style-type: none"> ✓ H & H Analysis and Modeling ✓ Engineering design ✓ Prepare Construction plans and technical Specifications ✓ Cost estimates 	<p><u>This project demonstrates ECM's ability and expertise in watershed modeling and analysis for Flood Mitigation</u></p> <p>In the flood of 2016 Strain Road became impossible to vehicles due to backwater flow from the Amite River. As Strain Road is the only route in and out of the adjacent neighborhood, the community and emergency vehicles were cut off with no access for a few days.</p> <p>ECM provided design study, topographic survey, ROW mapping and final design services for the replacement of Strain Road Bridge. The design Study report presented included two alternatives. One option was to replace the bridge with a 100' long and 24' wide 5x20' slab span bridge and second option included replacing existing bridge with 2-60-foot-long, 8' x 8' box culverts with 150 feet of channel improvement. Report also included required raising of the bridge/culvert surface by about 2' to keep roadway surface above BFE.</p> <p>The preliminary design report also noted that the area frequently flooded due to backwater from the Amite River which results in backwater into this unnamed stream. The City of Baton Rouge was concerned about whether raising the road several feet would result in upstream flooding. In order to support the design that ECM provided to the City of Baton Rouge, ECM engineer used a USGS Gage Station on the Amite River at US 190 which is about two miles upstream of Interstate 10 and spatially moved the Discharge versus Stage hydrograph downstream to the Amite River at Interstate 10. This spatially corrected rating curve was used to run several profiles for the 25, 50 and 100-year storm events with and without backwater to determine if raising the road several feet would cause flooding upstream. As per analysis it was determined that it will only cause a modest elevated water surface for the 100-year design event without backwater.</p> <p>The area floods from two distinct events from a single rainstorm, the first of which is a headwater flood as the rain is rushing out of the basin. It then floods again when the rain in the Amite River starts to stack up because its channel slope flattens out near this unnamed stream resulting in water rushing upstream, which is a more significant flood. If the Amite River cannot pass its flow, it has to store it resulting in a backwater condition. These two events are roughly 12 hours apart depending on its hyetograph; it could be longer if the rain event has two separate peaks within its hyetograph instead of single peak which is much more common.</p>	
	<p>KEY PERSONNEL: Ujjal Dasgupta, PE, Sunina Shrestha, PE, John Rasi, PE, Sudhir Mehta, PE</p>	
Completion Date: (Actual or Estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
2017	\$885,000	\$885,000

PROJECT NO. 10

PROJECT NO. 10					
Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:				
<p>Hydraulic analysis and modeling for Development of a Watershed plan and Environmental document for the state of Arkansas parks and tourism for the Lake Bennett Watershed Faulkner County, AR</p> <p>USDA - NRCS Room 3416, Federal Bldg. 700 West Capitol Avenue Little Rock, AR 72201-3225</p> <p>Chris A. King, Geologist Phone: (501) 301-3156 Chris.King@ar.usda.gov</p>	<p><u>This project demonstrates ECM's ability and expertise in watershed modeling and analysis for Flood Mitigation.</u></p> <p>Under a \$10 million, 5-year IDIQ prime contract with USDA-NRCS, ECM in association with AECOM and M&E is providing planning, H&H analysis and modeling services for the complete development of a Watershed Plan – Environmental Document (Plan-ED) for the approximately 2,500 Acre area of Lake Bennett Watershed. This watershed is located upstream of Arkansas State Highway 285. ECM Team formulating recommendation with most technically, economically, socially, and environmentally acceptable alternatives with defensible rationale. The project also involves the guiding Natural Resources Conservation Service (NRCS) in determining the appropriate environmental document needed for this federal action – Environmental Assessment or Environmental Impact Statement.</p> <p>ECM is responsible for all hydraulic and hydrologic analysis of this task. ECM has developed all the necessary hydrologic and hydraulic characteristics of the Lake Bennett drainage basin necessary for the design of a new dam. This included the obtaining data via ArcGIS, development of the Stage – Area curve upstream of the dam and the determination of the drainage area. After determining the land use for the drainage basin, the CN value for the drainage basin was calculated. Finally, ECM determine both the Time of Concentration (Tc) and the Lag Time, Tlag, that was used in the SCS Unit Hydrograph.</p> <p>This information was used to the size up a new spillway using NRCS' SITES software. ECM is also developing the flood profile downstream of the dam for storms from 1 year to 500 years. HEC-HMS software is being used to develop the peak flow discharge values along the discharge stream, Black Fork, which was later used in HEC-RAS. The analysis required the development of two separate scenarios. These scenarios included the existing and the new conditions.</p> <p>The results of the HEC-HMS and HEC-RAS study for storms from 1 year to 500 years will be used by the economics member of the team to develop a benefit cost study. The economic study should provide benefits that exceed the cost of a new dam.</p> <p>Finally, ECM is developing a dam breach analysis for both new and existing dams. A breach footprint will be developed from the analysis to determine which residential and commercial properties that will be affected the most</p>				
<p><u>Relevance to Scope of Services:</u> H&H analysis and modeling,</p> <p>Services Provided/Providing:</p> <p>✓ H & H Analysis and Modeling</p>					
					
	<p><u>KEY PERSONNEL</u></p> <p>Sunina Shrestha, PE, John Rasi, PE, Kazem Alikhani, PE</p>				
Completion Date: (Actual or Estimated):	Estimated Cost:				
	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">Entire Project:</td> <td style="width: 50%;">Work for which Firm was Responsible:</td> </tr> <tr> <td align="center">N/A</td> <td align="center">N/A</td> </tr> </table>	Entire Project:	Work for which Firm was Responsible:	N/A	N/A
Entire Project:	Work for which Firm was Responsible:				
N/A	N/A				
2022 (E)					

M. List all prior and/or on-going litigation between Firm and Jefferson Parish. Please attach additional pages if necessary NONE

Parties:		Status/Result of Case:
Plaintiff:	Defendant:	
1. N/A	N/A	N/A
2. N/A	N/A	N/A
3. N/A	N/A	N/A
4. N/A	N/A	N/A

ECM Consultants, Inc. **has never been involved** in any litigation and/or adversarial proceedings with Jefferson Parish.

N. Use this space to provide any additional information or description of resources supporting Firms qualifications for the proposed project.

TABLE OF CONTENTS

PROJECT UNDERSTANDING AND MODELING REQUIREMENTS

TEAM PROFILE

MINIMUM QUALIFICATIONS

EVALUATION CRITERIA

1. Professional Training & Experience
2. Capacity for Timely Completion of Work
3. Location of Principal Office
4. Adversarial Legal Proceedings with Parish
5. Prior Successful Completion of Projects
6. Size of Firm
7. Past Performance on Parish Contracts

QUALITY CONTROL PLAN

CONCLUSION

Project Understanding and Modeling Requirements

Over the past several years an increasing trend of frequent and excessive rainfall coupled with constant soil subsidence over the years, is causing severe flooding in many areas of both Eastbank and Westbank of the Jefferson Parish. To mitigate flooding problems in the future, the Parish is committed to identifying needs for future drainage improvements to provide its citizens relief from future flooding by increasing pump capacity, enlarging or improving existing channels and/or improving the existing subsurface systems as required. Therefore, Jefferson Parish desires to prepare/upgrade the **Master Drainage Plans for Eastbank of the Parish**. This will require watershed hydraulic modeling using appropriate software. The following activities have to be performed for modeling:

- Survey data (Land Survey, LiDAR (Light Detection and ranging), Bathymetry survey, canals, and Pump Stations)
- Data Collection (High water marks, Gage Stations, Flood events, and Rain)
- Subsurface GIS/Map Data/As- Builts
- Watersheds Delineation
- Determination of Boundary Conditions
- Calibration
- Hydrologic and Hydraulic Modeling

The modeling approach will accommodate drainage improvements and flood mitigation and watershed management alternatives and will have the needed resolution and specificity to support the analysis of future developments, drainage improvement projects

necessary to accommodate future improvements while maintaining present policy of sustaining 10-year storm, and evaluation of drainage ordinances.

ECM has assembled a team of Hydraulic & Hydrologic engineers that have performed Watershed H&H modeling in Louisiana and many other states. Our team is led by **Cecil Soileau, PE**, with more than 53 years of experience in hydraulic analysis and hydrology including design and **modeling** of flood control structures and **drainage master planning**. Cecil will be the Project/QAQC Manager for this contract. John Rasi, PE, Lead H&H engineer, and Modeler will be assisted by Cecil. John has 38 years of H&H modeling and Watershed master planning experience. They are well versed and knowledgeable of the project areas. They will be responsible to formulating a plan and executing hydraulic analysis and providing a drainage Master Plan for Jefferson Parish that will be a living document and guide for any future drainage infrastructure improvements.

The original Eastbank and Westbank Master Drainage plans that were modeled using HEC-RAS were converted by Jefferson Parish by EPA SWMM 5 model. The EPA SWMM5 model was utilized to identify the impacts of SELA projects on flood attenuation and improving the FEMA Digital Flood Insurance Rate Map (DFIRM). **ECM's Team members Cecil Soileau, PE, and Bhuban Ghimire, PhD, PE, were involved in the conversion of Master Drainage plans from HEC-RAS to EPA SWMM 5.** These individuals have extensive H&H modeling experience and are very familiar with the existing models of Jefferson Parish Eastbank and Westbank. This experience will be an asset for developing/ updating of the models in a most efficient and cost-effective manner. Additionally, John Rasi, PE, and Sunina Shrestha, PE, two experienced H&H modelers will be involved under the leadership of Cecil Soileau.

The existing Jefferson Parish drainage system for collections, conveyance and discharge includes:

- **Subsurface** gravity drainage system with varying sizes and types of pipes
- **Surface** gravity drainage system with open roadside ditches
- **Canals and major culverts** for conveyance to pump stations
- **Pump stations** for discharge mostly to Lake Ponchartrain (except for Harahan Pump to River Station) using multiple or manifolded force mains.

N. Use this space to provide any additional information or description of resources supporting Firms qualifications for the proposed project.

There are several modeling software programs available for developing Master Drainage Plan. These include:

SWMM5, HEC-HMS, HEC-GeoHMS, HEC-RAS and HEC-GeoRAS for watershed, canals, channels, and pumped drainage systems modeling.

A brief overview of watershed modeling hydraulic and hydrologic requirements is outlined below. If a Hydraulic Unit Code 8 (HUC8) map is available, it will be used to determine hydraulic characteristics for this study area. The modeling effort shall comply with the standards of the HUC8 when and where appropriate.

Modeling Requirements

A two-fold approach will be used: HEC series as primary modeling software and SWMM5 for Secondary and tertiary for pipes.

- **SWMM (Version 5.1):** EPA Storm Water Management Model (SWMM) is used to evaluate drainage infrastructure stormwater control strategies, **such as pipes and storm drains**. SWMM is a dynamic rainfall-runoff simulation model used for single event or long-term simulation of runoff quantity and quality from **primarily urban areas**. The runoff component of SWMM operates on a collection of subcatchment areas that receive precipitation and generate runoff and pollutant loads. The routing portion of SWMM transports this runoff through a system of pipes, channels, storage/treatment devices, pumps, and regulators and is a useful tool for creating cost-effective green/gray hybrid stormwater control solutions.
- **HEC-HMS (Version 4.8):** The most current fully tested version of HEC-HMS shall be used; it shall not be an alpha or beta version. All known issues shall be identified and accounted for. The output of HEC-HMS shall be used to provide all hydrologic inputs to HEC-RAS.
 - Naming Convention
 - Subbasins
 - Reaches
 - Junctions
 - Diversions
 - Detention Basins.
 - Pump Stations
 - Model Parameters
 - Both future and existing conditions shall be identified.
 - All one-dimensional (1-D) and two dimensional (2D) elements throughout the model shall be identified
 - Unit Hydrograph(s) shall be identified
 - Tc – Time of Concentration

- Subbasins
- Lag Time
- Soil loss rates
- Routing methods
- Rainfall distribution may be placed over the watershed using NOAA Hydrometeorological Reports 52 procedures where appropriate.
- Reaches
- Junctions
- Pump Stations

- Pumped Drainage systems
 - The name of the pump drainage system shall be identified in the HEC-HMS Model.
 - All pump stations and their characteristics shall be identified and coded.

- **HEC-GeoHMS (Version 10.2):** The most current fully tested version of HEC-GeoHMS shall be used; it shall not be an alpha or beta version. All known issues shall be identified and accounted for. The output of HEC-GeoHMS may be used to as input into HEC-HMS.

- **The Geospatial Hydrologic Modeling Extension (HEC-GeoHMS)** has been developed as a geospatial hydrology tool kit for engineers and hydrologists. HEC-GeoHMS uses ArcGIS and the Spatial Analyst extension to develop a number of hydrologic modeling inputs for the Hydrologic Engineering Center's Hydrologic Modeling System. Analyzing digital terrain data, HEC-GeoHMS *transforms the drainage paths and watershed boundaries* into a hydrologic data structure that represents the drainage network. The program allows users to visualize spatial information, document watershed characteristics, perform spatial analysis, and delineate subbasins and streams.

- **HEC-RAS (Version 6.0):** The most current fully tested version of HEC-RAS shall be used; it shall not be an alpha or beta version. All known issues shall be identified and accounted for. The current version shall be used to fully integrate one-dimensional and two-dimensional flow, where appropriate, to fully describe a rain event over a watershed. The modeling effort shall be unsteady flow; steady flow should only be

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used in very specific reasons and with the approval of the Parish.

- Boundary Conditions
- Junctions
- Storage areas
- Bridges
- Pump Stations
 - Pumps adding water into a major stream
 - Pumps removing water from a major stream
- Model Parameters
 - Weir Coefficients
 - Manning's N Values
 - Expansion/Contraction Coefficients
- Unsteady Computations
- Steady Computations
- One Dimensional Elements
- Two Dimensional Elements
- Pumped Drainage systems
- **HEC-GeoRAS:** This is a set of procedures, tools, and utilities for processing geospatial data in ArcGIS using a graphical user interface (GUI). The interface allows the preparation of geometric data for import into HEC-RAS and processes simulation results exported from HEC-RAS. To create the import file, the user must have an existing digital terrain model (DTM) of the river system in the ArcInfo TIN format. The user creates a series of line themes pertinent to developing geometric data for HEC-RAS. The themes created are the Stream Centerline, Flow Path Centerlines (optional), Main Channel Banks (optional), and Cross Section Cut Lines referred to as the RAS *Themes*.

Water surface profile data and velocity data exported from HEC-RAS simulations may be processed by HEC-GeoRAS for GIS analysis for floodplain mapping, flood damage computations, ecosystem restoration, and flood warning response and preparedness.
- **HEC-FIA (Version 2.2):** The Hydrologic Engineering Center's (HEC) Flood Impact Analysis (HEC-FIA) software is a tool to help identify the consequences from a single event. HEC-FIA was developed by HEC in collaboration with the Risk Management Center (RMC) and the Engineering Research and Design Center (ERDC). HEC-FIA evaluates consequences from events defined by hydraulic model output such as gridded data (e.g., depth and arrival time Grids) or HEC's Data Storage System (HEC-DSS) Stage Hydrographs. The HEC-FIA computation includes economic losses (losses to structures and their contents),

agricultural losses, and expected life loss from these hydraulic events.

Team Profile

ECM Consultants, Inc (ECM) is an engineering, architectural and construction management firm headquartered in Metairie, LA with a full-service branch office in Baton Rouge and Lafayette, LA. ECM was incorporated under the laws of the State of Louisiana on August 31, 1995 and holds current licenses in Professional Engineering (No. 2003) and Construction Management (No. 31739). Over the last 26 years, ECM has provided professional services on over 900 projects for clients including:

- Jefferson Parish Department of Public Works
- City of New Orleans Dept. of Public Works
- Louisiana Dept. of Transportation & Development
- Sewerage & Water Board of New Orleans
- City of Baton Rouge Dept. of Public Works
- Port of New Orleans
- USACE New Orleans, Vicksburg, Mobile, Rock Island, Charleston, and Louisville Districts
- USDA-NRCS
- LA CPRA
- Jefferson Parish Public Schools
- Jefferson Parish Dept. of Community Development
- SLFPA-East
- Tangipahoa Police Jury
- Calcasieu Parish

The qualifications, integrity, reliability, and commitment of our personnel to provide quality professional services have earned ECM Consultants, Inc. an excellent reputation and repeat work from our clients. Close to 95% of our work is repeat business from existing clients.

ECM will serve as the Prime Consultant on this contract with the following specialty firms as sub-consultants:

Ardurra Group, Inc. (Ardurra) is a Top 500 ENR-ranked national firm with an office in Metairie, LA, is offering exceptional engineering and consulting services to various clients nationally, including Louisiana. Founded in 1977, Ardurra has grown to 400+ employees throughout 25 offices nationwide. Ardurra's Civil and H&H

N. Use this space to provide any additional information or description of resources supporting Firms qualifications for the proposed project.

Engineers and Modeling Professionals' experience spans from the design of large-scale civil works projects involving flood control and management, hydraulics and hydrology, freshwater diversions, coastal protection, stormwater retrofits, water control, and pumping stations. Ardurra will provide hydraulic modelling support services for this contract.

BFM Corporation, LLC (BFM) is a professional surveying firm who has provided services to public and private agencies throughout the Gulf South, including hundreds of projects across Jefferson Parish. BFM provides surveying services covering all facets of engineering, construction, and forensics; topographic, hydrographic, and high definition laser scanning.

Plans for the Jefferson Parish to mitigate flooding problems. ECM has 18 professional engineers who are registered and licensed to practice in Louisiana.

Detailed resumes of all our key personnel and technical support staff are **included in Section "K"** of this TEC Questionnaire.

Kazem Alikhani, P.E., Principal/POC: 40 years of experience in managing public works projects including planning, design and construction management. He spent majority of his career working with the Jefferson Parish Department of Public Works where he served in a number of management roles including **Drainage Director and Director of Public Works**. As Drainage Director, he initiated numerous studies and designs for management of stormwater, including identifying and leading application processes for FEMA, HMGP, State Capital Outlay and other federal and state funding/grant sources. Mr. Alikhani served as Parish point of contact for the National Disaster Resilience Competition where he managed a team to research, plan and develop post-disaster-related **stormwater management and resiliency projects for the Parish's submittal**. As Jefferson Parish Director of Public Works, he was responsible for all public works functions and oversight that included managing **drainage, sewage, water, streets, parkways, environmental, Floodplain Management, Hazard Mitigation, engineering, and Capital projects**.

Cecil Soileau, P.E., Project Manager/QAQC Manager: Mr. Soileau has more than **53+ years of experience** in H&H engineering analysis, design and modeling for **flood control, master planning and major drainage projects for Jefferson Parish** and others in the GNO region. He worked with **30 years as a Hydraulic Engineer for USACE**. He served as Chief, Hydrology and Hydraulics Branch; Chief, Hydraulic Design Section; Chief, Coastal Engineering Section, and Chief, Hydrology Section. Mr. Soileau also served as the Executive Secretary of the Corps of Engineers Committee on Tidal Hydraulics. He is highly experienced in H&H modeling, **both 1-D and 2-D** and using many software including **SWMM5, HEC- RAS, HEC-HMS, SMS etc.**

John Rasi, PE, Lead H&H Engineer/ Modeler. Mr. Rasi has **39 years of hydraulic and hydrologic engineering experience** that includes a **25-year career with LADOTD**

Minimum Qualifications

Minimum Qualifications	Personnel Meeting Requirement
1. One Principal who is a professional engineer who shall be registered as such in Louisiana.	Kazem Alikhani, P.E. Chief Executive Officer LA License No. 25073
2. A Professional in Charge of the Project who is a Professional Engineer who shall be registered as such in Louisiana with a minimum of five (5) years' experience in the disciplines involved.	Cecil Soileau, P.E. 53 years' experience LA License No. 18950 John Rasi, P.E. H&H Engineer & Modeler LA Civil Eng. # 20841
3. One (1) employee who is a professional engineer registered as such in Louisiana in the field or fields of expertise required for the project.	Sunina Shrestha, P.E. H&H Engineer & Modeler LA Civil Eng. #37901 Bhuban Gimiere, PhD, P.E. H&H Engineer & Modeler LA Civil Eng. #39589

ECM substantially exceeds minimum qualification requirements.

EVALUATION CRITERIA:

1. PROFESSIONAL TRAINING AND EXPERIENCE

ECM Team's management and engineers are very familiar with preparation of Master Drainage Plans having been involved in many similar projects as illustrated in Section L. Some of our personnel are experts in H&H modeling and preparing Master Drainage Plan. **ECM and Ardurra are the two Best-in-Class** to develop Master Drainage

and a 4-year career with Louisiana Department of Natural Resources. He served as Manager of Hydraulic Engineering Department for DOTD and Hydraulic Engineer for DNR. He is highly experienced in H&H modeling, both 1-D and 2-D, and use of HEC-RAS, HEC-HMS, SWMM5, DAMBREAK and FLOODWAVE computer models for hydrologic and hydraulic analyses of watersheds. He was responsible for H&H modeling and performed **Master Drainage Study for St. Bernard Parish while working for LADOTD.**

Sunina Shrestha, P.E., Civil/H&H Engineer. She has a M.S. degree in Civil Engineering with major in H&H engineering and has over **15 years of experience.** As a registered Professional Engineer in Louisiana, her experience includes H&H modeling, both 1-D and 2-D, hydraulic, hydrologic engineering and analysis for watershed analysis, water resources, reservoirs, flood protection system including levees and dams, pump stations, open channel hydraulics and major drainage systems upgrades and improvements. Ms. Shrestha is very proficient in the use of HEC-RAS, HEC-HMS, SWMM5, SWAT, ArcGIS, AutoCAD, Civil 3D, SAP, and WINSLMM.

Reda Youssef, P.E., Senior Civil Engineer. Mr. Youssef has more than **45 years of experience** in both private and public sector including 18 years with Jefferson Parish Department of Public Works as the Director of Capital Projects. Mr. Youssef was involved in the development and the implementation of the **Jefferson Parish** internal master drainage plan at the east bank and west bank of the Parish: This was undertaken in the aftermath hurricane Katrina. because it was determined that a master drainage plan for the internal drainage system of the Parish is necessary for creating a priority list for improving the secondary (internal) drainage system in the parish.

Missy Reynolds, EI, Project Management Support. Ms. Reynolds has **28 years of experience** in project management, hydraulic study and drainage system analysis including drainage structures, canals, and water resource facilities. She performed Hydraulic Study Waggaman, Jefferson Parish and Cypress Park & Erindale Subdivisions Hydraulic Study for St. Tammany Parish Waggaman, Jefferson Parish, LA using EPA **SWMM hydraulic program** to determine adequacies of the existing drainage systems and required improvements.

Christopher Capretto, P.E. Civil Engineer. Mr. Capretto has **13 years of experience** in subsurface drainage design including hydraulic analysis conforming to LADOTD hydraulic manual and software, design of drainage pump stations, data collections and review of as-built plans field inspections for design of drainage and hydraulic structures.

John Foley, III, P.E., Civil Engineer is a Registered Professional Engineer with **8 years of experience** in including feasibility studies, data collections, field investigations, review as -built plans required for

designing drainage improvements and roadway projects. He performed drainage improvement design for Citrus Boulevard and Greg Court Drainage systems, Jefferson Parish, River Ridge, and Reserve Drainage Improvements, Phase III, in Reserve, St. John the Baptist Parish, LA.

Marvin May will serve as **CAD Technician**, he has over 19 years of experience in AutoCAD drafting, including preparation of plans and profiles, cross sections and miscellaneous details for roadway, drainage, and utilities projects. He is trained in both AutoCAD and Microstation.

Ann Springston Shires, PE, Principal (Arduzza): Ms. Springston has **40 years of experience** in the field of civil engineering particularly drainage, hydraulic analysis, computer modeling, pump stations and other relevant projects. She also managed large size drainage and flood protection programs mainly the SELA program in both Orleans and Jefferson parish. The SELA Program was estimated at \$1.3B. She was also heavily involved in the development of the Master drainage plan In St. Charles parish.

Bhuban Ghimire, PE, PhD, Hydraulic Engineer (Arduzza): Mr. Ghimire has **23 years of experience** in the fields of water resources and Hydraulics/Hydrology. He is proficient in the Hydraulic modeling tools such as **HEC-RAS, HEC-HMS, HSPF, SWMM, PCSWMM, DELFT3D** and **SOBEC.** He was the Hydraulic modeler in numerous water resources and Hydraulic projects such as: Uptown areas in New Orleans, Blue and Green Corridors in Gentilly, New Orleans Comprehensive Stormwater Modeling and master plan Evaluation, Comprehensive stormwater modeling in Jefferson parish among many others.

Ralph P. Fontcuberta, Jr., PLS, Surveyor of Record, (BFM): Mr. Fontcuberta has better than half a century of experience in the field of surveying and has been a registered Professional Land Surveyor (PLS) since 1974. He is thoroughly knowledgeable in all aspects of surveying: topographic, hydrographic, boundary, right-of-way surveying, and all facets thereof. He has provided surveying services for residential, plant, and industrial layout projects, ranging from small private lots & buildings to multi-million-dollar programs, including the New Orleans FEMA Streets/Recovery Roads Program.

2. CAPACITY FOR TIMELY COMPLETION FOR NEWLY ASSIGNED WORK

ECM understands the requirements of successfully managing and has the capacity and resources for completing all projects on time. Project(s) under this contract will be adequately staffed by personnel with the technical expertise, supervised by highly experienced engineering supervisor and provided with resources to effectively fulfill the needs of the project. Our efficient approach to scheduling our work allows ECM personnel to provide all required man-hours for each of our ongoing projects.

3. LOCATION OF PRINCIPAL OFFICE

ECM Consultants, Inc. principal office is located in Jefferson Parish at 1301 Clearview Parkway, Suite 200, Metairie, LA 70001. All work will be performed from this office.

4. ADVERSARIAL LEGAL PROCEEDINGS WITH THE PARISH

ECM Consultants, Inc. has never been involved in any litigation and/or adversarial legal proceedings with Jefferson Parish

5. PRIOR SUCCESSFUL COMPLETION OF PROJECTS

ECM's qualifications, integrity, reliability, and commitment to providing quality professional services on time and on budget has received **commendation** from all our clients. We also have provided services for H&H analysis and modeling, preparation of Master Drainage Plans, drainage systems and hydraulic structures design for many projects as documented in **Sections K and L**. ECM provided all these services to City of New Orleans DPW, Jefferson Parish DPW, Calcasieu Parish Police Jury, City of Kenner DPW, USACE, LADOTD, CPRA, Port of New Orleans, USDA-NRCS, US HUD, and others. All projects were completed on time and within budget, for which we received commendation and exceptional performance ratings.

The following are the examples of a few H&H, modeling and drainage master plan and related projects completed by ECM.:

- **Storm Water Master Drainage Plan for Ward 1 and East McNeese Basins**, Calcasieu Parish, LA.
Allen Wainwright, PE, 337-721-3700, awainwright@cppj.net
- **Planning, Hydraulic modeling for PCCP at Outfall Canals at 17th Street, Orleans Avenue, and London Avenue. Orleans Parish, LA.** USACE-New Orleans District. Dan Bradley, PE, 504. 862-2201.

- **Choupique-Sulphur Basin Drainage Master Plan Improvements Analysis, Calcasieu Parish, LA.**
Allen Wainwright, PE, 337-721-3700
awainwright@cppj.net
- **Louisiana Watershed Initiative, East Baton Rouge Parish, Louisiana, State of Louisiana OCD,**
Sub to AECOM, Michael Donahue, 734-646-4638,
michael.donahue@aecom.com
- **Hydraulic Analysis, Modeling and Safety inspection of State-Regulated Dams, Statewide, LA, LADOTD.**
Edward Knight, P.E, 225-379-3007
edward.knight@la.gov.
- **Hydraulic Modeling for Jefferson Parish Drainage Basin 33 and West Esplanade Drainage Pump Station, Jefferson parish**
Gary Lehmann, Project Manager,
Work phone: 504.736.6779,
Gary.Lehmann@jeffparish.net

Additionally, ECM has completed many drainage canals, pump stations, hydraulic structures, roads, subsurface drainage and utilities design projects. The following are our records of a few projects:

1. Orleans Avenue Canal Remediation, Orleans Parish, LA, USACE - HPO/NOD. ECM received **"Exceptional"** performance rating and accolades from Corps Project manager for this \$12 million emergency project for completing design of project within mandated 90 days. Rating Official Remark *"Easy to work with, produced quality product within established milestones and budget guidelines"*.

2. Conceptual Design of Hydrologic Systems and Pump Stations at Outfall Canals at 17th Street, Orleans Ave & London Ave, Orleans Parish, USACE-HPO/NOD. ECM assisted USACE in preparation of the two-phase Design- Build RFP for construction of \$700 million PCCP stations. ECM received **"Exceptional"** Rating. Rating official's Remark *"ECM did an outstanding job supporting evaluations of the PCCP project. They were always on time and provided everything necessary for the evaluation to be successful."*

3. Multidisciplinary Engineering Design Services, IDIQ Contract No. W912P8-16-D-0005, USACE New Orleans District. Total 11 task orders are issued. ECM received “**Exceptional**” ratings for all the task orders. ECM is currently designing West Shore Lake Pontchartrain flood risk reduction projects. Estimated Construction cost \$110 million and has received commendation from USACE

4. Contract No. C-FTW-00366 and 00411-U.S. HUD, Atlanta Contracting Operations, Fort Worth, Texas ECM received “**Outstanding**” performance rating for both the contracts. The evaluation report states: “*The contractor has demonstrated an outstanding performance level that was significantly in excess of anticipated achievements and is commendable as an example for others, so that it justifies adding a point to the score. It is expected that this rating will be used in those rare circumstances where contractor performance clearly exceeds the performance levels described as Excellent*”.

6. SIZE OF FIRM

ECM has **62 qualified professional engineers and support staff** to work on routine and specialized projects. Our talented staff will provide high quality professional services on this contract. ECM has **18 LA registered professional engineers**, three project managers, three engineering interns, two architects, 25 construction inspectors, three CAD technicians, and eight administrative and support staff

7. Past Performance on Parish Contracts

ECM has been working with and for Jefferson Parish for over 26 years on a variety of project such as drainage, sewer, roadway, and bridges. We have performed services in multiple capacities from design, inspection to support services for other disciplines such as coastal, electrical, and mechanical. Our 26-year history with the Parish should speak for itself on our past performance. ECM has successfully completed many projects for Jefferson Parish and has received “**letter of commendation**” from DPW relative to **controlling costs, quality of work, and maintaining the contract’s schedule**. We have a proven track record of completing projects on-time and within budget.

Below are examples of a few Jefferson Parish projects for past performance

1. Severn Avenue Corridor Improvements (Veterans Blvd. to West Esplanade Ave), Jefferson Parish, LA

The Severn Avenue corridor is the most heavily travelled busy street in Jefferson Parish with businesses on both sides, including Lakeside mall on east side. This required very detailed construction phasing plan to minimize inconvenience to motorist as well as pedestrians. Jefferson Parish was very satisfied with the design work and CA and resident

inspection currently being provided by ECM.
Engineer’s Estimate \$11.66 million
Bid amount \$11.60 million
Project is currently under construction

2. New Public Works Warehouse on the West Bank Jefferson Parish, LA

ECM provided A-E design services as well as construction administration and resident inspection services for the new Public Works warehouse complex for the West Bank of Jefferson Parish. This \$5 million, 50,000 square foot facility is located in Westwego, LA and provides storage for all public works systems for the west bank of Jefferson Parish.

Engineer’s Estimate \$5.2 million
Bid amount \$3.9 million Project was completed to the satisfaction of Jefferson Parish

3. Jefferson Parish Eastbank Water Treatment Plant Improvements, Phase II (P4) and Bacteriological and Wet Chemistry Laboratory, Jefferson Parish ECM Consultants, Inc performed a design analysis/review of the Consultants’ design for the new P4

Treatment Plant and Bacteriological and Wet Chemistry Laboratory. ECM Team also performed a Value Engineering evaluation on the P4 Water Treatment Plant to determine cost saving measures where recommendations would produce a \$20M cost savings

4. Program & Construction Management (Eastbank) for 2017 Jefferson Parish Road Bond Projects, Jefferson Parish, LA

ECM Team is responsible for reviewing all plans, construction specifications and engineers’ cost estimates to ensure conformity with the requirements and guidelines of the JP-DPW. Our Project engineers are working with consulting firms to resolve design and constructions issues, prior to bid, to avoid delays and cost overruns. ECM’s construction engineers provide oversight of construction activities serving as “Eyes and Ears” for Jefferson Parish

5. B&C Canal Improvement (Phase I) for Jefferson Parish. This project’s design and construction were completed on time, below our engineering estimate.

Quality Control Plan

ECM Consultants, Inc. has an excellent quality control program. During the study, data collections, H&H modeling, and design phase the **project manager** is responsible for establishing criteria for analysis, modeling and design in consultation with the owner. Before the start of a project, the project manager will meet with all staff (project engineers, junior engineers, and the CAD

operator) to explain the project scope, criteria, drafting standards, coordination requirements with various entities and agencies, completion schedules for various phases, and, **most importantly, the project goal and Owner's expectation of high-quality professional work.** The project manager is responsible for coordination with the owner and project engineers. All of our staff members are conscientious, thorough and understand the importance of preparing all documents with a standard of care exceeding the industry standard. Consistency and coordination of various discipline's work, as well as thoroughly checking of all deliverables at various stages.

Regular progress meetings are held to determine progress, coordination, and resolution of challenges associated with the project. The project engineer checks computations, input data, analysis results of models at every stage for quality assurance.

CONCLUSION

ECM Consultants, Inc. meets and exceeds the required qualifications, experience, and resources to perform engineering services for H & H analysis, Modeling and preparation of a Master Drainage Plan for Jefferson Parish. We are poised for immediate assignment and look forward to providing excellent professional services to Jefferson Parish for this contract. We hope to receive favorable consideration.

O. To the best of my knowledge, the foregoing is an accurate statement of facts.

Signature:  _____

Print Name: Kazem Alikhani, P.E.

Title: Chief Executive Officer

Date: 03/23/2022

Section 2

Ardurra Group, Inc.
TEC Professional Services Questionnaire

TEC Professional Services Questionnaire

A. Project Name:			
Professional Engineering Services & Supplemental Services for a Drainage Master Plan for the East Bank of Jefferson Parish. Resolution No 138896/SOQ 22-014			
B. Firm Name & Address where Project work will be performed:			
Ardurra Group, Inc. 3012 26th Street Metairie, LA 70002			
B. Name, title and contact information of Principal, as defined in Section 2-926 of the Jefferson Parish Code of Ordinances, who is a registered, licensed architect, professional engineer, or surveyor in the State of Louisiana:			
<p style="text-align: center;">Ann Springston Shires, PE Principal-in-Charge Ardurra Group Inc. 504.454.3866 aspringston@ardurra.com</p>			
D. Name and contact information of employee who is a registered and licensed architect, professional engineer, or surveyor in the State of Louisiana in the applicable discipline. A subcontractor may be substituted here only if the advertised Project requires more than one discipline.			
<p style="text-align: center;">PROFESSIONAL IN CHARGE OF PROJECT: Ann Springston Shires, PE Ardurra Group Inc. 504.454.3866 aspringston@ardurra.com</p>			
E. Please provide the number of employees whose primary function corresponds with each category:			
<u>204</u> Administrative	<u>7</u> Estimators	<u>0</u> Specification Writers	
<u>16</u> Architects (Licensed)	<u>0</u> Geologist	<u>12</u> Structural Engineers	
<u>0</u> Chemical Engineers	<u>0</u> Geotechnical Engineer	<u>68</u> Graduate Engineers	
<u>194</u> Civil Engineers	<u>0</u> Interior Designers	<u>81</u> Project Managers	
<u>104</u> Construction Inspectors	<u>6</u> Landscape Architects	<u>18</u> Clerical	
<u>4</u> Ecologists	<u>45</u> Land Surveyor	<u>0</u> Grant/Funding Specialist	
<u>2</u> Electrical Engineers	<u>2</u> Mechanical Engineers	<u>43</u> Sanitary Engineers	
<u>4</u> Engineer Intern	<u>18</u> Environmental Engineers		
<u>45</u> Professional Land Surveyors	<u> </u> CAD Technicians	<u>907</u> TOTAL	
F. Is this submittal by a JOINT-VENTURE? Please check:			
	YES	NO	X
If marked "No" skip to Section I. If marked "yes" complete Sections G-H.			

TEC Professional Services Questionnaire

G. If submittal is by JOINT-VENTURE, list the firms participating and outline specific areas of responsibility (including administrative, technical, and financial) for each firm. Please attach additional pages if necessary.

1. N/A

2. N/A

H. Has this JOINT-VENTURE previously worked together?
Please check: YES NO

I. List all subcontractors anticipated for this Project. Please note that all subcontractors must submit a fully completed copy of this questionnaire, applicable licenses, and any other information required by the advertisement. See Jefferson Parish Code of Ordinances, Sec. 2-928(a)(3). Please attach additional pages if necessary.

Name & Address:	Specialty:	Worked with Firm Before (Yes or No):
1. N/A		
2.		
3.		

J. Please specify the total number of support personnel that may assist in the completion of this Project: 3-6

TEC Professional Services Questionnaire

K. List the professional in charge, key persons, specialists, and individual consultants anticipated for this Project and provide their relevant information below. If necessary, please attach additional documentation (i.e. resume) that demonstrates the employment history and experience of the Firm's key persons that may assist in the completion of this Project. Please attach additional pages if necessary.
PROFESSIONAL IN CHARGE OF PROJECT:
Name & Title:
Ann Springston Shires, PE, Principal-in-Charge
Project Assignment:
QA/QC Manager
Name of Firm with which associated:
Ardurra Group, Inc.
Years' experience with this Firm:
27
Education: Degree(s)/Year/Specialization:
Bachelor of Science / 1982 / Civil Engineering
Active registration: Year first registered/discipline:
1992 / Professional, Civil, Environmental Engineer Louisiana 2008 / Civil Engineer Texas 2015 / Professional Engineer New York 2019 / Professional Engineer Florida
Other experience and qualifications relevant to the proposed Project:
<p>Ann has 39 years of experience in civil engineering planning and design throughout Louisiana, with a focus on open channel hydraulics, pipeline hydraulics, hydrologic analyses, computer modeling and pump stations. Relevant experience includes:</p> <p><u>Employment History:</u></p> <ul style="list-style-type: none">• Group Leader/ Sr. Project Engineer, Ardurra Group, Inc. (2018 – present)• Principal, Ardurra Group, LLC (2015 – 2017)• Sr. Project Engineer/ Program Manager, BCG Engineering & Consulting, Inc. (1992 – 2014)• Project Engineer, International Engineering & Consulting Services, Inc. (1986 – 1991)• Staff Civil Engineer, Chevron Pipeline Company (1982 – 1985) <p>Sewerage & Water Board of New Orleans Urban Flood Control Project, New Orleans, LA. Ann served as the hydraulics engineer for this project which included</p>

TEC Professional Services Questionnaire

upgrading an existing SWMM computer model, processing drainage improvements and making improvement recommendations. Ann was also responsible for project scheduling; coordination with the owner and the US Army Corps of Engineers; development of the Orleans Parish Feasibility Study; field data collection for structure inventory and hydrologic modeling; hydraulic modeling; report design plates and hydraulic write-up; development of GIS based overflow maps using the SWMM model results to aide in cost-benefit analyses; review of FEMA repetitive flood damage and rate structure information.

St Charles Parish East Bank Master Drainage Plan, St Charles Parish, LA. For four years Ann served as project engineer for this project with a study area of more than 7,000 acres. Her responsibilities included coordination of topographic mapping with subcontract photogrammetric mapping services, field data collection, hydrologic and hydraulic analyses using the HEC-1 and HEC-2 and final recommendations for drainage improvements. **She developed the final master drainage plan which outlined modeling efforts, existing conditions, recommended improvements and GIS based flood overflow maps** for existing and improved conditions for the 10, 50, and 100-year storms. She subsequently provided expanded data from this study for the FEMA Hazard Mitigation Grant Program for project funding.

Ann performed hydraulic analyses to indicate impact to existing drainage from proposed subdivision installations and impact of installation of new pumps at pump stations in St Charles Parish, and acted as project manager during construction of these subdivisions.

US Army Corps of Engineers SELA Project, Hydraulic Analyses and Improvements to Canal Systems in Jefferson and Orleans Parish, LA. This project reconstructs the open canal system by means of concrete flumes and trapezoidal sections and reconstructs multiple bridge crossings. Ann utilized HEC-18 and WSPRO to determine the effects of roadway and utility crossings and canal intersections.

Big Island Mining and Atchafalaya Sediment Delivery Projects. Ann served as hydraulic engineer for this project which included setting up a FASTTABS finite element computer model and processing alternate channel alignments to determine which alignment best diverted flows and sediment for marsh creation

Southeast Louisiana Drainage Project, New Orleans, LA. Ann served as program manager for this \$460M program. She was responsible for the coordination of construction and design contracts as well as maintaining a public information program. The project involved a 30-minute television program, 'Underground Rivers', which aired on PBS and traced the history and future of drainage in the City of New Orleans.

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:
Name & Title:
Bhuban Ghimire, PhD, PE, Hydraulic Engineer
Project Assignment:
Hydraulic Engineer
Name of Firm with which associated:
Ardurra Group, Inc.
Years' experience with this Firm:
8
Education: Degree(s)/Year/Specialization:
PhD / 2012 / Civil Engineering, Water Resources Master of Science / 2003 / Hydraulic Engineering Bachelor of Science / 1992 / Civil & Industrial Engineering
Active registration: Year first registered/discipline:
2012 / Professional Engineer Virginia 2015 / Civil Engineer Louisiana
Other experience and qualifications relevant to the proposed Project:
<p>Bhuban has 22 years of experience in water resources engineering and hydraulic/hydrologic engineering. He has worked extensively on the Expanded Small-Scale Physical Model of the Mississippi River. Bhuban's Ph.D. dissertation research 'Development of hydrograph-based approach to modeling fate and transport of sediment-borne bacteria in lowland rivers' resulted in the publication of a number of papers in internationally renowned journals in water resources such as Water Research, Journal of Hydrologic Engineering and Advances in Water Research. He is proficient in hydraulic and sediment transport modeling tools such as HEC-RAS, HEC-HMS, HSPF, SWMM, DELFT3D, and SOBEK while doing his doctoral as well as master's studies.</p> <p>Employment History:</p> <ul style="list-style-type: none"> • Department of Civil and Environmental Engineering (Baton Rouge), Research Assistant, 2006-2012 • Department of Water Induced Disaster Prevention, Water Resources Engineer (Kathmandu), 1999-2006 • Department of Irrigation (Kathmandu), Water Resources Engineer, 1994-1999 • Create Acme Associates (Kathmandu), Civil Engineer, 1992-1994 <p>Expanded Small Scale Physical Model (ESSPM) of Lower Mississippi River, LA. The ESSPM simulates sediment transport and diversions of the Lower Mississippi River and replaces the SSPM that Ardurra completed in 2003. The ESSPM is 90-feet by 120-feet. Bhuban developed plans for automatic control of sediment and water during model runs. He designed a data acquisition system and instrument control using Lab VIEW software from National Instruments.</p> <p>Hydraulic Modeler, Blue and Green Corridors. Bhuban assisted in revising the existing SWMM model for Blue and Green Corridors project in Gentilly District. He developed and evaluated alternative plans for lowering the flooding in the area via green projects, hydraulic structures as well as pump stations for the project.</p> <p>Water Resources Modeler, Feasibility Study to Upgrade Drainage and Pump Stations in the Bayou Segnette-Lake Cataouatche Watershed of Jefferson Parish, LA. Bhuban conducted an engineering feasibility study to upgrade drainage and pump Stations in the Bayou Segnette-Lake Cataouatche watershed of Jefferson Parish. He performed hydraulic and hydrologic analysis of the existing drainage deficiencies using EPA SWMM5 model and</p>

TEC Professional Services Questionnaire

analyzed alternative improvements plans.

Southeast Louisiana Urban Flood Control, LA. Bhuban converted updated HEC-HMS hydrologic and HEC-RAS hydraulic models for New Orleans East and New Orleans metro basins to US EPA SWMM dynamic rainfall-runoff models using PCSWMM. This effort was part of engineering and design support services for the development of O&M Manuals and related model updates for the for the Southeast Louisiana Urban Flood Control project. He reviewed and updated HEC-HMS models for New Orleans East Basin using South Regional Climate Center (SRCC97) rainfall data. He updated HEC-RAS model of the same basin by incorporating the improvements under Southeast Louisiana Urban Flood Control project.

Water Resources Modeler, Comprehensive Stormwater Modeling in Jefferson Parish, Jefferson Parish, LA. Bhuban developed a comprehensive EPA SWMM5 model for East Bank of Jefferson Parish that incorporated the latest FEMA Digital Flood Insurance Rate Map (DFIRM) model data, USACE Southeast Louisiana (SELA) Urban Flood Control Project improvements, and storm drainage infrastructure included in Jefferson Parish's GIS drainage database that is larger than 36 inches in diameter. He utilized high resolution LiDAR (Light Detection and Ranging) topographic data acquired for the USACE Hurricane Storm Damage Risk Reduction System (HSDRSS) to reflect surface features and storage, as well as new hydrology based on 2011 National Land Cover Database percent developed imperviousness data.

Water Resources Modeler, Conversion and Validation of Stormwater Models as Part of SELA UFC Engineering & Design Support Services, Orleans Parish, LA. Bhuban converted SELA HEC-HMS hydrologic and HEC-RAS hydraulic models to EPA Storm Water Management Model (SWMM) 5.0 for the following two Orleans Parish basins: New Orleans East Basin and New Orleans Metro Basin, as a part of SELA UFC Engineering & Design Support Services, Orleans Parish.

Water Resources Modeler, Model Review and Update of Orleans Parish, USACE New Orleans District, LA. Bhuban reviewed and updated HEC-HMS models for the New Orleans East Basin using South Regional Climate Center (SRCC97) rainfall data. He updated HEC-RAS models of the same basin by incorporating the improvements made under the Southeast Louisiana Urban Flood Control project.

Water Resources Modeler, Engineering and Economic Study of the Hoey's Basin Pump to the River Plan, Jefferson Parish, LA. Bhuban conducted hydrologic and hydraulic analyses of five alternative pump to the river plans for Hoey's Basin using HEC-RAS and HEC-HMS models.

Hydraulic Modeler, Uptown Area ABF PAC, New Orleans, LA Bhuban worked as the lead hydraulic modeler for a detailed Master Drainage Report for the Sewerage and Water Board of New Orleans. Services provided included model selection and calibration, hydrology and hydraulic modeling and master planning of drainage improvements. The Project was carried out in essentially four phases, Phase I: Data Collection, Phase II: Model Development, Phase III: Evaluated Current Drainage and Tested Solutions and Phase IV: Documentation. All activities were summarized in a Master Drainage Report. Presented existing conditions overflow maps and maps with improvements, and costs and design drawings, and comparative water surface profiles on major culvert/canals with and without improvements. Made recommendations, prioritized sequence of construction, and outlined a funding stream to carry out the plan.

Previous Experiences:

Department of Water Induced Disaster Prevention and Department of Irrigation, Ministry of Water Resources, Nepal. Bhuban performed hydrologic and hydraulic analysis for various river flood control and channel improvement projects in Nepal. He designed and implemented flood control and channel improvement works in large and medium rivers, including a 20-km flood embankment, gabion dikes and spurs in Mahankali and Girubari Rivers. He also prepared detailed design drawings for flood control, flow diversion and canal work for ADB-funded Rajanpur Irrigation Project. He performed hydrologic and hydraulic analysis of the watershed.

TEC Professional Services Questionnaire

L. Work by Firm or Joint-Venture members which best illustrates current qualifications relevant to this Project. Please include any and all work performed for Jefferson Parish. Please attach additional pages if necessary.

PROJECT NO. 1

Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:	
<p>Drainage Capital Improvement Program / SELA Program</p> <p style="text-align: center;">Jefferson Parish Department of Public Works 1221 Elmwood Park Blvd Suite 906 Jefferson, LA 70123</p> <p>Neil Schneider, 504.736.6833</p>	<p>Several large rainfall events from 1970's through early 1990's caused over \$1B in damages. As a result, the Federal government authorized and funded the SELA program – the first federally funded urban drainage program. Ardurra was hired as the program managers at program inception in 1994 to develop and implement the program activities to accomplish this task include, but are not limited to the following:</p> <ul style="list-style-type: none"> Coordination and review of Reconnaissance, Feasibly and 533(d) Engineering Report and Environmental Information Document to obtain Federal and Statewide Flood Control (SFC) Funding. Coordinate and oversee land acquisition and utility modifications. Develop and execute engineering and construction contracts on behalf of Jefferson Parish. Represent Jefferson Parish in meetings with USACE, CPRA, utility companies, and private landowners. Coordinate OMRR&R Manual preparation for program. Develop, implement, and execute \$8M Jefferson Parish annual Drainage Capital Improvement budgets and schedules for the SELA and SFC programs. 	
Completion Date (Actual or estimated):	Estimated Cost:	
Ongoing	Entire Project: \$1,320 /year (fee)	Work for which Firm was Responsible: 100%

PROJECT NO. 2

Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:	
<p>Drainage Improvements to Bonnabel Canal</p> <p style="text-align: center;">Jefferson Parish Department of Public Works 1221 Elmwood Park Blvd Suite 907 Jefferson, LA 70123</p> <p>Mitchell T Theriot PE, 504.736.6851</p>	<p>This project involves planning and design for canal dredging, widening and bank stabilization to improve drainage through the Bonnabel Canal. Ardurra prepared an engineering alternative report to evaluate various alternatives for improvements to Bonnabel Canal; prepared preliminary design and cost estimates to evaluate various alternatives; and prepared plans and specifications for the selected alternative. Alternatives included full u-shaped concrete flume; concrete flume with low walls and upper banks slope paved; concrete lined trapezoidal section; and sheet pile with rock lined side slopes. Ardurra followed up with complete plans and specifications for a reach of the canal.</p>	
Completion Date (Actual or estimated):	Estimated Cost:	
2020	Entire Project: \$717K	Work for which Firm was Responsible: 100%

TEC Professional Services Questionnaire

PROJECT NO. 3		
Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility	
<p>Hoey's Basin Pump to the River</p> <p style="text-align: center;">Jefferson Parish Department of Public Works 1221 Elmwood Park Blvd Suite 907 Jefferson Parish, LA 70123</p> <p>Mitchell T Theriot PE, 504.736.6851</p>	<p>Ardurra developed a plan to divert 1400 to 1600cfs from the Hoey's Canal at a location near Iris Ave. where it crosses Jefferson Highway to make up for the deficit reduction (9,480-7,800cfs) at Drainage Pump Station No. 6. At this location a pump station would be constructed and 5,500 linear feet of triple 84" steel discharge pipes laid, to discharge into the Mississippi River. The steel pipes would be laid above ground as much as possible. The crossings of Jefferson Hwy. and River Road would be aerial crossings to reduce construction costs. This plan would use vacant land along a railroad for the construction of the discharge lines.</p> <p>The benefits would be experienced in both Jefferson Parish and Orleans Parish because the new station would relieve flooding in Hoey's Basin and reduce the inflow to Drainage Pump Station No. 6 on a permanent basis.</p> <p>The estimated construction cost for this second diversion project is \$50M to \$55 M and with contingencies, engineering, construction administration and supervision the project cost increases to \$70M.</p>	
<p>Completion Date (Actual or estimated)</p> <p style="text-align: center;">2013</p>	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
	\$70M (Estimated Construction)	100%
PROJECT NO. 4		
Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:	
<p>USACE Fronting Protection Bonabel and Suburban Pumping Stations</p> <p style="text-align: center;">US Army Corps of Engineers New Orleans District 7400 Leake Ave New Orleans, LA 70118</p> <p>Darryl Bonura PE, 504.862.2653</p>	<p>Ardurra prepared a design report and subsequent plans and specifications for fronting protection across the entire width of the discharge areas of the Bonabel and Suburban Pump Stations. The design consists of a combination of gate monoliths and T-wall monoliths, including positive cutoff gates to include sluice gates and butterfly valves. Tie-in floodwalls were designed to connect the new fronting protection to the existing levee sections on each side of the pump stations. The design of floodwalls utilized new guidelines established post Hurricane Katrina.</p> <p>Ardurra evaluated the benefits of providing a breakwater at the Bonabel Pump Station. Ardurra subsequently prepared the structural design and plans and specifications for a new breakwater at the station. Ardurra also provided construction phase services including construction oversight.</p>	
<p>Completion Date (Actual or estimated):</p> <p style="text-align: center;">2008</p>	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
	\$160M	100%

TEC Professional Services Questionnaire

PROJECT NO. 5		
Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:	
<p>USACE West Closure Complex Gulf Intracoastal Waterway</p> <p>US Army Corps of Engineers New Orleans District 7400 Leake Ave New Orleans, LA 70118</p> <p>Nancy Powell PE, 504.862.2449</p>	<p>Ardurra developed hydraulic design requirements for intake and discharge basins for large drainage pumping stations located at the West Closure Complex. Ardurra was responsible for the development of basic intake and discharge basin design as well as design criteria for four large drainage pump stations - 12,000, 16,000, 20,000 or 25,000 cfs which would constitute the largest known capacities in the US, Canada and possibly the world. To accomplish this task on a fast-track schedule, the design had to include all necessary geometry to proceed to a 2D hydro-dynamic model to best determine approach velocities and possible flow separation problems that could affect hydraulics at the pumps. The basis for design was EM-1110-2-3102 and EM-1110-2-3105.</p>	
Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
2008	\$1B (Estimated Construction)	100%

PROJECT NO. 6		
Project Name, Location and Owner's contact information:	Nature of Firm's Responsibility:	
<p>Harahan Pump to the River Feasibility Study</p> <p>Department of Capital Projects Jefferson Parish 1221 Elmwood Park Blvd Suite 907 Jefferson Parish, LA 70123</p> <p>Neil Schneider, 504.736-6833</p>	<p>Ardurra performed civil, mechanical and hydraulic engineering analysis of an urban flood control plan for the Harahan, River Ridge Community in Jefferson Parish. The region includes an inflow channel, three high-head vertical lift pumps, 9,000 feet of force mains/pipes, a MR&T Levee crossing and a discharge basin at the Mississippi Riverbank. Ardurra prepared feasibility level design for a 1,200 cfs pumping station to include a shelter building, overhead crane system, suction basin, trash screens, discharge pipes, dry weather pumps, and prepared real estate drawings, discharge pipe routes, layout, cost estimates and technical report.</p> <p>The hydraulic and hydrologic analysis included computing of runoff volume, inflow characteristics, stage lowering's achieved, velocities of approach at confluences, pipe losses, pumping rates required, storage routing with and without the project in-place, and priming rate of flow. Ardurra also performed a two-dimensional flow analysis of inflow to suction basin in order to best locate the suction canal.</p> <p>The civil analysis included a cost analysis, geotechnical analysis, influence zones, structural analysis and concrete design. The mechanical analysis included pump selection, system curve analysis, horsepower requirements, day-tank sizes, siphonic recovery, pipe sizing, dry-weather pumps, start-up valve selection and automation.</p>	
Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
2008	\$300K	100%

TEC Professional Services Questionnaire

PROJECT NO. 7

Project Name, Location and Owner's contact	Nature of Firm's Responsibility:	
USACE Temporary Closure Structures and Pump Stations Orleans and London Outfall Canals US Army Corps of Engineers New Orleans District 7400 Leake Ave New Orleans, LA 70118 Jim St Germain, 504.862.2499	Ardurra designed temporary sluice gated structures and pumping capacity at the Orleans and London outfall canals in Orleans Parish to protect against backflow from hurricane surges from Lake Pontchartrain and from rainfall drainage flooding in the City of New Orleans when gates were temporarily closed to protect the City. In order to supply the proper number of pumps and prime movers, Ardurra modeled the entire interior drainage system in Orleans Parish west of the Industrial Canal and forecasted any adverse impacts related to flood potential if insufficient pumping was provided. Ardurra carried out structural design of gates, pump platforms, pump discharge piping and fuel storage systems. Ardurra selected the type, size, spacing and number of pumps required to meet the needs of each canal and furnished construction inspection and supervision services.	
Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
2007	\$575K	100%

PROJECT NO. 8

Project Name, Location and Owner's contact	Nature of Firm's Responsibility:	
Sewerage & Water Board of New Orleans Master Drainage Plans, New Orleans, Louisiana Sewerage and Water Board of New Orleans 625 St Joseph St. New Orleans, LA 70165 Ron Spooner, 504.585.2365	Ardurra prepared a detailed Master Drainage Report of the Uptown, Holly Grove and Carrollton water sheds that are tributary to Drainage Pump Stations 1 and 6. The Project was carried out in four phases: Phase I Data Collection. Ardurra obtained the surface drainage "unit" sheets from SWB, ground surface elevation data from LIDAR data, and GIS maps available from LSU for the purpose of creating a surface water model of Drainage Pump Station Nos. 1 and 6. Phase II Model Development. Reviewed availability of several unsteady flow surface water modeling systems. Selected a model system and constructed both a Hydrologic & Hydraulic Module for the purpose of evaluating existing drainage system and future drainage system improvements. Using historical rainfall data for the May 8 and 9, 1995 flood, and pumping station operating logs, calibrated the modeling system to the water shed characteristics. Phase III Evaluated Current Drainage and Tested Solutions. Using the calibrated model to develop existing conditions, flagged all deficiencies in the watershed and tested alternative channel improvements on Palmetto, Monticello, and Claiborne Avenue Channels and Canals, and Audubon St. Selected several neighborhood street drainage systems in uptown area, i.e. Galvez, Prytania, and evaluated the system. Applied larger pipe sizes to inadequate systems and developed unit costs for improvements. Phase IV Documentation. Summarized all activities carried out during study prosecution in a Master Drainage Report. Presented existing conditions overflow maps and maps with improvements, and costs and design drawings, and comparative water surface profiles on major culvert/canals with and without improvements. Made recommendations, prioritized sequence of construction, and outlined a funding stream to carry out the plan.	
Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
2021	\$1.1M	100%

TEC Professional Services Questionnaire

PROJECT NO. 9

PROJECT NO. 9		
Project Name, Location and Owner's contact	Nature of Firm's Responsibility:	
<p>USACE Hurricane Katrina Related Projects</p> <p>US Army Corps of Engineers New Orleans District 7400 Leake Ave New Orleans, LA 70118</p> <p>Carl Balint PE, 504.862.2706</p>	<p>Ardurra provided professional engineering services for several projects related to restoration of damages resulting from Hurricane Katrina. A listing of these services follows:</p> <ul style="list-style-type: none"> — Bayous Bienvenue & Dupre Control Structures — IHNC Floodwall Breaches — London Avenue & Orleans Avenue Outfall Canals — Levee/Floodwall Assessment for the West Bank — Bonnabel & Duncan Pump Stations — Louisiana Coastal Protection & Restoration Study — Hydraulic Analyses of Pumping Capacity at the 17th Street London/Orleans Outfall Canals 	
Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
2006	\$100M	100%

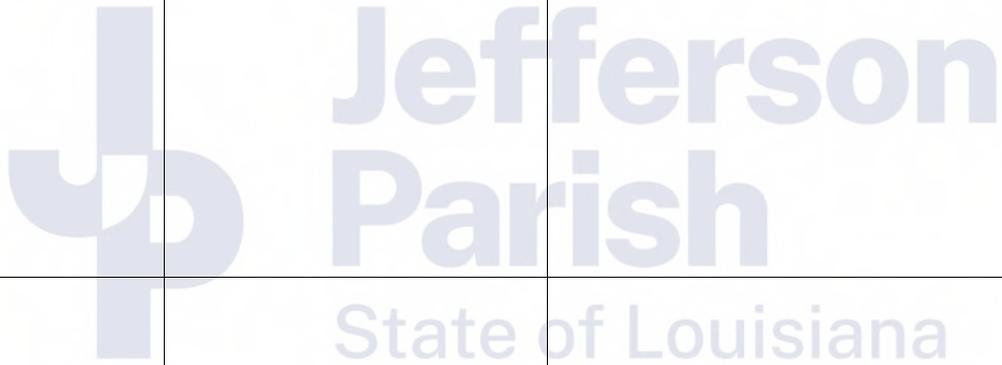
PROJECT NO. 10

PROJECT NO. 10		
Project Name, Location and Owner's contact	Nature of Firm's Responsibility:	
<p>Southeast Louisiana Urban Flood Control Project</p> <p>Sewerage & Water Board Of New Orleans 625 St Joseph St. New Orleans, LA 70165</p> <p>Ron Spooner, 504.585.2365</p>	<p>Ardurra serves as the program management team for the capital improvement program with the Sewerage & Water Board of New Orleans and the U.S. Army Corps of Engineers. Firm duties include overseeing and reviewing designs of components performed by engineering firms contracted by the S&WB; resolving design conflicts between Corps standards and S&WB standards; communicating with other utility owners and assisting in finalizing legal agreements between the S&WB and other utilities; assisting in property acquisition for the technical requirements of the design; submitting budget figures to the S&WB on a quarterly basis for funding of the design and construction projects; providing revised short term and long-term forecasts as necessary; completing grant applications for matching State monies; tracking funding and grant monies assuring timely disbursements and receipts; coordinating the public relations efforts required for disseminating information about the capital program to affected residents; assisting the Corps in resolving any problems that have arisen during actual construction of the separate components of the urban flood control project which includes technical design assistance, conflicting utility and/or private interest assistance, coordination with the S&WB and other City and State agencies.</p>	
Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
Ongoing	\$1B	100%

TEC Professional Services Questionnaire

M. List all prior and/or on-going litigation between Firm and Jefferson Parish. Please attach additional pages if necessary. NONE

Parties:		Status/Result of Case:
Plaintiff:	Defendant:	
1. N/A		
2.		
3.		
4.		



TEC Professional Services Questionnaire

N. Use this space to provide any additional information or description of resources supporting Firm's qualifications for the proposed project.

ABOUT Ardurra Group, Inc.

With an office in Metairie, Ardurra has been providing engineering services throughout Louisiana since 1987. The firm has developed an expertise in civil works projects - specifically drainage, flood control, sewer, water, wastewater and streets for local public agencies. In this regard, Ardurra's staff of over 900 professional and technical personnel have completed in excess of \$2B in assessment, design, development of O&M manuals, construction management and program management of related facilities in the region.

1. PROFESSIONAL TRAINING & EXPERIENCE

Ardurra has carefully crafted a team of seasoned professionals with the experience and capabilities to lead a successful project. Proposed personnel have been extensively involved in the hydraulic modeling of numerous drainage basins in Jefferson and Orleans Parishes. Notable experience includes hydraulic design of the Harahan Pump to the River project involving pumping 1,200 cfs through over 8,700 LF of triple pressure pipes, hydraulic design for City of New Orleans master drainage plan, and urban flood control projects for Jefferson Parish involving feasibility studies for canal and roadway drainage. Key personnel:

Ann Springston PE Senior Civil Engineer

- 39 years of experience in civil engineering planning and design in SE Louisiana
- key role in drainage projects in Jefferson Parish and Orleans Parish
- experienced is focused on open channel hydraulics, pipeline hydraulics, pump stations, computer modeling, and hydrologic analyses

Bhuban Ghimire PE, PhD Hydraulic Engineer

- 22 years of experience in water resources engineering and hydraulic/hydrologic engineering
- worked extensively on the Expanded Small-Scale Physical Model of the Mississippi
- dissertation research 'Development of hydrograph-based approach to modeling fate and transport of sediment-borne bacteria in lowland rivers' resulted in the publication of a number of papers in internationally renowned journals in water resources such as Water Research, Journal of Hydrologic Engineering and Advances in Water Research

EDUCATION & EXPERTISE OF STAFF (Proposed-Highlighted)

Name	Yrs. of Exp	Education	Expertise	Jefferson Parish Exp
Ann Springston Shires PE	39	BS in Civil Engineering	Program Mgmt., Water, Sewer, Drainage	Yes
Joseph Becker, PE, CSM	34	BS in Civil Engineering	Program Mgmt., WW, Sewer, Hazard Mitigation	Yes

TEC Professional Services Questionnaire

Adam Faschan, PhD PE	33	PhD, MS & BS in Civil Engineering	Water, WW, Hazard Mitigation	Yes
Gerry Preau, PE	43	MS & BS in Civil Engineering	Roadway, Drainage, Sewer, Water	Yes
Bhuban Ghimire, PE	22	PhD, MS & BS in Civil Engineering	Hydrology, Hydraulics, Modeling	Yes
Ryan Ruiz	24	AutoCAD 1, 2, 3 & 12 Upgrade	Roadway, Drainage, Sewer, Water, WW, Streets, Inspection	Yes
Billy Blackwell	59	Diesel Mechanic Certificate	Roadway, Construction, O&M	Yes

2. CAPACITY FOR TIMELY COMPLETION OF NEWLY ASSIGNED WORK

Ardurra's professional, technical and support personnel proposed for Jefferson Parish projects are currently available and mobilized to begin work. Ardurra has multiple contracts that are in the final stages of completion, which makes available several professional and construction personnel. Ardurra's significant newly assigned work includes disaster recovery work, which draws upon a different skillset than required for Jefferson Parish Master Drainage Plans. Ardurra's track record with Jefferson Parish projects is a testament to our project managers' and professional staff's ability to deliver projects on time and within budget.

3. LOCATION OF PRINCIPAL OFFICE WHERE WORK WILL BE PERFORMED

All work will be completed in Ardurra's office located in **Jefferson Parish - 3012 26th Street, Metairie Louisiana 70002.**

4. ADVERSARIAL LEGAL PROCEEDINGS BETWEEN PARISH AND THE FIRM

Ardurra is not involved in any current, or previous legal proceedings with Jefferson Parish.

5. PRIOR SUCCESSFUL COMPLETION OF PROJECTS OF THE TYPE AND NATURE OF THE MASTER DRAINAGE PLAN FOR THE EASTBANK OF JEFFERSON PARISH

Ardurra has provided program management services to Jefferson Parish for the \$52M CIP, which includes routine engineering services related to drainage and flood control. These services were expanded include program management for the federally funded and cost shared Southeast Louisiana Flood Control Program. Since 1997 the program has invested \$500M in drainage improvements for which Ardurra has led the interface with the United States Army Corps of Engineers (USACE). Other routine engineering services contracts and similar projects include:

Project	Description	Client Reference
USACE New Orleans District Hurricane Katrina Flood Protection Projects	Design of floodwalls along Inner Harbor Navigation Canal, design of control structures for Bayous Bienvenue and Dupre, and design of temporary closure structures at several outfall canals	Chris Dunn, 504.862.1799

TEC Professional Services Questionnaire

USACE New Orleans District West Esplanade Ave Crossing of Elmwood Canal	Preliminary and final design as well as construction supervision of this canal crossing	Chris Dunn, 504.862.1799
Ascension Parish \$63M Sewer Capital Program	Part of program management team, design and construction oversight for WWTP improvements	Bill Roux, 225.450.1340
South Florida Water Management District S-5A Pump Station Refurbishment	Design report for feasibility of modernization of existing horizontal drainage pumps and their driver machinery and automation of station operations at this pumping station. Design and construction oversight for refurbishment of pumping station	Richard Virgil, 561.682.6759

6. SIZE OF FIRM

Ardurra has ample manpower, professional qualifications and direct and relevant experience to furnish Jefferson Parish with Master Drainage Experiences to include project evaluation, design, drafting of technical plans, development of technical specifications and construction administration. Staff by discipline includes:

Discipline	# Staff
Admin, Accounting, IT, HR	204
Civil Engineers	194
Structural Engineers	12
Environmental Engineers	18
Mechanical Engineers	2
Engineering Interns & Engineers in Training	76
Project Managers	81
Environmental Professionals & Scientists	21
Ecologists	4
Landscape Architects	6
Land Surveyors	95
Grant Fund / Disaster Recovery Specialists	28
Construction Managers & Inspectors	104
Other	84
Total	907

TEC Professional Services Questionnaire

7. PAST PERFORMANCE ON PARISH CONTRACTS

For 35 years Ardurra has been providing engineering services within the metropolitan area to include multiple Parishes, the Sewerage & Water Board of New Orleans, and the City of New Orleans Public Works Department. Ardurra has successfully completed more than 20 projects for Jefferson Parish and is currently furnishing program management services to for Jefferson Parish's Drainage \$1B CIP/SELA program. Other recent Jefferson Parish work includes drainage improvements to Bonnabel Canal and Hoey's Pump to the River Economic Study. In each case, Ardurra completed projects on time, without cost overruns, and without design inadequacies. Ardurra has delivered multiple projects efficiently and within expectations - Ardurra personnel have not been held at fault for errors or omissions on previous projects. Some of Ardurra's Jefferson Parish projects include:

- Power Boulevard Phase I W Esplanade Ave to Vintage Dr
- Power Boulevard Phase II I-10 to West Esplanade Ave
- West Esplanade Avenue at Houma Boulevard
- Drainage Improvements Suburban Canal Veterans Blvd to W Esplanade Ave
- Drainage Improvements Huey P Long Bridge W Bank Traffic Circle
- Cousins Pumping Station Addition
- Intersection Improvements Clearview Parkway/W Metairie Ave
- Manhattan Boulevard Phase I Gretna Blvd to Lapalco Blvd
- Manhattan Boulevard Phase II West Bank Expwy to Gretna Blvd
- Drainage Capital Improvement Program
- LOMR

O. To the best of my knowledge, the foregoing is an accurate statement of facts.

Signature:  **Print Name:** Joseph Becker, PE, CSM
Title: Client Services Manager **Date:** March 23, 2022

Section 3

BFM Corporation, LLC.
TEC Professional Services Questionnaire

TEC Professional Services Questionnaire

A. Project Name and Advertisement Resolution Number:

Professional Engineering and Supplemental Services for a
Drainage Master Plan for the East Bank of Jefferson Parish
 SOQ **22-014** | Resolution No. **138896**

B. Firm Name & Address:



BFM
 CORPORATION, LLC
 Professional Land & Hydrographic Surveying

BFM Corporation, LLC
 15 Veterans Memorial Boulevard
 Kenner LA 70062

C. Name, title, & contact information of Principal, as defined in Section 2-926 of the Jefferson Parish Code of Ordinances, who is a registered, licensed architect, professional engineer, or surveyor in the State of Louisiana:

Chad M. Poché, P.E., Executive Vice President
 504-468-8800 • 504-460-5239 cell • cpoche@bfmcorporation.com
 Registered Professional Civil Engineer, Louisiana No. 27667 (since 1998)

D. Name, title, & contact information of employee who is a registered and licensed architect, professional engineer, or surveyor in the State of Louisiana in the applicable discipline. A subcontractor may be substituted here only if the advertised Project requires more than one discipline.

Ralph P. Fontcuberta, Jr., Executive Vice President • LA License No. 4329 (1974)
 504-468-8800 • 504-451-7500 cell • ralph@bfmcorporation.com
 Registered Professional Land Surveyor, Louisiana No. 4329 (since 1974)

E. Please provide the number of employees whose primary function corresponds with each category:

4	Administrative	-	Estimators	-	Specification Writers
-	Architects (Licensed)	-	Geologists	-	Structural Engineers
-	Chemical Engineers	1	Geotechnical Engineers	-	Graduate Engineers
-	Civil Engineers	-	Interior Designers	2*	Project Managers
-	Construction Inspectors	-	Landscape Architects	-	Clerical (<i>see Administrative</i>)
-	Ecologists	-	Land Surveyor (<i>see PLS</i>)	-	Grant/Funding Specialist
-	Electrical Engineers	-	Mechanical Engineers	-	Sanitary Engineers
-	Engineer Intern	-	Environmental Engineers	1	Principals
2	Professional Land Surveyors			1	Researcher/Archivist
				3	Drafting/AutoCADD
				5	Survey Crew Chiefs
				6	Instrument Men
				24	TOTAL

* Project Manager also noted in Professional Land Surveyor, but overall employee count is correct.

F. Is this submittal by a JOINT-VENTURE? Please check: YES _____ NO X

If marked "No", skip to Section I. If marked "yes", complete Sections G-H.

TEC Professional Services Questionnaire

G. If submittal is by a JOINT-VENTURE, list the firms participating and outline specific areas of responsibility (including administrative, technical, and financial) for each firm. please attach additional pages if necessary.

1. **N/A**

2.

H. Has this JOINT-VENTURE previously worked together? Please check:

YES _____ NO _____ N/A

I. List all subcontractors anticipated for this Project. Please note that all subcontractors must submit a fully completed copy of this questionnaire, applicable licenses, and any other information required by the advertisement. See Jefferson Parish Code of Ordinances, Sec. 2-928(a)(3). Please attach additional pages if necessary.

Name & Address:	Specialty:	Worked with Prime Before (Yes or No):
1. N/A		
2.		
3.		

J. Please specify the total number of support personnel that may assist in the completion of this Project:

24 *(all personnel, primary and support, will be available on all assigned projects)*

TEC Professional Services Questionnaire

K. List the professional in charge, key persons, specialists, and individual consultants anticipated for this Project and provide their relevant information below. If necessary, please attach additional documentation (i.e., résumé) that demonstrates the employment history of the Firm's key persons that may assist in the completion of this Project. Please attach additional pages if necessary.

PROFESSIONAL IN CHARGE OF PROJECT:

Name & Title:

Ralph P. Fontcuberta, Jr., PLS
Executive Vice President

Project Assignment:

Registered Professional Land Surveyor

Name of Firm with which associated:

BFM CORPORATION, LLC
Professional Land & Hydrographic Surveying

Years experience with this Firm:

40 years (Founding Principal of BFM in 1982); 55 years total (1967)

Education: Degree(s)/Year/Specialization:

Coursework, Building, Delgado College, New Orleans
Coursework, Math, University of New Orleans

Active registration: Year first registered/discipline:

1974, Professional Land Surveyor (Louisiana Lic. No. 4329)
1974, Professional Land Surveyor (Mississippi Lic. No. 1633)

Other experience and qualifications relevant to the proposed Project:

Ralph P. Fontcuberta, Jr., PLS has better than half a century of experience in the field of surveying and has been a registered Professional Land Surveyor (PLS) since 1974. He is thoroughly knowledgeable in all aspects of surveying: topographic, hydrographic, boundary, right-of-way surveying, and all facets thereof. He has provided surveying services for residential, plant, and industrial layout projects, ranging from small private lots & buildings to multi-million dollar programs, including the New Orleans FEMA Streets/Recovery Roads Program.

Since the beginning of his career, his work has entailed computations, drafting, and field work for various industrial, commercial, municipal, and private clients. Project work has included topographic surveying needed for a wide variety of engineering, architectural, and related endeavors.

TEC Professional Services Questionnaire

Other experience and qualifications relevant to the proposed Project:

Ralph P. Fontcuberta, Jr., PLS (continued)

Mr. Fontcuberta's **surveying experience with Jefferson Parish can be traced back to BFM's inception in 1982**, and before then while working as a surveyor with another firm. He has over half a century of experience with surveying throughout the region and **specifically with Jefferson Parish**. He has served as the PLS for projects throughout every corner of Jefferson Parish. Relevant project history includes, but is certainly not limited to, the following:

- *Bissonet Plaza Drainage Improvements (Phase 1, Elmwood Parkway and Craig Avenue), Metairie, Jefferson Parish, LA*
- *Lapalco Boulevard Bridge at Harvey Canal, (PW 2017-046-RBP; DOTD H.004396), Jefferson Parish, LA*
- *Orange Lane Drainage Pump Station Project (Drainage Mapping), Grand Isle, Jefferson Parish, LA*
- *Mounes Street Subsurface Drainage (Phase IV, Dickory Avenue to Elmwood Park Boulevard), Jefferson Parish, LA*
- *West Bank Expressway, Phase I Drainage Map, from Peters Road to Manhattan Boulevard, Jefferson Parish, LA*
- *West Bank Subsurface Drainage Improvement Project, Phase II, Bellemeade Boulevard to the Violet Canal Discharge, Jefferson Parish, LA*
- *Avenue D Drainage Improvements (Phase VIII: Allo Street), Metairie, Jefferson Parish, LA*
- *Coventry Drainage Pump Stations, Jefferson Parish, LA*
- *Metairie Road Drainage Evaluation, Metairie, Jefferson Parish, LA*
- *Mounes Subsurface Drainage – Phase I, Jefferson Parish, LA*
- *Jack & Bores Survey (Drainage Project), Waggaman, Jefferson Parish, LA*
- *Oakwood Terrytown Drainage Improvements (HMGP) (Carol Sue Drainage Improvements), Jefferson Parish, LA*
- *Drainage Improvements, Metairie Lawn to Labarre Drive, Jefferson Parish, LA*
- *Mary Ridge Court, Jefferson Parish, LA*
- *Bannerwood Drainage Improvements (Mt. Laurel Bridge & Oakwood Canal), Jefferson Parish, LA*
- *Orleans Village Subdivision Drainage Improvements, Jefferson Parish, LA*
- *Westgate Subdivision Subsurface Drainage Improvements, Jefferson Parish, LA*
- *Kawanee Drive Drainage Improvements, Jefferson Parish, LA*
- *Paillet – Maplewood Drainage Improvements, Jefferson Parish, LA*
- *Hoey's Canal Drainage Improvements (Deckbar Ave to Labarre Rd), Jefferson Parish, LA*
- *25th Street & Adjacent Canal, Gretna, Jefferson Parish, LA*
- *Mason Ditch Drainage Improvements, Jefferson Parish, LA*
- *Breaux Ditch Improvements, East Ames Boulevard – Leo Kenner Parkway, Jefferson Parish, LA*
- *Drainage Improvements to the Canal No. 11 Culvert Crossing West of Duncan Canal, Jefferson Parish, LA*
- *Mazoue Ditch Drainage Improvements (Rose Crest Lane to Darby Lane), Jefferson Parish, LA*
- *Ames Boulevard Drainage Pump Station Warehouse, Jefferson Parish, LA*
- *Improvements to Bayou Segnette Drainage Pump Station No. 1, Jefferson Parish, LA*
- *Cleary Avenue & West Napoleon Lift Station & Force Main, Jefferson Parish, LA*
- *Westwego Drainage Pump Station No. 1, Jefferson Parish, LA*
- *Parish Line Pump Station No. 5, Kenner, Jefferson Parish, LA*
- *Hero Pump Station, Harvey, Jefferson Parish, LA*
- *Fulton Street Pump Station, Jefferson Parish, LA*
- *Westwego Drainage Pump Station 1, Westwego, Jefferson Parish, LA*
- *Goose Bayou Drainage Pump Station, Lafitte, Jefferson Parish, LA*
- *Taft Park Drainage Pump Station, Jefferson Parish, LA*
- *Drainage Pump Station, Veterans North & South, Right-of-Way, 17th Street Canal, Jefferson Parish, LA*
- *Drainage Pump Station, West Esplanade and 17th Street Canals, Jefferson Parish, LA*
- *Bayou Segnette Fronting Protection/New Pump Station, Westwego, Jefferson Parish, LA*
- *Morton & Ingrid Pump Station, Jefferson Parish, LA*

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Chad M. Poché, P.E.
Executive Vice President

Project Assignment:

Engineering Liaison

Name of Firm with which associated:

BFM CORPORATION, LLC
Professional Land & Hydrographic Surveying

Years experience with this Firm:

5 years (became partial owner of BFM in 2017); 29 years total (1993)

Education: Degree(s)/Year/Specialization:

M.S., 1998, Civil Engineering, University of New Orleans
B.S., 1993, Civil Engineering, Louisiana State University

Active registration: Year first registered/discipline:

Louisiana, Civil Engineer, No. 27667, 1998
Mississippi, Civil Engineer, No. 15405, 2002

Other experience and qualifications relevant to the proposed Project:

Mr. Poché is an Executive Vice President with (and partial owner of) BFM Corporation, LLC, and a co-founder of BFM's sister company, Gulf South Engineering and Testing, Inc. He has been a consulting geotechnical engineer for more than 20 years in South Louisiana, working on traditional and unique geotechnical engineering projects (shallow and deep foundation design, slope stability, pavement design, etc.). Mr. Poché has also provided construction oversight for waste facilities and virtually every type of earthwork related project. He has been the geotechnical engineer of record for thousands of projects throughout his career.

Mr. Poché's experience includes the development of appropriate scopes of work and proposals for a broad range of projects; planning and coordinating analyses; preparing technical reports; foundation and geotechnical engineering design; construction recommendations; Miss. River facility permitting; managing personnel and office operations; and expert witness testimony. Mr. Poché has logged soil borings; overseen the installation of ground water monitoring wells, piezometers, and inclinometers; overseen and evaluated pile load tests; overseen, performed, and evaluated dynamic pile testing (PDA and PIT); performed CMT field testing and inspection; and performed laboratory testing.

BFM Corporation projects overseen by Mr. Poché would include:

TEC Professional Services Questionnaire

Other experience and qualifications relevant to the proposed Project:

Chad M. Poché, P.E. (continued)

Lapalco Boulevard Bridge at Harvey Canal, (PW 2017-046-RBP; DOTD H.004396), Jefferson Parish, LA. BFM Corporation provided extensive surveying services for a topographic survey and right-of-way (R/W) determination for the project. Project elements included setting GPS Static Control (5 permanent control points), traversing a proposed survey line, and land topography surveying. Additional phases include hydrographic topography/bathymetric surveying of the project area, the right-of-way determination, and subsurface utility engineering (SUE). Drone Surveying was utilized throughout the project. A Route Topographic Survey was also included as part of the scope, as was Subsurface Utility Engineering (SUE). (\$478,744 (fee); 2020)

Bissonet Plaza Drainage Improvements (Phase 1), Metairie, Jefferson Parish, LA. BFM prepared a Route Topographic Survey for Phase 1 of the project, located at Elmwood Parkway and Craig Avenue. This project built upon work executed by the firm for a previous extensive surveying project involving Bissonet Plaza subdivision; this allowed for BFM to build upon established surveys to save time and expenses. Surveying for each element of the project included services included confirming all controls and benchmarks, topographic features, location of improvements and utilities, location of natural elements as applicable, and notation of right-of-way points. (\$7,980 (fee); 2020)

Orange Lane Pump Station Project, Grand Isle, Jefferson Parish, LA. The project consists of a new storm water pumping station on the intersection of Orange Lane at Orleans Avenue in Grand Isle, Louisiana. The scope of services includes obtaining topographical survey information and the preparation of a drainage map for the project. Phase 1 of the project involved the topographic and right of way surveying services; BFM conducted a site topographic survey at the proposed lift station site and provided boundary surveying to determine rights of way. Phase 2 of the project established the Drainage Map. BFM located all drainage structures within the Limits of Survey; this included ditches, culverts, drain inlets, and catch basins. A drone survey was executed to gather a 25 ft elevation grid throughout the project area. (\$32,280 (fee); 2020)

Metairie Road Drainage Evaluation, Metairie, Jefferson Parish, LA. BFM provided surveying services for this Drainage Evaluation Project (PW 2018-024-DR). The scope of services included a full Route Topographic Survey (includes all services, utilities, properties, elevations and items necessary to perform any and all engineering and construction work) from gutter line to gutter line along Metairie Road from the westerly apparent right-of-way (R/W) of Causeway Boulevard to easterly apparent ROW of Focis Street. The project encompassed approximately 10,400 linear feet, with cross-sections and elevations surveyed included as part of the scope. (\$18,350 (fee); 2020)

Avenue D Drainage Improvements (Phase VIII: Allo Street), Metairie, Jefferson Parish, LA. BFM executed a Route Topographic Survey for the project; the full scope plan & profile included all services, utilities, properties, elevations and items necessary to perform any and all engineering and construction work. The project area (Allo Street) extended from 4th Street to 6th Street. (\$12,855 (fee); 2019)

Holly Drive Drainage Project, Lewisburg Estates Subdivision, Mandeville, St. Tammany Parish, LA. BFM provided boundary with topographic surveying of the project site (multiple lots) in the Lewisburg Estates Subdivision for the drainage project. (\$13,392 (fee); 2019)

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

John Philip Thayer
Field Operations Supervisor

Project Assignment:

Field Operations Supervisor

Name of Firm with which associated:

BFM CORPORATION, LLC
Professional Land & Hydrographic Surveying

Years experience with this Firm:

14 years (joined BFM in 2008); 15 years total (2007)

Education: Degree(s)/Year/Specialization:

B.S., 2007, Physical Education, Trevecca Nazarene University

Active registration: Year first registered/discipline:

Professional Land Surveyor Registration in process, State of Louisiana

Other experience and qualifications relevant to the proposed Project:

Mr. Thayer is a Field Operations Supervisor with considerable experience in field surveying services, including ALTA/as-built surveying, construction layout, boundary, topographic, cross-sections, GPS use, and numerous other surveying types.

West Bank Subsurface Drainage Improvement Project, Phase II, Bellemeade Boulevard to the Violet Canal Discharge, Jefferson Parish, LA. BFM provided topographic surveying for the project, which encompassed Bellemeade Boulevard from Briargrove to Brookmeade and Brookmeade from Bellemeade to the Violet Canal Discharge. (\$16,108 (fee); 2010)

Mounes Street Subsurface Drainage (Phase IV, Dickory Avenue to Elmwood Park Boulevard), Jefferson Parish, LA. BFM provided topographic surveying services for Phase IV of the project, part of a multiphase program to improve drainage issues on Mounes Street. Phase IV of the project involved a topographic survey of the project, extending from Dickory Avenue to Elmwood Park Boulevard. Services provided by BFM included establishment of a baseline, setting temporary benchmarks (TBMs), elevation surveys, locating improvements and utilities as well as natural elements, and right-of-way surveying. (\$23,540 (fee); 2017)

Avenue D Drainage Improvements (Phase VIII: Allo Street), Metairie, Jefferson Parish, LA. BFM executed a Route Topographic Survey for the project; the full scope plan & profile included all services, utilities, properties, elevations and items necessary to perform any and all engineering and construction work. The project area (Allo Street) extended from 4th Street to 6th Street. (\$12,855 (fee); 2019)

TEC Professional Services Questionnaire

Other experience and qualifications relevant to the proposed Project:

John Philip Thayer (continued)

Lapalco Boulevard Bridge at Harvey Canal, (PW 2017-046-RBP; DOTD H.004396), Jefferson Parish, LA. BFM Corporation provided extensive surveying services for a topographic survey and right-of-way (R/W) determination for the project. Project elements included setting GPS Static Control (5 permanent control points), traversing a proposed survey line, and land topography surveying. Additional phases include hydrographic topography/bathymetric surveying of the project area, the right-of-way determination, and subsurface utility engineering (SUE). Drone Surveying was utilized throughout the project. A Route Topographic Survey was also included as part of the scope, as was Subsurface Utility Engineering (SUE). (\$478,744 (fee); 2020)

Bissonet Plaza Drainage Improvements (Phase 1), Metairie, Jefferson Parish, LA. BFM prepared a Route Topographic Survey for Phase 1 of the project, located at Elmwood Parkway and Craig Avenue. This project built upon work executed by the firm for a previous extensive surveying project involving Bissonet Plaza subdivision; this allowed for BFM to build upon established surveys to save time and expenses. Surveying for each element of the project included services included confirming all controls and benchmarks, topographic features, location of improvements and utilities, location of natural elements as applicable, and notation of right-of-way points. (\$7,980 (fee); 2020)

Metairie Road Drainage Evaluation, Metairie, Jefferson Parish, LA. BFM provided surveying services for this Drainage Evaluation Project (PW 2018-024-DR). The scope of services included a full Route Topographic Survey (includes all services, utilities, properties, elevations and items necessary to perform any and all engineering and construction work) from gutter line to gutter line along Metairie Road from the westerly apparent right-of-way (R/W) of Causeway Boulevard to easterly apparent ROW of Focis Street. The project encompassed approximately 10,400 linear feet, with cross-sections and elevations surveyed included as part of the scope. (\$18,350 (fee); 2020)

Orange Lane Pump Station Project, Grand Isle, Jefferson Parish, LA. The project consists of a new storm water pumping station on the intersection of Orange Lane at Orleans Avenue in Grand Isle, Louisiana. The scope of services includes obtaining topographical survey information and the preparation of a drainage map for the project. Phase 1 of the project involved the topographic and right of way surveying services; BFM conducted a site topographic survey at the proposed lift station site and provided boundary surveying to determine rights of way. Phase 2 of the project established the Drainage Map. BFM located all drainage structures within the Limits of Survey; this included ditches, culverts, drain inlets, and catch basins. A drone survey was executed to gather a 25 ft elevation grid throughout the project area. (\$32,280 (fee); 2020)

Louisiana Statewide Flood Control Program (Package 1 & 2 Control and Package 3), City of Kenner, LA. BFM provided topographic surveying services for the project. Typical surveying elements included records research, establishment of baseline, Temporary Benchmarks, and shooting of elevations. BFM provided surveying for the location of improvements and utilities (sewer, water, drainage, storm, etc.), as well as natural elements in the project area. The Louisiana Statewide Flood Control Program uses state funds in the construction of flood control infrastructure to reduce (or eliminate) the incidence of flooding or damages in a specific area. (\$17,688 (fee); 2016)

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Gary J. Lambert, Jr., PLS
Registered Professional Land Surveyor

Project Assignment:

Registered Professional Land Surveyor; Project Manager/Drafting Supervisor

Name of Firm with which associated:

BFM CORPORATION, LLC
Professional Land & Hydrographic Surveying

Years experience with this Firm:

4 years (joined BFM in 2018); 11 years total

Education: Degree(s)/Year/Specialization:

B.S., 2018, Geomatics, Nicholls State University
B.S., 2014, Construction Management, Louisiana State University

Active registration: Year first registered/discipline:

2021, Professional Land Surveyor (Louisiana Lic. No. 5929)

Other experience and qualifications relevant to the proposed Project:

Mr. Lambert provides Project Management and Drafting Oversight for the firm. He has also provided Survey Crew Chief Services since joining BFM and offers a well-rounded experience overview for any project. Mr. Lambert has completed Basic OSHA Training and holds license with the Gulf Coast Safety Council (08SSV, ID429523).

Lapalco Boulevard Bridge at Harvey Canal, (PW 2017-046-RBP; DOTD H.004396), Jefferson Parish, LA. BFM Corporation provided extensive surveying services for a topographic survey and right-of-way (R/W) determination for the project. Project elements included setting GPS Static Control (5 permanent control points), traversing a proposed survey line, and land topography surveying. Additional phases include hydrographic topography/bathymetric surveying of the project area, the right-of-way determination, and subsurface utility engineering (SUE). Drone Surveying was utilized throughout the project. A Route Topographic Survey was also included as part of the scope, as was Subsurface Utility Engineering (SUE). (\$478,744 (fee); 2020)

Avenue D Drainage Improvements (Phase VIII: Allo Street), Metairie, Jefferson Parish, LA. BFM executed a Route Topographic Survey for the project; the full scope plan & profile included all services, utilities, properties, elevations and items necessary to perform any and all engineering and construction work. The project area (Allo Street) extended from 4th Street to 6th Street. (\$12,855 (fee); 2019)

TEC Professional Services Questionnaire

Other experience and qualifications relevant to the proposed Project:

Gary J. Lambert, Jr., PLS (continued)

Bissonet Plaza Drainage Improvements (Phase 1), Metairie, Jefferson Parish, LA. BFM prepared a Route Topographic Survey for Phase 1 of the project, located at Elmwood Parkway and Craig Avenue. This project built upon work executed by the firm for a previous extensive surveying project involving Bissonet Plaza subdivision; this allowed for BFM to build upon established surveys to save time and expenses. Surveying for each element of the project included services included confirming all controls and benchmarks, topographic features, location of improvements and utilities, location of natural elements as applicable, and notation of right-of-way points. (\$7,980 (fee); 2020)

Orange Lane Pump Station Project, Grand Isle, Jefferson Parish, LA. The project consists of a new storm water pumping station on the intersection of Orange Lane at Orleans Avenue in Grand Isle, Louisiana. The scope of services includes obtaining topographical survey information and the preparation of a drainage map for the project. Phase 1 of the project involved the topographic and right of way surveying services; BFM conducted a site topographic survey at the proposed lift station site and provided boundary surveying to determine rights of way. Phase 2 of the project established the Drainage Map. BFM located all drainage structures within the Limits of Survey; this included ditches, culverts, drain inlets, and catch basins. A drone survey was executed to gather a 25 ft elevation grid throughout the project area. (\$32,280 (fee); 2020)

Metairie Road Drainage Evaluation, Metairie, Jefferson Parish, LA. BFM provided surveying services for this Drainage Evaluation Project (PW 2018-024-DR). The scope of services included a full Route Topographic Survey (includes all services, utilities, properties, elevations and items necessary to perform any and all engineering and construction work) from gutter line to gutter line along Metairie Road from the westerly apparent right-of-way (R/W) of Causeway Boulevard to easterly apparent ROW of Focis Street. The project encompassed approximately 10,400 linear feet, with cross-sections and elevations surveyed included as part of the scope. (\$18,350 (fee); 2020)

West Causeway Approach Bike Path Drainage Study, City of Mandeville, St. Tammany Parish, LA. BFM executed a Route Topographic Survey for the project area. Scope included establishing a baseline parallel to the street; establishing temporary benchmarks (TBMs) along the project baseline; locating existing improvements with the designated Limits of Survey; locating existing above-ground and underground utilities. BFM also researched available location data from controlling agencies. Cross sections were taken on a 100 ft. grid within the Limits of Survey. BFM also provided surveying services to provide a Drainage Area Map for the project. The scope of services included establishing Vertical Control and the location of existing drainage structures. (\$16,720 (fee); 2018)

Revere Road W-3 Drainage Survey, St. Tammany Parish, LA. BFM provided surveying services to the St. Tammany Parish Government (Survey Services Contract No. 16-104) for this Drainage Survey project on Revere Road. The scope of services included a boundary survey with notation of improvements. Extensive records research was a precursor to the execution of the field survey. BFM also provided cross sections of Bayou De Zaire and of the drainage feature with notation of natural ground features, improvements, encroachments, and easements/servitudes. Upon completion, BFM provided AutoCAD maps and parcel property descriptions to the Parish. (\$18,960 (fee); 2020)

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Christopher Lemley
Quality Control Supervisor

Project Assignment:

Quality Control Supervisor

Name of Firm with which associated:

BFM CORPORATION, LLC
Professional Land & Hydrographic Surveying

Years experience with this Firm:

8 years (joined BFM in 2014); 16 years total (2006)

Education: Degree(s)/Year/Specialization:

High School Diploma

Active registration: Year first registered/discipline:

N/A

Other experience and qualifications relevant to the proposed Project:

Mr. Lemley serves as BFM's Quality Control Supervisor, overseeing all work and activity by the firm's personnel to be sure all is kept up to our exacting standards. His surveying experience includes over 8 years as a Survey Crew Chief. His survey software experience includes projects involving Trimble, Topcon, Leica, and Hypack, and has maintained and operated GPS, Auto-Level, and Total Station.

Metairie Road Drainage Evaluation, Metairie, Jefferson Parish, LA. BFM provided surveying services for this Drainage Evaluation Project (PW 2018-024-DR). The scope of services included a full Route Topographic Survey (includes all services, utilities, properties, elevations and items necessary to perform any and all engineering and construction work) from gutter line to gutter line along Metairie Road from the westerly apparent right-of-way (R/W) of Causeway Boulevard to easterly apparent ROW of Focis Street. The project encompassed approximately 10,400 linear feet, with cross-sections and elevations surveyed included as part of the scope. (\$18,350 (fee); 2020)

Drainage Improvements, Metairie Lawn to Labarre Drive, Jefferson Parish, LA. BFM provided Surveying Services for this project located in Bayou Metairie Park. (\$9,740 (fee); 2016)

Mounes Subsurface Drainage – Phase I, Jefferson Parish, LA. BFM provided topographic surveying services for Phase I of the project, which extended from Dickory to Elmwood Park Boulevard). (\$26,240 (fee); 2017)

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Thomas O. Wright
Survey Crew Chief

Project Assignment:

Survey Crew Chief

Name of Firm with which associated:

BFM CORPORATION, LLC
Professional Land & Hydrographic Surveying

Years experience with this Firm:

14 years (joined BFM in 2008); 45 years total (1977)

Education: Degree(s)/Year/Specialization:

High School Diploma

Active registration: Year first registered/discipline:

*American Traffic Safety Service Assn. – Traffic Flagger/Control Technician/Control Supervisor
Basic OSHA Training - Completed
Transportation Work Identification Card (TWIC)*

Other experience and qualifications relevant to the proposed Project:

Mr. Wright has over 40 years of experience in surveying services, including a multitude of project types (water, wastewater, stormwater, drainage, roadway, etc.) throughout the region.

Mounes Street Subsurface Drainage (Phase IV, Dickory Avenue to Elmwood Park Boulevard), Jefferson Parish, LA. BFM provided topographic surveying services for Phase IV of the project, part of a multiphase program to improve drainage issues on Mounes Street. Phase IV of the project involved a topographic survey of the project. Services provided by BFM included establishment of a baseline, setting temporary benchmarks (TBMs), elevation surveys, locating improvements and utilities as well as natural elements, and right-of-way surveying. (\$23,540 (fee); 2017)

Massachusetts Avenue Drainage Improvements, Jefferson Parish, LA. BFM provided topographic surveying services for the project, which extended from W Napoleon Avenue to Veterans Memorial Boulevard. (\$28,515 (fee); 2009)

Coventry Drainage Pump Stations, Jefferson Parish, LA. BFM provided a Route Topographic Survey with Hydrographic Survey for the project. The limits of survey extended from r/w to r/w along Jefferson Highway. The levee and hydrographic survey area was noted as 400 feet wide (200 ft. in either direction of the extended centerline of Colonial Heights Road). Drone Surveying was a key element of the project. The hydrographic survey extended 500 feet into the river from the water's edge. (\$89,780 (fee); 2020)

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Curtis "Jay" Barrios
Survey Crew Chief

Project Assignment:

Survey Crew Chief

Name of Firm with which associated:

BFM CORPORATION, LLC
Professional Land & Hydrographic Surveying

Years experience with this Firm:

32 years (joined BFM in 1990); 32 years total (1990)

Education: Degree(s)/Year/Specialization:

High School Diploma

Active registration: Year first registered/discipline:

*American Traffic Safety Service Assn. – Traffic Flagger
Transportation Work Identification Card (TWIC)*

Other experience and qualifications relevant to the proposed Project:

Mr. Barrios' surveying experience includes boundary, hydrographic, and topographic. He has worked on location and performed topographic surveys for a number of major projects.

West Bank Subsurface Drainage Improvement Project, Phase II, Bellemeade Boulevard to the Violet Canal Discharge, Jefferson Parish, LA. BFM provided topographic surveying for the project, which encompassed Bellemeade Boulevard from Briargrove to Brookmeade and Brookmeade from Bellemeade to the Violet Canal Discharge. (\$16,108 (fee); 2010)

Sena Drive Subsurface Drainage Improvements, Jefferson Parish, LA. BFM provided topographic surveying services for the Sena Drive Subsurface Drainage Improvements project, which extended along Sena Drive from West Esplanade Avenue (Canal No. 2) to Nero Street. (\$13,364 (fee); 2010)

Avenue D Drainage Improvements (Phase VIII: Allo Street), Metairie, Jefferson Parish, LA. BFM executed a Route Topographic Survey for the project; the full scope plan & profile included all services, utilities, properties, elevations and items necessary to perform any and all engineering and construction work. The project area (Allo Street) extended from 4th Street to 6th Street. (\$12,855 (fee); 2019)

Woodland West Subdivision Drainage Improvements, Marrero, LA. BFM provided a topographic survey for the design of drainage improvement. (\$8,900 (fee); 2006)

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Eric Gladney
Survey Crew Chief

Project Assignment:

Survey Crew Chief

Name of Firm with which associated:

BFM CORPORATION, LLC
Professional Land & Hydrographic Surveying

Years experience with this Firm:

8 years (joined BFM in 2014); 21 years total (2001)

Education: Degree(s)/Year/Specialization:

High School Diploma

Active registration: Year first registered/discipline:

*American Traffic Safety Service Assn. – Traffic Flagger
Norfolk Southern Roadway Worker Protection Contractor Safety Cert.
Transportation Work Identification Card (TWIC)*

Other experience and qualifications relevant to the proposed Project:

Avenue D Drainage Improvements (Phase VIII: Allo Street), Metairie, Jefferson Parish, LA. BFM executed a Route Topographic Survey for the project; the full scope plan & profile included all services, utilities, properties, elevations and items necessary to perform any and all engineering and construction work. The project area (Allo Street) extended from 4th Street to 6th Street. (\$12,855 (fee); 2019)

Mounes Street Subsurface Drainage (Phase IV, Dickory Avenue to Elmwood Park Boulevard), Jefferson Parish, LA. BFM provided topographic surveying services for Phase IV of the project, part of a multiphase program to improve drainage issues on Mounes Street. Phase IV of the project involved a topographic survey of the project, extending from Dickory Avenue to Elmwood Park Boulevard. Services provided by BFM included establishment of a baseline, setting temporary benchmarks (TBMs), elevation surveys, locating improvements and utilities as well as natural elements, and right-of-way surveying. (\$23,540 (fee); 2017)

Drainage Improvements, Metairie Lawn to Labarre Drive, Jefferson Parish, LA. BFM provided Surveying Services for this project located in Bayou Metairie Park. (\$9,740 (fee); 2016)

25th Street & Adjacent Canal, Gretna, Jefferson Parish, LA. BFM provided cross section surveying and a limited drainage survey for the project. (\$2,925 (fee); 2017)

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Jeff Patin
Survey Crew Chief

Project Assignment:

Survey Crew Chief

Name of Firm with which associated:

BFM CORPORATION, LLC
Professional Land & Hydrographic Surveying

Years experience with this Firm:

3 years (joined BFM in 2019); 23 years total (1999)

Education: Degree(s)/Year/Specialization:

High School Diploma

Active registration: Year first registered/discipline:

Transportation Work Identification Card (TWIC)

Other experience and qualifications relevant to the proposed Project:

Mr. Patin has worked as a Survey Crew Chief and Instrumentman for 20 years for a number of southeastern Louisiana surveying firms on projects throughout the region. His work history includes supervision of field crew personnel, operation of various survey equipment (Topcon GPT, Leica GPS, Total Station, etc.), calculations, information collection, and any & all work required to execute the survey and obtain the information needed. Mr. Patin has worked on projects for various public & private clients, and has performed field work under the direction of the Corps of Engineers.

Coventry Drainage Pump Stations, Jefferson Parish, LA. BFM provided a Route Topographic Survey with Hydrographic Survey for the project, located in River Ridge, Louisiana. The limits of survey extended from r/w to r/w along Jefferson Highway. The levee and hydrographic survey area was noted as 400 feet wide (200 ft. in either direction of the extended centerline of Colonial Heights Road). Drone Surveying was a key element of the project. The hydrographic survey extended 500 feet into the river from the water's edge. (\$89,780 (fee); 2020)

Metairie Road Drainage Evaluation, Metairie, Jefferson Parish, LA. BFM provided surveying services for this Drainage Evaluation Project (PW 2018-024-DR). The scope of services included a full Route Topographic Survey (includes all services, utilities, properties, elevations and items necessary to perform any and all engineering and construction work) from gutter line to gutter line along Metairie Road from the westerly apparent right-of-way (R/W) of Causeway Boulevard to easterly apparent ROW of Focis Street. The project encompassed approximately 10,400 linear feet, with cross-sections and elevations surveyed included as part of the scope. (\$18,350 (fee); 2020)

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Anthony Watson
CADD Technician

Project Assignment:

CADD Technician

Name of Firm with which associated:

BFM CORPORATION, LLC
Professional Land & Hydrographic Surveying

Years experience with this Firm:

11 years (joined BFM in 2011); 31 years total (1992)

Education: Degree(s)/Year/Specialization:

Coursework - CAD, Avatech Solutions, Los Colinas, TX

Active registration: Year first registered/discipline:

NA

Other experience and qualifications relevant to the proposed Project:

Mr. Watson has experience as a draftsman/CADD technician, having started his career as an intern with the Surveying Department of the City of Plano, TX. His experience through the years includes manual and computer-aided drafting for a wide range of projects, ranging from small lot surveys to subdivisions to municipal treatment and private industrial plants. He has experience in all facets of surveying (boundary, topographic, ALTA/ACSM, plan & profile, etc.) in both drafting and field environments.

Mounes Street Subsurface Drainage (Phase IV, Dickory Avenue to Elmwood Park Boulevard), Jefferson Parish, LA. BFM provided topographic surveying services for Phase IV of the project, part of a multiphase program to improve drainage issues on Mounes Street. Phase IV of the project involved a topographic survey of the project, extending from Dickory Avenue to Elmwood Park Boulevard. Services provided by BFM included establishment of a baseline, setting temporary benchmarks (TBMs), elevation surveys, locating improvements and utilities as well as natural elements, and right-of-way surveying. (\$23,540 (fee); 2017)

Bissonet Plaza Drainage Improvements (Phase 1), Metairie, Jefferson Parish, LA. BFM prepared a Route Topographic Survey for Phase 1 of the project, located at Elmwood Parkway and Craig Avenue. This project built upon work executed by the firm for a previous extensive surveying project involving Bissonet Plaza subdivision; this allowed for BFM to build upon established surveys to save time and expenses. Surveying for each element of the project included services included confirming all controls and benchmarks, topographic features, location of improvements and utilities, location of natural elements as applicable, and notation of right-of-way points. (\$7,980 (fee); 2020)

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Shaun Clements
CADD Technician

Project Assignment:

CADD Technician

Name of Firm with which associated:

BFM CORPORATION, LLC
Professional Land & Hydrographic Surveying

Years experience with this Firm:

4 years (joined BFM in 2018); 7 years total (2015)

Education: Degree(s)/Year/Specialization:

Associates of Applied Sciences, 2015, Computer Drafting and Design (ITT)

Active registration: Year first registered/discipline:

NA

Other experience and qualifications relevant to the proposed Project:

Metairie Road Drainage Evaluation, Metairie, Jefferson Parish, LA. BFM provided surveying services for this Drainage Evaluation Project (PW 2018-024-DR). The scope of services included a full Route Topographic Survey (includes all services, utilities, properties, elevations and items necessary to perform any and all engineering and construction work) from gutter line to gutter line along Metairie Road from the westerly apparent right-of-way (R/W) of Causeway Boulevard to easterly apparent ROW of Focis Street. The project encompassed approximately 10,400 linear feet, with cross-sections and elevations surveyed included as part of the scope. (\$18,350 (fee); 2020)

Avenue D Drainage Improvements (Phase VIII: Allo Street), Metairie, Jefferson Parish, LA. BFM executed a Route Topographic Survey for the project; the full scope plan & profile included all services, utilities, properties, elevations and items necessary to perform any and all engineering and construction work. The project area (Allo Street) extended from 4th Street to 6th Street. (\$12,855 (fee); 2019)

Bissonet Plaza Drainage Improvements (Phase 1), Metairie, Jefferson Parish, LA. BFM prepared a Route Topographic Survey for Phase 1 of the project, located at Elmwood Parkway and Craig Avenue. This project built upon work executed by the firm for a previous extensive surveying project involving Bissonet Plaza subdivision; this allowed for BFM to build upon established surveys to save time and expenses. Surveying for each element of the project included services included confirming all controls and benchmarks, topographic features, location of improvements and utilities, location of natural elements as applicable, and notation of right-of-way points. (\$7,980 (fee); 2020)

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Kevin A. Roberts
CADD Technician

Project Assignment:

CADD Technician

Name of Firm with which associated:

BFM CORPORATION, LLC
Professional Land & Hydrographic Surveying

Years experience with this Firm:

4 years (joined BFM in 2018); 37 years total (1985)

Education: Degree(s)/Year/Specialization:

A.D., 1999, Drafting & Design, Louisiana Technical College
Coursework, 1994-1997, Nunez Community College
Coursework, 1984-1988, Delgado Community College
Coursework, 1982-1983, University of New Orleans

Active registration: Year first registered/discipline:

NA

Other experience and qualifications relevant to the proposed Project:

Mr. Roberts has experience with civil engineering, offshore engineering, water purification systems, and general architectural and construction design & terminology. He obtained his A.D. in Drafting in 1999, and has taken additional coursework throughout his career.

Orange Lane Pump Station Project, Grand Isle, Jefferson Parish, LA. The project consists of a new storm water pumping station on the intersection of Orange Lane at Orleans Avenue in Grand Isle, Louisiana. The scope of services includes obtaining topographical survey information and the preparation of a drainage map for the project. Phase 1 of the project involved the topographic and right of way surveying services; BFM conducted a site topographic survey at the proposed lift station site and provided boundary surveying to determine rights of way. Phase 2 of the project established the Drainage Map. BFM located all drainage structures within the Limits of Survey; this included ditches, culverts, drain inlets, and catch basins. A drone survey was executed to gather a 25 ft elevation grid throughout the project area. (\$32,280 (fee); 2020)

Holly Drive Drainage Project, Lewisburg Estates Subdivision, Mandeville, St. Tammany Parish, LA. BFM provided boundary with topographic surveying of the project site (multiple lots) in the Lewisburg Estates Subdivision for the drainage project. (\$13,392 (fee); 2019)

TEC Professional Services Questionnaire

KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:

Name & Title:

Dawn Hoffman
Researcher/Archivist

Project Assignment:

Researcher/Archivist

Name of Firm with which associated:

BFM CORPORATION, LLC
Professional Land & Hydrographic Surveying

Years experience with this Firm:

13 years (joined BFM in 2009); 25 years total (1997)

Education: Degree(s)/Year/Specialization:

A.D., 1999, Computer-Aided Drafting, Southeast College of Technology
Certificate, 2003, Introduction to ArcGIS, Louisiana State University

Active registration: Year first registered/discipline:

NA

Other experience and qualifications relevant to the proposed Project:

West Bank Subsurface Drainage Improvement Project, Phase II, Bellemeade Boulevard to the Violet Canal Discharge, Jefferson Parish, LA. BFM provided topographic surveying for the project, which encompassed Bellemeade Boulevard from Briargrove to Brookmeade and Brookmeade from Bellemeade to the Violet Canal Discharge. (\$16,108 (fee); 2010)

Bissonet Plaza Drainage Improvements (Phase 1), Metairie, Jefferson Parish, LA. BFM prepared a Route Topographic Survey for Phase 1 of the project, located at Elmwood Parkway and Craig Avenue. This project built upon work executed by the firm for a previous extensive surveying project involving Bissonet Plaza subdivision; this allowed for BFM to build upon established surveys to save time and expenses. Surveying for each element of the project included services included confirming all controls and benchmarks, topographic features, location of improvements and utilities, location of natural elements as applicable, and notation of right-of-way points. (\$7,980 (fee); 2020)

Avenue D Drainage Improvements (Phase VIII: Allo Street), Metairie, Jefferson Parish, LA. BFM executed a Route Topographic Survey for the project; the full scope plan & profile included all services, utilities, properties, elevations and items necessary to perform any and all engineering and construction work. The project area (Allo Street) extended from 4th Street to 6th Street. (\$12,855 (fee); 2019)

TEC Professional Services Questionnaire

L. Work by Firm or Joint-Venture members which best illustrates current qualifications relevant to this Project. Please include any and all work performed for Jefferson Parish. Please attach additional pages if necessary.

PROJECT NO. 1

Project Name, Location, and Owner's Contact Information:	Nature of Firm's Responsibility:	
<p>Bissonet Plaza Drainage Improvements (Phase 1, Elmwood Parkway and Craig Avenue), Metairie, Jefferson Parish, Louisiana</p> <p>Meyer Engineers Ltd. 4937 Hearst St. Ste. B Metairie LA 70001</p> <p>Ana Theriot, P.E., 504-885-9892</p>	<p>BFM prepared a Route Topographic Survey for Phase 1 of the project, located at Elmwood Parkway and Craig Avenue. This project built upon work executed by the firm for a previous extensive surveying project involving Bissonet Plaza subdivision; this allowed for BFM to build upon established surveys to save time and expenses. Surveying for each element of the project included services included confirming all controls and benchmarks, topographic features, location of improvements and utilities, location of natural elements as applicable, and notation of right-of-way points.</p>	
Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
2020 March	N/A	\$7,980 (fee)

PROJECT NO. 2

Project Name, Location, and Owner's Contact Information:	Nature of Firm's Responsibility:	
<p>Lapalco Boulevard Bridge at Harvey Canal, (PW 2017-046-RBP; DOTD H.004396), Jefferson Parish, Louisiana</p> <p>Hardesty & Hanover 3850 N Causeway Blvd Ste 1850 Metairie LA 70002</p> <p>Babak Naghavi, 504-962-9212 bnaghavi@hardestyhanover.com</p>	<p>BFM Corporation provided extensive surveying services for a topographic survey and right-of-way (R/W) determination for the project. Project elements included setting GPS Static Control (5 permanent control points), traversing a proposed survey line, and land topography surveying. Additional phases include hydrographic topography/bathymetric surveying of the project area, the right-of-way determination, and subsurface utility engineering (SUE). Drone Surveying was utilized throughout the project. A Route Topographic Survey was also included as part of the scope, as was Subsurface Utility Engineering (SUE).</p>	
Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
2020 September	N/A	\$478,744 (fee)

TEC Professional Services Questionnaire

PROJECT NO. 3		
Project Name, Location, and Owner's Contact Information:	Nature of Firm's Responsibility:	
<p>Orange Lane Drainage Pump Station Project (Drainage Mapping), Grand Isle, Jefferson Parish, Louisiana</p> <p>AIMS Group, Inc. 4421 Zenith Street Metairie LA 70001</p> <p>Lowell Pitré, P.E., 504-887-7045 ljp@aimsgroupinc.com</p>	<p>The project consists of a new storm water pumping station on the intersection of Orange Lane at Orleans Avenue. The scope includes obtaining topographical survey information and the preparation of a drainage map for the project. Phase 1 of the project involved the topographic and right of way surveying services; BFM conducted a site topographic survey at the proposed lift station site and provided boundary surveying to determine rights of way. Phase 2 of the project established the Drainage Map. BFM located all drainage structures within the Limits of Survey; this included ditches, culverts, drain inlets, and catch basins. A drone survey was executed to gather a 25 ft elevation grid throughout the project area.</p>	
Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
2020 August	N/A	\$32,280 (fee)

PROJECT NO. 4		
Project Name, Location, and Owner's Contact Information:	Nature of Firm's Responsibility:	
<p>Mounes Street Subsurface Drainage (Phase IV, Dickory Avenue to Elmwood Park Boulevard), Jefferson Parish, Louisiana</p> <p>APTIM 2424 Edenborn Avenue Suite 450 Metairie LA 70001</p> <p>Gene S. Gillen, P.E., 504-832-4881 info@aptim.com</p>	<p>BFM provided topographic surveying services for Phase IV of the project, part of a multiphase program to improve drainage issues on Mounes Street. Phase IV of the project involved a topographic survey of the project, extending from Dickory Avenue to Elmwood Park Boulevard. Services provided by BFM included establishment of a baseline, setting temporary benchmarks (TBMs), elevation surveys, locating improvements and utilities as well as natural elements, and right-of-way surveying.</p>	
Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
2017 December	N/A	\$23,540 (fee)

TEC Professional Services Questionnaire

PROJECT NO. 5		
Project Name, Location, and Owner's Contact Information:	Nature of Firm's Responsibility:	
<p>West Bank Expressway, Phase I Drainage Map, from Peters Road to Manhattan Boulevard, Jefferson Parish, Louisiana</p> <p>Design Engineering 3330 W Esplanade Ave Ste 205 Metairie LA 70002</p> <p>John Holtgreve, P.E., 504-836-2155 jholtgreve@dei-engr.com</p>	<p>BFM provided topographic surveying services for the preparation of a drainage map for the project area. The Limits of Survey extended 300 feet in each direction on Peters Road, beginning at the westernmost right-of-way (R/W) Peters Road and terminating at the eastern edge of the Manhattan Boulevard intersection with the West Bank Expressway. The survey area further extended southerly and northerly down side streets (for 150 feet from the R/W) along the West Bank Expressway. BFM provided elevation shots on the gutter line and first lane divider on the east and westbound sections of the elevated structure. Sections on the elevated structure were taken at 25-foot intervals. A digital elevation model was also prepared.</p>	
Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
2004 September	N/A	\$155,790 (fee)

PROJECT NO. 6		
Project Name, Location, and Owner's Contact Information:	Nature of Firm's Responsibility:	
<p>Metairie Road Drainage Evaluation, Metairie, Jefferson Parish, Louisiana</p> <p>GEC, Inc. 3445 N Causeway Blvd Ste 401 Metairie LA 70002-3779</p> <p>Jerome Lohmann, 504-207-6926 jlohmann@gecinc.com</p>	<p>BFM provided surveying services for this Drainage Evaluation Project (PW 2018-024-DR). The scope of services included a full Route Topographic Survey (includes all services, utilities, properties, elevations and items necessary to perform any and all engineering and construction work) from gutter line to gutter line along Metairie Road from the westerly apparent right-of-way (R/W) of Causeway Boulevard to easterly apparent R/W of Focis Street. The project encompassed approximately 10,400 linear feet, with cross-sections and elevations surveyed included as part of the scope.</p>	
Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
2020 May	N/A	\$18,350 (fee)

TEC Professional Services Questionnaire

PROJECT NO. 7		
Project Name, Location, and Owner's Contact Information:	Nature of Firm's Responsibility:	
<p>Coventry Drainage Pump Stations, Jefferson Parish, Louisiana</p> <p>ECM Consultants, Inc. 1301 Clearview Pkwy Ste 200 Metairie LA 70001</p> <p>Sunina Shrestha, 504-885-4080 SShrestha@ecmconsultants.com</p>	<p>BFM provided a Route Topographic Survey with Hydrographic Survey for the project, located in River Ridge, Louisiana. The limits of survey extended from r/w to r/w along Jefferson Highway. The levee and hydrographic survey area was noted as 400 feet wide (200 ft. in either direction of the extended centerline of Colonial Heights Road). Drone Surveying was a key element of the project. The hydrographic survey extended 500 feet into the river from the water's edge.</p>	
Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
2020	N/A	\$89,780 (fee)

PROJECT NO. 8		
Project Name, Location, and Owner's Contact Information:	Nature of Firm's Responsibility:	
<p>Waggaman Canal Relocation Survey (Jefferson Parish Landfill Sites), Jefferson Parish, Louisiana</p> <p>CDMSmith 1515 Poydras St Ste 1000 New Orleans LA 70112</p> <p>Jenny Bywater, P.E., 504-799-1168 bywaterje@cdmsmith.com</p>	<p>BFM Corporation was contracted to provide boundary, right-of-way, and topographic surveying services for the project site. Location of improvements were plotted within the designated limits of the survey; this included buildings, fences, light standards, traffic control devices, signage, structures, pavement, and other topographic features. Existing storm sewer and sanitary sewers were located using top of casing; invert elevations were provided on the survey.</p>	
Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
2016 February	N/A	\$19,940 (fee)

TEC Professional Services Questionnaire

PROJECT NO. 9		
Project Name, Location, and Owner's Contact Information:	Nature of Firm's Responsibility:	
<p>Revere Road W-3 Drainage Survey, St. Tammany Parish, Louisiana</p> <p>St. Tammany Parish Post Office Box 628 Covington LA 70434</p> <p>Beverly Mathies, 985-898-2520 procurement@stpgov.org</p>	<p>BFM provided surveying services to the St. Tammany Parish Government (Survey Services Contract No. 16-104) for this Drainage Survey project on Revere Road. The scope of services included a boundary survey with notation of improvements. Extensive records research was a precursor to the execution of the field survey. BFM also provided cross sections of Bayou De Zaire and of the drainage feature with notation of natural ground features, improvements, encroachments, and easements/servitudes. Upon completion, BFM provided AutoCAD maps and parcel property descriptions to the Parish.</p>	
Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
2020 May	N/A	\$18,960 (fee)

PROJECT NO. 10		
Project Name, Location, and Owner's Contact Information:	Nature of Firm's Responsibility:	
<p>Brewster Road Subsurface Drainage Improvements and Proposed Detention Pond, St. Tammany Parish, Louisiana</p> <p>N-Y Associates, Inc. 2750 Lake Villa Drive Metairie LA 70002</p> <p>Fred Mortali, 419-346-6282 fmortali@n-yassociates.com</p>	<p>BFM provided multiple surveying services (including Route Topographic, Right-of-Way, Drainage Study, Property Acquisition) for the Brewster Road Subsurface Drainage Improvements and Proposed Detention Pond in St. Tammany Parish. The Limits of Survey included the area of Brewster Road between LA HWY 1077 and LA HWY 21; BFM provided Temporary Benchmarks, location of all improvements (natural and man-made) and utilities (including drainage, sewer, and water structures), and coordination with State and Local agencies. BFM took cross-sections at 100 ft. intervals and property corners along the route to determine rights-of-way.</p>	
Completion Date (Actual or estimated):	Estimated Cost:	
	Entire Project:	Work for which Firm was Responsible:
2020 September	N/A	\$203,320 (fee)

TEC Professional Services Questionnaire

M. List all prior and/or on-going litigation between Firm and Jefferson Parish. Please attach additional pages if necessary.

Parties:		Status/Result of Case:
Plaintiff:	Defendant:	
1.	<div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: 80%;"> <p style="text-align: center;"><i>BFM Corporation is not currently, nor has it previously been involved, in litigation with Jefferson Parish.</i></p> </div>	
2.		
3.		
4.		

N. Use this space to provide any additional information or description of resources supporting Firm's qualifications for the proposed project.

BFM CORPORATION, LLC

Professional Land & Hydrographic Surveying

CRITERIA 1 • PROFESSIONAL TRAINING AND RELEVANT PROJECT EXPERIENCE

Established in 1982, **BFM Corporation, LLC, Professional Land & Hydrographic Surveying**, has provided services to public & private concerns throughout Louisiana and the Gulf South. The firm provides surveying services covering all facets of engineering, construction, and forensics; topographic, hydrographic, and high definition laser scanning.

BFM is a majority Woman-Owned Business Enterprise (WBE) as well as a Hudson Initiative certified Small & Emerging Business and Small Entrepreneurship in Louisiana.

Our capabilities include the following and more:

- **Topographic Surveying**
- **Drone Surveying / Photogrammic and LiDAR**
- **Bathymetric / Hydrographic Surveys**
- **Property, Boundary, and Right-of-Way Surveys**

TEC Professional Services Questionnaire

N. continued.

- **Maps, Cross-Sections, and Data Sets**
- **3D Laser Scanning**
- **Benchmarks**
- **Construction-Related Surveying**
- **Builder's Package Surveys**
- **American Land Title Association (ALTA) Surveys**

BFM's project work routinely involves **extensive records and related research** as an element of successful completion, as well as coordination with the client, agency or department. BFM has the personnel to make sure this is done correctly and expeditiously.

Our **Survey Field Crews** are equipped with Leica Viva and Leica Captivate Data Collectors, as well as Leica GPS Smart Antennas. Each GPS unit is linked to the Leica SmartNet Network, giving each crew the ability for Real Time Kinematic Positioning (RTK), derived from the Global Navigation Satellite System (GNSS). Furthermore, each crew is outfitted with Leica TS series robotic total stations, simplifying and expediting projects. BFM can also use in-house drones and 3D scanners to further analyze sites and projects. BFM's crews are trained to use this equipment to its full potential to maximize accuracy and efficiency in the field.

BFM offers **Drone Surveying Services**, featuring a DJI Matrice 600 Pro drone outfitted with a Sony A7R3 42-megapixel camera, Pixhawk Triggering System, VMAP PPK system, and an A3 Pro Flight Controller. It can capture 50 acres of land in that time (with a flight ceiling of 165 feet, pixel quality is 0.71 CM). This allows BFM to quickly & accurately capture data and facilitates quicker field work to produce highly accurate and precise surveying information. Deliverables feature Clean Point Cloud, 3D Mesh, Orthomosaic, and AutoCAD DWG Topographic.

BFM's **3D modeling capabilities** allow us to process & model for any design purpose. High-definition scanner data is processed using software from Leica and Autodesk. BFM is working on non-traditional survey deliverables, including virtual tours, live walkthroughs, detailed pipe rack modeling, and modeling for use with Autodesk Revit Architecture.

When needed, BFM Corporation provides **bathymetric surveying** to handle any **hydrographic surveying** tasks. For large rivers and bodies of water, BFM is equipped with Teledyne Odom Hydro Solutions' Hydro Trac Single Beam Echo Sounder. For smaller bodies of water, BFM uses an SL20 Remote Controlled Boat equipped with CEE Scope Dual Channel Echo Sounder. The firm uses Hypack Software to process collected data. Further, BFM can execute multi-beam scans, side scans and magnetometer surveys upon request.

Please refer to the projects presented in Item L of this form as well as our personnel bios for an overview of relevant project work executed by BFM Corporation.

TEC Professional Services Questionnaire

N. continued.

CRITERIA 2 • CAPACITY FOR TIMELY COMPLETION OF NEWLY-ASSIGNED WORK

BFM Corporation has the manpower and equipment to execute any surveying task within the reasonable time set forth by the contract or project engineer. It is our continual goal to keep this reputation solid. We establish base costs and fees for our services, and work with our clients to meet all project budgets. Our workload and scheduling, and proximity to the project site, will allow for quick assignment of personnel to any directed project.

BFM Corporation's **Ralph P. Fontcuberta, Jr., PLS**, is a **Louisiana-Registered Professional Land Surveyor (since 1974)** and meets or exceeds any minimum requirements for any surveying project. He has been **providing surveying services in Louisiana for over 50 years** and brings an almost incalculable wealth of experience in the region to any project, especially in Southeast Louisiana.

BFM's **Chad M. Poché, P.E.** brings **more than 25 years of experience** to assist in completing projects on time and within budget. He has been a consulting geotechnical engineer for more than 20 years in South Louisiana and has been the geotechnical engineer of record for thousands of projects throughout his career.

Our personnel included **multiple survey crews** and a **fully-staffed drafting department** to handle any project needs; they are thoroughly trained and extensively familiar with the region and needs of various types of surveying projects.

CRITERIA 3 • LOCATION OF PRINCIPAL OFFICE

BFM has called **Jefferson Parish home office location since the firm's inception in 1982**; our principal office is located in Jefferson Parish at **15 Veterans Memorial Boulevard** in Kenner.

CRITERIA 4 • ADVERSARIAL LEGAL PROCEEDINGS WITH PARISH

BFM Corporation is **not involved in litigation with Jefferson Parish** nor with any of our clients, as is noted in *Item M* of this form.

CRITERIA 5 • PRIOR SUCCESSFUL COMPLETION OF PROJECTS

For nearly 40 years, BFM Corporation has completed thousands of projects throughout Jefferson Parish and Southeast Louisiana, both to municipal and various private clients, similar to the project at hand, not to mention other drainage projects in a wide range of sizes, from small lot to Parish-wide endeavors. **Multiple examples of this work are included throughout this form in both the Personnel Résumés section (Item K) and Representative Project Work (Item L).** Further, BFM has worked with virtually every municipality in the region. We enjoy a high repeat-business rate with all our clients. We offer the following specific references for contact:

- **Mark R. Drewes, P.E.**, Director, Jefferson Parish Public Works Department (504-736-6783 | JPPW@jeffparish.net)
- **Neil Schneider, CCM, P.E.**, Director, Capital Projects, Jefferson Parish Public Works Department (504-736-6783 | JPPW@jeffparish.net)

TEC Professional Services Questionnaire

N. continued.

- **Angela DeSoto, P.E.**, Director of Engineering, Jefferson Parish (504-736-6511 | ADeSoto@jeffparish.net)
- **Sid Trouard, P.E.**, Program Manager, Jefferson Parish Sewerage Capital Improvement Program (504-736-6386 | STrouard@jeffparish.net)
- **Tom Schreiner**, Deputy CAO, Public Works & Capital Projects, City of Kenner (504-468-7515 | tschreiner@kenner.la.us)
- **Greg Cromer**, Mayor, City of Slidell (985-646-4333 | gcromer@cityofslidell.org)

Our professional work history is exemplary. We strive to provide on-time and technically thorough project deliverables at the budget set by our clients.

CRITERIA 6 • SIZE OF FIRM

As noted, BFM has the manpower and equipment to execute any surveying task within the reasonable time set forth by the contract or project engineer. BFM has no issue with meeting the project deadlines set forth by our clients, both municipal and private. It is our continual goal to keep this reputation solid. Further, we establish base costs and fees for our services, and work with our clients to meet all project budgets.

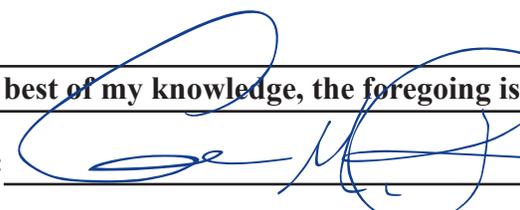
As noted in **item E of this form**, BFM currently has a **full time staff of two dozen people**, including **two Registered Professional Land Surveyors, Survey Field Crew Personnel, and AutoCAD drafting personnel**, as well as **complete administrative and support staff**.

CRITERIA 7 • PAST PERFORMANCE ON PARISH CONTRACTS

BFM has provided surveying services in **Jefferson Parish since 1982**, both **directly to Parish agencies and as a consultant to firms serving the Parish**. The firm has executed many hundreds of projects in the Parish, including both direct Parish projects and agency projects (CPRA, Louisiana DOTD, etc.), not to mention the scores of surveying projects for private individuals and industry.

As noted, Mr. Fontcuberta has **over half a century of professional land surveying experience**, including nearly 40 years with BFM. He has provided professional surveying services for **thousands of projects for and throughout Jefferson Parish**. Additional information beyond the scope of this RFQ response is available upon request.

O. To the best of my knowledge, the foregoing is an accurate statement of facts.

Signature:  Print Name: Chad M. Poché, P.E.
Title: Executive Vice President Date: March 10, 2022

ECM Consultants, Inc.

1301 Clearview Parkway, Suite 200, Metairie, Louisiana 70001