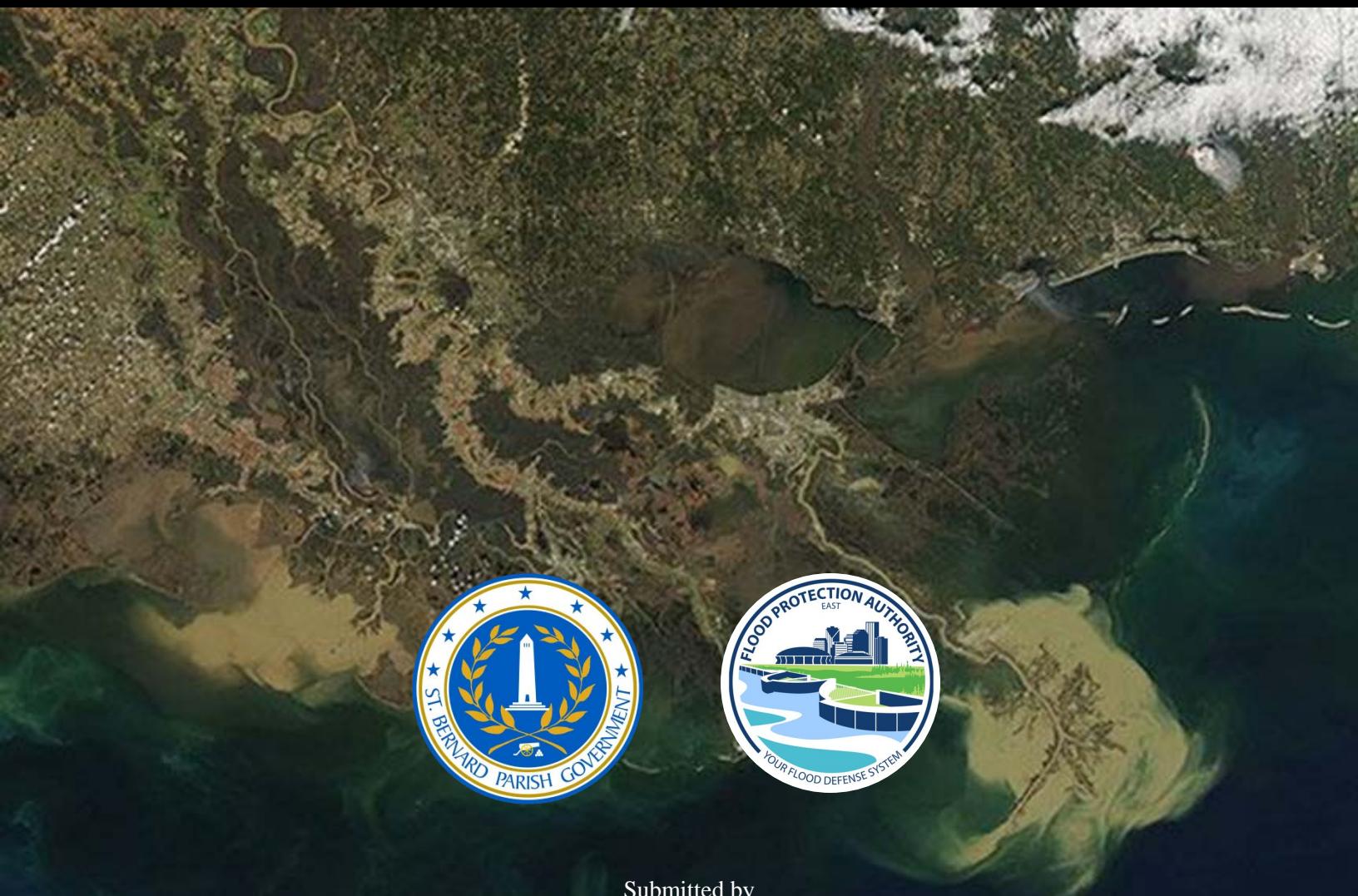


Lake Borgne Drainage Canals Assessment

April 24, 2019



Submitted by

EG **EVANS-GRAVES**
ENGINEERS, INC.

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April 24, 2019

Hon. Guy S. McInnis
President, St. Bernard Parish
8201 W Judge Perez Drive
Chalmette, LA 70043

Mr. Derek Boese
Chief Administrative Officer
Southeast Louisiana Flood Protection Authority - East
6920 Franklin Avenue
New Orleans, LA 70122

RE: Lake Borgne Drainage Canals Condition

Dear Mr. McInnis and Mr. Boese:

As you are aware, Evans-Graves Engineers, Inc. is conducting observation of the eight (8) pump stations and 56 miles of drainage canals described in the Scope of Work in our contracts with St. Bernard Parish and SLFPA-E. This letter is to provide you with our observations of the drainage canals only.

As stated in the firm's original scope of work, Evans-Graves Engineers has visually observed and assessed the condition of the canals in St. Bernard Parish that were described to us as being those for which SLFPA-East has been responsible. Observations were made indirectly by the capture and analysis of tens of thousands of georeferenced high resolution aerial orthophotos. These images are compiled in an ESRI ArcGIS database that allows for the rapid and efficient observation of any single one or all of the photographs based on its mapped location.

No field measurements have been made and no surveys or control taken of these canals. All locations are retrieved from the Unmanned Aerial Vehicles (UAVs) that were used for the project. Flight plans were developed for each canal to capture images from two independent flight paths to allow a higher probability of a clear line of sight under overhanging foliage or obstructions. These flight paths are electronically saved and are repeatable. The resolution of the orthophotos used on this project is 0.4 inches per pixel (2.4 ppi).

The primary purpose of Evans-Graves's work was to evaluate the visible condition of each canal to determine if that canal was *adequate for service*. For the purposes of this report, we define *adequate for service* as being functional and appropriate for its intended use. Because all of the observed canals achieved this threshold, we further subjectively placed each canal in very generalized categories of Poor, Fair, and Good, based on a visual assessment of the overall condition of the canal relative to ideal conditions. SLFPA-East has

petitioned for some particular canals to be reevaluated based on specific operations that have been undertaken by the Flood Authority on these canals. Evans-Graves looked at each of these situations with the additional information and, although our observations remain unchanged, we have no objection to what we considered the Flood Authority's reasonable requests for amending several of the canal ratings.

The observations made by Evans-Graves include evaluation of the general visual condition of the canal, to include such items as amount and location of vegetative undergrowth, extent of tree dripline overhang, presence and density of surficial aquatic plants (referred to here as "pond algae"), general length and depth of the canal, development density, areas of historic flooding, and visible presence of siltation, erosion, channel meanders, trash, and debris. These parameters are assigned numeric values and are then composited together to define a ranking of the need for remediation for each individual canal.

In this document, a 'poorly maintained channel' will be defined as a channel in the bottom of a ditch or canal that appears excessively overgrown or silted in, has accumulated excessive plant debris or trash, or has a general appearance that is excessively rough.

SLFPA-East has commented that "pond algae presence has no bearing. Water flows in all canals after rain events. This should not influence rating." Evans-Graves has taken pond algae considerations out of the firm's overall canal rating system, but is keeping the line item for pond algae removal in the cost estimate for the canals.

All of the locations and lengths of the named canal segments included in this report are available in the Arc-GIS database that will be provided to the Parish and the Flood Authority.

This report does not address dredging of the canals. No measurement or assessment was made of conditions below the water surface, specifically water depth and siltation measurements, as this was not part of our scope.

This report does not make any assessment of the hydraulic needs or capabilities of the canals, as this was not part of our scope.

Multiple information sources were gathered and analyzed for the purpose of this report, but no definitive source of information on the canals was provided. Questions or comments which have been or will be presented by the Parish and the Flood Authority regarding past or ongoing actions have not been and will not be corroborated by Evans-Graves. Any questions and comments were or will be included as such in the report. Dates, measurements, quantifications, qualifications, and condition ratings mentioned in this report should be taken as

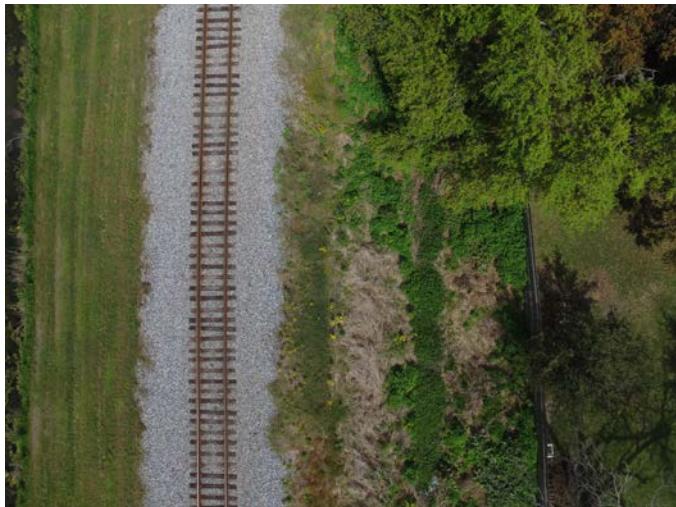
approximations and are accurate to the best of our knowledge based on the resources that were at our disposal during the time of our assessment.

Canals in the Chalmette and Arabi Areas

For this report, the Chalmette and Arabi Areas are nominally defined as that portion of St. Bernard Parish from the Orleans Parish line to Louisiana Highway 47 (Paris Road), being part of a project area bounded by the Orleans Parish line on the north, the Mississippi River Levee on the west, the St. Bernard Back Protection Levee on the east, and the USACE Hurricane Protection Levee on the south.

Alexander (East Railroad Ditch) runs parallel and East of Norfolk Southern RR for 5500 feet from West St. Bernard Hwy to Alexander Ave. at Benjamin St. in Arabi. The Ditch is in an area that has a reported history of flooding events. The Ditch is a small, shallow stream with moderate to heavy pond algae in pockets, with a poorly maintained channel and overgrowth on both banks.

Overall condition: Fair



Alexander (East Railroad Ditch); Visible overgrowth and poorly maintained

Artillery (Chalmette Vista Canal) runs parallel and West of Artillery Dr. for 1500 feet from 8th St. to Claiborne Square Canal in Chalmette. The Canal is in an area that has a reported history of flooding events. The Canal is a small canal with heavy pond algae throughout and overgrowth on both banks. The canal is subsurface south of 8th Street.

Overall condition: Fair

Aycock North (West Railroad Ditch) runs parallel and West of Norfolk Southern RR for 2500 feet from Dubreuil St. to Florida Walk Canal in Arabi. The Ditch is in an area that does not have a reported history of flooding events. The Ditch is a small, shallow stream with heavy tree overgrowth throughout. Culverts under railroad discharge east to Florida Walk Canal.

Overall condition: Poor

Aycock South (West Railroad Ditch) runs parallel and West of Norfolk Southern RR for 5000 feet from St. Claude Ave. to Florida Walk Canal in Arabi. The Ditch is in an area that has a reported history of flooding events. The Ditch is a medium, shallow stream and is adequately maintained. Culverts under railroad discharge east to Florida Walk Canal.

Overall condition: Good

Claiborne Square East (Chalmette Vista Canal) runs parallel and North of E. Claiborne Sq. for 2000 feet from Old Hickory Ave. to King Canal in Chalmette. The Canal is in an area that has a reported history of flooding events. The Canal is a small, shallow stream. Municipal debris is visible in the canal. The channel is poorly maintained. Overgrowth is present on both banks.

Overall condition: Poor

Claiborne Square West (Chalmette Vista Canal) runs parallel and North of E. Claiborne Sq. for 2000 feet from Artillery Drive to SBP Hospital in Chalmette. The Canal is in an area that has a reported history of flooding events. The Canal is a small, shallow stream. The channel is poorly maintained. Overgrowth is visible on both banks.

Overall condition: Fair

Claiborne Square Central (Chalmette Vista Canal) runs parallel and North of E. Claiborne Sq. for 2000 feet from King Canal to Artillery Drive in Chalmette. The Canal is in an area that has a reported history of flooding events. The Canal is a medium feeder canal. Overgrowth is visible on both banks. The canal appears adequately maintained.

Overall condition: Fair

Cougar North (Guerenger Canal) runs parallel and East of Cougar Dr. for 4500 feet from E. Judge Perez Dr. to Forty Arpent Canal in Chalmette. The Canal is in an area that has a reported history of flooding events. The Canal is a medium to large feeder canal. The canal appears adequately maintained.

Overall condition: Good

Cougar South (Guerenger Canal) runs parallel and East of Cougar Dr. for 3500 feet from W. St. Bernard Hwy. to E. Judge Perez Dr. in Chalmette. The Canal is in an area that does not have a reported history of flooding events. The Canal is a small to medium feeder canal. The canal appears adequately maintained. Pond algae is visible along both banks. Overgrowth is visible on both banks.

Overall condition: Good

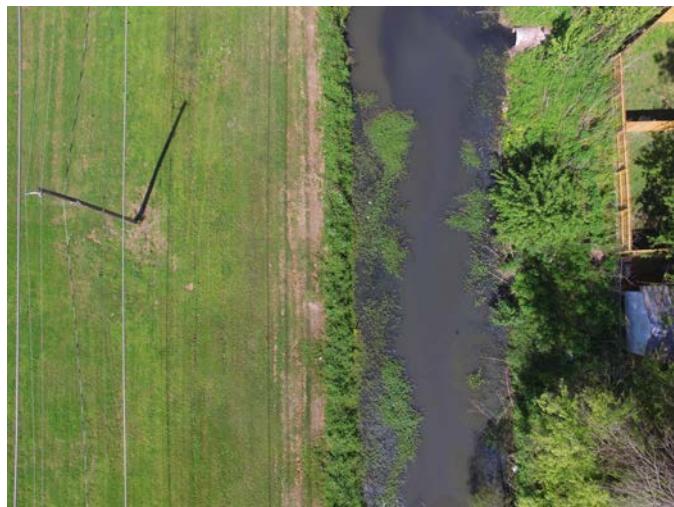
Kings (Chalmette Vista Canal) runs parallel and Southeast of Kings Dr. for 5500 feet from Claiborne Sq. Canal to Florida Walk Canal in Chalmette. The

Canal is in an area that does not have a reported history of flooding events. The Canal is a medium to large feeder canal. Pond algae pockets are visible along both banks. The canal appears adequately maintained.

Overall condition: Good

Pakenham North (Guichard Canal) runs parallel and Southeast of Pakenham Dr. for 5500 feet from W. Josephine St. to Florida Walk Canal in Chalmette. The Canal is in an area that has a reported history of flooding events. The Canal is a medium to large feeder canal. Significant pond algae pockets are visible. The canal appears adequately maintained.

Overall condition: Fair



Pakenham North (Guichard Canal)

Pakenham South (Guichard Canal) runs parallel and Southeast of Pakenham Dr. for 3500 feet from W. St. Bernard Hwy. to W. Josephine St. in Chalmette. The Canal is in an area that does not have a reported history of flooding events. The Canal is a small to medium, shallow stream. The channel is poorly maintained.

Overall condition: Good

PS-1 01 (Florida Walk Canal) runs parallel and Southwest of Chalmette Back Levee for 2500 feet from PS-1 to Cougar Drive in Chalmette. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. The canal appears adequately maintained. Pond algae is visible along both banks. Heavy trees overhang the southwest bank.

Overall condition: Good

PS-1 02 (Florida Walk Canal) runs parallel and Southwest of Chalmette Back Levee for 2000 feet from Cougar Drive to Perrin Drive in Arabi. The Canal is in an area that does not have a reported history of flooding events. The Canal is a

large primary storage canal. The canal appears adequately maintained. Pond algae is visible along both banks.

Overall condition: Good

PS-1 03 (Florida Walk Canal) runs parallel and Southwest of Chalmette Back Levee for 1000 feet from Perrin Drive to Center Street in Arabi. The Canal is in an area that has a reported history of flooding events. The Canal is a large primary storage canal. The canal appears adequately maintained. Dense pond algae is visible throughout.

Overall condition: Good

PS-1 04 South (Florida Walk Canal) runs parallel and Southwest of Chalmette Back Levee for 1000 feet from Center Street to Norfolk Southern Railroad in Arabi. The Canal is in an area that has a reported history of flooding events. The Canal is a large primary storage canal. Moderate Pond algae is visible along both banks.

Overall condition: Good

PS-1 04 West (Florida Walk Canal) runs parallel and Southwest of Chalmette Back Levee for 1000 feet from Center Street to Norfolk Southern Railroad in Arabi. The Canal is in an area that has a reported history of flooding events. The Canal is a large primary storage canal. The canal appears adequately maintained. Dense pond algae is visible throughout.

Overall condition: Good

PS-2 01 (Florida Walk Canal) runs parallel and Southwest of Chalmette Back Levee for 4000 feet from PS-2 to Jean Lafitte Parkway in Chalmette. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. The canal appears adequately maintained. Banks are overgrown where under trees. Pond algae is visible along both banks.

Overall condition: Good

PS-3 03 (Forty Arpent Canal) runs parallel and Southwest of Chalmette Back Levee for 3000 feet from Paris Road to PS-2 in Chalmette. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. The channel poorly maintained. Pond algae is visible along both banks. Heavy overgrowth is visible on both banks.

Overall condition: Fair

PS-6 01 (Florida Walk Canal) runs parallel and Southwest of Chalmette Back Levee for 1000 feet from PS-6 to PS-1 in Chalmette. The Canal is in an area that has a reported history of flooding events. The Canal is a large primary storage canal and sump area. The canal appears adequately maintained.

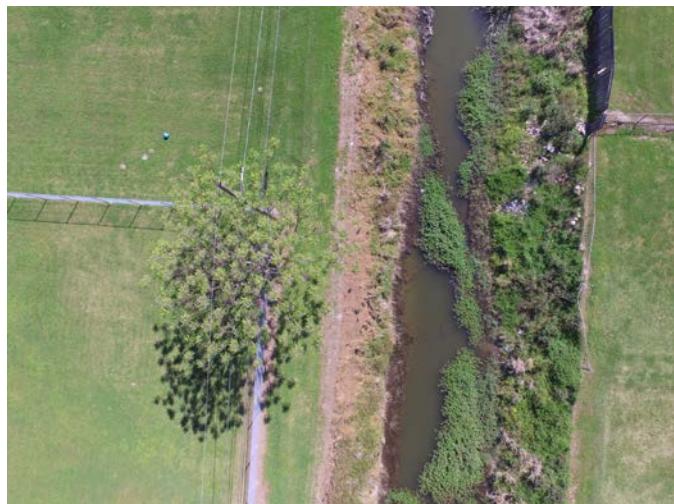
Overall condition: Good

Schnell South (Eickes Canal) runs parallel and West of Schnell Drive for 4500 feet from Bienvenue Street to W. Judge Perez Drive in Arabi. The Canal is in an area that has a reported history of flooding events. The Canal is a small to large shallow ditch. The channel is poorly maintained. Overgrowth is visible on both banks.

Overall condition: Fair

Schnell North (Eickes Canal) runs parallel and West of Schnell Drive for 4000 feet from W. Judge Perez Drive to Florida Walk Canal in Arabi. The Canal is in an area that has a reported history of flooding events. The Canal is a small to large canal. Overgrowth is visible on both banks. Pond algae is visible along both banks and in dense pockets.

Overall condition: Fair



Schnell North (Eickes Canal)

Canals in the Meraux Area

For this report, the Meraux Area is nominally defined as that portion of St. Bernard Parish from Louisiana Highway 47 (Paris Road) in Chalmette to the Dubouchel Canal that parallels St. Marie Drive in Meraux, being part of a project area bounded by the Orleans Parish line on the north, the Mississippi River Levee on the west, the St. Bernard Back Protection Levee on the east, and the USACE Hurricane Protection Levee on the south.

Chalona South (Corinne Canal) runs parallel and East of Chalona Drive for 6000 feet from E. St. Bernard Hwy. to Missouri Street in Chalmette. The Canal is in an area that does not have a reported history of flooding events. The Canal is a small feeder ditch. Overgrowth is visible on both banks. The channel is poorly maintained.

Overall condition: Fair

Chalona North (Corinne Canal) runs parallel and East of Chalona Drive for 5500 feet from Missouri Street to Forty Arpent Canal in Chalmette. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large feeder ditch. Overgrowth is visible on both banks. The channel is poorly maintained.

Overall condition: Fair

Golden (De La Ronde Canal) runs parallel and Northwest of Golden Dr. for 6500 feet from E. Judge Perez Blvd. to Forty Arpent Canal in Chalmette. The Canal is in an area that has a reported history of flooding events. The Canal is a small to medium feeder canal. The canal appears adequately maintained. Pond algae is visible in pockets throughout.

Overall condition: Good

Judge Perez 03 (Twenty Arpent Canal) runs parallel and Northeast of E. Judge Perez Dr. for 10000 feet from St. Marie Canal to Chalona Canal in Meraux. The Canal is in an area that has a reported history of flooding events. The Canal is a small to medium feeder canal. Some heavy tree overhang is visible on the southwest bank. The northeast bank appears adequately maintained.

Overall condition: Fair

Palmisano South (Water Works Ditch) runs parallel and Southeast of Palmisano St. for 1000 feet from E. St. Bernard Hwy. to St. Avide Canal in Chalmette. The Ditch is in an area that does not have a reported history of flooding events. The Ditch is a small, shallow stream. Overgrowth is visible on both banks. The channel is poorly maintained.

Overall condition: Poor

Palmisano North (Water Works Ditch) runs parallel and Southeast of Palmisano St. for 5000 feet from E. St. Bernard Hwy. to St. Avide Canal in Chalmette. The Ditch is in an area that does not have a reported history of flooding events. The Ditch is an enclosed box culvert throughout.

Overall condition: Good

PS-3 01 Northwest (Forty Arpent Canal) runs parallel and Southwest of Chalmette Back Levee for 500 feet from PS-3 to Paris Road in Chalmette. The Canal is in an area that has a reported history of flooding events. The Canal is a small, shallow stream. Overgrowth is visible on both banks. The channel is poorly maintained.

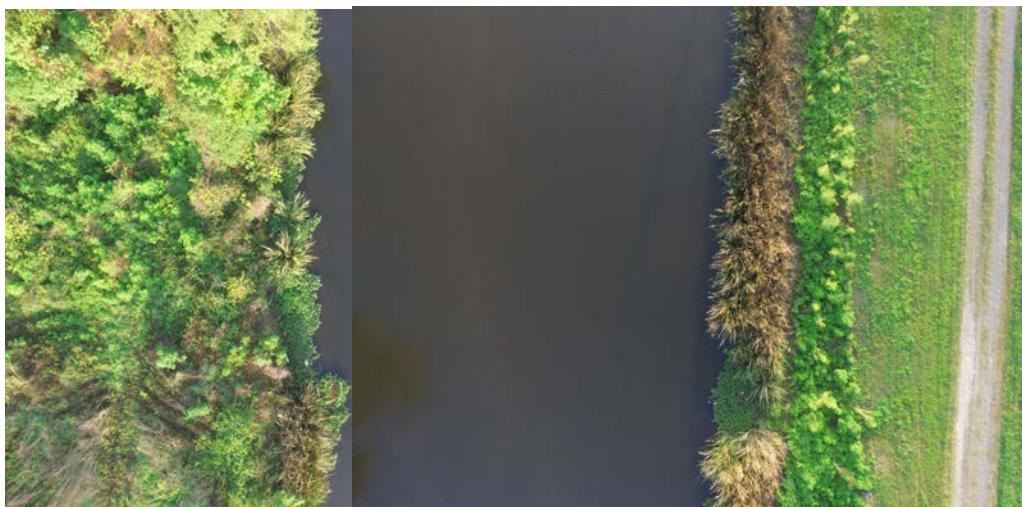
Overall condition: Poor

PS-3 01 Southeast (Forty Arpent Canal) runs parallel and Southwest of Chalmette Back Levee for 7000 feet from PS-3 to Paris Road in Chalmette. The Canal is in an area that has a reported history of flooding events. The Canal is a large primary storage canal. Overgrowth is visible on both banks. The canal appears adequately maintained.

Overall condition: Good

PS-4 02 (Forty Arpent Canal) runs parallel and Southwest of Chalmette Back Levee for 500 feet from Munster Boulevard to Jacob Drive in Meraux. The Canal is in an area that has a reported history of flooding events. The Canal is a large primary storage canal. Overgrowth is visible on both banks. Heavy trees overhang most of the southwest bank. The canal appears adequately maintained.

Overall condition: Fair



PS-4_02 (Forty Arpent Canal)

PS-4 03 (Forty Arpent Canal) runs parallel and Southwest of Chalmette Back Levee for 2000 feet from Munster Boulevard to Jacob Drive in Meraux. The

Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. Overgrowth is visible on both banks. Heavy trees overhang most of the southwest bank. The canal appears adequately maintained.

Overall condition: Fair

PS-4 04 (Forty Arpent Canal) runs parallel and Southwest of Chalmette Back Levee for 5000 feet from St. Marie Drive to PS-7 in Meraux. The Canal is in an area that has a reported history of flooding events. The Canal is a large primary storage canal. Overgrowth is visible on both banks. Heavy trees overhang most of the southwest bank. The canal appears adequately maintained.

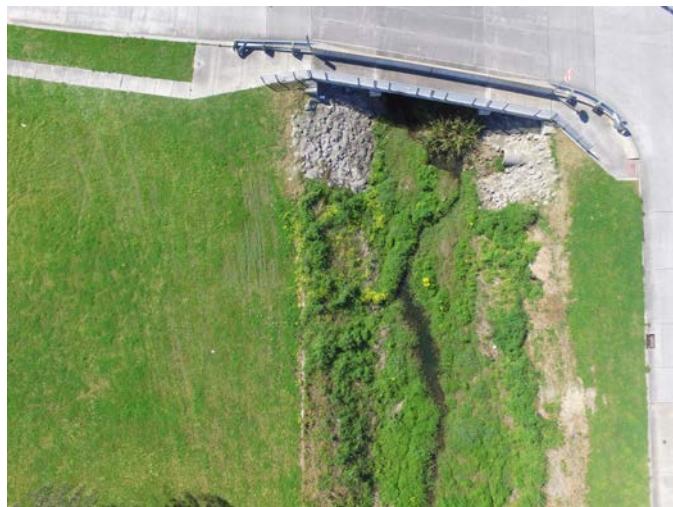
Overall condition: Fair

PS-7 01 (Forty Arpent Canal) runs parallel and Southwest of Chalmette Back Levee for 2500 feet from PS-7 to PS-3 in Meraux. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. Large pockets of dense pond algae are visible throughout. Overgrowth is visible on both banks. Dense trees overhang the south bank. The canal appears adequately maintained.

Overall condition: Fair

St. Avide (Corinne Canal) runs parallel and South of St. Avide Street for 3500 feet from Delambert Street to Gallo Drive in Chalmette. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large, shallow canal. Overgrowth is visible on both banks. The channel is poorly maintained.

Overall condition: Fair



St. Avide (Corinne Canal); Visible overgrowth

St. Marie Northeast (Dubouchel Canal) runs parallel and North of St. Marie Drive for 4000 feet from E. St. Bernard Hwy. to Florida Avenue in Meraux. The

Canal is in an area that does not have a reported history of flooding events. The Canal is a large feeder canal. Moderate to heavy pond algae is visible along both banks. Overgrowth is visible on both banks. The canal appears adequately maintained.

Overall condition: Good

St. Marie Southwest (Dubouchel Canal) runs parallel and North of St. Marie Drive for 4000 feet from E. St. Bernard Hwy. to Florida Avenue in Meraux. The Canal is in an area that does not have a reported history of flooding events. The Canal is a small, shallow stream. Heavy tree cover is visible throughout. The channel is poorly maintained.

Overall condition: Poor

Valero (Meraux Canal) runs parallel and North of Munster Blvd / Jacob Drive for 3000 feet from Twenty Arpent Canal to Forty Arpent Canal in Meraux. The Canal is in an area that does not have a reported history of flooding events. The Canal is a small feeder canal. Dense trees overhang the northwest bank. Overgrowth is visible on both banks.

Overall condition: Fair

Virtue (Virtue St. Canal) runs parallel and Southwest of Virtue Street for 2000 feet from Paris Road to Lavoisier Street in Chalmette. The Canal is in an area that has a reported history of flooding events. The Canal is a small, shallow stream. Real estate adjacent to the canal is fully developed. Overgrowth is visible on both banks. The channel is poorly maintained.

Overall condition: Poor

Canals in the Violet Area

For this report, the Violet Area is nominally defined as that portion of St. Bernard Parish from the Dubouchel Canal that parallels St. Marie Drive in Meraux to the Violet Canal in Violet, being part of a project area bounded by the Orleans Parish line on the north, the Mississippi River Levee on the west, the St. Bernard Back Protection Levee on the east, and the USACE Hurricane Protection Levee on the south.

Edgar (Lower Docville Canal) runs parallel and Northwest of Edgar Dr. for 4500 feet from E. St. Bernard Hwy. to JudgePerez Canal in Meraux. The Canal is in an area that has a reported history of flooding events. The Canal is a small, shallow stream. Overgrowth is visible on both banks. The channel is poorly maintained.

Overall condition: Fair

General Pershing (Violet Ditch) runs parallel and Northwest of Violet Canal for 2000 feet from General Pershing St. to JudgePerez Canal in Violet. The Ditch is in an area that does not have a reported history of flooding events. The Ditch is a small, shallow stream. Tree overgrowth is visible on both banks. The channel is poorly maintained.

Overall condition: Poor



General Pershing (Violet Ditch); Visible overgrowth, channel poorly maintained

Judge Perez 01 (Twenty Arpent Canal) runs parallel and Northeast of E. Judge Perez Dr. for 6500 feet from Violet Canal to Shannon Canal in Violet. The Canal is in an area that does not have a reported history of flooding events. The Canal is a small to medium feeder canal. Heavy trees overhang much of southwest bank. The northeast bank appears adequately maintained.

Overall condition: Fair

Judge Perez 02 (Twenty Arpent Canal) runs parallel and Northeast of E. Judge Perez Dr. for 9500 feet from Shannon Canal to St. Marie Canal in Meraux. The Canal is in an area that does not have a reported history of flooding events. The Canal is a small to medium feeder canal. Heavy trees overhang much of southwest bank. The northeast bank appears adequately maintained.

Overall condition: Fair

PS-4 01 (Forty Arpent Canal) runs parallel and Southwest of Chalmette Back Levee for 7000 feet from Violet Canal to Shannon Canal in Violet. The Canal is in an area that has a reported history of flooding events. The Canal is a large primary storage canal. The canal appears adequately maintained. Dense pockets of pond algae are visible on the northwest bank for half the canal length. Southeast half of the canal length is visibly very shallow. Heavy Overgrowth is visible on both banks. Heavy trees overhang the southwest bank.

Overall condition: Fair



PS-4_01 (Forty Arpent Canal); Southeast half visibly shallow, heavy overgrowth)

PS-4 05 (Forty Arpent Canal) runs parallel and Southwest of Chalmette Back Levee for 8500 feet from Shannon Canal to St. Marie Drive in Meraux. The Canal is in an area that has a reported history of flooding events. The Canal is a large primary storage canal. Overgrowth is visible on the northeast bank. Bank overgrowth and heavy overhanging trees are visible on the southwest bank. The canal appears adequately maintained.

Overall condition: Good

Shannon (Lower Docville Canal) runs parallel and Northwest of Shannon Drive for 3000 feet from E. Judge Perez Blvd. to Florida Walk Canal in Violet.

The Canal is in an area that does not have a reported history of flooding events. The Canal is a medium feeder canal. Moderate overgrowth is visible on both banks. Moderate to heavy pond algae is visible in the northeast half of the canal length.

Overall condition: Fair

Violet (Violet Ditch) runs parallel and North of Lakewood Drive / Violet Canal for 3500 feet from E. Judge Perez Drive to Forty Arpent Canal in Violet. The Ditch is in an area that does not have a reported history of flooding events. The Ditch is a medium feeder canal. Thick overgrowth is visible on both banks. Dense trees are visible overhanging the northwest bank.

Overall condition: Poor



Violet (Violet Ditch); Thick overgrowth and extensive tree overhang

Canals in the Poydras Area

For this report, the Poydras Area is nominally defined as that portion of St. Bernard Parish from the Violet Canal in Violet to north of Bayou Road (LA 39) in Poydras, east from the Mississippi River Levee to the intersection of Louisiana Highways 46 and 39 in Poydras, being part of a project area bounded by the Orleans Parish line on the north, the Mississippi River Levee on the west, the St. Bernard Back Protection Levee on the east, and the USACE Hurricane Protection Levee on the south.

Centanni North (Forty Arpent Canal) runs parallel and North of Centanni Dr. for 3500 feet from Green Canal to E. Judge Perez Dr. in Poydras. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large feeder canal that discharges at Pump Station 5. Moderate to heavy pond algae is visible throughout. The canal appears adequately maintained.

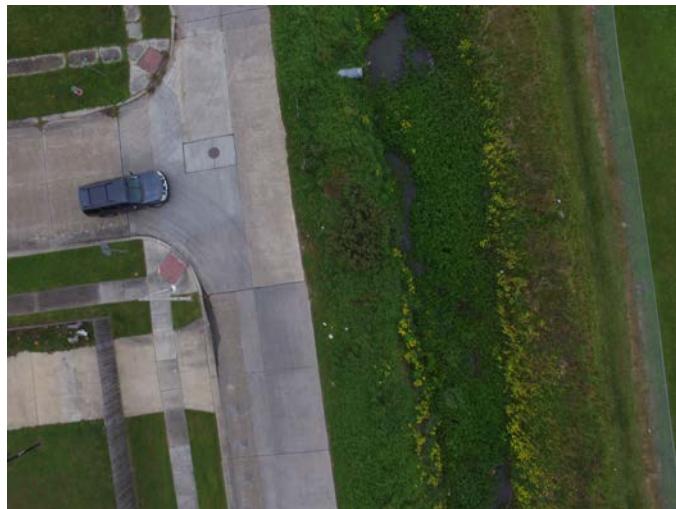
Overall condition: Fair

Centanni South (Forty Arpent Canal) runs parallel and North of Serpas Dr. for 1000 feet from Bayou Rd. to Green Canal in Poydras. The Canal is in an area that does not have a reported history of flooding events. The Canal is a small, crowded stream with some heavy tree overgrowth. The canal is poorly maintained.

Overall condition: Fair

Green (Green Avenue Ditch) runs parallel and South of Green Ave. for 6000 feet from E. St. Bernard Hwy. to Centanni Canal in Poydras. The Ditch is in an area that does not have a reported history of flooding events. The Ditch is a small, shallow stream. Heavy trees overhang the south bank. Overgrowth is visible on both banks. The canal is poorly maintained.

Overall condition: Poor



Green (Green Avenue Ditch); Overgrowth, poorly maintained

Massicott (Green Avenue Ditch) runs parallel and East of Massicot Road for 1000 feet from Massicot Road to Green Avenue Ditch in Poydras. The Ditch is in an area that does not have a reported history of flooding events. The Ditch is a small, shallow stream. Heavy trees overhang the west bank. Overgrowth is visible on both banks. The canal is poorly maintained.

Overall condition: Poor

PS-5 01 (Forty Arpent Canal) runs parallel and West of Violet Back Levee for 7500 feet from PS-5 to Violet Canal in Violet. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. The canal appears adequately maintained. Dense pockets of pond algae are held by a boom structure. Heavy trees and overgrowth are visible on the west bank.

Overall condition: Fair

PS-5 02 (Forty Arpent Canal) runs parallel and West of Violet Back Levee for 1500 feet from Violet Canal to Violet Canal in Violet. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. Heavy trees and overgrowth are visible on the west bank. The canal appears adequately maintained.

Overall condition: Good

PS-8 14 (Forty Arpent Canal) runs parallel and South of Poydras Back Levee for 2000 feet from Powerlines to PS-5 in St. Bernard. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. Heavy overgrowth and trees are visible on the south bank. Dense pond algae is visible in the west end of the canal length. The canal appears adequately maintained.

Overall condition: Good

Canals in the Back Protection Levee Area

For this report the Back Protection Levee Area is nominally defined as that portion of St. Bernard Parish from Highway LA 39 to the Bayou Road (LA 300) Floodgate, north of Highway LA 46, east of Poydras, being part of a project area bounded by the Orleans Parish line on the north, the Mississippi River Levee on the west, the St. Bernard Back Protection Levee on the east, and the USACE Hurricane Protection Levee on the south.

PS-8_08 (Forty Arpent Canal) runs parallel and South of Poydras Back Levee for 4000 feet from Twenty Arpent Canal to Floodside north canal in St. Bernard. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. Heavy overgrowth and trees are visible on the south bank. Overgrowth is visible on the north bank. Unbroken pond algae is visible through the entire reach.

Overall condition: Good

PS-8_09 (Forty Arpent Canal) runs parallel and South of Poydras Back Levee for 7000 feet from Floodside north canal to Rue Terre Aux Boeufs in St. Bernard. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. Heavy overgrowth and trees are visible on the south bank. Unbroken pond algae is visible through the entire reach.

Overall condition: Good



PS-8_09 (Forty Arpent Canal); Pond algae

PS-8_10 (Forty Arpent Canal) runs parallel and South of Poydras Back Levee for 5000 feet from Rue Terre Aux Boeufs to Detention Pond in St. Bernard. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. Heavy overgrowth and trees are

visible on the south bank. Unbroken pond algae is visible through the entire reach.

Overall condition: Good

PS-8 11 (Forty Arpent Canal) runs parallel and South of Poydras Back Levee for 5500 feet from Detention Pond to Fountain Lane in St. Bernard. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. Heavy overgrowth and trees are visible on the south bank. Unbroken pond algae is visible through the entire reach.

Overall condition: Good

PS-8 12 (Forty Arpent Canal) runs parallel and South of Poydras Back Levee for 8000 feet from Fountain Lane to Powelines in St. Bernard. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. Heavy overgrowth and trees are visible on the south bank. Unbroken pond algae is visible in the eastern third of the canal length.

Overall condition: Good

PS-8 13 (Forty Arpent Canal) runs parallel and South of Poydras Back Levee for 500 feet from Powelines to Powelines in St. Bernard. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. Heavy overgrowth and trees are visible on the south bank. Pond algae is visible along both banks.

Overall condition: Good

Canals in the Twenty Arpent Canal Area

For this report the Twenty Arpent Canal Area is nominally defined as that portion of St. Bernard Parish from the Canaervon (LA 39) Floodgate to the Bayou Road (LA 300) Floodgate, south of Highway LA 46, east of Poydras, being part of a project area bounded by the Orleans Parish line on the north, the Mississippi River Levee on the west, the St. Bernard Back Protection Levee on the east, and the USACE Hurricane Protection Levee on the south. SLFPA-East has raised a question as to whether some of the canal segments in this area should be included in this report.

PS-8 01 (Twenty Arpent Canal) runs parallel and North of Hurricane Protection Levee for 11000 feet from Caenarvon to Joseph Drive in Poydras. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. Heavy overgrowth and trees are visible on both banks. Heavy pond algae is visible throughout, becoming denser further east. The canal is poorly maintained.

Overall condition: Fair

PS-8 02 (Twenty Arpent Canal) runs parallel and North of Hurricane Protection Levee for 12500 feet from Joseph Drive to Western Gas Road in St. Bernard. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. Heavy overgrowth and trees are visible on both banks. Heavy pond algae is visible over most of the canal length. The canal is poorly maintained.

Overall condition: Fair

PS-8 03 (Twenty Arpent Canal) runs parallel and North of Hurricane Protection Levee for 11000 feet from Western Gas Road to PS-8 in St. Bernard. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. Heavy overgrowth and trees are visible on both banks. Moderate pond algae is visible throughout with some dense pockets. The canal appears adequately maintained.

Overall condition: Fair



PS-8_03 (Twenty Arpent Canal); Overgrowth

PS-8_04 (Twenty Arpent Canal) runs parallel and North of Hurricane Protection Levee for 1000 feet from PS-8 to PS-8 in St. Bernard. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. Heavy overgrowth and trees are visible on the north bank. Dense pond algae is visible throughout. The canal appears adequately maintained.

Overall condition: Fair

PS-8_05 (Twenty Arpent Canal) runs parallel and North of Hurricane Protection Levee for 5500 feet from PS-8 to Bayou Road (LA 300) in St. Bernard. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. Heavy overgrowth and trees are visible on both banks. Moderate pond algae is visible throughout with some dense pockets. The canal appears adequately maintained.

Overall condition: Fair

PS-8_06 (Twenty Arpent Canal) runs parallel and Northwest of Poydras Back Levee for 2000 feet from Bayou Road (LA 300) to LA 46 in St. Bernard. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. Heavy overgrowth and trees are visible on both banks. Moderate pond algae is visible throughout with some dense pockets. The canal is poorly maintained.

Overall condition: Poor



PS-8_06 (Twenty Arpent Canal); Overgrowth and poorly maintained

PS-8 07 (Forty Arpent Canal) runs parallel and West of Poydras Back Levee for 4000 feet from LA 46 to Forty Arpent Canal in St. Bernard. The Canal is in an area that does not have a reported history of flooding events. The Canal is a large primary storage canal. Heavy overgrowth and trees are visible on the southwest bank. Overgrowth is visible on the northeast bank. Heavy pond algae is visible throughout. The canal appears adequately maintained.

Overall condition: Fair

Summary

	Ft.	%
Canals Summary - All SBP Drainage Canals		
<i>Good</i>	99000	35%
<i>Fair</i>	153500	55%
<i>Poor</i>	26500	9%
TOTAL	279000	

Canals by Area - Summary

	Ft.	%
Canals in the Chalmette and Arabi Areas		
<i>Good</i>	34500	51%
<i>Fair</i>	28000	42%
<i>Poor</i>	4500	7%
TOTAL	67000	
Canals in the Meraux Area		
<i>Good</i>	22500	33%
<i>Fair</i>	38000	56%
<i>Poor</i>	7500	11%
TOTAL	68000	
Canals in the Violet Area		
<i>Good</i>	8500	19%
<i>Fair</i>	30500	69%
<i>Poor</i>	5500	12%
TOTAL	44500	
Canals in the Poydras Area		
<i>Good</i>	3500	16%
<i>Fair</i>	12000	53%
<i>Poor</i>	7000	31%
TOTAL	22500	
Canals in the Back Protection Levee Area		
<i>Good</i>	30000	100%
<i>Fair</i>	0	0%
<i>Poor</i>	0	0%
TOTAL	30000	
Canals in the Twenty Arpent Canal Area		
<i>Good</i>	0	0%
<i>Fair</i>	45000	96%
<i>Poor</i>	2000	4%
TOTAL	47000	

Cost Estimate

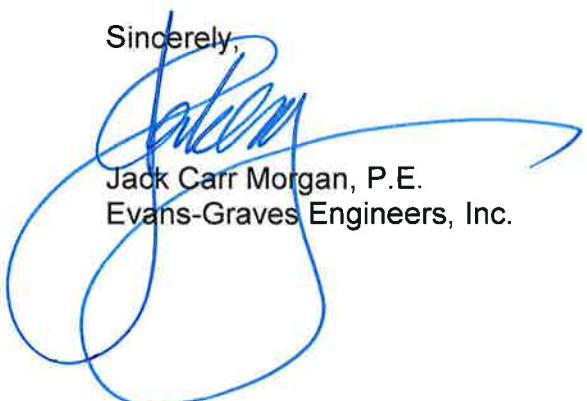
Area	Canal Reach	Condition Rating	Length (Ft.)	Trimming Trees Cost (\$)	Tree Debris Haul Cost (\$)	Bank Trimming Undergrowth (\$)	Undergrowth Debris Haul Cost (\$)	Skimming Algae Cost (\$)	Algae Debris Haul Cost (\$)	TOTAL COST (\$)
Canals in the Chalmette and Arabi Areas	Alexander (East Railroad Ditch)	Fair	5500	\$ -	\$ -	\$ 11,000	\$ 110	\$ 905	\$ 68	\$ 12,083
	Artillery (Chalmette Vista Canal)	Fair	1500	\$ -	\$ -	\$ 3,000	\$ 30	\$ 1,852	\$ 139	\$ 5,021
	Aycock North (West Railroad Ditch)	Poor	2500	\$ 25,000	\$ 500	\$ 5,000	\$ 50	\$ -	\$ -	\$ 30,550
	Aycock South (West Railroad Ditch)	Good	5000	\$ -	\$ -	\$ 10,000	\$ 100	\$ -	\$ -	\$ 10,100
	Claiborne Sq East (Chalmette Vista Canal)	Poor	2000	\$ -	\$ -	\$ 4,000	\$ 40	\$ -	\$ -	\$ 4,040
	Claiborne Sq West (Chalmette Vista Canal)	Fair	2000	\$ -	\$ -	\$ 4,000	\$ 40	\$ -	\$ -	\$ 4,040
	Claiborne Sq Central (Chalmette Vista Canal)	Fair	2000	\$ -	\$ -	\$ 4,000	\$ 40	\$ -	\$ -	\$ 4,040
	Cougar North (Guerenger Canal)	Good	4500	\$ 67,500	\$ 450	\$ 45,000	\$ 90	\$ -	\$ -	\$ 113,040
	Cougar South (Guerenger Canal)	Good	3500	\$ -	\$ -	\$ 7,000	\$ 70	\$ 2,305	\$ 173	\$ 9,547
	Kings (Chalmette Vista Canal)	Good	5500	\$ -	\$ -	\$ -	\$ -	\$ 27,160	\$ 407	\$ 27,568
	Pakenham North (Guichard Canal)	Fair	5500	\$ 27,500	\$ 550	\$ 11,000	\$ 110	\$ 7,243	\$ 543	\$ 46,946
	Pakenham South (Guichard Canal)	Good	3500	\$ -	\$ -	\$ 7,000	\$ 70	\$ -	\$ -	\$ 7,070
	PS-1_01 (Florida Walk Canal)	Good	2500	\$ 37,500	\$ 250	\$ -	\$ -	\$ 18,519	\$ 278	\$ 56,546
	PS-1_02 (Florida Walk Canal)	Good	2000	\$ -	\$ -	\$ -	\$ -	\$ 16,461	\$ 247	\$ 16,708
	PS-1_03 (Florida Walk Canal)	Good	1000	\$ -	\$ -	\$ -	\$ -	\$ 16,049	\$ 241	\$ 16,290
	PS-1_04 South (Florida Walk Canal)	Good	1000	\$ -	\$ -	\$ -	\$ -	\$ 3,704	\$ 56	\$ 3,759
	PS-1_04 West (Florida Walk Canal)	Good	1000	\$ -	\$ -	\$ -	\$ -	\$ 11,111	\$ 167	\$ 11,278
	PS-2_01 (Florida Walk Canal)	Good	4000	\$ 120,000	\$ 800	\$ 20,000	\$ 40	\$ 27,984	\$ 420	\$ 169,243
	PS-3_03 (Forty Arpent Canal)	Fair	3000	\$ -	\$ -	\$ 30,000	\$ 60	\$ 6,173	\$ 93	\$ 36,325
	PS-6_01 (Florida Walk Canal)	Good	1000	\$ -	\$ -	\$ -	\$ -	\$ 32,922	\$ 494	\$ 33,416
	Schnell South (Eickes Canal)	Fair	4500	\$ -	\$ -	\$ 9,000	\$ 90	\$ -	\$ -	\$ 9,090
	Schnell North (Eickes Canal)	Fair	4000	\$ -	\$ -	\$ 8,000	\$ 80	\$ 2,634	\$ 198	\$ 10,911
Canals in the Meraux Area	Chalona South (Corinne Canal)	Fair	6000	\$ -	\$ -	\$ 12,000	\$ 120	\$ -	\$ -	\$ 12,120
	Chalona North (Corinne Canal)	Fair	5500	\$ -	\$ -	\$ 11,000	\$ 110	\$ -	\$ -	\$ 11,110
	Golden (De La Ronde Canal)	Good	6500	\$ -	\$ -	\$ -	\$ -	\$ 7,490	\$ 562	\$ 8,051
	Judge Perez_03 (Twenty Arpent Canal)	Fair	10000	\$ 50,000	\$ 1,000	\$ -	\$ -	\$ -	\$ -	\$ 51,000
	Palmisano South (Water Works Ditch)	Poor	1000	\$ -	\$ -	\$ 2,000	\$ 20	\$ -	\$ -	\$ 2,020
	Palmisano North (Water Works Ditch)	Good	5000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	PS-3_01 Northwest (Forty Arpent Canal)	Poor	500	\$ -	\$ -	\$ 5,000	\$ 10	\$ -	\$ -	\$ 5,010
	PS-3_01 Southeast (Forty Arpent Canal)	Good	7000	\$ -	\$ -	\$ 70,000	\$ 140	\$ -	\$ -	\$ 70,140
	PS-4_02 (Forty Arpent Canal)	Fair	500	\$ 7,500	\$ 50	\$ 5,000	\$ 10	\$ -	\$ -	\$ 12,560
	PS-4_03 (Forty Arpent Canal)	Fair	2000	\$ 30,000	\$ 200	\$ 20,000	\$ 40	\$ -	\$ -	\$ 50,240
	PS-4_04 (Forty Arpent Canal)	Fair	5000	\$ 75,000	\$ 500	\$ 50,000	\$ 100	\$ -	\$ -	\$ 125,600
	PS-7_01 (Forty Arpent Canal)	Fair	2500	\$ 37,500	\$ 250	\$ 25,000	\$ 50	\$ 47,325	\$ 710	\$ 110,835
	StAvide (Corinne Canal)	Fair	3500	\$ -	\$ -	\$ 7,000	\$ 70	\$ -	\$ -	\$ 7,070
	StMarie Northeast (Dubouchel Canal)	Good	4000	\$ -	\$ -	\$ 40,000	\$ 80	\$ 19,753	\$ 296	\$ 60,129
	StMarie Southwest (Dubouchel Canal)	Poor	4000	\$ 40,000	\$ 800	\$ -	\$ -	\$ -	\$ -	\$ 40,800
	Valero (Meraux Canal)	Fair	3000	\$ 15,000	\$ 300	\$ 3,000	\$ 30	\$ -	\$ -	\$ 18,330
	Virtue (Virtu St Canal)	Poor	2000	\$ -	\$ -	\$ 4,000	\$ 40	\$ -	\$ -	\$ 4,040

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Area	Canal Reach	Condition Rating	Length (Ft.)	Trimming Trees Cost (\$)	Tree Debris Haul Cost (\$)	Bank Trimming Undergrowth (\$)	Undergrowth Debris Haul Cost (\$)	Skimming Algae Cost (\$)	Algae Debris Haul Cost (\$)	TOTAL COST (\$)
Canals in the Violet Area	Edgar (Lower Docville Canal)	Fair	4500	\$ -	\$ -	\$ 9,000	\$ 90	\$ -	\$ -	\$ 9,090
	GenPershing (Violet Ditch)	Poor	2000	\$ 20,000	\$ 400	\$ 4,000	\$ 40	\$ -	\$ -	\$ 24,440
	JudgePerez_01 (Twenty Arpent Canal)	Fair	6500	\$ 32,500	\$ 650	\$ -	\$ -	\$ -	\$ -	\$ 33,150
	JudgePerez_02 (Twenty Arpent Canal)	Fair	9500	\$ 47,500	\$ 950	\$ -	\$ -	\$ -	\$ -	\$ 48,450
	PS-4_01 (Forty Arpent Canal)	Fair	7000	\$ 105,000	\$ 700	\$ 70,000	\$ 140	\$ 51,852	\$ 778	\$ 228,470
	PS-4_05 (Forty Arpent Canal)	Good	8500	\$ 127,500	\$ 850	\$ 42,500	\$ 85	\$ -	\$ -	\$ 170,935
	Shannon (Lower Docville Canal)	Fair	3000	\$ -	\$ -	\$ 30,000	\$ 60	\$ 22,222	\$ 333	\$ 52,616
	Violet (Violet Ditch)	Poor	3500	\$ 52,500	\$ 350	\$ 35,000	\$ 70	\$ -	\$ -	\$ 87,920
Canals in the Poydras Area	Centanni North (Forty Arpent Canal)	Fair	3500	\$ -	\$ -	\$ -	\$ -	\$ 4,033	\$ 302	\$ 4,335
	Centanni South (Forty Arpent Canal)	Fair	1000	\$ 10,000	\$ 200	\$ 2,000	\$ 20	\$ -	\$ -	\$ 12,220
	Green (Green Avenue Ditch)	Poor	6000	\$ 30,000	\$ 600	\$ 12,000	\$ 120	\$ -	\$ -	\$ 42,720
	Massicott (Green Avenue Ditch)	Poor	1000	\$ 5,000	\$ 100	\$ 2,000	\$ 20	\$ -	\$ -	\$ 7,120
	PS-5_01 (Forty Arpent Canal)	Fair	7500	\$ 112,500	\$ 750	\$ 37,500	\$ 75	\$ 123,457	\$ 1,852	\$ 276,134
	PS-5_02 (Forty Arpent Canal)	Good	1500	\$ 22,500	\$ 150	\$ 7,500	\$ 15	\$ -	\$ -	\$ 30,165
	PS-8_14 (Forty Arpent Canal)	Good	2000	\$ 30,000	\$ 200	\$ 10,000	\$ 20	\$ 24,691	\$ 370	\$ 65,282
Canals in the Back Protection Levee Area	PS-8_08 (Forty Arpent Canal)	Good	4000	\$ 60,000	\$ 400	\$ 20,000	\$ 40	\$ 88,889	\$ 1,333	\$ 170,662
	PS-8_09 (Forty Arpent Canal)	Good	7000	\$ 105,000	\$ 700	\$ 35,000	\$ 70	\$ 120,988	\$ 1,815	\$ 263,572
	PS-8_10 (Forty Arpent Canal)	Good	5000	\$ 75,000	\$ 500	\$ 25,000	\$ 50	\$ 86,420	\$ 1,296	\$ 188,266
	PS-8_11 (Forty Arpent Canal)	Good	5500	\$ 82,500	\$ 550	\$ 27,500	\$ 55	\$ 95,062	\$ 1,426	\$ 207,093
	PS-8_12 (Forty Arpent Canal)	Good	8000	\$ 120,000	\$ 800	\$ 40,000	\$ 80	\$ 92,181	\$ 1,383	\$ 254,444
	PS-8_13 (Forty Arpent Canal)	Good	500	\$ 7,500	\$ 50	\$ 2,500	\$ 5	\$ 2,881	\$ 43	\$ 12,979
Canals in the Twenty Arpent Canal Area	PS-8_01 (Twenty Arpent Canal)	Fair	11000	\$ 330,000	\$ 2,200	\$ 110,000	\$ 220	\$ 135,802	\$ 2,037	\$ 580,260
	PS-8_02 (Twenty Arpent Canal)	Fair	12500	\$ 375,000	\$ 2,500	\$ 125,000	\$ 250	\$ 216,049	\$ 3,241	\$ 722,040
	PS-8_03 (Twenty Arpent Canal)	Fair	11000	\$ 330,000	\$ 2,200	\$ 110,000	\$ 220	\$ 126,749	\$ 1,901	\$ 571,070
	PS-8_04 (Twenty Arpent Canal)	Fair	1000	\$ 15,000	\$ 100	\$ 5,000	\$ 10	\$ 17,284	\$ 259	\$ 37,653
	PS-8_05 (Twenty Arpent Canal)	Fair	5500	\$ 165,000	\$ 1,100	\$ 55,000	\$ 110	\$ 63,374	\$ 951	\$ 285,535
	PS-8_06 (Twenty Arpent Canal)	Poor	2000	\$ 60,000	\$ 400	\$ 20,000	\$ 40	\$ 19,753	\$ 296	\$ 100,489
	PS-8_07 (Forty Arpent Canal)	Fair	4000	\$ 60,000	\$ 400	\$ 40,000	\$ 80	\$ 98,765	\$ 1,481	\$ 200,727
TOTAL				\$ 2,912,500	\$ 23,450	\$ 1,308,500	\$ 3,825	\$ 1,640,041	\$ 26,188	\$ 5,914,504

If you have any questions or comments, please do not hesitate to contact me.

Sincerely,



Jack Carr Morgan, P.E.
Evans-Graves Engineers, Inc.