



Fourrier & de Abreu  
Engineers, L.L.C.  
Environmental and Civil Engineering

# **FOURRIER & DE ABREU ENGINEERS**

## **SOQ to Provide Laboratory Services for Inspection of Materials and Equipment for Public Works Projects (Resolution 138808)**



FOURRIER & DE ABREU ENGINEERS, LLC

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**March 31, 2022**

Jefferson Parish Purchasing Department  
200 Derbigny Street  
General Government Building, Suite 4400  
Gretna, LA 70053

Attention: Ms. Melissa Ovalle, Buyer

**Re: Statement of Qualifications (SOQ 22-012)  
SOQ to Provide Laboratory Services for Inspection of  
Materials and Equipment for Public Works Projects  
Resolution 138808  
Jefferson Parish, Louisiana**

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Dear Ms. Ovalle:

Fourrier & de Abreu Engineers, L.L.C. (FDAE) is pleased to submit our Statement of Qualifications (SOQ) for the referenced project.

We think you will find that FDAE provides unmatched qualifications and experience with regard to providing geotechnical engineering, geotechnical laboratory services, and construction materials testing services for soil investigations and concrete testing, and that our **DBE-certified** firm meets or exceeds all requirements outlined in the Parish's solicitation for SOQ's.

**FDAE's AASHTO-accredited and LELAP-accredited laboratory**, located in our Baton Rouge office, employs a rigorous Quality Management System (QMS), so that the testing results received by our clients are accurate, precise, and meet all required technical standards. All of our equipment is calibrated and inspected in accordance with the most up-to-date quality management standards. In addition, our dedicated team of technicians is fully qualified to serve our clients' construction materials testing needs.

FDAE understands the specialized needs for projects of this nature, since we provide the same type of services for several other Parish governments in Louisiana. Each Evaluation Criterion from the Parish's Public Notice is listed below in **bold text** (#1 to #7); FDAE's response immediately follows each criterion.

**1) PROFESSIONAL TRAINING AND EXPERIENCE IN RELATION TO THE TYPE OF WORK REQUIRED FOR LABORATORY SERVICES FOR INSPECTION OF MATERIALS AND EQUIPMENT**

FDAE's principals are Professional Civil and Environmental Engineers registered in the State of Louisiana. Dr. de Abreu has **30** years of extensive experience in geotechnical engineering and laboratory testing, with the last 17 years of his experience being in Louisiana. Mr. Fourrier has **22** years of extensive experience in providing geotechnical engineering and overseeing laboratory testing for municipalities and private companies in Louisiana. In addition, our Vice President and Engineering Manager, Mr. Dale Steib, has **27** years of extensive experience in inspection, construction management, and quality assurance & quality control (QA/QC) services.

During the course of their careers, Mr. Fourrier and Dr. de Abreu careers have provided geotechnical engineering, laboratory and construction oversight services for several Parish Governments in Louisiana, including: Tangipahoa Parish; St. Mary Parish; DeSoto Parish; St. Landry Parish, among others.

We have on staff 4 Professional Engineers and 3 Engineer Interns registered in the State of Louisiana with specialized training and experience in geotechnical engineering, geotechnical and concrete laboratory testing and/or construction material testing and inspection. Most of our Engineers hold advanced degrees (MSCE or higher). We have on staff 1 Professional Geoscientist and 8 Civil Engineering Technicians with decades of experience working at geotechnical and laboratory & field-testing projects in Louisiana.

Our Dr. de Abreu is an international geotechnical engineering expert and has provided geotechnical services for hundreds of facilities in Louisiana and around the world for more than 30 years. He is one of the very few D.GE (Diplomate in Geotechnical Engineering) in Louisiana as certified by the Academy of Geo-Professionals of the American Society of Civil Engineers (ASCE). In the past, Dr. de Abreu was also the co-instructor of the Soil Mechanics Laboratory discipline at the University of New Orleans (UNO). Recently, Dr. de Abreu instructed graduate level courses at UNO on solid waste management. He is currently FDAE's Laboratory Director.

FDAE is committed to providing the Jefferson Parish Government with the highest quality professional and technical services with a constant commitment to the health and safety of its employees. All of our projects have been completed on time and within budget. The Jefferson Parish Government can rest assured that should this project be awarded to FDAE, you will be working closely with our two principals who will directly oversee and complete this project.

FDAE is also a Louisiana company, with our main office located in Baton Rouge. We are a **DBE-certified small business** and have provided our expertise on hundreds of projects involving government, industrial, and commercial interests.

A list of our laboratory capabilities is presented on Appendix B of this SOQ.

## **2) CAPACITY FOR TIMELY COMPLETION OF WORK**

FDAE is sufficiently staffed to properly assist with laboratory testing, soils investigations and concrete testing for the Jefferson Parish Government. One of our primary business functions is the preparation and submittal of geotechnical investigations and construction quality assurance certification reports, which include inspection, field and laboratory testing, and certification by a Professional Engineer; therefore, FDAE is ready and able to handle any and all needs that may arise during the course of projects.

Our current and projected workloads will not prevent our firm from devoting the resources to provide the required services in a timely manner.

Our office in Baton Rouge is fully equipped with all necessary software and equipment needed for this project. This includes a full-size drawing plotter, printers, copiers, scanners, computers, laptops, and the most update-to-date software (ElmTree CMT Software, AutoCAD Civil 3D 2022, Rocscience, Slope/W and numerous other specialized engineering software). In addition, FDAE has all manner of field equipment that may be required such as water and soil sampling equipment, nuclear density gauge, water meters, survey equipment, and concrete testing equipment.

Our **AASHTO-Accredited** and **LELAP-Accredited** Construction Materials Testing (CMT) laboratory, also located in our Baton Rouge office, is fully equipped with the most modern testing equipment and employs a rigorous Quality Management System (QMS), so that the testing results that our clients receive are accurate, precise, and meet all required technical standards. All of our equipment is calibrated and inspected in accordance with the most up-to-date quality management standards. More details of our laboratory are presented in Appendix B.

By selecting FDAE for this project, the Jefferson Parish Government can avoid many of the inefficiencies and pitfalls associated with using large and/or out-of-state firms such as multi-layered duplicative staff, excessive travel costs, heavy reliance on subconsultants, and corporate-stipulated revenue requirements.

**3) LOCATION OF PRINCIPAL OFFICE WHERE WORK WILL BE PERFORMED**

FDAE's primary office is located in Baton Rouge, Louisiana. However, FDAE's Dr. de Abreu resides in New Orleans and will be readily available for consultation by the Jefferson Parish Government.

FDAE is in full expansion and intends to open an office in the New Orleans metro area. If this project is awarded to FDAE, the timeline for opening FDAE's New Orleans metro area office will certainly be expedited, and Jefferson Parish will likely be the selected location.

**4) ADVERSARIAL LEGAL PROCEEDINGS BETWEEN THE PARISH AND THE PERSON OR FIRM**

FDAE has never had a legal proceeding (adversarial or otherwise) between it and the Parish or between it and any other entity.

**5) PRIOR SUCCESSFUL COMPLETION OF PROJECTS REQUIRING LABORATORY SERVICES FOR INSPECTION OF MATERIALS AND EQUIPMENT FOR WHICH FIRM HAS PROVIDED VERIFIABLE REFERENCES**

Some of the main clients to whom FDAE has routinely provided soils investigation services and/or geotechnical engineering in the last two years include:

- Tangipahoa Parish Government
- St. Mary Parish Government
- DeSoto Parish Police Jury
- Tensas Parish Police Jury
- St. Landry Parish Solid Waste Disposal District
- Union Parish Police Jury
- Vermilion Parish Police Jury
- West Carroll Parish Police Jury
- Waste Connections
- Waste Management
- Republic Services
- ExxonMobil
- International Paper
- R360 Environmental Solutions
- Eagle Environmental Services
- Trade Construction Company
- Wilson Kimble Contractors
- Beard Construction Group
- Turner Specialty Services

Summary descriptions of a few of our relevant projects are provided in the Jefferson Parish Technical Evaluation Committee (TEC) Questionnaire in Appendix A. A more detailed listing of our past projects is provided in Dr. de Abreu's and Mr. Fourrier's resumes in Appendix C. References for any client are available upon request.

FDAE's Principal Dr. de Abreu, a Diplomate in Geotechnical Engineering (D.GE) with Master and Ph.D. degrees in Geotechnical Engineering, resides in New Orleans and will be readily available for consultation by the Jefferson Parish Government, as needed. In addition, we will dedicate one of our seven highly qualified Civil Engineering Technicians to work exclusively for the Jefferson Parish Government, if needed.

As noted above, FDAE and its principals have maintained a constant and ongoing working relationship with several Parish Governments in Louisiana since its inception. FDAE's principals have overseen the execution of numerous multi-million-dollar Public Works Contracts. Listed below are a few recent examples, which included soils investigations, geotechnical engineering, laboratory testing services, construction inspection, and quality assurance certification reporting:

- 2012, St. Mary Parish Government, Harold J. "Babe" Landry Landfill, Design and Construction Inspection and Quality Assurance of Cell 4 – Phase II, approximate \$6 million budget.
- 2012, Tangipahoa Parish Government, Tangipahoa Parish Regional Solid Waste Facility, Design and Construction Inspection and Quality Assurance of Cell 12, approximate \$2 million budget.
- 2013, DeSoto Parish Police Jury, Mundy Landfill, Design and Construction Inspection and Quality Assurance of Landfill Cell VIII-Stage 3, approximate \$3.5 million budget.
- 2014, St. Mary Parish Government, Harold J. "Babe" Landry Landfill, Design and Construction Inspection and Quality Assurance of Admin Area Repaving Project, approximate \$600,000 budget.
- 2015, DeSoto Parish Police Jury, Mundy Landfill, Design and Construction Inspection and Quality Assurance of Landfill Cell VIII-Stage 4, approximate \$3.5 million budget.
- 2015, St. Mary Parish Government, Harold J. "Babe" Landry Landfill, Design and Construction Inspection and Quality Assurance of Landfill Access Road Paving Project, approximate \$1 million budget.
- 2016, St. Landry Parish Solid Waste Disposal District, St. Landry Parish Landfill, Design and Construction Inspection and Quality Assurance of 4-acre Landfill Cell, approximate \$1 million budget.

- 2018, St. Mary Parish Government, Harold J. “Babe” Landry Landfill, Design and Construction Inspection and Quality Assurance of Citizens’ Dump, approximate \$1 million budget.
- 2018, DeSoto Parish Police Jury, Mundy Landfill, Design and Construction Inspection and Quality Assurance of Landfill Cell VIII-Stage 5 and Sedimentation Pond No. 3, approximate \$3.5 million budget.
- 2019, Tangipahoa Parish Government, Tangipahoa Parish Regional Solid Waste Facility, Design and Construction Inspection and Quality Assurance of Landfill Cell 14, approximate \$2 million budget.
- 2021, St. Landry Parish Solid Waste Disposal District, St. Landry Parish Landfill, Design and Construction Inspection and Quality Assurance of Landfill Cells 9, 10, 16 & 17, approximate \$2 million budget.
- 2018-2022, Tangipahoa Parish Government, Tangipahoa Parish Regional Solid Waste Facility, Design and Construction Inspection and Quality Assurance of Landfill Cells 13-15, approximate \$6 million budget.

On these projects, there were absolutely no issues with delays, cost overruns, and/or inadequacies for which FDAE’s principals were held to be at fault.

**6) SIZE OF FIRM, CONSIDERING THE NUMBER OF PROFESSIONAL AND SUPPORT PERSONNEL REQUIRED TO PERFORM LABORATORY SERVICES, INCLUDING DRAFTING OF REPORTS, PLANS AND SPECIFICATIONS**

We have on staff 4 Professional Engineers and 3 Engineer Interns registered in the State of Louisiana with specialized training and experience in geotechnical engineering, laboratory testing and/or construction material testing and inspection. Most of our Engineers hold advanced degrees (MSCE or higher). We have on staff 1 Professional Geoscientist, 1 Professional Land Surveyor, 1 Surveying Technician, 1 CADD Manager, and 8 Civil Engineering Technicians with decades of experience working on geotechnical laboratory & field-testing projects in Louisiana. FDAE also has 3 administrative support personnel for the above-mentioned professionals. FDAE’s current total number of employees and Principals is 22.

FDAE is committed to providing the Jefferson Parish Government with the highest quality professional and technical services with a constant commitment to the health and safety of its employees. All of our projects have been completed on time and within budget. The Jefferson Parish Government can rest assured that should this project be awarded to FDAE, you will be working closely with one of our Principals who will directly oversee and complete the projects.

**Ms. Melissa Ovalle, Buyer**  
**March 31, 2022**  
**Page 7 of 7**

**7) PAST PERFORMANCE BY PERSON OR FIRM ON PARISH CONTRACTS**

In December 2019, FDAE was issued approval from the Jefferson Parish Government as a standby consultant to provide laboratory services relating to materials testing and geotechnical services on an as-needed basis (Resolution No.134453). To date, work has not yet begun under this contract but FDAE eagerly awaits the opportunity to serve the Jefferson Parish Government. This is the only direct contract FDAE has with the Jefferson Parish Government.

FDAE did provide engineering services as a technical subconsultant to Intertek-PSI for the 2018 Leachate Aeration Pond Repair Project conducted at the Jefferson Parish Sanitary Landfill.

FDAE is currently providing laboratory and field testing for Cell 25 for River Birch at the Jefferson Parish Sanitary Landfill. FDAE has also provided the design drawings for Cell 25.

Previously, FDAE has also prepared the landfill's annual Solid Waste Certification of Compliance Report for LRLC for submittal to LDEQ.

We sincerely thank you for your time and consideration. Please contact us if you have any questions or if you need additional information.

We look forward to being selected for this project and to working with the Jefferson Parish Government.

Very truly yours,

**FOURRIER & DE ABREU ENGINEERS, LLC**



Ricardo C. de Abreu, Ph.D., P.E., D.GE, F.ASCE  
Principal



Jonathan E. Fourrier, P.E., M.S.C.E.  
Principal

Enclosures submitted

The following five (5) appendices are included and complete this submittal:

- Appendix A     FDAE Organizational Chart
- Appendix B     FDAE Laboratory Capabilities
- Appendix C     FDAE Resumes of Key Personnel for the Project
- Appendix D     FDAE Certifications

**APPENDIX A**

**FDAE TECHNICAL EVALUATION  
COMMITTEE (TEC) QUESTIONNAIRE**

## TEC Professional Services Questionnaire

**A. Project Name and Advertisement Resolution Number:**

**B. Firm Name & Address:**

**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:**

**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.**

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

<input type="checkbox"/> Administrative	<input type="checkbox"/> Estimators	<input type="checkbox"/> Specification Writers
<input type="checkbox"/> Architects (Licensed)	<input type="checkbox"/> Geologists	<input type="checkbox"/> Structural Engineers
<input type="checkbox"/> Chemical Engineers	<input type="checkbox"/> Geotechnical Engineers	<input type="checkbox"/> Graduate Engineers
<input type="checkbox"/> Civil Engineers	<input type="checkbox"/> Interior Designers	<input type="checkbox"/> Project Managers
<input type="checkbox"/> Construction Inspectors	<input type="checkbox"/> Landscape Architects	<input type="checkbox"/> Clerical
<input type="checkbox"/> Ecologists	<input type="checkbox"/> Land Surveyor	<input type="checkbox"/> Grant/Funding Specialist
<input type="checkbox"/> Electrical Engineers	<input type="checkbox"/> Mechanical Engineers	<input type="checkbox"/> Sanitary Engineers
<input type="checkbox"/> Engineer Intern	<input type="checkbox"/> Environmental Engineers	
<input type="checkbox"/> Professional Land Surveyors		<input type="checkbox"/> <b>TOTAL</b>

**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.**

**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.

2.

**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.		
2.		
3.		

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

\_\_\_\_\_

**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:**

**Project Assignment:**

**Name of Firm with which associated:**

**Years' experience with this Firm:**

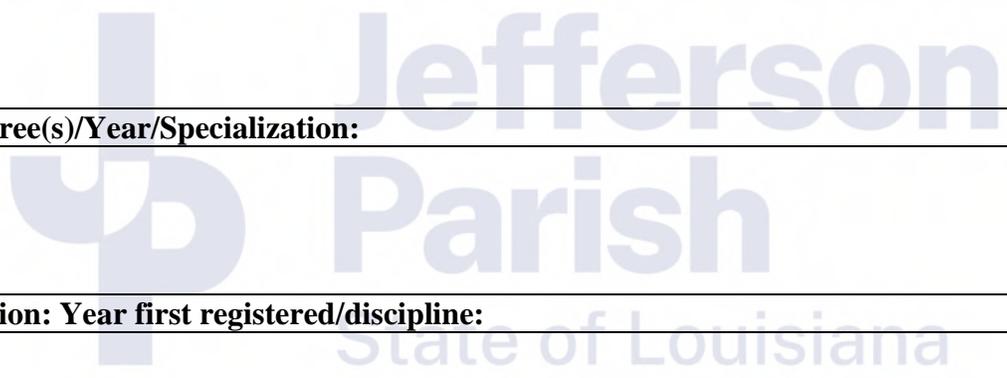
**Education: Degree(s)/Year/Specialization:**

**Active registration: Year first registered/discipline:**

**Other experience and qualifications relevant to the proposed Project:**

**TEC Professional Services Questionnaire**

<b>KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:</b>
<b>Name &amp; Title:</b>
<b>Project Assignment:</b>
<b>Name of Firm with which associated:</b>
<b>Years' experience with this Firm:</b>
<b>Education: Degree(s)/Year/Specialization:</b>
<b>Active registration: Year first registered/discipline:</b>
<b>Other experience and qualifications relevant to the proposed Project:</b>



**TEC Professional Services Questionnaire**

<b>KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:</b>
<b>Name &amp; Title:</b>
<b>Project Assignment:</b>
<b>Name of Firm with which associated:</b>
<b>Years' experience with this Firm:</b>
<b>Education: Degree(s)/Year/Specialization:</b>
<b>Active registration: Year first registered/discipline:</b>
<b>Other experience and qualifications relevant to the proposed Project:</b>

**TEC Professional Services Questionnaire**

<b>KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:</b>
<b>Name &amp; Title:</b>
<b>Project Assignment:</b>
<b>Name of Firm with which associated:</b>
<b>Years' experience with this Firm:</b>
<b>Education: Degree(s)/Year/Specialization:</b>
<b>Active registration: Year first registered/discipline:</b>
<b>Other experience and qualifications relevant to the proposed Project:</b>

**TEC Professional Services Questionnaire**

<b>KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:</b>
<b>Name &amp; Title:</b>
<b>Project Assignment:</b>
<b>Name of Firm with which associated:</b>
<b>Years' experience with this Firm:</b>
<b>Education: Degree(s)/Year/Specialization:</b>
<b>Active registration: Year first registered/discipline:</b>
<b>Other experience and qualifications relevant to the proposed Project:</b>

## TEC Professional Services Questionnaire

<b>+KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:</b>
<b>Name &amp; Title:</b>
Chad E. Dabney, Concrete and Soil/Field Technician
<b>Project Assignment:</b>
Concrete and Soil/Field Technician
<b>Name of Firm with which associated:</b>
Fourrier & de Abreu Engineers, L.L.C.
<b>Years' experience with this Firm:</b>
1 year
<b>Education: Degree(s)/Year/Specialization:</b>
High School Diploma/2005 Studied at Phoenix University, Business Foundations – 60 credits
<b>Active registration: Year first registered/discipline:</b>
ACI Concrete Field Testing Technician-Grade 1
<b>Other experience and qualifications relevant to the proposed Project:</b>
Mr. Dabney is a Troxler certified soil technician who has 7 years of experience in providing soils QA/QC field compaction testing and inspection services on various construction projects for the following clients: City of Baton Rouge/Parish of East Baton Rouge Public Works Department, City of New Orleans Public Works Department, and U.S. Army Corps of Engineers, New Orleans District. He has worked on environmental construction projects for the following clients: Waste Connections, St. Landry Parish, DeSoto Parish Police Jury, and Tangipahoa Parish Government. Relevant experience includes soil compaction testing, foundation inspections, borrow sites investigations, proof roll inspections, drilled shaft inspections, and concrete testing.

## TEC Professional Services Questionnaire

<b>+KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:</b>
<b>Name &amp; Title:</b>
Corey G. May, Concrete and Soil/Laboratory/Field Technician
<b>Project Assignment:</b>
Concrete and Soil/Laboratory/Field Technician. Will oversee and conduct daily laboratory test assignments as instructed by the project manager.
<b>Name of Firm with which associated:</b>
Fourrier & de Abreu Engineers, L.L.C.
<b>Years' experience with this Firm:</b>
14 months
<b>Education: Degree(s)/Year/Specialization:</b>
Glen Oaks Magnet High School Attended Southern University/2009
<b>Active registration: Year first registered/discipline:</b>
ACI Concrete Field Testing Technician-Grade 1 ACI Concrete Strength Testing Technician
<b>Other experience and qualifications relevant to the proposed Project:</b>
Mr. May is a Troxler certified soil technician who has 6 years of experience in providing soils QA/QC field compaction testing, laboratory soils testing and inspection services for various construction projects for the following clients: City of Baton Rouge/Parish of East Baton Rouge Public Works Department, City of New Orleans Public Works Department, and U.S. Army Corps of Engineers, New Orleans District. He has worked on environmental construction and geotechnical engineering projects for the following clients: St. Mary Parish Government, Waste Connections, St. Landry Parish, DeSoto Parish Police Jury, and Tangipahoa Parish Government. Relevant experience includes soil compaction testing, foundation inspections, borrow sites investigations, and proof roll inspections. Mr. May also has extensive laboratory soils testing experience for the following tests: Atterberg limits, particle size analysis, soil unconfined compressive strength, unconsolidated-undrained triaxial compression strength, one-dimensional consolidation, specific gravity, rigid wall/flexible wall permeability testing, USCS soil classification, and organic content testing. Mr. May also has extensive field and laboratory concrete testing experience.

## TEC Professional Services Questionnaire

<b>+KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:</b>
<b>Name &amp; Title:</b>
Milton L. Reams, III, Concrete and Soil/Laboratory/Field Technician
<b>Project Assignment:</b>
Concrete and Soil/Laboratory/Field Technician
<b>Name of Firm with which associated:</b>
Fourrier & de Abreu Engineers, L.L.C.
<b>Years' experience with this Firm:</b>
9 months
<b>Education: Degree(s)/Year/Specialization:</b>
Bachelor of Science/2015/Civil Engineering
<b>Active registration: Year first registered/discipline:</b>
ACI Concrete Field Testing Technician-Grade 1
<b>Other experience and qualifications relevant to the proposed Project:</b>
<p>Mr. Reams is a Troxler certified soil technician who has 6 years of experience in providing soils QA/QC field compaction testing, laboratory soils testing and inspection services for various construction projects for the following clients: City of Baton Rouge/Parish of East Baton Rouge Public Works Department, City of New Orleans Public Works Department, and U.S. Army Corps of Engineers, New Orleans District. He has also worked on environmental construction and geotechnical engineering projects for the following clients: St. Mary Parish Government, Waste Connections, St. Landry Parish, DeSoto Parish Police Jury, and Tangipahoa Parish Government. Relevant experience includes soil compaction testing, foundation inspections, borrow sites investigations, and proof roll inspections. Mr. Reams has also extensive laboratory soils testing experience for the following tests: Atterberg limits, particle size analysis, rigid wall/flexible wall permeability testing, USCS soil classification, and organic content testing. Mr. Reams also has extensive field and laboratory concrete testing experience.</p>

## TEC Professional Services Questionnaire

<b>+KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:</b>
<b>Name &amp; Title:</b>
Nickie S. Perkins, Soil/Field Technician
<b>Project Assignment:</b>
Soil/Field Technician
<b>Name of Firm with which associated:</b>
Fourrier & de Abreu Engineers, L.L.C.
<b>Years' experience with this Firm:</b>
4.5 years
<b>Education: Degree(s)/Year/Specialization:</b>
Attended Robert E. Lee High School
<b>Active registration: Year first registered/discipline:</b>
N/A
<b>Other experience and qualifications relevant to the proposed Project:</b>
<p>Mr. Perkins is a Troxler certified soil technician who has 15 years of experience in providing soils QA/QC field compaction testing, laboratory soils testing and inspection services on various construction projects for the following clients: City of Baton Rouge/Parish of East Baton Rouge Public Works Department, and U.S. Army Corps of Engineers, New Orleans District. He has worked on environmental construction projects for the following clients: Waste Connections, Republic Services, St. Landry Parish, DeSoto Parish Police Jury, and Tangipahoa Parish Government. Relevant experience includes soil compaction testing, foundation inspections, borrow sites investigations, proof roll inspections, and drilled shaft inspections. Mr. Perkins also has extensive laboratory soils testing experience for the following tests: Atterberg limits, particle size analysis, USCS soil classification, and organic content testing.</p>

## TEC Professional Services Questionnaire

<b>+KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:</b>
<b>Name &amp; Title:</b>
Evelyn M. Naquin, Concrete and Soil/Field Technician
<b>Project Assignment:</b>
Concrete and Soil/Field Technician
<b>Name of Firm with which associated:</b>
Fourrier & de Abreu Engineers, L.L.C.
<b>Years' experience with this Firm:</b>
2.5 years
<b>Education: Degree(s)/Year/Specialization:</b>
Zachary High School/1996
<b>Active registration: Year first registered/discipline:</b>
ACI Concrete Field Testing Technician-Grade 1
<b>Other experience and qualifications relevant to the proposed Project:</b>
Ms. Naquin is a Troxler certified soil technician who has 9 years of experience in providing soils QA/QC field compaction testing and inspection services on various construction projects for the following clients: City of Baton Rouge/Parish of East Baton Rouge Public Works Department, and U.S. Army Corps of Engineers, New Orleans District. She has worked on environmental construction projects for the following clients: Waste Connections, Republic Services, St. Landry Parish, DeSoto Parish Police Jury, and Tangipahoa Parish Government. Relevant experience includes soil compaction testing, foundation inspections, borrow sites investigations, proof roll inspections, and drilled shaft inspections. Ms. Naquin also has extensive field concrete testing experience.

## TEC Professional Services Questionnaire

<b>+KEY PERSON, SPECIALIST, OR INDIVIDUAL CONSULTANT:</b>
<b>Name &amp; Title:</b>
Fredrick L. Dabney, Concrete and Soil/Field Technician
<b>Project Assignment:</b>
Concrete and Soil/Field Technician
<b>Name of Firm with which associated:</b>
Fourrier & de Abreu Engineers, L.L.C.
<b>Years' experience with this Firm:</b>
13 months
<b>Education: Degree(s)/Year/Specialization:</b>
Capital High School/2002
<b>Active registration: Year first registered/discipline:</b>
N/A
<b>Other experience and qualifications relevant to the proposed Project:</b>
Mr. Dabney is a Troxler certified soil technician who has 7 years of experience in providing soils QA/QC field compaction testing and inspection services on various construction projects for the following clients: City of Baton Rouge/Parish of East Baton Rouge Public Works Department, City of New Orleans Public Works Department, and U.S. Army Corps of Engineers, New Orleans District. He has worked on environmental construction projects for the following clients: Waste Connections, St. Landry Parish, DeSoto Parish Police Jury, and Tangipahoa Parish Government. Relevant experience includes soil compaction testing, foundation inspections, borrow sites investigations, proof roll inspections, and drilled shaft inspections. Mr. Dabney also has extensive field concrete testing experience.

**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**

<b>Project Name, Location and Owner's contact information:</b>	<b>Nature of Firm's Responsibility:</b>	
<b>Completion Date (Actual or estimated):</b>	<b>Estimated Cost:</b>	
	<b>Entire Project:</b>	<b>Work for which Firm was Responsible:</b>

**PROJECT NO. 2**

<b>Project Name, Location and Owner's contact information:</b>	<b>Nature of Firm's Responsibility:</b>	
<b>Completion Date (Actual or estimated):</b>	<b>Estimated Cost:</b>	
	<b>Entire Project:</b>	<b>Work for which Firm was Responsible:</b>

**TEC Professional Services Questionnaire**

<b>PROJECT NO. 3</b>		
<b>Project Name, Location and Owner's contact information:</b>	<b>Nature of Firm's Responsibility</b>	
<b>Completion Date (Actual or estimated)</b>	<b>Estimated Cost:</b>	
	<b>Entire Project:</b>	<b>Work for which Firm was Responsible:</b>

<b>PROJECT NO. 4</b>		
<b>Project Name, Location and Owner's contact information:</b>	<b>Nature of Firm's Responsibility</b>	
<b>Completion Date (Actual or estimated):</b>	<b>Estimated Cost:</b>	
	<b>Entire Project:</b>	<b>Work for which Firm was Responsible:</b>

**TEC Professional Services Questionnaire**

<b>PROJECT NO. 5</b>		
<b>Project Name, Location and Owner's contact information:</b>	<b>Nature of Firm's Responsibility:</b>	
<b>Completion Date (Actual or estimated):</b>	<b>Estimated Cost:</b>	
	<b>Entire Project:</b>	<b>Work for which Firm was Responsible:</b>

<b>PROJECT NO. 6</b>		
<b>Project Name, Location and Owner's contact information:</b>	<b>Nature of Firm's Responsibility:</b>	
<b>Completion Date (Actual or estimated):</b>	<b>Estimated Cost:</b>	
	<b>Entire Project:</b>	<b>Work for which Firm was Responsible:</b>

**TEC Professional Services Questionnaire**

<b>PROJECT NO. 7</b>		
<b>Project Name, Location and Owner's contact information:</b>	<b>Nature of Firm's Responsibility:</b>	
<b>Completion Date (Actual or estimated):</b>	<b>Estimated Cost:</b>	
	<b>Entire Project:</b>	<b>Work for which Firm was Responsible:</b>

<b>PROJECT NO. 8</b>		
<b>Project Name, Location and Owner's contact information:</b>	<b>Nature of Firm's Responsibility:</b>	
<b>Completion Date (Actual or estimated):</b>	<b>Estimated Cost:</b>	
	<b>Entire Project:</b>	<b>Work for which Firm was Responsible:</b>

**TEC Professional Services Questionnaire**

<b>PROJECT NO. 9</b>		
<b>Project Name, Location and Owner's contact information:</b>	<b>Nature of Firm's Responsibility:</b>	
<b>Completion Date (Actual or estimated):</b>	<b>Estimated Cost:</b>	
	<b>Entire Project:</b>	<b>Work for which Firm was Responsible:</b>

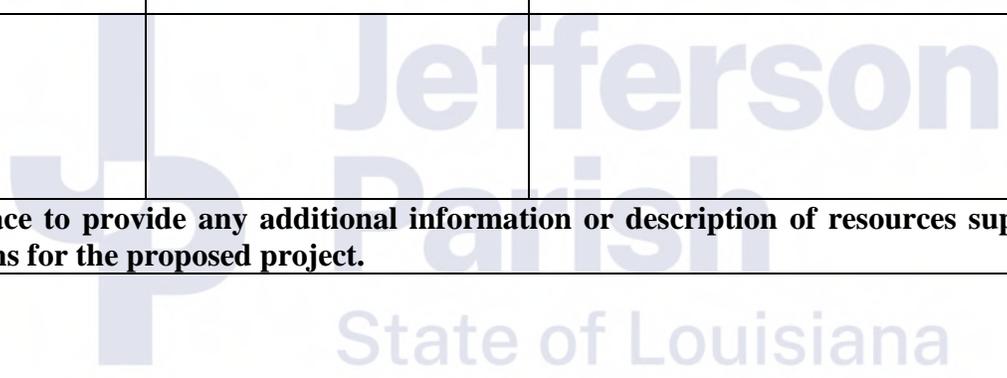
<b>PROJECT NO. 10</b>		
<b>Project Name, Location and Owner's contact information:</b>	<b>Nature of Firm's Responsibility:</b>	
<b>Completion Date (Actual or estimated):</b>	<b>Estimated Cost:</b>	
	<b>Entire Project:</b>	<b>Work for which Firm was Responsible:</b>

**TEC Professional Services Questionnaire**

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

<b>Parties:</b>		<b>Status/Result of Case:</b>
<b>Plaintiff:</b>	<b>Defendant:</b>	
1.		
2.		
3.		
4.		

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



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

**Signature:** \_\_\_\_\_ **Print Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_ **Date:** \_\_\_\_\_

# **APPENDIX B**

## **FDAE LABORATORY CAPABILITIES**

***Founded in 2016 through the merger of Fourrier Consulting Engineers and Solo Environmental Consultants, FOURRIER & DE ABREU ENGINEERS (FDAE) is a DBE-certified minority-owned company that maintains high standards for client satisfaction and provides innovative and cost-effective solutions. FDAE's business philosophy consists of a daily commitment to the ethics and principles of engineering, care for our employees, and dedication to our clients, all of which has made us the premier solid waste and geotechnical engineering company in Louisiana.***

***Our 11,000 sq. ft. facility comprised of office space and a state-of-the-art geotechnical laboratory is another sign of our commitment to improve and expand the scope of services we offer our clients in order to better serve their needs. FDAE's investment in this facility has enabled us to provide complete in-house services for all our clients' solid waste and geotechnical consultation needs including laboratory and field testing, engineering, regulatory compliance, permitting, surveying, construction oversight, and field monitoring and sampling. FDAE will continue to provide all services with the same level of passion and pride that has earned us the reputation of being the leader in solid waste and geotechnical engineering.***

***FDAE is a corporate member of the American Council of Engineering Companies (ACEC) and the Louisiana Airport Managers and Associates (LAMA).***

**FDAE's Geotechnical and CMT Laboratory Complex is located in our Main Office in Baton Rouge, Louisiana and is comprised of a 1,200 sq.ft. main testing area, 400 sq.ft. climatized sample storage area and a 2,500 sq.ft warehouse. All of FDAE's laboratory equipment was acquired new, from top-of-the-line manufacturers, and all of the equipment is maintained in excellent shape.**

### **GEOTECHNICAL AND CMT TESTING**

FDAE's AASHTO-Accredited laboratory employs a rigorous Quality Management System (QMS) so that the testing results our clients receive are accurate, precise, and meet all required technical standards. All of our equipment is calibrated and inspected in accordance with the most up-to-date quality management standards.

In addition, our dedicated team of technicians are fully-qualified to serve your construction materials testing needs.

Some of our capabilities include:

**Field and Laboratory Services**

***Soil Classification***

- Particle Size Analysis & Grain Size Sieve and Hydrometer Analysis (ASTM D422, D1140, D6913 and D7928)
- Specific Gravity Determination (ASTM D854)
- Moisture Content (ASTM D2216)
- USCS Soil Classification (ASTM D2487)
- Visual-Manual Soil Classification (ASTM D2488)
- Organic Content (ASTM D2974)
- Atterberg Limits (ASTM D4318)
- Unit Weight Determination (ASTM D7263)

***Soil Strength and Consolidation***

- Unconfined Compressive Strength (ASTM D2166)
- One-Dimensional Consolidation (ASTM D2435)
- Unconsolidated-Undrained Triaxial Compression (ASTM D2850)
- Consolidated-Undrained Triaxial Compression (ASTM D4767)

***Soil Compaction***

- Standard Proctor Compaction Tests (ASTM D698)
- Modified Proctor Compaction Test (ASTM D1557)
- Unit Weight and Moisture Content Determination by Nuclear Methods (ASTM D6938)

***Saturated Hydraulic Conductivity***

- Hydraulic Conductivity by Rigid Wall Permeameter (ASTM D2934)
- Hydraulic Conductivity by Flexible Wall Permeameter (ASTM D5084)

***Other Tests***

- Dry Preparation of Soil Samples (ASTM D421)
- Soil pH Determination (ASTM D4972)
- Soil/Aggregates Sampling
- Two-Stage Borehole Permeability Test
- Construction Surveying



***Concrete Testing***

- Making and Curing Concrete Test Specimens in the Field (ASTM C31)
- Compressive Strength of Cylindrical Concrete Specimens (ASTM C39)
- Density (Unit Weight), Yield, and Air Content of Concrete (ASTM C138)
- Slump of Hydraulic Cement Concrete (ASTM C143)
- Sampling Fresh Mixed Concrete (ASTM C172)
- Air Content of Freshly Mixed Concrete by the Pressure Method (ASTM C231)
- Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the testing of Hydraulic Cements and Concretes (ASTM C511)
- Temperature of Freshly Mixed Portland Cement Concrete (ASTM C1064)
- Use of Unbonded Caps in Determination of Compressive Strength of Hardened Concrete Cylinders (ASTM C1231)

## **GEOTECHNICAL ENGINEERING**

FDAE is proud of our state-of-the-art geotechnical laboratory and our team of experts in this field. From a small construction job to a multi-million-dollar project, FDAE can handle all of your geotechnical needs.

FDAE's team has vast experience in the geotechnical analysis and design of buildings, bridges, embankments, retaining-walls, flood reservoirs, roadways, tunnels, dams, and landfills.

Some of our capabilities include:

### **Engineering**

- Settlement/Consolidation Analysis
- Bearing Capacity Analysis
- Slope Stability Analysis of Earth/Rock Structures
- Ground Improvement
- Earth Retaining Structures (sheet pile, bulkhead, and cantilever walls)
- Shallow Foundations
- Deep Foundations (driven piles, drilled shafts, and auger cast piles)
- Pavement and Slab Recommendations

### **Subsurface Investigations**

- Marsh, Water, or Land Deployment Drilling Equipment (through Marsh Master/Airboat)
- Shelby Tube (Undisturbed) and Split Spoon Sampling
- Direct Push Sampling (GeoProbe)
- Cone Penetration Testing (CPT)
- Dynamic Cone Penetration Testing (DCPT)
- Soil Electrical Conductivity Profiling (Soil EC)
- Hydraulic Profiling Tool (HPT)

### **Instrumentation and Monitoring**

- Settlement Monitoring
- Monitoring Wells
- Piezometers
- Slope Inclometers
- Dewatering Wells
- Video Camera Inspection of Wells and Pipes
- Vibrating Wire Transducers (VWT)
- Gamma Wireline Logging
- Infiltration Gallery Installation

**APPENDIX C**

**FDAE RESUMES OF KEY PERSONNEL  
FOR THE PROJECT**

### EXPERTISE

- Solid Waste Landfill Engineering
- Solid Waste Landfill Design, Permitting, and Compliance
- Geotechnical Engineering
- Geoenvironmental Engineering
- Environmental Engineering
- Groundwater Monitoring
- Landfill Cell Bid Package Preparation, Construction Oversight and Certification Reporting
- LPDES (Water Discharge) Permitting, Compliance and Monitoring
- Air Permitting, Compliance and Monitoring
- Field Investigation and Surveying
- Flood and Erosion Control Structure Design
- Hydrologic and Hydraulic Modeling
- Water Resources Management
- Computer Aided Drafting and Design (CADD)

### EXPERIENCE SUMMARY

Engineering and design experience include geotechnical, environmental, and water resources, as well as hydrogeologic investigations, environmental site analyses, and construction oversight.

### CREDENTIALS

- **Doctor of Philosophy in Engineering and Applied Sciences**, 2003, GPA: 4.0, University of New Orleans, U.S.A. Dissertation title: *Facultative Bioreactor Landfill – An Environmental and Geotechnical Study*.
- **Master of Science in Civil Engineering**, 2000, GPA: 3.6, University of Sao Paulo, Brazil. Dissertation title: *Compressibility of Waste Landfills*.
- **Bachelor of Science in Civil Engineering**, 1994, GPA: 3.4, University of Sao Paulo, Brazil.
- **Professional Engineer (Civil and Environmental Engineering)** – Louisiana (License No. 31257).
- **Diplomate, Geotechnical Engineering** - Academy of Geo-Professionals
- **Owner/Principal**: Fourrier & de Abreu Engineers, LLC.
- **Owner/Principal**: Solo Environmental Consultants, LLC.
- **Fellow**, American Society of Civil Engineers (ASCE).
- **Member**, International Society for Soil Mechanics and Geotechnical Engineering.
- **Member**, Solid Waste Association of North America (SWANA)
- **Member**, Louisiana Engineering Society (LES).
- **Member**, Brazilian Council of Engineers and Architects (CREA/SP).
- **Vice Chairman**, Louisiana Board of Certification and Training for Solid Waste Management Operators.

### AWARDS

- **Crescent City Doctoral Scholarship Award** – University of New Orleans (2002).
- **Best Theme Paper for Waste Facilities Closures and Aftercare** – 7th International Congress on Environmental Geotechnics, Melbourne, Australia (2014).

### ACADEMIC EXPERIENCE

- **Instructor of the discipline “Solid Waste Management”** – Graduate Course – Civil and Environmental Engineering – University of New Orleans, U.S.A. (2019 - 2020).
- **Instructor of the course “Geotechnics of Waste Landfills” on the discipline “Introduction to Geoenvironmental Engineering”** – Undergraduate Course - Civil Engineering – Escola Politecnica da Universidade de Sao Paulo, Brazil (1999 - 2000).

- **Co-instructor of the discipline “Soil Mechanics Laboratory”** – Undergraduate Course – Civil and Environmental Engineering – University of New Orleans, U.S.A. (2002 - 2003).

#### **LANDFILL PERMITTING AND DESIGN PROJECTS**

Project manager for numerous industrial/municipal (Type I/II) and construction/demolition debris (Type III) solid waste facility expansions, permit renewals, and permit modifications in Louisiana and Brazil. Oversaw numerous geotechnical investigations that involved field soil analysis, soil sample collection, piezometer and monitoring well installation, laboratory testing of soil samples, and boring log preparation. Conducted the following analyses: slope stability; settlement; vertical heave; and bearing capacity. Designed the facilities' grading and excavation plans, subsurface drainage systems, leak detection systems, perimeter levee systems, compacted clay liners, synthetic liner systems, leachate collection and removal systems, leachate treatment systems, and final caps. Designed and created site geologic cross sections, isometric soil profiles, potentiometric surface maps, CAD volume and area calculations, and construction detail drawings for Solid Waste Standard Permit Applications. Wrote and prepared Facility Operations Plans, Emergency Response Plans, Construction Quality Assurance Plans, Waste Acceptance Plans, Closure and Post-Closure Plans, Groundwater Monitoring Plans, financial assurance documents, bid packages, construction specifications and construction cost estimates. The following list of projects represents solid waste permitting work performed for Louisiana landfills only.

- 2003, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: permit modification application for vertical expansion of Type II unit (Cell 11) over unlined units of the landfill. Responsible for entire permit application.
- 2003, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: permit renewal application to continue operation of the Type II landfill. Responsible for entire permit application.
- 2003, Vermilion Parish Sanitary Landfill, Vermilion Parish, Louisiana: permit renewal application to continue operation of the Type II landfill. Included permit modification for lateral (piggyback) expansion of the landfill. Responsible for all geological, hydrogeological, and geotechnical engineering services for the permit application.
- 2004, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: permit modification application to increase the permitted capacity of the landfill by linking the cell liner of Cell 11 with the liners of Cells 8/9 and Cell 10. Responsible for entire permit application.
- 2004, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: permit modification application to increase the permitted capacity of the landfill and expand facility's footprint through horizontal and vertical expansion comprising a new Type II cell (Cell 12-Phase I); included piggyback expansion over lined and unlined units. Responsible for entire permit application.
- 2005, St. Landry Parish Sanitary Landfill, St. Landry Parish, Louisiana: permit renewal application to continue operation of the Type II landfill. Responsible for all geological, hydrogeological, and geotechnical engineering services for the permit application.
- 2005, Mundy Landfill, DeSoto Parish, Louisiana: permit renewal application to continue operation of the Type I/II/III landfill. Responsible for all engineering services for the permit application.
- 2005, Mundy Landfill, DeSoto Parish, Louisiana: permit modification application for creation of Type III unit (Cell CD&T-N) over unlined and lined units of the landfill. Responsible for all engineering services for the permit application.
- 2005, Choctaw Road Landfill, Washington Parish, Louisiana: permit renewal application to continue operation of the Type I/II/III landfill. Included permitting of piggyback expansion of a horizontal expansion of the landfill (Cells 4/5) over natural ground and lined cells. Responsible for entire permit application.

- 2005, Two Rivers Facility, Catahoula Parish, Louisiana: permit application to operate a Type III landfill. Responsible for the entire permit application.
- 2007, Big Cajun II Power Plant Landfill, West Feliciana Parish, Louisiana: permit application to operate a Type I landfill. Responsible for all geological, hydrogeological, and geotechnical engineering services for the permit application.
- 2008, Temple-Inland Bogalusa Landfill, Washington Parish, Louisiana: permit application to operate a Type I landfill. Responsible for all engineering services for the permit application.
- 2009, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: permit modification application to increase the permitted capacity of the landfill to expand facility's footprint through horizontal and vertical expansion comprising a new Type II cell (Cell 12-Phase II); included piggyback expansion over lined units. Responsible for entire permit application.
- 2009, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: permit modification application to modify the design of the gas system for the facility from a passive system to an active gas collection and control system. Responsible for entire permit application.
- 2009, Mundy Landfill, DeSoto Parish, Louisiana: permit modification application to update the facility's groundwater sampling and analysis plan. Responsible for reviewing the permit application.
- 2010, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: permit modification application to update the facility's groundwater sampling and analysis plan. Responsible for entire permit application.
- 2011, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: permit modification application to request approval to install an alternate final cover system (ClosureTurf), to increase the allowable area without final cover, and to utilize spray-on daily cover. Responsible for entire permit application.
- 2012, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: permit modification application to request approval to install an alternate final cover system (exposed HDPE geomembrane). Responsible for entire permit application.
- 2013, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: permit renewal application to continue operation of the Type II/III landfill. Responsible for entire permit application.
- 2015, Mikeebo Landfill, Caddo Parish, Louisiana: permit renewal application to continue operation of the Type III landfill. Responsible for all engineering services for the permit application.
- 2016, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: permit modification application to update new location of the of the Gas Collection and Control System (GCCS) candlestick flare. Responsible for entire permit application.
- 2016, St. Landry Parish Sanitary Landfill, St. Landry Parish, Louisiana: permit renewal application to continue operation of the Type II/III landfill. Responsible for all geological, hydrogeological, and geotechnical engineering services for the permit application.
- 2016, St. Landry Parish Sanitary Landfill, St. Landry Parish, Louisiana: permit modification application to update the facility's groundwater sampling and analysis plan and update implementation plan. Responsible for the update of the groundwater sampling and analysis plan and review of the implementation plan.
- 2017, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: permit modification application to allow for the traffic of sand and gravel exploration vehicles through the landfill. Responsible for entire permit application.

- 2017, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: permit modification application to increase the permitted capacity of the landfill and expand the facility through Type II cells (Cells 13 through 16) in a new area. Responsible for entire permit application.
- 2017, Mundy Landfill, DeSoto Parish, Louisiana: permit modification application to modify closure and post-closure plans for the facility and update the facility's groundwater sampling and analysis plan. Responsible for engineering services, update of closure and post-closure plans, and for reviewing the updated groundwater sampling and analysis plan.
- 2017, Choctaw Road Landfill, Washington Parish, Louisiana: permit renewal application to continue operation of the Type I/II/III landfill. Responsible for all engineering services for the permit application.

Perform geotechnical analyses (slope stability analysis, settlement analysis, bearing capacity analysis, bottom and lateral heave analysis, structural analysis of leachate collection pipes, etc.) for several landfills (Tangipahoa Regional Solid Waste Facility, Mundy Landfill, St. Landry Parish Landfill, Choctaw Road Landfill, Vermillion Parish Landfill, White Oaks Landfill, Ronaldson Field C&D Landfill, Slidell C&D Landfill, Honeywell International (Geismar Plant), Big Cajun II Power Plant, MeadWestvaco Evadale, Exide Baton Rouge Smelter, Temple-Inland Bogalusa Mill, Crescent City Landfill, Two Rivers Facility, Colonial Landfill, and dozens of landfills in Brazil).

Prepared LPDES permit modification and renewal applications for two solid waste landfills in Louisiana. Currently manage implementation of LPDES permit requirements, and oversee sample collection, analysis, and Discharge Monitoring Report (DMR) preparation and submittal. Testing involves standard pollutants, Whole Effluent Toxicity Testing (WETT – now eliminated from the permits), and quarterly priority pollutant scanning.

Prepared Stormwater Pollution Prevention Plans (SWPPP) for two solid waste landfills. Gathered necessary information during site visits to complete the reports, and designed/selected a series of BMPs to satisfy regulatory requirements for stormwater pollution reduction while minimizing the cost and maintenance efforts experienced by the client.

### **LANDFILL CONSTRUCTION PROJECTS**

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Provided Construction Quality Control (CQC) oversight for construction of numerous industrial/municipal (Type I/II) and construction/demolition debris (Type III) solid waste landfill cells and associated appurtenances. CQC involved oversight of cell excavation, compacted clay liner installation, earthen levee construction, synthetic liner system installation, and leachate collection and removal system installation. Oversaw subcontractor operations, surveying and testing, construction budgets and pay applications, provided design/technical assistance, collected and organized CQC documents, and wrote Construction Certification Reports for the landfill cells and appurtenances.

- 2003, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of an approximate 10-acre cell comprising a vertical expansion of the landfill (Cell 11). Construction involved subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, secondary synthetic liner installation (geomembrane-supported geosynthetic clay liner), primary HDPE geomembrane liner installation, leachate collection system installation, geocomposite drainage layer installation on side slopes, and 1-ft sand drainage layer installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
- 2005, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of an approximate 5-acre cell comprising a vertical/horizontal expansion of the landfill (Cell 12-Phase I East). Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, secondary synthetic liner installation (geomembrane-supported geosynthetic clay liner), primary HDPE geomembrane liner installation,



- leachate collection system installation, geocomposite drainage layer installation on side slopes, and 1-ft sand drainage layer installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
- 2005, Choctaw Road Landfill, Washington Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of an approximate 10-acre cell comprising a horizontal expansion of the landfill (Cells 4/5). Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, secondary synthetic liner installation (geomembrane-supported geosynthetic clay liner), primary, HDPE geomembrane liner installation, leachate collection pipe and sump installation, geocomposite drainage layer installation on side slopes, and 1-ft sand drainage layer installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2006, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of an approximate 5-acre cell comprising a vertical/horizontal expansion of the landfill (Cell 12-Phase I West). Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, secondary synthetic liner installation (geomembrane-supported geosynthetic clay liner), primary HDPE geomembrane liner installation, leachate collection system installation, geocomposite drainage layer installation on side slopes, and 1-ft sand drainage layer installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2006, St. Landry Parish Sanitary Landfill, St. Landry Parish, Louisiana: oversaw construction of an approximate 4-acre cell comprising a vertical/horizontal expansion of the landfill (Cells 7/14). Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, primary HDPE geomembrane liner installation, leachate collection system and sump installation, geocomposite drainage layer installation on side slopes, and 1-ft sand drainage layer installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2007, Choctaw Road Landfill, Washington Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of final cover for an approximate 10-acre cell (Cell 3). Construction involved subgrade preparation, compacted clay cover installation, HDPE geomembrane liner installation, and passive gas collection system installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2008, Mundy Landfill, DeSoto Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of an approximate 5-acre cell comprising an expansion of the landfill (Cell VIII-Stage 1). Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, secondary synthetic liner installation (geomembrane-supported geosynthetic clay liner), primary HDPE geomembrane liner installation, leachate collection system and sump installation, geocomposite drainage layer installation on side slopes, and 1-ft sand drainage layer installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2008, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of an approximate 5-acre cell comprising a vertical/horizontal expansion of the landfill (Cell 12-Phase II West). Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, secondary synthetic liner installation (geomembrane-supported geosynthetic clay liner), primary HDPE geomembrane liner installation, leachate collection system and sump installation, geocomposite drainage layer installation on side slopes, and 1-ft sand drainage layer installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2010, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for installation of an active gas and

- collection and control system (GCCS), including flare system. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
- 2010, Mundy Landfill, DeSoto Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of an approximate 5-acre cell comprising a vertical/horizontal expansion of the landfill (Cell VIII-Stage 2). Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, secondary synthetic liner installation (geomembrane-supported geosynthetic clay liner), primary HDPE geomembrane liner installation, leachate collection system and sump installation, geocomposite drainage layer installation on side slopes, and 1-ft sand drainage layer installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2010, St. Landry Parish Sanitary Landfill, St. Landry Parish, Louisiana: oversaw construction of an approximate 4-acre cell comprising a vertical/horizontal expansion of the landfill (Cell 2). Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, primary HDPE geomembrane liner installation, leachate collection system and sump installation, geocomposite drainage layer installation on side slopes, and 1-ft sand drainage layer installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2012, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of an approximate 5-acre cell comprising a vertical/horizontal expansion of the landfill (Cell 12-Phase II East). Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, secondary synthetic liner installation (geomembrane-supported geosynthetic clay liner), primary HDPE geomembrane liner installation, leachate collection system and sump installation, geocomposite drainage layer installation on side slopes, and 1-ft sand drainage layer installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2013, Mundy Landfill, DeSoto Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of an approximate 5-acre cell comprising a vertical/horizontal of the landfill (Cell VIII-Stage 3). Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, secondary synthetic liner installation (geomembrane-supported geosynthetic clay liner), primary HDPE geomembrane liner installation, leachate collection system and sump installation, geocomposite drainage layer installation on side slopes, and 1-ft sand drainage layer installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval
  - 2014, Tangipahoa Parish Regional Solid Waste Facility, Tangipahoa Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of innovative final cover system for 20-acre cells (Cells 10 and 11). Construction involved subgrade preparation, installation of synthetic final cover (Closure Turf), installation of stormwater drainage benches, installation of stormwater drainage let-downs, and expansion of innovative gas collection and control system for the facility. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2014, St. Landry Parish Sanitary Landfill, St. Landry Parish, Louisiana: oversaw repair of damaged liner of an existing cell (Cell 2). Repair involved the investigation of affected area, removal of HDPE geomembrane liner, removal of portion of clay liner affected, subgrade preparation, compacted clay liner reinstallation, and primary HDPE geomembrane liner reinstallation. Wrote certification report detailing repair activities and quality control procedures for LDEQ approval.
  - 2015, Mundy Landfill, DeSoto Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of an approximate 7-acre cell comprising a vertical/horizontal of the landfill (Cell VIII-Stage 4). Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, secondary synthetic liner installation (geomembrane-supported geosynthetic clay liner),

- primary HDPE geomembrane liner installation, leachate collection system and sump installation, geocomposite drainage layer installation on side slopes, and 1-ft sand drainage layer installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
- 2015, Mundy Landfill, DeSoto Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of an approximate 1-acre temporary sedimentation pond for non-contact stormwater storage (Sedimentation Pond No.3). Construction involved cell excavation, subgrade preparation, compacted fill installation, and temporary culverts and outfalls installation.
  - 2016, St. Landry Parish Sanitary Landfill, St. Landry Parish, Louisiana: oversaw construction of an approximate 4-acre cell comprising a vertical/horizontal expansion of the landfill (Cells 8/15). Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, primary HDPE geomembrane liner installation, leachate collection system and sump installation, geocomposite drainage layer installation on side slopes, and 1-ft sand drainage layer installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.

Other facilities that Dr. de Abreu provided landfill construction services include the Jefferson Davis Parish Landfill and Dow Chemical Landfill.

#### **OTHER RELEVANT LANDFILL PROJECTS**

Some additional projects which illustrate Dr. de Abreu's expertise in the landfill engineering area include:

- 1992-2001, Bandeirantes Waste Landfill – Sao Paulo, Brazil. Provided design, consulting, and monitoring for one of the largest sanitary landfills in the world, which received more than 7,000 tons of waste per day. Dr. de Abreu was one of the main consultants for the landfill from 1994 until 2001, when he came to the United States. Geotechnical and environmental monitoring included the analysis of instrumentation comprising of more than 200 piezometers, monitoring wells, and monuments.
- 1992-2001, Brazilian Landfills. Provided consulting, design, monitoring and permitting for more than sixty landfills in Brazil. Work also included the remediation of landfills in environmental protection areas.
- 2003-present, North American Landfills. Provided consulting, design, monitoring, and permitting for dozens of landfills in Louisiana and other states since 2003. Some of the landfills include the Tangipahoa Regional Solid Waste Facility, Mundy Landfill (DeSoto Parish), Choctaw Road Landfill (Washington Parish), St. Landry Landfill, Vermillion Parish Landfill, Acadia Parish Landfill, Jefferson-Davis Parish Landfill, West Carroll Parish Landfill, St. Mary Parish Landfill, Tensas Parish Landfill, among many others.
- 2003-present, Groundwater Consulting Services. Provided groundwater monitoring and consulting services for several facilities in Louisiana, such as Tangipahoa Regional Solid Waste Facility, St. Landry Landfill, Choctaw Road Landfill (Washington Parish), Acadia Parish Landfill, West Carroll Landfill, Tensas Parish Landfill, and CF Industries.
- 2003-present, Air Permitting and Consulting Services. Provided air permitting and consulting services, including Title V Permit and EPA Greenhouse Gas Monitoring for the Tangipahoa Regional Solid Waste Facility and Mundy Landfill (DeSoto Parish).

### **GEOTECHNICAL PROJECTS**

Besides landfill projects, Dr. de Abreu has worked in hundreds of conventional geotechnical projects in Louisiana and in Brazil. Some of the most relevant are:

- 1992-1995, Foundation design for industrial, commercial and residential edifications. Performed the design of driven piles, excavated piles, and shallow foundations for diverse purposes. North-American clients included Wal-Mart, Turner-Birmann, and American National Can.
- 1992-1995, Retaining-wall design for industrial, commercial and residential edifications. Performed the design of retaining walls, including concrete walls, tieback walls, and gravity walls for several purposes.
- 1992-1994, TECON Test Fill. Performed settlement studies on a test fill over soft clays for construction of the Santos Containers Terminal, the busiest port in Brazil.
- 1994, Pichi Picun Leufeu Hydropower Plant – Argentina. Dr. de Abreu was responsible for the slope stability analyses for the temporary dams during construction of this important hydropower plant in Argentina.
- 1994, Alto Jatapu Dam (1994). Performed slope stability analysis for the dam of an important hydroelectric located in the Amazon, Brazil.
- 1994, Parque Novo Mundo Tunnel (1994). Performed daily construction oversight for a tunnel in one of Sao Paulo's most important wastewater treatment plants.
- 1996, Cingapura Project. Performed design of foundations, road pavements and hydraulic structures for one of the largest housing development projects in Sao Paulo, Brazil.
- 1996-2001, Monitoring of Bandeirantes Highway. Performed the geotechnical monitoring of an important highway adjacent to a landfill. The purpose of this monitoring was to evaluate the settlements and horizontal displacements of the highway caused by the landfill.
- 2000-2001, Maua Stormwater Reservoir. Provided project supervision and performed geotechnical design for the largest stormwater reservoir for flood control in Latin American, with capacity of more than 250,000,000 gallons.
- 2003-2007, Louisiana LA-1 Improvements Provided geotechnical investigation, pile design, CAPWAP pile analysis as part of the pile load test program of this 17-mile bridge project. He was also responsible for the settlement studies of the engineered embankments at the bridge tie-ins, including wick-drain design and settlement monitoring.

Other relevant geotechnical projects in Louisiana:

<b>Year</b>	<b>Project</b>	<b>Location</b>	<b>Activity</b>
2003	Waffle House Mandeville (HWY 59 & I-12)	Mandeville	Geotechnical Investigation, Foundation for building and sign (Shallow Footings), Slab, Earthwork, Pavement, QC
2003	Clinton High School	Clinton	Geotechnical Investigation. Light Poles Foundation
2004	Oaks at Bluebonnet	Baton Rouge	Geotechnical Investigation, Swelling Soils Analysis
2004	Innophos, Inc. - Railroad Scale	Baton Rouge	Geotechnical Investigation. Foundation/pH Analysis
2004	Honeywell Geismar	Geismar	Piezometers installation for monitoring of Stack 5A / Slope Stability Analysis
2004	Honeywell Geismar	Geismar	Geotechnical Monitoring of HF Gypsum Stacks
2004	ConocoPhillips Westlake	Westlake	Geotech Investigation. Design for Crane Lift Foundation at Area 6 of Westlake Plant. 440 ton crane (Shallow)



2004	ConocoPhillips Lake Charles	Lake Charles	Determination of Dynamic Soil Parameters for Compressor Foundation
2004	Waffle House Baton Rouge (10389 Airline Hwy)	Baton Rouge	Geotechnical Investigation, Foundation for building and sign (Shallow Footings), Slab, Earthwork, Pavement, QC
2004	Riverdale Baptist Church (O'Neal Lane)	Baton Rouge	Geotechnical Investigation, Foundation for building (Shallow Footings), Slab, and Earthwork
2004	Racoon Isl. Shoreline Protection/Marsh Creation	Terrebonne Parish	Geotechnical Investigation. Bearing capacity, settlement analysis, and slope stability analysis for breakwater and marsh
2004	Minteq Plant	Baton Rouge	Determination of Dynamic Soil Parameters for Machinery Foundation
2004	Koch Industries Plant - Taft	Taft	Geotechnical Investigation and Deep Foundation recommendations
2004-2005	Baton Rouge Pumping Station	Baton Rouge	Geotechnical Investigation for tunnel and caissons. Force main block system foundation design
2004-2007	Formosa Plastics	Baton Rouge	Geotechnical Investigation. Slope Stability Analysis for the Dock Facility
2005	State Route in Zwolle-US 171 and LA3229	Sabine Parish	Review of Pile Design for LA TIMED Managers
2005	Exide Smelter Plant Landfill	Baton Rouge	Geotechnical Investigation. Slope Stability Analysis
2005	Manchac Wildlife Management Area - Prairie Shoreline Protection	St. John the Baptist Parish	Geotechnical Investigation. Bearing capacity, settlement analysis, and slope stability analysis for breakwater and marsh
2005	Renal Care Center Slope Stability Study	Baton Rouge	Geotechnical Investigation. Slope Stability Analysis
2005	ConocoPhillips Westlake	Westlake	Geotechnical Investigation for North Flare Gas Area. Dynamic Cone Penetrometer Test. Bearing Capacity Analysis
2005	The Crescent-Baton Rouge	Baton Rouge	Review of Design for South Access Road
2005	Colonial Landfill	Sorrento	Geotechnical Investigation for Leachate Tank. Dynamic Cone Penetrometer Test. Settlement Analysis for Waste
2005	Plaza Orthopedics and Sports Medicine Building	Hammond	Geotechnical Investigation, Foundation for building (Shallow Footings)
2005	Northshore Internal Medicine Building	Hammond	Geotechnical Investigation, Foundation for building (Shallow Footings)
2005	ConocoPhillips Westlake	Westlake	Geotechnical Investigation for South Flare Gas Area. Dynamic Cone Penetrometer Test. Bearing Capacity Analysis
2005	Power Generating Facility - Beau Pre Road (South Side)	Lafayette	Dynamic Pile Testing. Pile Driving Analysis (PDA) & CAPWAP for piles
2005	Westway Molasses Storage Tanks	Port Allen	Geotechnical Investigation. Bearing Capacity. Slope Stability Analysis
2005	PCS Nitrogen	Geismar	Geotechnical Investigation for Turbine Generator Foundation. WEAP Analysis

### **RELEVANT PUBLICATIONS**

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- *Construction of Citizen's Drop-Off Ramp in South Louisiana by Soil Surcharging* – Proceedings of the 2019 Geo-Congress, Philadelphia, USA – 2019.
- *Landfilling of Oil and Gas Exploration and Production Wastes: Geotechnical and Environmental Considerations* – Proceedings of the 8th International Congress on Environmental Geotechnics, Hangzhou, China – 2018.
- *Compressibility of Municipal Solid Waste in Controlled Landfills* - Proceedings of the Nineteenth Brazilian Congress of soil Mechanics and Geotechnical Engineering, Salvador, Brazil – 2018 (in Spanish).
- *Design and Installation of Geosynthetic Final Cover Utilizing Artificial Turf in Louisiana* – Proceedings of the 7th International Congress on Environmental Geotechnics, Melbourne, Australia – 2014.
- *Facultative Landfill Bioreactors (FLB): Results of a Pilot-Scale Study* – Proceedings of the 2005 Geo-Frontiers Conference, Austin, USA – 2005.
- *A New Model for Immediate Settlement Predictions in Landfills* – Proceedings of the 16th International Conference of Soil Mechanics and Geotechnical Engineering, Osaka, Japan – 2005.
- *Facultative Bioreactor Landfill: An Environmental and Geotechnical Study* – Dissertation - Doctor of Philosophy in Engineering and Applied Sciences – University of New Orleans – 2003.
- *Facultative Landfill Bioreactors (FLB): A Pilot-scale Study of Waste Stabilization, Landfill Gas Emissions, Leachate Treatment and Landfill Geotechnical Properties* – Proceedings of the Eighteenth International Conference on Solid Waste Technology and Management, Philadelphia, USA – 2003.
- *Compressibility of Waste Landfills* – Dissertation - Master of Civil Engineering Degree – Escola Politecnica da Universidade de Sao Paulo – 2000 (in Portuguese).
- *Waste Landfills* – Chapter of the book: "Prediction versus Real Behavior" – Brazilian Association of Soil Mechanics (ABMS), Sao Paulo, Brazil – 2000 (in Portuguese).
- *Some Aspects of Settlements and Horizontal Displacements in Waste Landfills* - Proceedings of the Fourth Brazilian Congress of Geoenvironmental Engineering – 1999 (in Portuguese).
- *Performance of Vector Piezometer in Waste Landfills* – Proceedings of REGEO'95 (Third Brazilian Congress of Geoenvironmental Engineering), Ouro Preto, Brazil – 1995 (in Portuguese).

### **RELEVANT PRESENTATIONS**

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- *Monitoring and Maintenance of Leachate Collection Systems* – 2019 Louisiana Solid Waste Association Conference, Lafayette, USA – 2019.
- *Landfilling of Oil and Gas Exploration and Production Wastes: Geotechnical and Environmental Considerations* – 8th International Congress on Environmental Geotechnics, Hangzhou, China – 2018.
- *Monitoring and Inspection of Landfills* – 2018 Louisiana Solid Waste Association Conference, Lafayette, USA – 2018.
- *Geotechnics of Waste Landfills* – 22<sup>nd</sup> Joint Engineering Societies Conference, Lafayette, USA – 2018.
- *Landfill Cell Design and Construction 101* – 2017 Louisiana Solid Waste Association Conference, Lafayette, USA – 2017.
- *Vertical Expansion of Landfills over Pre-Subtitle D Areas* – 2016 Louisiana Solid Waste Association Conference, Lafayette, USA – 2016.
- *Municipal Solid Waste Compaction in Landfills* – 2015 Louisiana Solid Waste Association Workshop, Marksville, USA – 2015.
- *Synthetic Final Covers and a New Approach to Landfill Gas Collection* – 2014 Louisiana Solid Waste Association Conference, Lafayette, USA – 2014.



- *Design and Installation of Geosynthetic Final Cover Utilizing Artificial Turf in Louisiana* – 7th International Congress on Environmental Geotechnics, Melbourne, Australia – 2014.
- *Slope Stability: Are Landfills Too Big to Fail?* – 2012 Louisiana Solid Waste Association Conference, Lafayette, USA – 2012.
- *Facultative Landfill Bioreactors (FLB): Results of a Pilot-Scale Study* – Geo-Frontiers 2005 Conference, Austin, USA – 2005.
- *Facultative Landfill Bioreactors: A Pilot Study – Urban Waste Management & Research Center Workshop* - Schlieder Urban Environmental Systems Center, New Orleans, USA – 2004.
- *Facultative Landfill Bioreactors* – Science Advisory Committee - Schlieder Urban Environmental Systems Center, New Orleans, USA – 2003.
- *Facultative Landfill Bioreactors (FLB): A Pilot-scale Study of Waste Stabilization, Landfill Gas Emissions, Leachate Treatment and Landfill Geotechnical Properties* – International Conference on Solid Waste Technology and Management, Philadelphia, USA – 2003.
- *Prediction versus Real Behavior in Waste Landfills* – Brazilian Association of Soil Mechanics (ABMS), Sao Paulo, Brazil – 2000.

### EXPERTISE

- Solid Waste Landfill Design, Permitting, and Compliance
- Geotechnical and Groundwater Investigations, Sampling and Analysis
- Landfill Cell Bid Package Preparation, Construction Oversight and Certification Reporting
- Computer Aided Drafting and Design (CADD)
- LPDES (Water Discharge) Permitting, Compliance and Monitoring
- Air Permitting, Compliance and Monitoring
- Small Dam Design
- Field Investigation and Surveying
- Flood and Erosion Control Structure Design
- Hydrologic and Hydraulic Modeling
- Water Resources Management
- Stream Analysis and Restoration Design

### EXPERIENCE SUMMARY

Engineering and design experience includes geotechnical, civil, environmental, and water resources, as well as hydrogeologic investigations, environmental site analyses, and construction oversight.

### CREDENTIALS

- **Bachelor of Science in Environmental Engineering**, 2002, *Magna Cum Laude*, GPA: 3.86, Louisiana State University.
- **Master of Science in Civil Engineering**, 2007, GPA: 4.0, Louisiana State University. Thesis title: *Urban Stream Stabilization Using Regional Hydraulic Geometry Curves for Bankfull Floodplain Design*.
- **Professional Engineer** – Louisiana (License No. 32935).
- **United States Marine Corps**, Sergeant, Infantry Squad Leader, 1993 – 1997. Two overseas amphibious deployments to eleven countries in the Middle East, Asia, & Australia as part of a Marine Expeditionary Unit.
- **Owner/President**: Fourrier Consulting Engineers, LLC – a Veteran-Owned Small Business (VOSB).
- **Owner/Principal**: Fourrier & de Abreu Engineers, LLC.
- **Level A Solid Waste Operator** certified by the Louisiana Department of Environmental Quality for the following facility types: Landfill, Surface Impoundment, Landfarm, Incinerator, Transfer Station, C&D Landfill, Composting, and Separation and Woodwaste.
- **Member**, Louisiana Board of Certification and Training for Solid Waste Management Operators.
- **Certified Inspector**, Geosynthetic Certification Institute-Inspectors Certification Program (GCI-ICP) for Geosynthetics and Compacted Clay Liners, 2014.

### COMPUTER DESIGN SOFTWARE

Proficient in the following engineering software:

- **AutoCAD 2022 Civil 3D** (Landfill Permit and Construction Design Drawings and Volume Calculations)
- **CulvertMaster** (Surface Water Hydraulic Analysis)
- **EFH-2** (Surface Water Hydrologic Analysis)
- **HEC-2, HEC-RAS, and HEC-HMS**
- **HELP** (Hydrologic Evaluation of Landfill Performance Model – Leachate Volume Estimation Software)
- **LandGEM** (Landfill Gas Emission Model)
- **HYDRWIN - LADOTD Hydraulics Programs**: HYDR1120, HYDR1130, HYDR2130
- **M-Tech** (Geotechnical and Groundwater Graphics Software)
- **SAS** (Statistical Analysis Software)
- **Sanitas** (Groundwater Statistical Analysis Software)
- **Slope/W** (Slope Stability Software)
- **TANKS** (Volatiles Emission Software)
- **UniSettle** (Settlement Software)

### **SOLID WASTE FACILITY DESIGN AND PERMITTING PROJECTS**

Project manager for numerous industrial/municipal (Type I/II) and construction/demolition debris (Type III) solid waste facility expansions, permit renewals, and permit modifications in Louisiana. Oversaw numerous geotechnical investigations that involved field soil analysis, soil sample collection, piezometer and monitoring well installation, laboratory testing of soil samples, and boring log preparation. Conducted the following analyses: slope stability; settlement; vertical heave; and bearing capacity. Designed the facilities' grading and excavation plans, subsurface drainage systems, leak detection systems, perimeter levee systems, compacted clay liners, synthetic liner systems, leachate collection and removal systems, leachate treatment systems, and final caps. Designed and created site geologic cross sections, isometric soil profiles, potentiometric surface maps, CAD volume and area calculations, and construction detail drawings for Solid Waste Standard Permit Applications. Wrote and prepared Facility Operations Plans, Emergency Response Plans, Construction Quality Assurance Plans, Waste Acceptance Plans, Closure and Post-Closure Plans, Groundwater Monitoring Plans, financial assurance documents, bid packages, construction specifications and construction cost estimates.

- 2000 – 2002, Harold J. “Babe” Landry Landfill, St. Mary Parish, Louisiana: permit renewal application to continue Type II cell operation, permit modification application to expand facility's footprint through horizontal and vertical expansion comprising a new Type I/II cell, included piggyback expansion (Type I/II cell over a Type III cell), and permitted a new waste stream (Type I).
- 2000 – 2002, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: permit renewal application to continue and to expand Type III operations, permit modification application to expand facility's footprint through horizontal and vertical expansion comprising a new Type I/II cell, included piggyback expansion, and permitted new waste streams (Type I & Type II).
- 2003, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: permit modification involving redesign of leachate/contact water treatment impoundments' leak detection system and liner protection system, and modified the landfill construction schedule.
- 2004, Louisiana Land Acquisitions, East Baton Rouge Parish, Louisiana: completed cell construction and property assessment report for 80-acre impoundment with 80-mil geomembrane liner and 3' compacted clay liner.
- 2005 - 2006, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: permit modification involving redesign of Type I/II landfill cell's primary synthetic liner system, secondary compacted clay liner system, and geocomposite drainage layer for piggyback slopes.
- 2005, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: prepared major solid waste permit modification application requesting authorization to accept oilfield Exploration & Production (E&P) wastes into White Oaks Landfill's Type I/II cell. Modification required human health and environmental analysis of E&P wastes, study of E&P waste regulatory history, NORM analysis, E&P waste odor analysis, comparison of LDNR E&P disposal requirements for onsite disposal and commercial facility disposal versus LDEQ Subtitle D disposal requirements, chlorides impact study on landfill's leachate treatment system, analysis of landfill liner system compatibility with E&P waste constituents, landfill operations modifications including E&P waste screening and solidification procedures, E&P waste manifesting requirements, landfill facility analysis versus STRONGER requirements, supporting agency study (EPA, Tulane, LSU, LDNR, environmental regulatory agencies from other states, and E&P industry organizations), market analysis, economic analysis, and beneficial reuse study.
- 2005, Acadiana C&D Facility, Vermilion Parish, Louisiana: prepared feasibility study of existing facility to ascertain value for purchase and potential for cell expansion. Study involved analysis of expanded cells for constructability, and CAD area and volume calculations.
- 2005, Confidential Client, Louisiana: conducted solid waste facility site selection study for client to determine available properties and potential for landfill development at each. Analyses involved floodplain

determination, compatibility with adjacent land use, market analysis, transportation infrastructure analysis, aquifer research, geologic study, cell configuration, and CAD area and volume calculations.

- 2006, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: permit modification involving redesign and construction of additional Type III sedimentation pond used for storage and treatment of contact water from Type III cells.
- 2006 – 2007, Type III Landfill, Iberia Parish, Louisiana: prepared permit renewal application including reports, AutoCAD figures, design computations, and CAD area and volume calculations.
- 2006 – 2008, Harold J. “Babe” Landry Landfill, St. Mary Parish, Louisiana: permit renewal application to continue use of Type III cell. Included report preparation and CAD area and volume calculations.
- 2007, Harold J. “Babe” Landry Landfill, St. Mary Parish, Louisiana: major permit modification involving request for authorization to accept Regulated Asbestos Containing Material (RACM) waste into the facility’s Type I/II cell, electrical fencing requirements, permit expiration date, and emergency contingency notification procedures.
- 2007 – 2008, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: major permit modification to vertically expand and to horizontally expand the facility’s Type I/II footprint by nearly 180 acres. Expansion included piggyback design (Type I/II cell over Type III cell). Required redesign of cell geometry, cap design, facility operations, CAD area and volume calculations, extensive slope stability analyses, and extensive hydrogeologic investigations. Designed landfill’s leachate collection and removal system to transfer to either the existing impoundment treatment system or to a nearby, proposed Underground Injection Control (UIC) facility. The UIC facility will provide for deep-well injection and disposal of leachate and contact water from the landfill. Performed review of UIC facility permit application prior to submittal to LDNR.
- 2008, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: permit modification to alter the landfill footprint due to unrelated onsite construction. Also, incorporated flexibility into construction plans within permit to allow for higher cell bottom construction grade elevations during future construction projects if necessary due to fluctuations in groundwater levels.
- 2009, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: major permit modification to increase the maximum Type I tonnage intake rate and to increase the landfill’s operational schedule.
- 2009, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: submitted a modification application to construct a 43,000-gallon steel-reinforced concrete solidification basin to be used for the solidification of liquid wastes.
- 2009 - 2010, Belle Landfill, Louisiana: conducted solid waste facility site selection study for client to determine available properties and potential for landfill development at each. Analyses involved floodplain determination, compatibility with adjacent land use, market analysis, transportation infrastructure analysis, aquifer research, geologic study, cell configuration, and CAD area and volume calculations.
- 2010, Belle Landfill, Louisiana: provided expert testimony to Louisiana State Senate’s Environmental Quality Committee regarding proposed solid waste landfill facility legislation.
- 2009 – 2012, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: landfill received Administrative Order (AO) authorizing 18-month pilot study to accept E&P wastes. Provided compliance oversight, operations assistance, and LDEQ reporting to maintain compliance with AO.
- 2010, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: Prepared major permit modification applications (solid waste and LPDES) in accordance with AO which requested permanent authorization to accept oilfield Exploration & Production (E&P) wastes into White Oaks Landfill’s Type I/II cell. Modification required human health and environmental analysis of E&P wastes, study of E&P waste regulatory history, NORM analysis, E&P waste odor analysis, comparison of LDNR E&P disposal



requirements for onsite disposal and commercial facility disposal versus LDEQ Subtitle D disposal requirements, chlorides impact study on landfill's leachate treatment system, analysis of landfill liner system compatibility with E&P waste constituents, landfill operations modifications including E&P waste screening and solidification procedures, E&P waste manifesting requirements, landfill facility analysis versus STRONGER requirements, supporting agency study (EPA, Tulane, LSU, LDNR, environmental regulatory agencies from other states, and E&P industry organizations), market analysis, economic analysis, and beneficial reuse study.

- 2011, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: prepared Final Report regarding the E&P acceptance program in accordance with the AO issued by LDEQ. The Final Report addressed E&P acceptance rates, lessons learned, and suggestions for successful implementation of a permanent E&P waste acceptance program.
- 2011, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: prepared permit modification application requesting authority to install a steel vehicle washwater solidification basin in the Type I/II landfill cell.
- 2011, Harold J. “Babe” Landry Landfill, St. Mary Parish, Louisiana: prepared permit modification application proposing use of telescoping fiberglass standpipes in conjunction with large-diameter HDPE manhole risers for leachate extraction and removal.
- 2012, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: prepared permit modification application proposing alternate synthetic liner system specification requirements and revised interim berm design.
- 2012, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: prepared solid waste permit renewal application for Type I/II/III landfill utilizing LDEQ’s updated permit renewal application form.
- 2012, Harold J. “Babe” Landry Landfill, St. Mary Parish, Louisiana: prepared solid waste permit renewal application for Type I/II/III landfill utilizing LDEQ’s updated permit renewal application form.
- 2014, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: prepared permit modification application to update the permit after plugging and abandonment of four existing monitoring wells, installation of four new monitoring wells, and to incorporate the findings of the geotechnical investigation conducted during installation of the new wells.
- 2014, Catahoula C&D Landfill, Catahoula Parish, Louisiana: prepared an updated Closure and Post-Closure Plan for the landfill in order to secure LDEQ’s authorization to close. Plan included redesigned final cover with erosion control system and updated financial assurance.
- 2014, Harold J. “Babe” Landry Landfill, St. Mary Parish, Louisiana: prepared permit modification application proposing addition of a citizens’ dump in the administration area.
- 2015, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: prepared permit modification application proposing the installation of a passive landfill gas collection and control system with solar-powered vent flares.
- 2015, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: prepared major permit modification application proposing redesigned final cap which increases airspace by over 3 million cubic yards with no increase in landfill footprint. This major modification involved a vertical expansion and extensive slope stability analyses, including study of E&P waste’s geotechnical properties.
- 2014-2015, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: prepared permit modification application proposing to use MSW and select Type I wastes as solidification agents.
- 2016, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: prepared permit modification applications proposing active landfill gas collection and control system (LGCCS), and landfill gas-fueled leachate evaporator system at WCI – White Oaks Landfill in Monroe, Louisiana.

- 2017, Choctaw Road Landfill, Washington Parish, Louisiana: redesigned proposed landfill cell based on new location, incorporated asbuilt features for a recently constructed cell into the permit, and revised permit drawings, text, calculations and permit document to reflect these changes.
- 2017, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: prepared permit modification application with innovative redesign of permitted cell subgrade to reduce the number of sump pumps by 50% while not reducing airspace. Modification application also included alternative operational cover construction options and additional non-contact stormwater and contact water management options.
- 2020, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: prepared permit modification application requesting authorization to utilize select industrial wastes as alternate daily cover.
- 2019 – 2020, Harold J. “Babe” Landry Landfill, St. Mary Parish, Louisiana: prepared permit modification to reconcile asbuilt well depths with permit well depths and prepared a separate modification application for the P&A of existing piezometer and installation of a new piezometer.
- 2020, Harold J. “Babe” Landry Landfill, St. Mary Parish, Louisiana: prepared permit modification to remove the requirement to statistically analyze pH groundwater well field data from the permit.
- 2021, Harold J. “Babe” Landry Landfill, St. Mary Parish, Louisiana: conducted a geotechnical investigation in the field (borings and soil samples) and performed geotechnical laboratory testing of the soil samples. Samples were analyzed to estimate strength gain which had occurred due to fill placement subsequent to historical geotechnical investigations and laboratory analyses. Strength gain in soft compressive clay subgrade soils occurred due to settlement and consolidation. Current and estimated future strength gains were used in the slope stability analyses the results of which showed that the landfill can be filled with steeper slopes and to higher elevations thereby significantly increasing the capacity of the landfill without requiring any new construction. The modified landfill's stability will be monitored by piezometers and inclinometers.
- 2022, Harold J. “Babe” Landry Landfill, St. Mary Parish, Louisiana: preparing the facility's solid waste permit renewal application utilizing LDEQ's latest application format. The renewal application will include but will not be limited to the following plans: Emergency Response Plan, Groundwater Monitoring Plan, Waste Acceptance Plan, Comprehensive Operational Plan, Construction Quality Assurance Plan, and Closure and Post-Closure Plan. The capacity increase, geotechnical investigation, and slope stability analyses cited above will be included as a major modification along with the standard permit renewal application.
- 2022, Harold J. “Babe” Landry Landfill, St. Mary Parish, Louisiana: preparing the facility's solid waste permit renewal application utilizing LDEQ's latest application format. The renewal application will include but will not be limited to the following plans: Emergency Response Plan, Groundwater Monitoring Plan, Waste Acceptance Plan, Comprehensive Operational Plan, Construction Quality Assurance Plan, and Closure and Post-Closure Plan.

Worked with subcontracted engineer to design innovative telescoping standpipe structures for solid waste landfill in south Louisiana. The telescoping risers serve as leachate collection sumps which allow subgrade settlement and waste compaction to occur without creating excessive dragdown forces on the riser structure and the underlying liner system. Once waste compaction and settlement create enough dragdown force to overcome the design strength of the nylon shear pins in the lower standpipe section, the upper standpipe section(s) of the telescoping system will be dragged down into the lower, larger standpipe section to relieve the induced axial stress.

Prepared numerous LPDES permit modification and renewal applications for multiple solid waste landfills, E&P waste treatment facilities, and solid waste service facilities in Louisiana. Currently manage implementation of LPDES permit requirements, and oversee sample collection, analysis, and Discharge Monitoring Report (DMR)

preparation and submittal. Testing involves standard monthly parameters, quarterly parameters, and quarterly priority pollutant scans.

Prepared Stormwater Pollution Prevention Plans (SWPPP) for numerous landfills, solid waste service facilities, and E&P waste treatment facilities in Louisiana. Gathered necessary information during site visits to complete the reports, and designed/selected a series of BMPs to satisfy regulatory requirements for stormwater pollution reduction while minimizing the cost and maintenance efforts experienced by the client.

Prepared Spill Prevention, Control, and Countermeasures (SPCC) Plan for numerous landfills, solid waste service facilities, and E&P waste treatment facilities in Louisiana. Gathered and organized site information to ensure facility and Plan compliance with LAC 33:I.Chapter 39, LAC 33:IX.Chapter 9, and 40 CFR 112.

Prepared Standard Waste Tire Permit Renewal Application for waste tire processing facility in Louisiana (Environmental Industries Recycling, Inc.).

Perform analyses of industrial solid wastes proposed for acceptance at Type I/II solid waste facilities in Louisiana. Analyses include review of TCLP test results and other testing and/or generator process knowledge as required to ensure waste is nonhazardous in accordance with LAC 33:V.1103 and to ensure that it can be accepted in accordance with LAC 33:VII and the facilities' permits.

### **CONSTRUCTION PROJECTS**

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Provided Construction Quality Control (CQC) oversight for construction of numerous industrial/municipal (Type I/II) and construction/demolition debris (Type III) solid waste landfill cells and associated appurtenances. CQC involved oversight of cell excavation, compacted clay liner installation, earthen levee construction, synthetic liner system installation, and leachate collection and removal system installation. Oversaw subcontractor operations, surveying and testing, construction budgets and pay applications, provided design/technical assistance, collected and organized CQC documents, and wrote Construction Certification Reports for the landfill cells and appurtenances for submittal to and approval by LDEQ.

- 2003, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of an approximate 10-acre cell comprising Cell I/II-A, Phases I and II. Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, secondary synthetic liner installation (GundSeal, geomembrane-supported geosynthetic clay liner), primary HDPE geomembrane liner installation, leachate collection pipe and sump installation, geocomposite drainage layer installation on side slopes, 1' sand drainage layer installation, filter non-woven geotextile installation, and 1' operational cover installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
- 2003, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of three leachate/contact water treatment impoundments. Construction involved impoundment excavation, subgrade preparation, compacted clay liner installation, perimeter levee construction, leak detection layer and leak detection sump installation, secondary synthetic liner installation (GundSeal, geomembrane-supported geosynthetic clay liner), primary HDPE geomembrane liner installation, protective non-woven geotextile installation, and sacrificial HDPE geomembrane installation. Also, budgeted, managed purchase, and oversaw installation of two 1-HP aerators, a 10-HP spray aerator, and a 42,000 GPD clarifier with chlorinator, sludge return lines, and scum recirculation lines. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
- 2003, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: oversaw geotechnical investigation for determination of screening intervals for landfill's monitoring well network. Oversaw installation of thirteen



- (13) monitoring wells and piezometers, and prepared certification report detailing construction activities and quality control procedures for LDEQ approval.
- 2004, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: produced final design drawings and quantity calculations for construction and oversaw construction of approximately 5-acres of Type III cells comprising Cells III-B and III-D. Construction involved cell excavation, subgrade preparation, and perimeter levee construction. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2004 - 2006, Harold J. “Babe” Landry Landfill, St. Mary Parish, Louisiana: assisted with production of final design drawings, technical specifications, and bid quantity calculations for construction and assisted in construction oversight for an approximate 34-acre cell comprising Cell 4, Phase I. Construction involved cell excavation, subgrade preparation, subsurface drainage system installation, compacted clay liner installation, perimeter levee and intermediate levee construction, secondary synthetic liner installation (GundSeal, geomembrane-supported geosynthetic clay liner), primary HDPE geomembrane liner installation, leachate collection pipe and sump (manhole) installation, 1’ sand drainage layer installation, filter non-woven geotextile installation, and 1’ operational cover installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2006, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of an approximate 3-acre cell comprising Cell I/II-A, Phase V (lower ½) which “piggybacks” over filled Type III cells. Construction involved subgrade preparation, compacted clay liner installation, containment berm construction, primary HDPE geomembrane liner installation, geocomposite drainage layer installation, and 1’ operational cover installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2006, Harold J. “Babe” Landry Landfill, St. Mary Parish, Louisiana: oversaw geotechnical investigation for determination of screening intervals for landfill’s monitoring well network. Oversaw installation of eleven (11) monitoring wells and piezometers, and prepared certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2007, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of an approximate 2-acre cell comprising Cell I/II-A, Phase V (upper ½) which “piggybacks” over filled Type III cells. Construction involved subgrade preparation, compacted clay liner installation, containment berm construction, primary HDPE geomembrane liner installation, geocomposite drainage layer installation, and 1’ operational cover installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2008, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of an approximate 3-acre cell comprising Cell I/II-A, Phase III (East). Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, primary HDPE geomembrane liner installation, leachate collection pipe and sump installation, geocomposite drainage layer installation on side slopes, 1’ sand drainage layer installation, filter non-woven geotextile installation, and 1’ operational cover installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2008, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: produced final design drawings, technical specifications, and quantity calculations and oversaw construction of an approximate 10-acre Type III cell comprising Cell III-E, and its associated Type III sedimentation pond. Construction involved cell and pond excavation, subgrade preparation, and perimeter levee construction. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2009, CWI – White Oaks Landfill, Ouachita Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations and oversaw construction of an approximate 3-acre cell comprising Cell I/II-A, Phase IV (East). Construction involved cell excavation, subgrade preparation,

- compacted clay liner installation, perimeter levee and intermediate berm construction, intermediate berm removal, clay liner and synthetic liner tie-in, primary HDPE geomembrane liner installation, leachate collection pipe installation, geocomposite drainage layer installation on side slopes, 1' sand drainage layer installation, filter non-woven geotextile installation, and 1' operational cover installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
- 2010, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations and oversaw construction of an approximate 5-acre cell comprising Cell I/II-A, Phase III (West) & Phase IV (West). Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, clay liner and synthetic liner tie-in, primary HDPE geomembrane liner installation, leachate collection pipe installation, leachate collection sump installation, geocomposite drainage layer installation on side slopes, 1' sand drainage layer installation, filter non-woven geotextile installation, and 1' operational cover installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2010, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations and oversaw construction of 43,000-gallon steel-reinforced concrete solidification basin. Construction involved excavation, subgrade preparation, compacted clay liner installation, perimeter levee construction, geomembrane liner and leak detection sump installation, rebar installation, concrete form setup, concrete pouring and curing, and concrete pavement installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2010, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations and oversaw installation of a new groundwater monitoring well. Conducted sampling, statistical analysis, and reporting for new well.
  - 2011 - 2012, Harold J. “Babe” Landry Landfill, St. Mary Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for construction and oversaw construction of an approximate 28-acre cell comprising Cell 4, Phase II. Construction involved cell excavation, subgrade preparation, subsurface drainage system installation, compacted clay liner installation, perimeter levee construction, tie-in with Phase I, secondary synthetic liner installation (GundSeal, geomembrane-supported geosynthetic clay liner), primary HDPE geomembrane liner installation, leachate collection pipe and sump (manhole) installation, 1' sand drainage layer installation, filter non-woven geotextile installation, and 1' operational cover installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2012, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations and oversaw construction of an approximate 5-acre cell comprising Cell I/II-A, Phase VI (East) & Phase VII (East). Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, clay liner and synthetic liner tie-in, primary HDPE geomembrane liner installation, leachate collection pipe installation, leachate collection sump installation, geocomposite drainage layer installation on side slopes, 1' sand drainage layer installation, filter non-woven geotextile installation, and 1' operational cover installation. Wrote certification report detailing construction activities and quality control procedures for LDEQ approval.
  - 2013, West End Pickup Station, St. Mary Parish Government, Franklin, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations and oversaw construction of facility improvements including guardrail post and block installation, protective steel plate installation on a reinforced concrete bulk waste bin, repairs to solid waste discharge hoppers, and other work in connection therewith.
  - 2013, West End Pickup Station, St. Mary Parish Government, Franklin, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations and oversaw construction of a lift station rehabilitation project including replacement of the pump, control panel, float system, control valves.



- 2013, Harold J. "Babe" Landry Landfill, St. Mary Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations and oversaw construction of a pre-subtitle D landfill cell dewatering system.
- 2014, Harold J. "Babe" Landry Landfill, St. Mary Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for facility improvements including removal of existing pavement, base course, and sidewalks, and providing all required materials and labor to install aggregate base course, Portland cement concrete pavement, Portland cement concrete sidewalks, plastic pavement markings, and other work in connection therewith.
- 2014, R360 Mermentau, Jefferson Davis Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for an approximate 5-acre land treatment cell rebuild. Construction involved cell excavation, subgrade preparation, subsurface drainage system, compacted clay liner installation, and perimeter levee construction. Prepared certification report detailing construction activities and quality control procedures for LDNR approval.
- 2014, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for an approximate 3-acre cell comprising Cell I/II-A, Phase VI (West) & Phase VII (West). Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, clay liner and synthetic liner tie-in, primary HDPE geomembrane liner installation, leachate collection pipe installation, leachate collection sump installation, geocomposite drainage layer installation on side slopes, 1' sand drainage layer installation, filter non-woven geotextile installation, and 1' operational cover installation. Prepared certification report detailing construction activities and quality control procedures for LDEQ approval.
- 2014, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations and oversaw installation of four new groundwater monitoring wells and plugging and abandonment of four existing groundwater wells. Conducted sampling, statistical analysis, and reporting for new wells.
- 2014, West End Pickup Station, St. Mary Parish Government, Franklin, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations and oversaw construction of a reinforced concrete bulk waste bin with adjacent pavement and underlying aggregate base course, and other work in connection therewith.
- 2014, Catahoula C&D Landfill, Catahoula Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for closure of an approximate 3.4-acre C&D cell. Construction involved waste relocation, interim cover regrading, clay cap installation, topsoil installation, erosion control system installation, and hydroseeding. Prepared certification report detailing construction activities and quality control procedures for LDEQ approval.
- 2015, West End Pickup Station, St. Mary Parish Government, Franklin, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations and oversaw construction of facility improvements including metal roof and wall replacement.
- 2015, Harold J. "Babe" Landry Landfill, St. Mary Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations and oversaw construction of asphalt paving of the landfill's gravel access road including drainage design and cross drain installation.
- 2015, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for an approximate 8-acre cell comprising Cell I/II-B and Piggyback. Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, primary HDPE geomembrane liner installation, leachate collection pipe installation, leachate collection sump installation, geocomposite drainage layer installation on side slopes, 1' sand drainage layer installation, filter non-woven geotextile installation, and 1' operational cover installation. Prepared certification report detailing construction activities and quality control procedures for LDEQ approval.
- 2015, Chatsworth Bridge, Franklin, St. Mary Parish, Louisiana. Produced bid package, oversaw bidding, and oversaw construction to replace steel grate bridge deck.



- 2015, Bayou Vista Barn, St. Mary Parish Government, Bayou Vista, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations and oversaw construction of facility improvements including metal roof replacement and rolling steel service door replacement.
- 2016, Amelia, St. Mary Parish, Louisiana. Produced bid package, oversaw bidding, and oversaw construction to replace two culverts under a Parish road including asphalt removal and patching.
- 2016, West End Pickup Station, St. Mary Parish Government, Franklin, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations and oversaw fence and gate removal and replacement including design of a unique removable fence which will allow future cleaning of the adjacent waterway.
- 2017, Harold J. "Babe" Landry Landfill, St. Mary Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations and managed a 125' x 120' x 28' metal building rehabilitation which included removing and replacing the entire lighting and power systems, metal roof, metals walls, ridge vent, sky lights, purlins, girts, support steel, scabbing the main frame columns, and blasting and painting steel items that remained.
- 2017, Jefferson Parish Sanitary Landfill, Jefferson Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for a project that will consist of: the removal of existing chain link fence and gates; removal of existing geomembrane liners; removal of existing baffle system; excavation of existing compacted clay liner for remediation purposes; environmental testing for remediation confirmation; installation of new compacted clay liner; installation of new geocomposite gas vent layer; installation of new geomembrane liner and sacrificial geomembrane; installation of new HDPE pipe gas vents; installation of new chain link fence and gates; and hydro-seeding at the Jefferson Parish Sanitary Landfill's Leachate Aeration Pond.
- 2018, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for an approximate 8-acre cell comprising Cell I/II-C and Piggyback. Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, GCL installation, primary HDPE geomembrane liner installation, leachate collection pipe installation, leachate collection sump installation, geocomposite drainage layer installation on side slopes and bottom, and 1' operational cover installation. Prepared certification report detailing construction activities and quality control procedures for LDEQ approval.
- 2018, Harold J. "Babe" Landry Landfill, St. Mary Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations and oversaw construction of reinforced concrete citizens' drop-off ramp with associated asphalt and PCC pavement and subsurface drainage system.
- 2021, WCI – White Oaks Landfill, Ouachita Parish, Louisiana: produced final design drawings, technical specifications, and bid quantity calculations for an approximate 5-acre cell comprising Cell I/II-D. Construction involved cell excavation, subgrade preparation, compacted clay liner installation, perimeter levee and intermediate berm construction, primary HDPE geomembrane liner installation, leachate collection pipe installation, leachate collection sump installation, geocomposite drainage layer installation on side slopes and bottom, and 1' operational cover installation. Prepared certification report detailing construction activities and quality control procedures for LDEQ approval.

CQC Management and Site Safety and Health Management for two (2) USCACE floodwall (levee) reinforcement projects in Jefferson and Orleans Parishes, Louisiana. The scope of these projects included clearing, geotextile installation, underwater geotextile installation, heavy demolition, installation and grouting of riprap, installation of crushed stone base and asphalt paving, compacted and uncompacted levee embankment installation, installation of H-piles and sheet piles, installation of H-pile splices, fabrication and installation of corner and transition sheet piles, installation of concrete scour protection, installation of concrete drain line and drain manhole, and fertilizer and seeding application. Performed site surveys for: construction layout; construction quality control; and to quantify work items. Utilized AutoCAD to compute in-place volumes for USACE pay estimates.

Project Manager and CQC Manager for the design and construction of two FEMA EGS (Emergency Group Sites) and multiple small FEMA projects. Design and construction services included subcontractor oversight and quality control, site survey and layout, permitting and ordinance compliance, site grading, stormwater control and erosion prevention efforts, potable water distribution system, sanitary sewer system, storm sewer system, primary and secondary electrical system, paved and aggregate roads, drainage, and travel trailer installation. Developed construction budgets and schedules, developed scope of work and estimates for change order requests to the client, served as liaison between site owners, clients, FEMA, and USACE; and managed onsite construction quality control, construction safety and subcontractors.

Prepared design and bid package for upgrade of children's playground in Louisiana. Design involved: site surveying to obtain appropriate drainage pattern; development of existing conditions and construction plans from survey and measurements; design of 24' diameter, floating, wooden octagonal deck with handrails and center bench seat; subsurface drainage system utilizing geocomposite drainage layer and perforated drain pipe backfilled with aggregate and wrapped with geotextile; upgrade of existing site drainage structures; and installation of 8" wood carpet over play yard for safety surface. Oversaw construction and contractor payment.

### **GEOTECHNICAL PROJECTS**

Project manager of a high hazard dam geotechnical analysis and retrofit in North Carolina. Designed a downstream reinforcement berm, which included a blanket drain, and an upstream armoring layer consisting of riprap with a dual aggregate filter blanket. Also designed a filter-drainage diaphragm for the principal spillway conduit in accordance with SCS Technical Note 709. Analyses performed included: subsurface geotechnical and potentiometric; foundation bearing capacity; embankment resistance to sliding; stability of the upstream and downstream slopes; seepage; and settlement. Wrote report and prepared associated CAD drawings, calculations, and specifications for the dam modification application; prepared response document to regulatory comments regarding the permit application. Provided CQC assistance during dam retrofit.

Project manager of a site survey, geotechnical analysis, slope stability analysis, and bearing capacity study for an innovative dry-stacking bauxite disposal compound in Louisiana.

Designed a three-phase, earthen cofferdam to protect the construction area during a high-hazard dam rehabilitation in McKinney, Texas, for the NRCS. The dam rehabilitation involved installation of a new primary spillway conduit and construction of a Roller Compacted Concrete (RCC) auxiliary spillway. After the lake was drained, each phase of the cofferdam system was constructed to protect the work area from reservoir water inundation. Cofferdam design included analysis of geotechnical data, slope stability analyses utilizing Slope/W with Spencer's Method utilizing a circular slip surface, construction sequencing, and volume analysis.

Oversaw a 3+ year project that involved pre-loading soft compressive clays at the Harold J. "Babe" Landry Landfill in Berwick, LA, in order to incur settlement in the soils prior to construction. A Citizens' Dump (reinforced concrete structure with sand backfill and asphalt ramp) was constructed over the pre-loaded area and the dump allows local residents to back up onto the ramp and dump their waste directly into roll-off boxes so that they don't have to drive to the landfill cell's working face. The footprint of the Citizen's Dump was pre-loaded with sand (which also served as the ramp's backfill during construction) to approximately 150% of the expected post-construction load. Settlement plates were installed within the Citizens' Dump area prior to pre-loading and they were surveyed periodically for 3 years. Settlement rates were tracked and computed using the survey data. When deemed appropriate, excess sand was removed (so that the current load was approximately equivalent to the post-construction load) and settlement plate monitoring continued. Since unloading, data derived from the settlement plate surveys showed very little settlement indicating the project has been successful. Construction of the Citizens' Dump is anticipated in nearing completion in 2018.

### ENVIRONMENTAL PROJECTS

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Perform ongoing semiannual groundwater sampling of monitoring well networks at two Type I/II/III solid waste landfills in Louisiana. Field activities include water level measurement, well purging, sample collection, and quality control implementation. Conduct statistical analysis of laboratory results, create potentiometric surface maps, and write reports summarizing results and interpretations. The laboratory results are analyzed to determine if a statistical difference exists between analyte concentrations in the upgradient wells and each of the downgradient wells (interwell prediction interval procedures). Sanitas statistical analysis software is used to conduct the analyses.

Oversaw cleanup of two leachate spills and one cleanup from storage of Type I/II leachate in an unlined area at a solid waste facility. Conducted sampling of cleanup areas and compared results to LDEQ's Risk Evaluation/Corrective Action Program (RECAP) Screening Standards to determine if additional cleanup efforts were necessary. Wrote reports of such activities for client and LDEQ.

Conducted environmental baseline investigation and environmental site assessments and wrote reports for such activities for industry and commercial interests throughout Louisiana. Collected soil and groundwater samples for laboratory analyses utilizing a geoprobe rig for environmental baseline investigations. Collected soil samples for geotechnical soil classification and constructed boring logs, cross sections, and 3D fence diagrams. Developed remediation solutions under LDEQ's Risk Evaluation/Corrective Action Program (RECAP).

Developed request for proposals (RFP's) and agreements, and oversaw proposal review and acceptance for Parish residential waste collection contracts, emergency debris removal contracts, and emergency debris management contracts.

Prepared bid packages, oversaw bidding, and oversaw delivery and installation of compaction-ejection trailers for a Parish Transfer Station in Louisiana.

Prepared bid packages, oversaw bidding, and oversaw delivery and installation of an automated sewage sludge receiving station with pump at a solid waste landfill in Louisiana.

Prepared applications, certifications, and renewal applications for pre-approved LDEQ Emergency Debris Sites.



### **AIR PERMITTING PROJECTS**

Prepared numerous Part 70 Operating Permit Applications, modification applications, and renewal applications for solid waste landfills and E&P waste treatment facilities in Louisiana. Performed NSPS, PSD, NSR, NAAQS, NESHAP, and HAPs/TAPs review for the facilities. In accordance with 40 CFR 60 Subparts WWW and XXX, oversaw Tier 2 sample collection and testing for numerous projects. Utilized these results, along with the EPA's LandGEM model, to estimate the facilities' NMOC emissions to determine applicability of Subparts WWW and XXX. Performed calculations of: fugitive landfill emissions; VOC emissions from leachate; fugitive dust emissions; stationary internal combustion engine emissions; flares; leachate evaporator; and tank emissions. Provide ongoing semiannual and annual compliance reporting, ERIC emissions inventory data reporting, and Greenhouse Gas Reporting.

Performed air permitting requirements analysis for proposed Underground Injection Control (UIC) facility. In addition to accepting liquid oil and gas Exploration and Production (E&P) wastes from generators in the area, the proposed UIC facility will accept leachate and contact water from a nearby Type I/II/III solid waste landfill for deep-well injection disposal. The UIC facility was scrutinized for applicability of NSPS, PSD, NSR, NAAQS, NESHAP, and HAPs/TAPs, as well as applicability of other State and Federal air regulations.

Prepared large industrial client's air permit application for compliance with 40 CFR 70, the Louisiana Air Quality Regulations and New Source Performance Standards (NSPS). Performed emissions calculations for boilers, baghouses, tanks, fugitive sources, and a new lime handling system. Prepared the revised Part 70 Permit Operating Application including the Application for Emissions, GC-17 Report, and Emission Inventory Questionnaires.

Prepared Title V permit modification applications and renewal applications proposing passive solar-powered vent flares, active landfill gas collection and control system (LGCCS) with candlestick flare, and landfill gas-fueled leachate evaporator system at WCI – White Oaks Landfill in Monroe, Louisiana. The leachate evaporator combusts landfill gas collected at the landfill thereby reducing the emission rates of pollutants such as VOC's and HAP's while at the same time using the heat from combustion to perform another environmentally beneficial project – the evaporation of landfill leachate.

### **WATER RESOURCES PROJECTS**

In concert with the design and development of a solid waste landfill expansion, designed an adjoining 54-acre wetlands mitigation area for a USACE Section 404 permit application. The wetlands mitigation area contains a 100'-wide meandering slough with an outfall controlled by a discharge weir. The slough is designed to retain stormwater from the 25-year/24-hour rainfall event onsite so that increased runoff from the landfill is mitigated. The slough and surrounding area were planted with hardwood seedlings to create a forested riparian habitat, which in combination with high-quality, permanent wetlands created by the slough, offers superior habitat to wildlife including waterfowl and various aquatic species. The slough, in combination with the discharge weir, is improving downstream water quality by promoting nutrient uptake, sediment deposition, and minimizes downstream channel bank and bed erosion. Construction activities were completed in 2010.

Project manager of a \$100,000 grant from the Great Lakes Commission to study the effectiveness of sediment reduction from bankfull floodplain construction within an urban/improved drain system in Michigan. Developed budget, experimental techniques, and experimental protocol for the project. Purchased and installed two continuously-logging turbidity/depth meters at the upstream and downstream sections of the project reach. Analyzed suspended solids concentration (SSC) samples collected at each meter location to correlate turbidity with SSC. Statistically analyzed data logged by meters to determine effectiveness of constructed bankfull floodplain at reducing sediment load in the stream. Wrote report for the Great Lakes Commission detailing the findings of the study. Also wrote thesis for MSCE degree from LSU on this project. Thesis title: *Urban Stream Stabilization Using Regional Hydraulic Geometry Curves for Bankfull Floodplain Design* [[http://etd.lsu.edu/docs/available/etd-07032007-152113/unrestricted/Fourrier\\_Thesis.pdf](http://etd.lsu.edu/docs/available/etd-07032007-152113/unrestricted/Fourrier_Thesis.pdf)].

Participated in large-scale stream restoration projects in North Carolina which included hydrologic/hydraulic stream analyses, flood control, floodplain construction and ecological restoration. Utilized Rosgen stream restoration techniques which involved reference reach simulation. Analyses and designs were performed with AutoCAD, BOSS-RMS, HEC-RAS, HEC-HMS, and RIVERMorph©. Conducted detailed geomorphic survey of streams which concentrated on stream geometry, dimensions, pattern, profile, bed material, armor material, riparian zone, and bank conditions for the purpose of classification, evaluation and design.

Co-project manager for an urban/channelized drain system restoration and flood control project in Michigan. Developed drain improvement design plans which included regional hydraulic geometry curve development, bankfull floodplain design utilizing the regional hydraulic geometry curves, stream control structures (e.g., cross vanes, energy dissipaters, J-hook vanes, and vegetated gabions), beach outlet structure, constructed unsteady state model for analysis of peak flow attenuation resulting from constructed storage areas, performed culvert analyses, and prepared construction drawings. Analyses and designs were performed with AutoCAD, BOSS-RMS, HEC-RAS, HEC-HMS, CulvertMaster, and RIVERMorph©.

Served as project director for two survey and design projects with the USDA's NRCS-Mississippi Office; projects included sites within four different counties. Supervised or conducted the survey and design of over 80 grade stabilization/erosion control structures, which incorporated standard cantilever pipes, box inlet pipes, hooded-inlet pipes, and drop inlet pipes within earthen levees (dams). In addition to earthen levees, the structures were designed with emergency spillways and water-control diversion berms. Design services included preparation of construction detail drawings, soils maps showing drainage area and structure location, topographic maps showing drainage area and structure location, and detailed watershed hydrologic analysis.

Conducted floodplain impact analysis of proposed streamside developments using HEC-RAS for County Drain Commissioner in Michigan.

Compiled county property plats into district base maps for a large rural/natural and urban/improved drain systems in Michigan. Assisted in developing drain improvement design plans for small urban/improved drain systems. Collected and analyzed data such as topographic data (field surveys), digital elevation maps, rain data, soil types, current land use, current drain properties, future potential land use, current bridge/culvert configurations, georeferenced rasterized images, and a variety of digital map information.

#### **INSTRUCTOR FOR THE FOLLOWING COURSES**

- *E&P Waste Acceptance at LDEQ-Permitted Type I (Industrial) Solid Waste Landfills*, Louisiana Solid Waste Association (LSWA) Workshop, Marksville and Shreveport, LA, 2011.
- *Air Quality Compliance at Solid Waste Landfills*, Louisiana Solid Waste Association (LSWA) Workshop, Marksville and Shreveport, LA, 2012.
- *MSW Compaction*, Louisiana Solid Waste Association (LSWA) Workshop, Marksville, LA, 2015.
- *Groundwater Monitoring at Solid Waste Landfills*, Louisiana Solid Waste Association (LSWA) Workshop, Lafayette, LA, 2017.
- *Landfills 101 – Basics of Design and Operation*, Louisiana Solid Waste Association (LSWA) Workshop, Lafayette, LA, 2018.
- *Survey and Integrity Inspections of Leachate Collection Lines*, Louisiana Solid Waste Association (LSWA) Workshop, Lafayette, LA, 2019.



**PERTINENT CONTINUING PROFESSIONAL DEVELOPMENT**

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- RIVERMorph© Stream Restoration Software Training, FMSM Engineers, 2003.
- OSHA 10-Hour Construction Training, 2007.
- Basic First Aid and CPR Training, 2007.
- ASCE, Fundamentals of Slope Stability, 2008.
- ASCE, Soil Basics for Engineers, 2008.
- ASCE, Geotechnical Field Exploration Using Test Borings, 2008.
- ASCE, Design of Waste Containment Liner and Final Closure Systems, 2008.
- LDEQ, Introduction to RECAP Workshop, 2008.
- NRCS, Conservation Planning Training, 2009.
- AutoCAD Civil 3D 2010 Essentials Training Course, 2009.
- Sanitas – Applied Groundwater Statistics for RCRA Applications, 2010.
- AutoCAD Civil 3D 2011 Essentials Training Course, 2010.
- TRI/Environmental, Inc., Construction QA/QC for Geosynthetic Installations and Construction QA/QC for Compacted Clay Liner & GCL Installation, 2014.
- Member of Solid Waste Committee for the LASCE Report Card for Louisiana Infrastructure, 2016-2017.
- Member of American Society of Civil Engineers.

### EXPERTISE

- Solid Waste Landfill Design, Permitting, and Compliance
- Landfill Cell Bid Package Preparation, Construction Oversight and Certification Reporting
- Computer Aided Drafting and Design (CADD)
- LPDES (Water Discharge) Permitting, Compliance and Monitoring
- Field Investigation and Surveying
- Flood and Erosion Control Structure Design
- Hydrologic and Hydraulic Modeling
- Water Resources Management

### EXPERIENCE SUMMARY

Engineering and design experience include geotechnical, civil, environmental, and water resources, as well as bridge and road design and geometrics, hydrogeologic investigations, environmental site analyses, and construction oversight.

### CREDENTIALS

- **Bachelor of Science in Civil Engineering**, 1993, Louisiana State University.
- **Minor in Environmental Engineering**, 1993, Louisiana State University.
- **Minor in Mathematics**, 1993, Louisiana State University.
- **Professional Engineer** – Louisiana (License No. 28229).
- **Professional Engineer** – Mississippi (License No. 14541).
- **Project Manager/Senior Engineer** – Sigma Engineers and Constructors, Inc.
- **Vice President and Engineering Manager** - Fourrier & de Abreu Engineers, LLC.

### COMPUTER DESIGN SOFTWARE

Proficient in the following engineering software:

- **AutoCAD 2019 Civil 3D** (Landfill Permit and Construction Design Drawings and Volume Calculations)
- **CulvertMaster** (Surface Water Hydraulic Analysis)
- **Autodesk Storm and Sanitary Analysis** (Surface Water Hydrologic and Flow Analysis)
- **HEC-2, HEC-RAS, and HEC-HMS**
- **HELP** (Hydrologic Evaluation of Landfill Performance Model – Leachate Volume Estimation Software)
- **Slope/W** (Slope Stability Software)

### ENGINEERING EXPERIENCE SUMMARY

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Project Manager with over twenty-four years of experience in the fields of Civil and Environmental Engineering. Currently responsible for the design, management and inspections of various environment and civil engineering projects with extensive experience involving solid waste facility permitting and design, storm water system designs, construction monitoring, management & certification, environmental site assessments, SWPPP, SPC, and SPCC preparation and implementation. He also has other experience including foundation design, bridge design, bridge inspection, road design and repairs, geometrics and noise wall design.

- Managed the construction and contract administration for many solid waste facility projects including cell development, final cover installation and transfer/pickup station projects.
- Managed and performed all aspects associated with the development of many landfill applications including new facilities, expansions, modifications, renewals and LPDES permits.



- Performed calculations and generated designs associated with the development of solid waste facilities including site/cell layouts, storm water routing, wastewater collection and treatment, geotechnical features, HELP model, airspace volumes and water/leachate/gas piping.
- Managed and provided project oversight for the work performed by subcontractors in the areas of wetlands delineations and permitting, geotechnical drilling and testing, groundwater sampling and management, storm water sampling and management, surveying, liner and piping installation crews and QAQC oversight services.
- Managed, designed and prepared construction drawings and specifications needed for the construction of many civil and environmental engineering projects in the solid waste industry various civil and environmental engineering projects located in Louisiana, Florida, Texas and Mississippi.
- Utilizes AutoCAD and Civil 3D to design landfill cells, site layouts for landfill, transfer and pickup stations and various details needed for construction projects.
- Provided a variety of engineering services for the design and operation of type I/II & III landfills, transfer & pickup stations, steel mills, railroad facilities, chemical facilities and various commercial businesses.
- Collaborated with clients in the planning of annual budgets for capital projects and operational costs.
- Prepares landfill annual fiscal planning reports with construction quantities calculated using AutoCAD / Civil 3D surfaces for depletion models.
- Provided feasibility studies and cost estimates for the development and planning of many engineering and construction projects.
- Designed and prepared the construction drawings and specifications for a temporary synthetic cap and associated collection and treatment system to control gas generated over an area of the landfill to suppress odors.
- Responsible for providing the engineering services for the layout and gas system collection design along with the associated drawings and specifications for final cover closures utilizing Closure Turf as a certified Designer; Provided construction management and CQA services for the projects.
- Represented the Closure Turf manufacturer as the Quality Assurance and Quality Control Manager for a large landfill closure project.
- Prepared design plans and specifications for a 143-acre landfill closure; Responsible for the construction management, QAQC and soil testing for the project.
- Worked with clients to provide value engineering and evaluate cost savings alternatives associated with both daily operations and construction projects.
- Performed 3rd party peer reviews and issued recommendations for various civil and environmental projects designed by outside firms.
- Evaluated, prepared and implemented SPCC, SPC, and SWPP Plans for various sites
- Managed the coordination of storm water sampling and DMR preparation.
- Served as resident engineer and inspector for the construction of drainage improvements, treatment process units and the epoxy injection and structural repair of a containment wall and floor for a large fueling dike at a large railroad facility.
- Designed structural foundations for various types of buildings.
- Prepared certification reports for the inspection of various tanks and piping.
- Conducted and prepared the reports for environmental site assessments.
- Designed a portable jack apparatus for the changing of bridge bearing neoprene pads.
- Responsible for the AASHTO inspection of the entire causeway bridge, bascule, toll booths and all other structures of the GNOEC; Prepared all corresponding inspection/annual reports and presentations.
- Designed the heights and alignments of the I-10/I-12 sound barriers in Baton Rouge.
- Responsible for pre-stressed girder, bent and span designs, span and bent qualities and bent designs for the widening of the I-10/I-12 corridor in Baton Rouge.



- Prepared the preliminary design of the Oaklawn and Bonnabel Street overpasses of I-10 in New Orleans; Prepared preliminary design of concrete column bents and pre-stressed girders.
- Acted as an on-site engineer and quality control inspector for soil cement stabilization, curb and gutter replacement, limestone and concrete patching, asphalt and concrete paving for road rehab projects.
- Assisted the USCOE in environmental assessments for qualifying sites for environmental restoration.
- Conducted load rating inspections for bridge structures.
- Worked as a student intern at the LADOTD materials lab assisting in the evaluation of materials used in the construction of projects around the state.
- Worked as a student intern in the LADOTD water resources division. Involved with several special flooding research and coastal jetty breaker design projects.

**PERTINENT CONTINUING PROFESSIONAL DEVELOPMENT**

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- Basic First Aid and CPR Training, 2018.
- TRI/Environmental, Inc., Drainage Geocomposites in Landfill Engineering, 2008.
- TRI/Environmental, Inc., Interface Friction / Direct Shear Testing & Slope Stability Issues, 2008.
- Human Resource Management Resources, Inc., Managing Effective Meetings, 2013.
- Halfmoon Education, Inc., Louisiana Stormwater Management, 2014.
- Human Resource Management Resources, Inc., Managing Conflict and dealing with Difficult People, 2015.
- Soil Vision, SVSLOPE® 2D/3D Rapid Drawdown, 2017.
- Sigma Engineers and Constructors, Inc., Leadership Training, 2018-19
- LAPELS Solid Waste Environmental Engineering Practice Committee Chair Appointee, 2015-16

### **EXPERTISE/RESPONSIBILITIES**

- Oversee Construction Materials Testing Field and Lab QA/QC Operations
- Review Field and Lab Testing Reports
- Manage CMET Field and Lab Technicians
- Provides QA/QC Oversight on Various Types of Civil Construction Projects
- Implement Field and Laboratory Employee Training and Development
- Maintain and Coordinate Field Staff Construction Service Schedules to Ensure High Quality of QA/QC Services, Project Continuity and Client Satisfaction
- Implementing and Execute Data Collection Procedures for Field and Laboratory Testing Services

### **EXPERIENCE SUMMARY**

Extensive experience in overseeing several construction materials testing and inspection programs. Types of construction materials and inspection programs executed include soil improvements for problematic soils, cast in-place concrete, prestressed concrete, post-tension slabs, masonry grout, reinforcing steel inspection, structural steel inspection, asphalt paving, precast pile, ACIP piles, drilled shafts, Dewaal piles, waste site clay and synthetic liner inspection and testing. Review test and construction QA/QC inspection reports for civil construction projects to ensure tests are performed in accordance with prescribed project standards and procedures. Ensure contractors quality control procedures comply with the project specifications during construction and/or report any noncompliant issues to the project owner/owner's representative. Provide consultant support to clients during construction to assist with or mitigate unforeseen construction issues that fall within our scope of construction oversight. For 2 years, provided Construction Quality Control Management services for the U.S. Army Corps of Engineers during the last 2 years for the Task Force Hope - Hurricane Protection Program initiative to rebuild the Greater New Orleans Hurricane Protection Systems to sustain 100 years of hurricane protection. Spent the past 10 years working for the private sector as a CMET Project Manager managing the CMET field and laboratory testing operations and overseeing testing and inspection programs for several industrial, oil and gas, local/state/federal government and commercial civil construction projects.

### **CREDENTIALS**

- **Bachelor of Science in Civil Engineering**, 2008, Florida A&M University
- **Engineer Intern - Louisiana** (Certification No. 0034279)

### **NOTABLE CMET PROJECTS MANAGED**

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- Livingston Parish Road Improvement Program; Livingston Parish, Louisiana
- EBR Parish Rotation Projects: Highland Road Improvements; Baton Rouge, Louisiana
- EBR Parish Rotation Projects: Central Thruway; Baton Rouge, Louisiana
- EBR Parish Rotation Projects: Staring Lane Extension; Baton Rouge, Louisiana
- EBR Parish Rotation Projects: O'Neal Lane Improvements; Baton Rouge, Louisiana
- Shintech Ethane Cracker Facility, Toyo Engineering corporation and CB&I, Plaquemines, Louisiana
- GIWW West Closure Complex, Jefferson Parish, Louisiana
- Our Lady of Lake Children's Hospital, Our Lady of the Lake, Baton Rouge, Louisiana
- Woman's Hospital Cancer Center, Woman's Hospital, Baton Rouge, Louisiana
- Hattiesburg Terminal Brine Pond #3, Energy Transfer, Petal, Mississippi
- E.I. Dupont Cell 17 and 10 Closure, Beard Construction Group, LLC. Delisle, Mississippi
- E.I. Dupont Cell 4 and Cell 5 Closure, Beard Construction Group, LLC., Delisle, Mississippi

#### EXPERTISE

- Solid Waste Landfill Design, Permitting, and Compliance
- Geotechnical and Groundwater Investigations, Sampling and Analysis
- Computer Aided Drafting and Design (CADD)
- LPDES (Water Discharge) Permitting, Compliance and Monitoring
- Surveying

#### EXPERIENCE SUMMARY

Application of the principles of Geotechnical and Environmental Engineering, Hydraulics, and Hydrology. Geotechnical laboratory testing in accordance with ASTM standards, and field geotechnical investigation oversight. Some tests include Atterberg limits tests, sieve analyses, soil compression tests, concrete compression test, visual classification of soils, and measurement of soil moisture content. Conducted field testing of soils using nuclear density gauge.

- **Fourrier & de Abreu Engineers, L.L.C.** Engineer Intern. January 2017 – Present.
- **SITE Engineering, INC.** Laboratory Technician. Fall 2015 – Fall 2016.
- **Cory Fremin Construction.** Summer 2011 – Fall 2015.

#### CREDENTIALS

- **Bachelor of Science in Civil Engineering**, 2016, GPA: 3.50, University of Louisiana.
- **Professional Engineer – Louisiana** (License No. 45312)
- **Honored**, University of Louisiana, Department of Civil Engineering, Outstanding Graduate Fall 2016.
- **Member**, Chi Epsilon Honor Society

#### CONTINUING EDUCATION

TRI/Environmental, Inc., Construction QA/QC for Geosynthetic Installations and Construction QA/QC for Compacted Clay Liner & GCL Installation, 2017.

#### COMPUTER DESIGN SOFTWARE

Proficient in the following engineering software:

- **AutoCAD 2017 Civil 3D** (Landfill Permit and Construction Design Drawings and Volume Calculations)
- **HEC-RAS and HEC-HMS**
- **Chempoint** (Groundwater Database Manager)
- **Chemstat** (Groundwater Statistical Analysis Software)

#### SOLID WASTE FACILITY DESIGN AND PERMITTING PROJECTS

Worked under Professional Civil Engineers on a major permit modification for the Tangipahoa Regional Solid Waste Facility. The major permit modification involved the design and construction of four new cells (Cells 13-16) at the TRSWF. Surveyed land in preparation of the construction of Cell 13. Created plans and engineering drawings in preparation for the CQA process. Oversaw numerous geotechnical investigations that involved field soil analysis, soil sample collection, laboratory testing of soil samples, and boring log preparation. Conducted the following analysis: settlement, vertical heave, and bearing capacity. Design and planning of cell excavation, leachate collection system, and final cap design. Experience in design of levee system and stormwater detention pond for landfills. Analyzed and created drawings of site geologic cross sections based on soil boring logs. Created isometric soil profiles, potentiometric surface maps, CAD volume and area calculations, and construction detail drawings for Solid Waste Standard Permit Applications. Wrote and prepared Groundwater Sampling and Analysis Plan, and Stormwater Pollution Prevention Plan.

### **GEOTECHNICAL PROJECTS**

Performed field investigations and laboratory analysis on numerous commercial and residential geotechnical engineering projects. Laboratory analysis included, but was not limited to Atterberg limits tests, sieve analyses, soil compression tests, concrete compression test, visual classification of soils, and measurement of soil moisture content.

Served on the Geotechnical Engineering team of the Civil Engineering Senior Design Project. This involved design of landfill liner system, final cap system, interim cover system, research of alternative daily cover options, and excavation plans. The geotechnical team also performed slope stability analyses on excavation slopes for the waste cells and detention pond, and fill slopes on the perimeter levees. The Geotechnical team produced specifications on the compaction and material requirements (Atterberg limits and sieve analysis requirements) for the levees. Heave calculations for bottom of waste disposal cells. Settlement and bearing capacity verifications for waste disposal cells and foundation of concrete leachate collection system basins. Volume calculations for landfill airspace, levee fill material, daily and interim cover requirements, and final cap requirements. Volume calculations were also performed for the borrow area. Before and after topographic maps were generated for the project area.

- 2017, St. Landry Parish Sanitary Landfill: Produced contour maps presenting soil elevation and thickness of various soil strata. Analysis of boring logs.
- 2017, Tangipahoa Regional Solid Waste Facility: Analyzed boring logs. Generated contour maps of tops of soil strata and strata thicknesses. Developed geologic cross sections.
- 2017, Tangipahoa Regional Solid Waste Facility: Estimating the required fill volume for subgrade and levees for the new cells of Permit Modification No.4. Waste disposal area of new cells: 48 acres.

### **ENVIRONMENTAL PROJECTS**

Experience in performing groundwater sampling of monitoring well network at Type II/III solid waste landfills in Louisiana. Field activities include water level measurement, well purging, sample collection, and quality control implementation. Conduct statistical analysis of laboratory results, create potentiometric surface maps, and write reports summarizing results and interpretations. The laboratory results are analyzed to determine if a statistically significant difference exists between analyte concentrations in the upgradient wells and each of the downgradient wells (interwell prediction interval procedures). Chempoint/Chemstat statistical analysis software is used to conduct the analyses.

Served as co-captain on the Environmental Engineering team for the Civil Engineering senior design project which was based on the St. Landry Parish Sanitary Landfill. Tasks performed on the Environmental Engineering team included, but was not limited to, leachate collection system design, leachate and stormwater treatment system design, stormwater conveyance and retention system design, groundwater monitoring well network design. Extensive research was involved in the leachate treatment system design. The Environmental Team also performed research on requirements for stormwater pollution prevention for the proposed borrow area.

- 2017, Tangipahoa Parish Regional Solid Waste Facility: participated in sampling groundwater monitoring wells. Used Chempoint/Chemstat to aide in analyzing analytical data. Generated potentiometric map.
- 2017, Tangipahoa Parish Regional Solid Waste Facility: Designed groundwater monitoring well network for new cells. Required analyzing soil strata and assuring compliance with regulations.
- 2017, Harold J. "Babe" Landry Landfill, St. Mary Parish, Louisiana: participated in sampling groundwater monitoring wells. Compiled data into table format for presentation. Generated report.



- 2017, Tangipahoa Parish Regional Solid Waste Facility: Designed stormwater management plan. Diversion berm size, perimeter berm size, and perimeter stormwater swale size design. Culvert sizing. Utilizing TR-55 Methodology.
- 2017, St. Landry Parish Sanitary Landfill: Familiarity with facility Groundwater Sampling and Analysis Plan. Quarterly groundwater monitoring report in accordance with permit modification to GWSAP.
- 2017, Tangipahoa Regional Solid Waste Facility: Wrote specifications for installation on new monitoring wells as part of permit modification for landfill expansion.
- 2016, Tangipahoa Regional Solid Waste Facility: Wrote specifications for installation on new monitoring wells as part of permit modification for landfill expansion.

Mr. Romero performed field investigations and laboratory analysis on numerous commercial and residential geotechnical engineering projects. Laboratory analyses include, but are not limited soil consolidation, Atterberg limits tests, sieve analyses, soil compression tests, concrete compression test, visual classification of soils, and measurement of soil moisture content.

**APPENDIX D**

**FDAE AASHTO, DBE AND USACE  
CERTIFICATIONS**



# CERTIFICATE OF ACCREDITATION



## Fourrier & de Abreu Engineers, L.L.C.

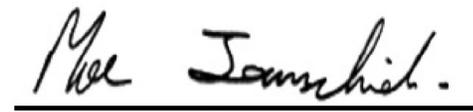
in

### Baton Rouge, Louisiana, USA

has demonstrated proficiency for the testing of construction materials and has conformed to the requirements established in AASHTO R 18 and the AASHTO Accreditation policies established by the AASHTO Committee on Materials and Pavements.

The scope of accreditation can be viewed on the Directory of AASHTO Accredited Laboratories ([aashtoresource.org](http://aashtoresource.org)).

  
\_\_\_\_\_  
Jim Tymon,  
AASHTO Executive Director

  
\_\_\_\_\_  
Moe Jamshidi,  
AASHTO COMP Chair

This certificate was generated on 05/20/2019 at 10:41 AM Eastern Time. Please confirm the current accreditation status of this laboratory at [aashtoresource.org/aap/accreditation-directory](http://aashtoresource.org/aap/accreditation-directory)



Office of the Secretary  
PO Box 94245 | Baton Rouge, LA 70804-9245  
PH: 225-379-1200 | FX: 225-379-1851

John Bel Edwards, Governor  
Shawn D. Wilson, Ph.D., Secretary

March 18, 2022

**Fourrier & de Abreu Engineers, LLC.**

Attn: Ricardo C. de Abreu  
10995 Coursey Blvd  
Baton Rouge, La. 70816

Dear Ricardo C. de Abreu:

The Louisiana Department of Transportation and Development (LADOTD) Compliance Programs Section have received your firm's Disadvantaged Business Enterprise (DBE) and Small Business Element (SBE) annual affidavit. Based on the information, which you provided, it has been confirmed that your firm continues to meet the eligibility requirements of our program and remains certified for only the following specific work categories that fall under the listed NAICS codes:

**NC541330- Engineering Services**

C01- Geotechnical Engineering  
C09- Civil Engineering  
C22- Environmental Engineering

**NC541370- Surveying and Mapping (except Geophysical) Services**

C06- Land Surveying  
740- Construction Layout

*Please note that per the federal regulations, suppliers only receive 60% goal credit towards the materials they provide. Also, note that any contractor performing work in excess of \$50,000 with the exception of electrical, mechanical and plumbing requires A Louisiana Contractor's License, which are required to have a license if work is in excess of \$10,000. You may contact the State Licensing Board for Contractors at (225) 765-2301 for more information.* All participants of the Louisiana Unified Certification Program will recognize your firm's certification. This includes all entities receiving federal transportation funding within the boundaries of our state.

You will be required to submit an annual affidavit with all supporting documents (**Business taxes with all attachments, such as 1098, 1099, K-1's and/or W-2's**) stating your firm continues to meet the eligibility requirements of the program. An email informing you to submit the necessary documentation will be forwarded to you approximately six (6) weeks prior to your anniversary date of **April 30, 2023**. However, should you not receive notification from this office for your annual affidavit; it is your responsibility to contact us. Additionally, you must notify our office immediately regarding any changes, which affect the social and economic disadvantage, size, ownership or control of your firm.

**Fourrier & de Abreu Engineering, LLC.**

March 18, 2022

Page 2

The LADOTD has contracted SJB Group, LLC to provide DBE Supportive Services to all certified DBEs, in the LAUCP, at no cost to you. This consultant can offer your firm assistance and guidance on areas such as marketing, estimating, bidding, financial preparations, etc. Contact Jackie des Bordes or Kenyatta Sparks with the SJB Group, LLC at (225) 769-3400 for any assistance needed to grow your organization.

The Louisiana UCP certifying entity reserves the right to withdraw this certification, if at any time, it is determined that **DBE and SBE** certifications was knowingly obtained by the submission of false, misleading or incorrect data. The Louisiana UCP certifying entity also reserves the right to request additional information and/or conduct an on-site visit at any time during your certification period.

We are pleased to have you as a participant in the LAUCP and wish you much success.

If you have any questions regarding the content of this letter, contact the LADOTD DBE Certification Unit at (225) 379-1382.

Respectfully,

*Rhonda Wallace*

Rhonda Wallace  
DBE/SBE Programs Manager

Enclosure (Certificate)



# LOUISIANA UNIFIED CERTIFICATION PROGRAM

## Disadvantaged Business Enterprise Program (DBE)

## Small Business Element (SBE)

This is to certify that under Title 49, Part 26 of the Code of Federal Regulations  
& under the State of Louisiana Unified Certification Program (LAUCP)

# Fourrier & de Abreu Engineers, LLC.

Is a Certified Disadvantaged Business Enterprise (DBE) & Small Business Element (SBE) in the following specialties:

**NC541330, NC541370**

*NOTE: There may be other approved NAICS Codes. The online DBE Directory includes a complete list of approved codes.*

### **Certificate Eligibility: April 2022 to April 2023**

*This certificate is valid through the above date provided. This firm meets the on-going programmatic standard and fulfills the annual update requirement to remain in good standing as a DBE. This certification is subject to annual verification and suspension or revocation based upon reasonable cause to believe that the firm is ineligible.*

*Rhonda Wallace*

**Rhonda Wallace, DBE/SBE Programs Manager**

*Louisiana Department of Transportation & Development*



USACE CERTIFICATE  
OF  
LABORATORY VALIDATION



**Fourrier & de Abreu Engineers, LLC**

10995 Coursey Blvd.  
Baton Rouge, LA,  
Ricardo de Abreu  
(225) 677-7950

has demonstrated, by abbreviated audit of its AASHTO accreditation, or by inspection of required records, equipment, procedures, facilities, and/or final reports, its proficiency to perform testing of construction materials, as established by the quality standards of AASHTO R 18 guidance and the requirements of the applicable ASTM standards.

**THIS USACE CERTIFICATE OF LABORATORY VALIDATION IS ACCURATE AS OF ITS DATE AND TIME OF GENERATION:**

**29 OCT 2021 AT 10:03 HOURS**

**ALL METHODS LISTED ON THIS CERTIFICATE OF VALIDATION WILL EXPIRE ON 03/17/2023**

PLEASE CONFIRM THE CURRENT VALIDATION STATUS OF THIS LABORATORY USING THE SEARCH FEATURE ON OUR PUBLIC WEBSITE: <https://mtc.erdcdren.mil>

Chad A. Gartrell, PE, Director  
USACE Materials Testing Center  
Vicksburg, Mississippi, USA

## CONCRETE

Concrete - C 31 - Req - Making and Curing Test Specimens in the Field  
Concrete - C 39 - Req - Compressive Strength of Cylindrical Specimens  
Concrete - C 138 - Req - Unit Weight and Air Content by Gravimetric  
Concrete - C 143 - Req - Slump  
Concrete - C 231 - Req - Air Content by Pressure \*\*\*required if C173 not performed\*\*\*  
Concrete - E 329 - Opt - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection  
Concrete - C 511 - Opt - Moist Cabinets, Moist Rooms, Water Storage Tanks  
Concrete - C 1064 - Req - Temperature of Concrete  
Concrete - C 1077 - Opt - Concrete and Concrete Aggregate Testing Standards (Quality Standards)  
Concrete - C 1231 - Opt - Unbonded Caps

## SOILS

Soils - D 421 - Req - Dry Preparation for Particle Size Distribution & Soil Constants  
Soils - D 422 - Req - Particle Size Analysis  
Soils - D 854 - Req - Specific Gravity of Soils  
Soils - D 1140 - Req - Material Finer than 75  $\mu$ m (No. 200) Sieve  
Soils - D 1557 - Req - Compaction Characteristics by Modified Effort  
Soils - D 2166 - Req - Unconfined Compressive Strength  
Soils - D 2216 - Req - Water Content  
Soils - D 2435 - Req - One-Dimensional Consolidation Properties  
Soils - D 2487 - Req - Classification of Soils  
Soils - D 2488 - Req - Description & Identification of Soils (Visual-Manual Procedure)  
Soils - D 2850 - Req - Unconsolidated, Undrained Strength in Triaxial Compression  
Soils - D 3740 - Opt - Soil and Rock Testing Standards (Quality Standard)  
Soils - D 4318 - Req - Liquid & Plastic Limits & Plasticity Index  
Soils - D 4767 - Req - Consolidated-Undrained Triaxial Compression  
Soils - D 4972 - Opt - pH of Soils  
Soils - D 5084 - Req - Hydraulic Conductivity using a Flexible Wall Permeameter

Soils - D 6913 - Req - Particle-Size Distribution of Soils Using Sieve Analysis  
Soils - D 6938 - Req - Density and Water Content by Shallow Depth Nuclear Method