Appendix D
Reports and Other Correspondence

Preliminary Wetland Delineation
Concordia Parish Drainage Projects **12-14-18**
Brushy Bayou- Site "A" & "B"
Concordia Parish, Louisiana

INTRODUCTION

At the request of Jordan, Kaiser, & Sessions, LLC a preliminary wetland delineation has been conducted for two proposed drainage projects (Site "A" & "B") located along Brushy Bayou in Concordia Parish, Louisiana. The Concordia Parish Police Jury is proposing the construction of a drainage structure in the Tensas River levee at the intersection with Brushy Bayou (Site "A") and the construction of new roadway and bridge at the intersection of Luke Martin Road with Brushy Bayou (Site "B"). Site "A" will require the construction of an access road, temporary coffer dam, and possible borrow area for material. The exact location and limits of the project areas are shown in the attached maps. This report will describe the results of a preliminary wetland delineation conducted for the proposed project areas to determine the presence and approximate extent of jurisdiction wetlands and "waters of the U.S." as defined in Section 404 of the Clean Water Act. The field delineation of the project areas was conducted by Mr. Bart Pittman on December 11, 2018.

SITE DESCRIPTION

The project areas are situated at two locations along Brushy Bayou. Brushy Bayou is comprised of shallow inundation and partially vegetated areas. Scattered cypress trees and emergent vegetation is found within much of the bayou. The proposed access easement to Site "A" transects pasture land and BLH area. An existing cleared woods road transects the BLH area to Site "A". Recreational camps are located along the edge of Brushy Bayou at Site "A". The area of Site "A" is undulating with long gently sloping ridges. The NRCS Web Soil Survey depicts the primary mapped soil types as Tensas-Alligator (To), Tensas silty clay loam (Ba), and Dundee-Alligator-Tensas (Ds). Attached pictures depict the current conditions of the two project locations.

METHODOLOGY & RESULTS

Methods utilized for identifying and delineating wetlands follow procedures outlined in Part IV of the "Corps of Engineers Wetlands Delineation Manual" dated January 1987 and the Atlantic/Gulf Cost Plain Regional Supplement. Wetland Delineation Data Forms (Atlantic and Gulf Cost Plain Region) were completed for each vegetative community represented within the site. These attached data forms provide a listing of parameters/indicators to differentiate jurisdictional wetlands from non-wetlands. The completed forms confirm the presence or absence of the three required wetland criteria; hydrophytic vegetation, wetland hydrology, and hydric soils. The approximate location of each data point is shown on the attached preliminary wetland delineation maps.

Initial review of the project locations indicated that jurisdictional wetland/waters would be present. The project locations were transected and observed for visual indicators of jurisdictional wetland. Soil profiles were examined within suspect areas to determine the presence of hydric soil and/or hydrology indicators.

Once the presence and location of the wetland areas was established, the boundaries were flagged and mapped with a sub-meter GPS, (Ashtech Mobile Mapper). GPS SHP files were overlaid with aerial photography in ArcMap 10.1 to provide the location/acreage of delineated wetland within the project areas as depicted on the attached preliminary wetland delineation maps.

SITE "A" RESULTS

Approximately 35 acres was delineated at Site "A", this area includes proposed drainage easement, temporary drainage easement, access road easement, and pasture area that may be used for borrow material excavation. Approximately 2.9 acres of open water (Brushy Bayou), 2.75 acres of PFO wetland, and 10.45 acres of pasture wetland was delineated within this 35 acre area. One active ditch flows NE along the toe of levee intersecting with Brushy Bayou. High water table, saturation at surface, inundation, and drainage patterns was observed within the delineated wetlands. A depleted soil matrix was recorded at the wetland data point locations.

SITE "B" RESULTS

Approximately 2 acres was delineated at Site "B", this area includes existing roadway and the area of proposed realignment across Brushy Bayou. Approximately 1.2 acres of PFO/emergent wetland was delineated within the project location. This 1.2 acres may include some area outside of the proposed impact area. The attached pictures depict the wetlands within the proposed realignment location. High water table, saturation at surface, and inundation was observed within the delineated wetlands. A depleted soil matrix was recorded at the wetland data point location.

CONCLUSION

Jurisdictional wetland/waters was delineated at each project location. Brushy Bayou and the adjacent wetlands would be considered jurisdictional. The location and extent of the delineated areas along with data point locations are shown in the attached maps.

This wetland delineation is preliminary and should not be interpreted as a final determination. The responsibility of a final wetland determination is that of the U.S. Army Corps of Engineers, Vicksburg District.

Pittman Environmental Services, LLC
P.O. Box 1926 • Purvis, MS 39475 • Phone: 601-297-2487

Please call (601)-297-2487 if you have any questions or need additional information regarding this study.

Sincerely,

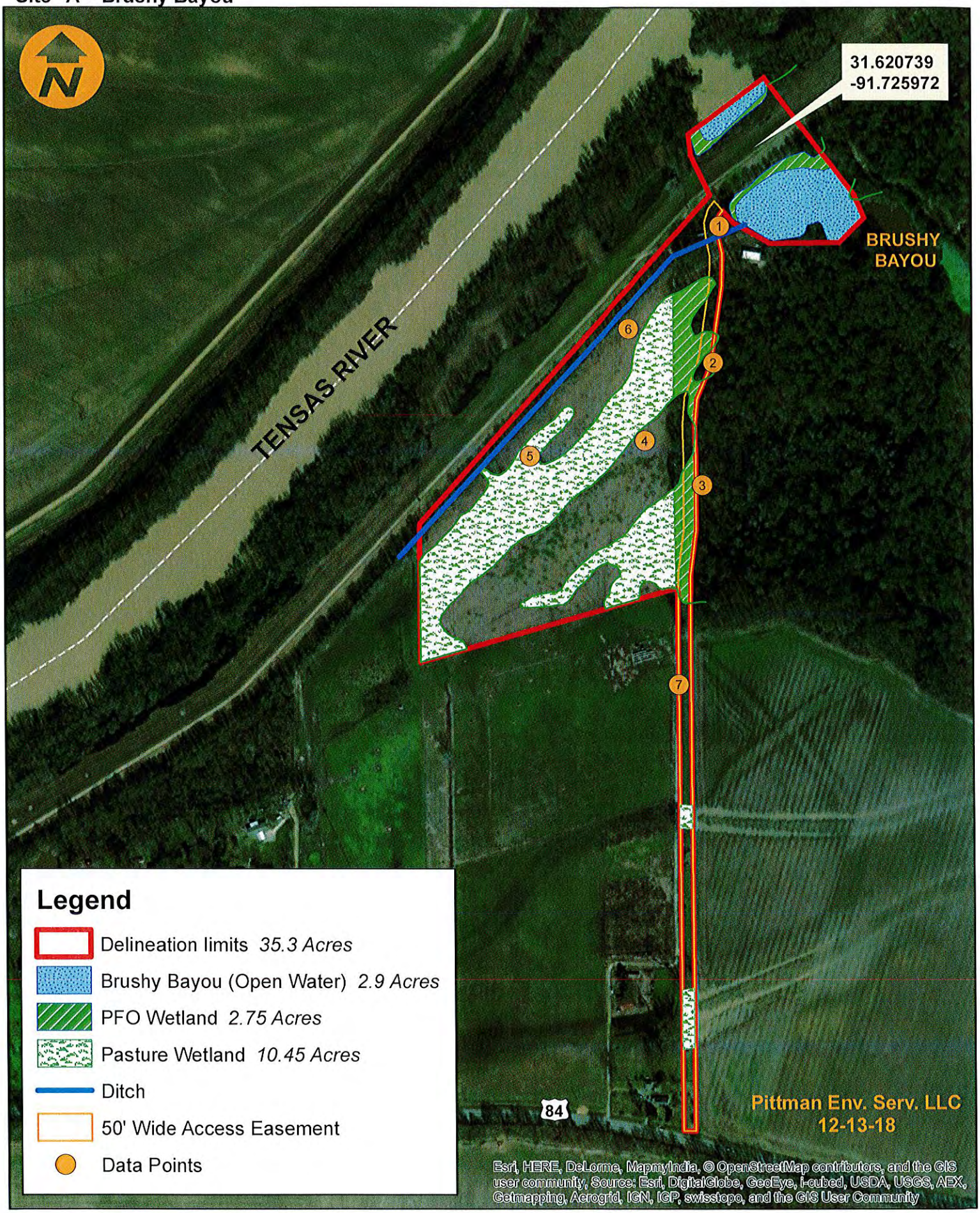
Bart A. Pittman

Bart A. Pittman
Environmental Specialist
Pittman Environmental Services, LLC

ATTACHMENT 1
SITE "A"- Maps, Pictures, Data Forms

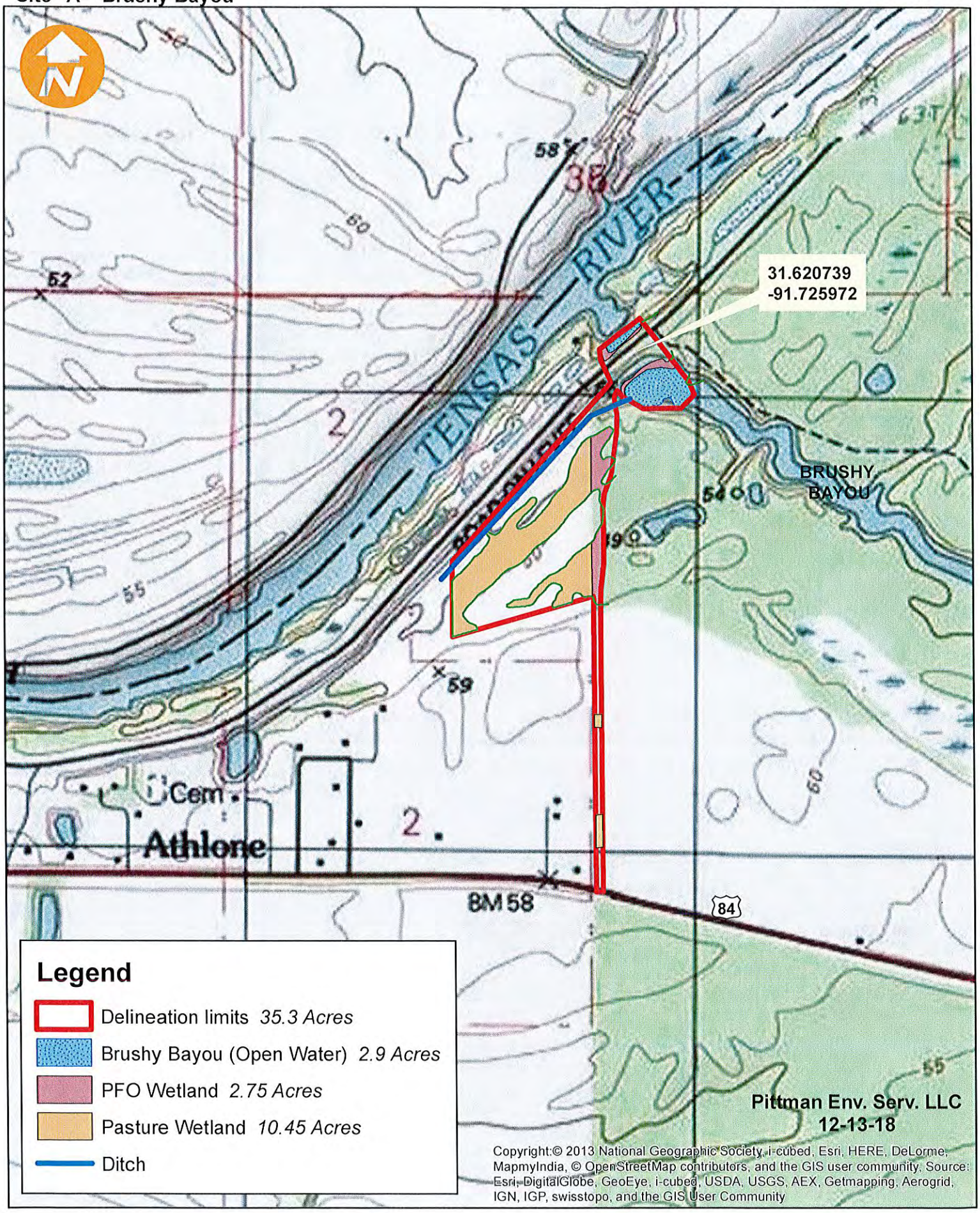
Preliminary Wetland Delineation
Concordia Parish Drainage Project
Site "A"- Brushy Bayou

Section 2, T-7N, R-7E
Concordia Parish, LA



Preliminary Wetland Delineation
Concordia Parish Drainage Project
Site "A"- Brushy Bayou

Section 2, T-7N, R-7E
Concordia Parish, LA



Hydric Rating by Map Unit—Concordia Parish, Louisiana
(Delineation Limits)

Map Scale: 1:7,370 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

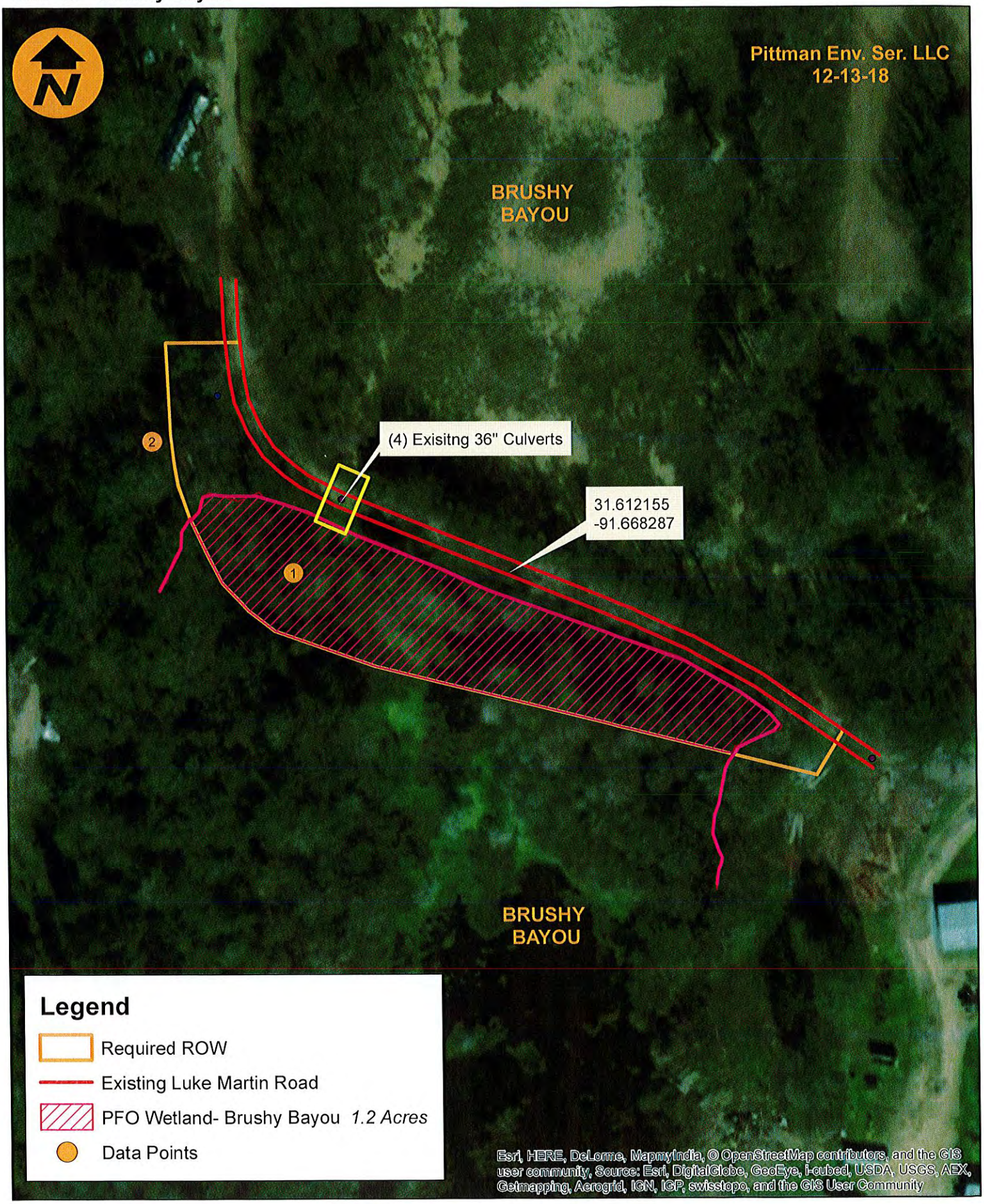
Feet
0 350 700 1400 2100

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

ATTACHMENT 2
SITE "B"- Maps, Pictures, Data Forms

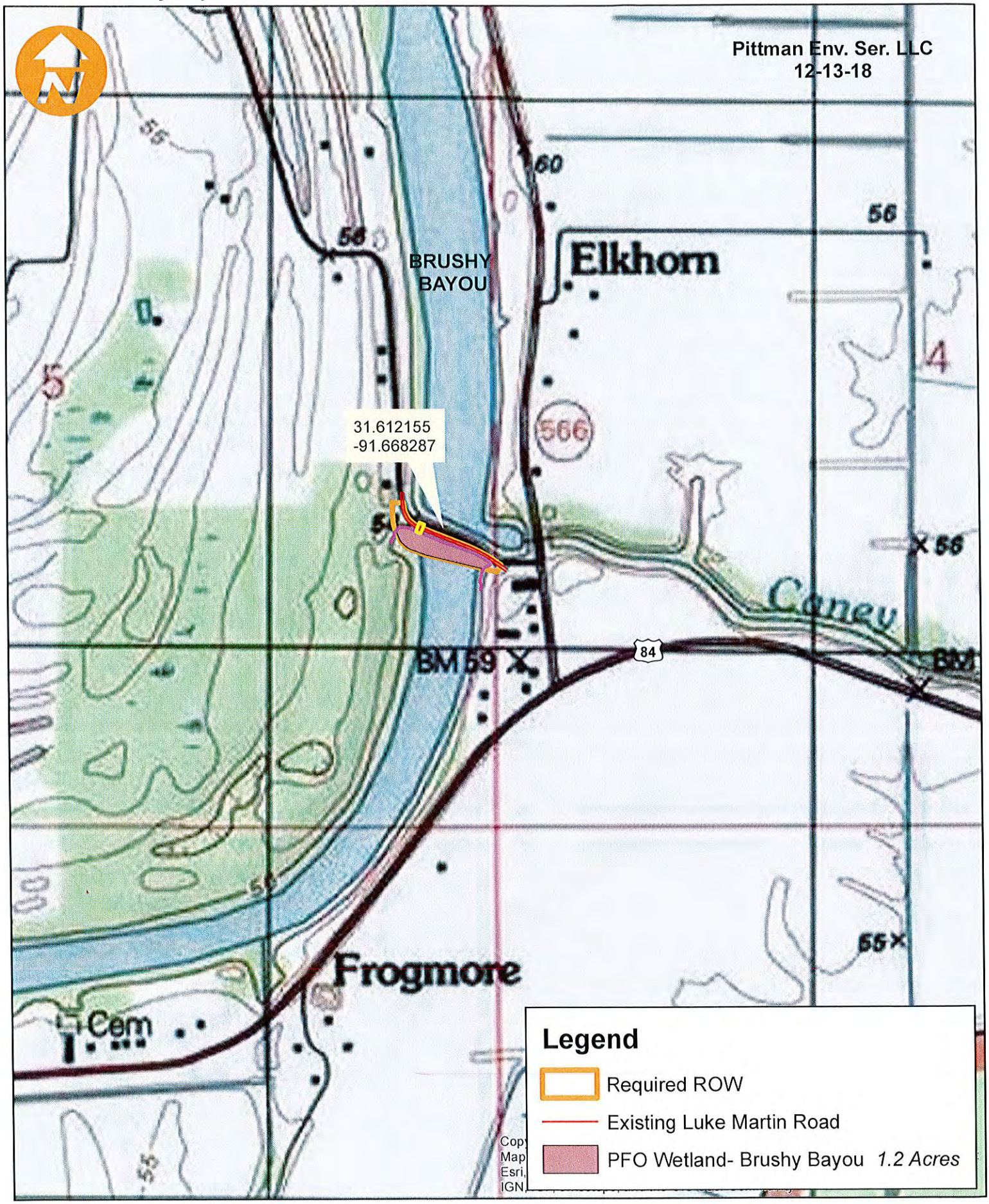
Preliminary Wetland Delineation
Concordia Parish Drainage Project
Site "B"- Brushy Bayou

Section 5, T-7N, R-8E
Concordia Parish, LA

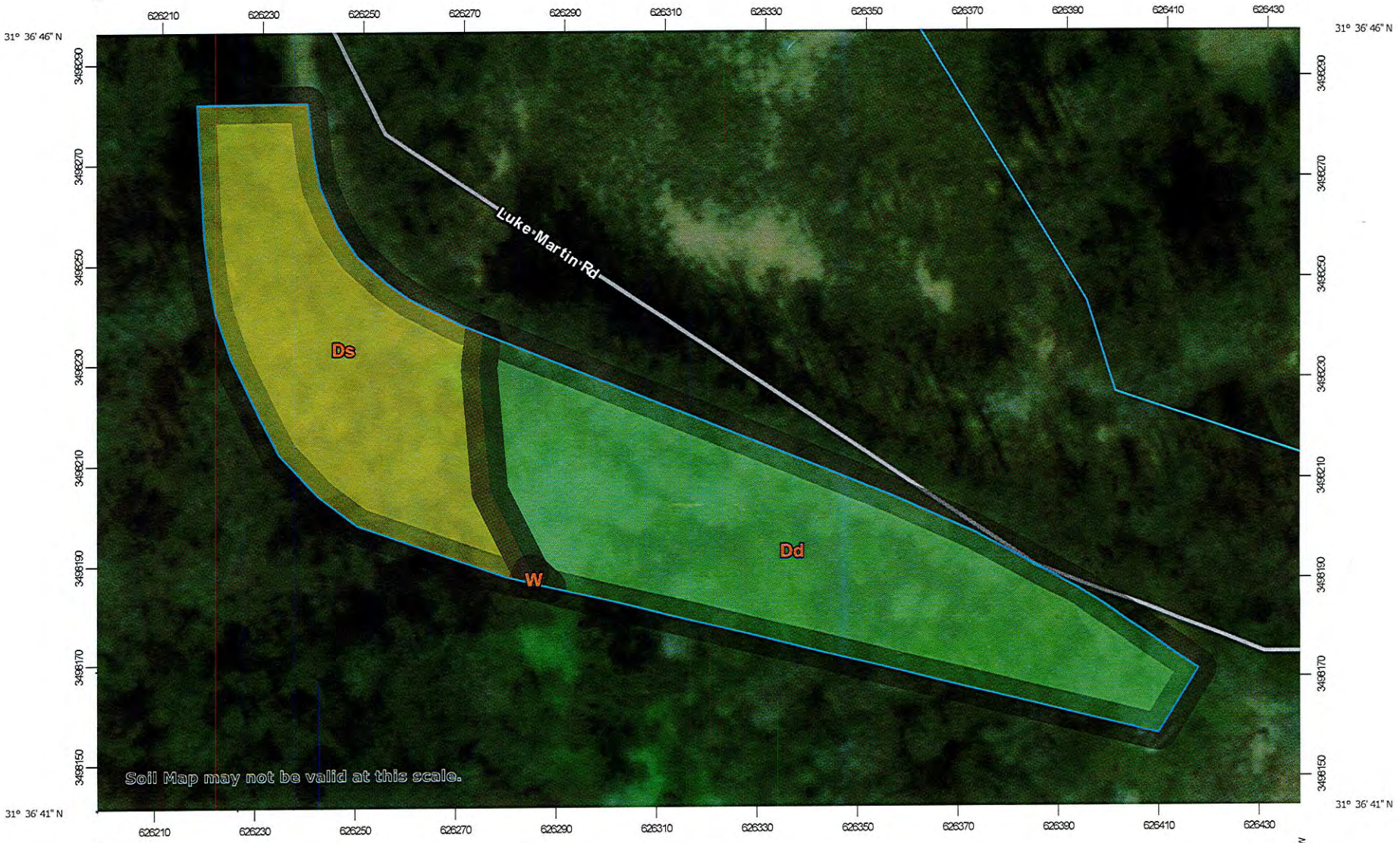


Preliminary Wetland Delineation
Concordia Parish Drainage Project
Site "B"- Brushy Bayou

Section 5, T-7N, R-8E
Concordia Parish, LA



Hydric Rating by Map Unit—Concordia Parish, Louisiana
(Required ROW)



Map Scale: 1:1,100 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT *(33 CFR 325)*	OMB APPROVAL NO. 0710-0003 Expires December 31, 2004

The public reporting burden for this collection of information is estimated to average 10 hours per response, although the majority of applications should require 5 hours or less. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies. Submission of requested information is voluntary, however, if information is not provided, the permit application cannot be processed nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE *(an agent is not required)*
Jimmy Wilkinson, Police Jury President	Gary B. Jones, Engineer Intern
6. APPLICANT'S ADDRESS	**9. AGENT'S ADDRESS**
Concordia Parish Police Jury 4001 Carter Street Vidalia, LA 71373	Jordan Kaiser & Sessions, LLC 279 Lower Woodville Road Natchez. MS 39120
7. APPLICANT'S PHONE NUMBERS WITH AREA CODE	**10. AGENT'S PHONE NUMBERS WITH AREA CODE**
a. Residence 318-757-2550 b. Business 318-336-7151	a. Residence 318-372-6848 b. Business 601-445-3628

11. STATEMENT OF AUTHORIZATION

I hereby authorize Gary B. Jones to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

Jimmy Wilkinson — 09/06/2018

APPLICANT'S SIGNATURE — DATE

NAME, LOCATION AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE *(see instructions)*

Brushy Bayou Drainage Structure/MVK-2016-633

13. NAME OF WATERBODY, IF KNOWN *(if applicable)*	14. PROJECT STREET ADDRESS *(if applicable)*
Tensas River/Brushy Bayou	N/A
15. LOCATION OF PROJECT	
Concordia Parish (COUNTY) — Louisiana (STATE)	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

See Attachment 1

17. DIRECTIONS TO THE SITE

See Attachment 1

18. Nature of Activity *(Description of project, include all features)*

See Attachment 1

19. Project Purpose *(Describe the reason or purpose of the project, see instructions)*

See Attachment 1

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

See Attachment 1

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards

See Attachment 1

22. Surface Area in Acres of Wetlands or Other Waters Filled *(see instructions)*

See Attachment 1

23. Is Any Portion of the Work Already Complete? Yes _____ No X IF YES, DESCRIBE THE COMPLETED WORK :

24. Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

See Attachment 1

25. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

*Would include but is not restricted to zoning, building and flood plain permits

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT — DATE: 09/06/2018 — SIGNATURE OF AGENT — DATE: 9/6/2018

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States, knowingly and willfully falsifies, conceals, or covers up any trick scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Attachment 1

BLOCK 16

Brushy Bayou Drainage Structure "Site A" – See Attached Location Map L-01 for general location of the structure. The structure will lie within the Tensas River Levee at the intersection of Brushy Bayou. The structure site is in the NE/4 of Sec. 2, T7N, R7E. The property is owned by Abundant Life Properties, LLC with a parcel number of 0500191401 located within Concordia Parish, Louisiana.

Luke Martin Road Bridge "Site B "- See Attached Location Map L-01 for general location of the Road and Bridge Structure. The Bridge is located at the intersection of Luke Martin Road and Brushy Bayou. The Bridge Site is located in Sec. 4 & 5, T7N, R8E. The property is owned by George O. Tanner and Lynette Ater Tanner with a parcel number of 0400186301 and Lorraine Jackson with a parcel number of 0500147400 both located within Concordia Parish, Louisiana.

BLOCK 17

Brushy Bayou Drainage Structure "Site A" – From Ferriday, LA take US 84 West from the intersection of US 425 approximately 8.6 miles to the intersection of LA 129 just west of Frogmore, then from the intersection of US 84 and LA 129 continue west approximately 2.25 miles to a crushed concrete/gravel road located on the right or north side of the highway just east of a small grey wood framed house with an address of 13029 US 84, Jonesville, LA. Then from US 84 go north approximately 3500' to the Tensas River Levee. The site is approximately 500' to the northeast along the levee.

Luke Martin Road Bridge "Site B "-From Ferriday, LA take US 84 West from the intersection of US 425 approximately 7.0 miles to the intersection of Dunbarton Road (LA 566) just northeast of Frogmore, then from this intersection go north on LA 566 for approximately 800' to the intersection of Luke Martin Road, then at the intersection of Luke Martin Road go west on Luke Martin Road approximately 850' to the four barrel culverts crossing of Brushy Bayou.

BLOCK 18

Brushy Bayou Drainage Structure "Site A - Brushy Bayou Drainage Structure (Site A). The proposed structure will be a triple 8 ft. x 16 ft. box culvert with wing walls on each end, 6 sluice gates located on the downstream end (Unprotected Side) of the culverts and a coffer dam with a weir and 354 linear feet of sheet piles on the upstream end (Protected Side) of the wing walls. There will also be a temporary earthened barrier dam just upstream of the drainage structure with a top elevation of 50.0 msl for protection from Brushy Bayou during construction. After construction the temporary barrier dam will be removed.

The coffer dam will consist of 236 linear feet of sheet piles, as shown in the profile view of the weir on sheet C-22, the weir with an elevation of 44.0 msl, 98 linear feet of sheet piles that create a weir with an elevation of 50.0 msl, and 10 linear feet of sheet piles that project into the levee on each end at an elevation of 50.0 msl. All sheet pile tip elevations are at 15.0 msl. Within the area between ther weir and the upstream apron of the box culvert, there will be an approximate 224 linear feet long concrete splash

Attachment 1

pad that adjacent to and extends 20 ft. deep inside the weir at an elevation of 39.0 msl, as shown on sheet C-21. Between the splash pad and wing wall apron there will be rip rap armorment.

The downstream and upstream wing walls and aprons have the same dimensions. The apron is 75 ft. wide at the edge of the apron, 52.67 ft. wide adjacent to the box culvert, and is 33 ft. deep. The wing walls will be 18-inches thick.

There is a 4 ft. parapet on each end of the culverts from which the top of the wing walls extend down to 2 ft. above the edge of the concrete apron. The upstream flow line begins at 38.50 msl and exits at 36.0 msl, from edge of apron to edge of apron. The wing wall details are shown on sheets C-14 and C-15.

There will be 3710 cubic yards of rip rap around the downstream outlet of the box culvert and 2675 cubic yards of rip rap around the upstream inlet of the box culvert. Rip rap locations and thicknesses are shown on sheets C-10 & C-21 and in the profile views on sheets C-11 & C-24, respectively.

The triple box culvert structure has a total dimension of 52.67 ft. wide and 11.67 ft. tall with 14-inch walls and 22-inch tops and bottoms. The culverts will have a total length of 196.50 ft. The box culvert details are on sheets C-12 and C-13.

Borrow Pit Area:

Fill material for this proposed project will be obtained from a proposed borrow pit site located approximately 1,500 ft. southeast of the drainage structure, as shown on the attached location map L-01 and the Taunton Map. The borrow pit area is approximately 5.5 acres and consists of improved pastureland, Emergent Wetlands, (PEM). This area will be excavation only, with no permit required.

We calculate using 20,000 cubic yards from this borrow pit, while excavating down to a minimum elevation of 46’ with a maximum cut of approximately 6’.

The process of excavation and transport of the fill material will consist of capture of the fill material using a track-hoe or similar bucket retrieval methods. The excavated material will be loaded into a transport vehicle and taken directly to the appropriate location for improvements. The approximate center of the borrow pit area is 31.61752 -91.72801.

Access Road:

Plans also call for the construction of an access road from LA 84 to the proposed structure. The propose access road will be approximant 4,000 L.F. long with a 50’ ROW. The roadway typical sections will a 18’ wide crushed stone roadway with ditches on each side. The fore and back slopes of the ditches will be at 3:1 slopes, as shown on location map L-01.

The proposed access road will cross six drainage features. 5 - 36’ long, 36” dia. culverts will be installed at each location to maintain surface water flows and the culverts will be placed 20% below grade. An existing 84-inch steel culvert lose to he toe of the levee (Ditch OW1) will be utilized to access the site.

Attachment 1

Luke Martin Road Bridge "Site B "-

Luke Martin Road Bridge (Site B). Site B will consist of relocating the existing roadway 50' south and installing a 120' long, concrete slab span bridge approximately 250' to the east-southeast. Once the proposed roadway and bridge are in place, the existing roadway and 55' long, 4-barrel, 36" dia. concrete culverts will be removed and returned to a part Brushy Bayou.

The proposed road will be built as shown in the typical section on sheet C-30. The bridge will consist of 6 – 20' concrete slab span sections width a clear roadway width of 28'. The piles will be of 14-inch x 14-inch concrete driven piles and consist of 4 piles in both the interior and end bents for a total of 28 piles. The sides of the bridge will have concrete railing and the right approach side of the bridge will have metal guardrails. The abutments of the bridge and the stream channel under the bridge will be protected by revetment and/or rip rap.

The bridge will be aligned with the center of the original Brushy Bayou Channel. The installation of the bridge is needed to create the required flow that the existing culverts could not provide.

BLOCK 19

This is a drainage project for the northern portion of Concordia Parish to discharge storm water directly into the Tensas River through Brushy Bayou. As shown on attached Sheet L-02, this storm water is currently routed through Cocodrie Bayou and eventually through the southern portion of the parish. Cocodrie Bayou is considered scenic and cannot be widened or dredged to obtain flows to alleviate the flooding in the northern portion of the parish. Brushy Bayou served as the natural drainage before the Tensas River Levee was installed in the 1950's. The invert of the proposed drainage structure would be above the pool stage of the Tensas River at the discharge. In the previous studies, the Tensas River's water elevation was shown to be above the invert of the proposed drainage structure less than 10% of time during a flood relief situation in the northern portion of Concordia Parish. This project would also offer relief to the rest of the parish, not having to discharge this storm water. The project, consisting of the Brushy Bayou Drainage Structure and the Luke Martin Road Bridge, has a time line for beginning construction in June, 2019 and completing construction by June, 2020.

This project is not anticipated to impact the any wetlands other than in the areas of the construction of the drainage structure and the Luke Martin Bridge. The project will provide an alternative to storm water in elevated water and flood situations due to low flows through Cocodrie Bayou.

BLOCK 20

Brushy Bayou Drainage Structure "Site A" – The structure itself should have a minimal effect on the wetlands areas. The coffer dam and sheet pile weir will have a footprint that impacts a small portion of an existing waterbody. The reason for installing this coffer dam and weir is to maintain the pool stage of Brushy Bayou, so there is no impacts to any wetlands upstream from the drainage structure.

Luke Martin Road Bridge "Site B "- The culvert needs to be replaced so that during an flood event there would be enough flow not to create a low flow area in this proposed drainage system. The proposed

Attachment 1

road and bridge had to be offset approximately 80' to the downstream side or south side of the existing road to make the road alignment conform to today's specifications. It is our intentions to return a portion of the existing road to a wetlands state.

BLOCK 21

Brushy Bayou Drainage Structure –

Based upon the information furnished this project will permanently impact (fill PFO-2 and PFO-3), approximately 0.87 acre of Palustrine Forested Wetlands (PFO), associate with the construction of the proposed access road. Permanent loss of PFO functions.

Access Road –

Permanently impact (fill PEM-1 and PEM-2), approximately 0.38 acre of Palustrine Emergent Wetlands (PEM), associate with the construction of the proposed access road. Permanent loss of PEM functions.

Quantities that will be placed within the PFO-2 and PFO 3 features are as follows:

3375 cubic yards of fill material
250 cubic yards of crushed stone
108 linear foot of 24" CMP

Quantities that will be placed within the PEM-1 & PEM-2 features are as follows:

673 cubic yards of fill material
115 cubic yards of crushed stone
72 linear foot of 24" CMP

Luke Martin Road Bridge –

The project will permanently impact (fill PFO-1B), approximately 0.87 acre of Palustrine Forested Wetlands (PFO), associate with the replacement of a substandard bridge crossing Brushy Bayou. Permanent loss of PFO functions.

Quantities that will be placed within the PFO-1B feature are as follows:

3385 cubic yards of fill material
984 cubic yards of crushed stone
94 cubic yards of asphalt
255 cubic yards of concrete
240 linear foot of concrete railing
22.5 tons of steel
893 sqare yards of revetment

BLOCK 22

Attachment 1

Both sites will need to utilize trackhoes, dozers, dump trucks, and cement trucks to excavate, backfill and install concrete structures. Site B will also need a pile driver for the pile to be driven for the bridge and asphalt equipment to install the roadway. The contract document will require the contractor to have a storm water runoff prevention plan and permit.

BLOCK 24

Brushy Bayou Drainage Structure "Site A":

Abundant Life Properties, LLC
1209 Concordia Avenue
Vidalia, La 71373

Richard Ben and Connie D. Taunton
271 Sunrise Road
Jonesville, La 71343

Emily Moore Calvert, ETAL
12567 Hwy. 84
Frogmore, La 71334

Luke Martin Road Bridge "Site B :

George O. Tanner and Lynette Ater Tanner
11054 Hwy. 84
Frogmore, La 71334

Lorraine Jackson
PO Box 594
Ferriday, La 71334

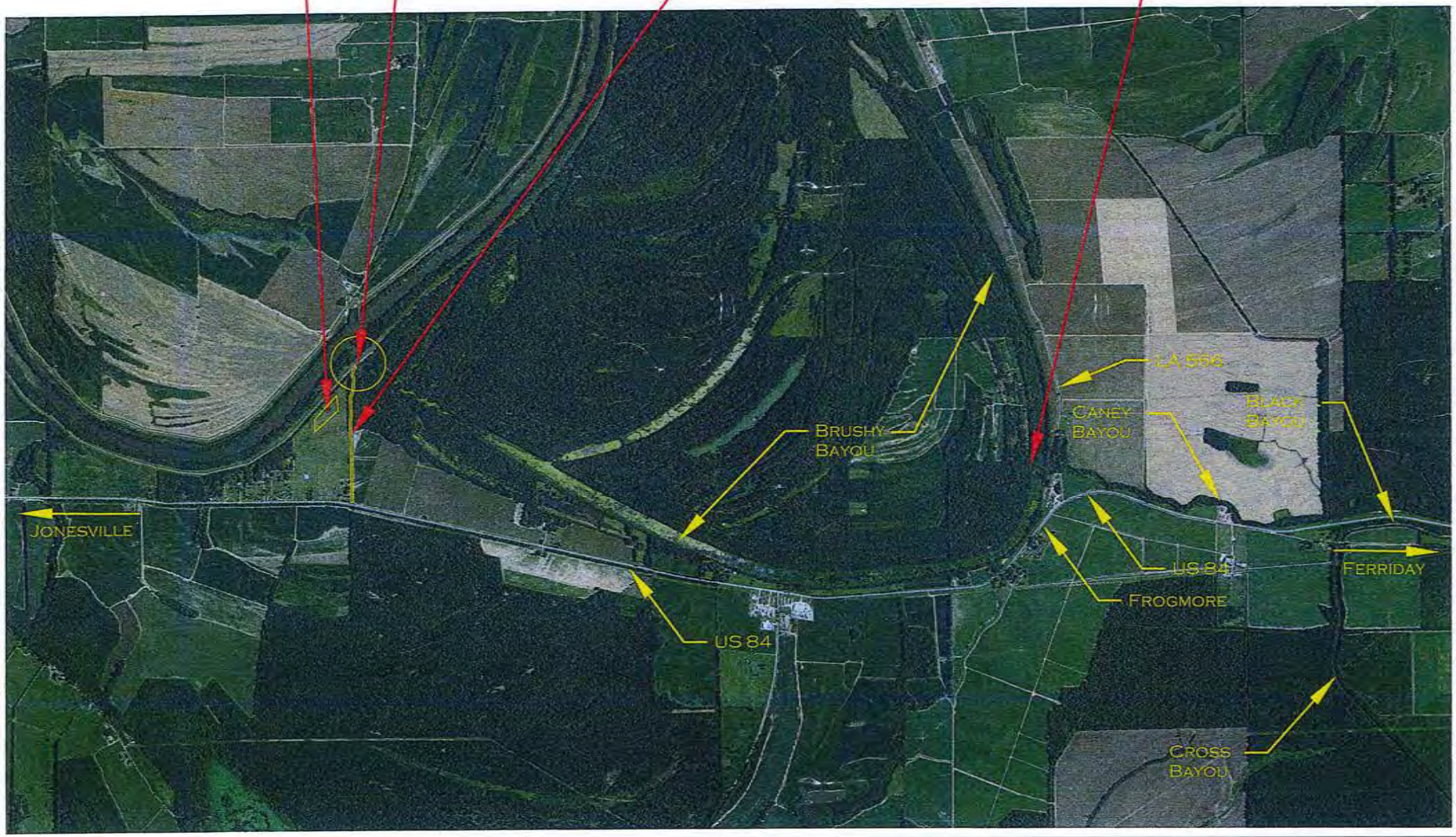
Attachment 1

PROPOSED BORROW AREA
LAT. - N 31°37'0.88"
LONG. - W 091°43'44.85"
SECTION 2, T7N, R7E
5.5 AC., SEE ATTACHED TAUNTON MAP

PROPOSED BRUSHY BAYOU DRAINAGE STRUCTURE - "SITE A"
LAT. - N 31°37'14.05"
LONG. - W 091°43'33.64"
SECTION 2, T7N, R7E
CENTERLINE OF LEVEE AT BRUSHY BAYOU

PROPOSED BRUSHY BAYOU DRAINAGE STRUCTURE - ACCESS ROAD
BEGIN - US 84
LAT. - N 31°36'36.86"
LONG. - W 091°43'36.80"
END - DRAINAGE STRUCTURE
LAT. - N 31°37'13.04"
LONG. - W 091°43'34.76"
SECTION 2, T7N, R7E

LUKE MARTIN ROAD BRIDGE - "SITE B"
LAT. - N 31°37'14.05"
LONG. - W 091°43'33.64"
SECTION 4 & 5, T7N, R8E



JKS ENGINEERS SURVEYORS

DATE: MARCH, 2018

SCALE: 1" = 2500'

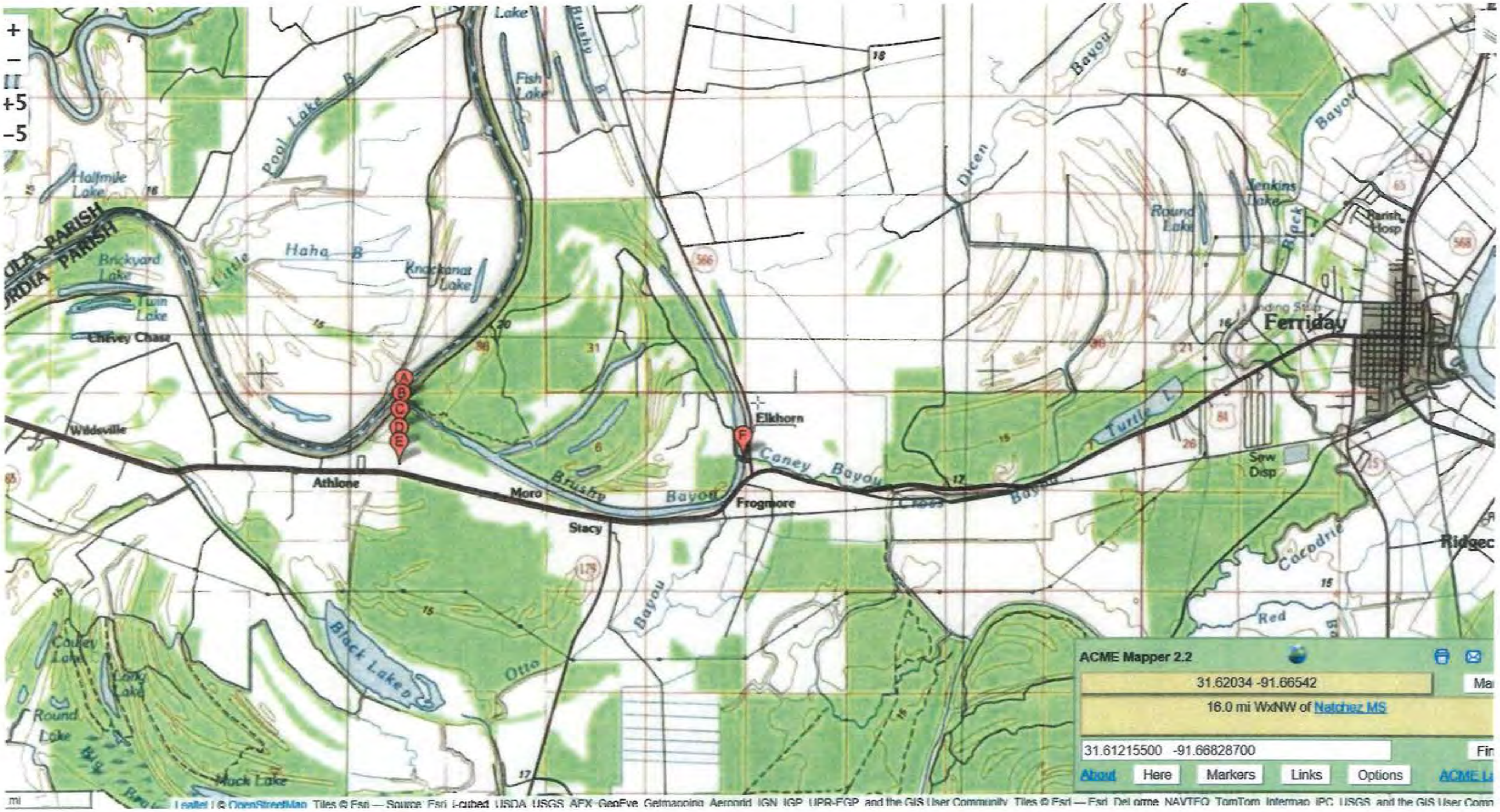
CONCORDIA PARISH POLICE JURY

CONCORDIA PARISH DRAINAGE PROJECT
BRUSHY BAYOU DRAINAGE STRUCTURE

LOCATION MAP

DATE	DESCRIPTION

SHEET NO.
L-01



Ferriday
Elkhorn
Frogmore
Athlone
Moro
Stacy
Wildsville
Chevy Chase
Ridgec
Coney Bayou
Brushy Bayou
Black Lake
Turtle L
Knockanat Lake
Fish Lake
Round Lake
Jenkins Lake
Halfmile Lake
Brickyard Lake
Twin Lake
Pool Lake B
Haha B
Saw Disp
Parish Hosp
ACME Mapper 2.2
31.62034 -91.66542
16.0 mi WxNW of Natchez MS
31.61215500 -91.66828700
About
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Markers
Links
Options
Leaflet | © OpenStreetMap Tiles © Esri — Source: Esri i-cubed USDA USGS AEX GeoEye Getmapping Aerogrid IGN IGP UPR-EGP and the GIS User Community Tiles © Esri — Esri DeLorme NAVTEQ TomTom Intermap IPC USGS and the GIS User Comm


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+5
−5
ACME Mapper 2.2
31.61267 -91.66055
15.6 mi WxNW of
31.61215500 -91.66828700
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MVK-2016-633

ArcGIS Web Map

New Borrow Pit Location, NPR

1200 foot boundary

Primary area

31.61254 -91.72743

The Primary area is 1.87 acres. The Secondary area is 1.15 acres. Both areas consist of improved pasture land, Emergent Wetlands (PEM). This area will be Section 404 excavation only, with no permit required.

Secondary area

Taunton Map

Customer(s): RICHARD B TAUNTON
District: TENSAS-CONCORDIA SWCD
Approximate Acres: 78.8
Legal Description: Farm-235 Tract-303

Date: 1/23/2018
Agency: USDA/NRCS
State and County: LA, Concordia Parish, Louisiana
Field Office: FERRIDAY SERVICE CENTER
Assisted By: WILLIAM FOSTER

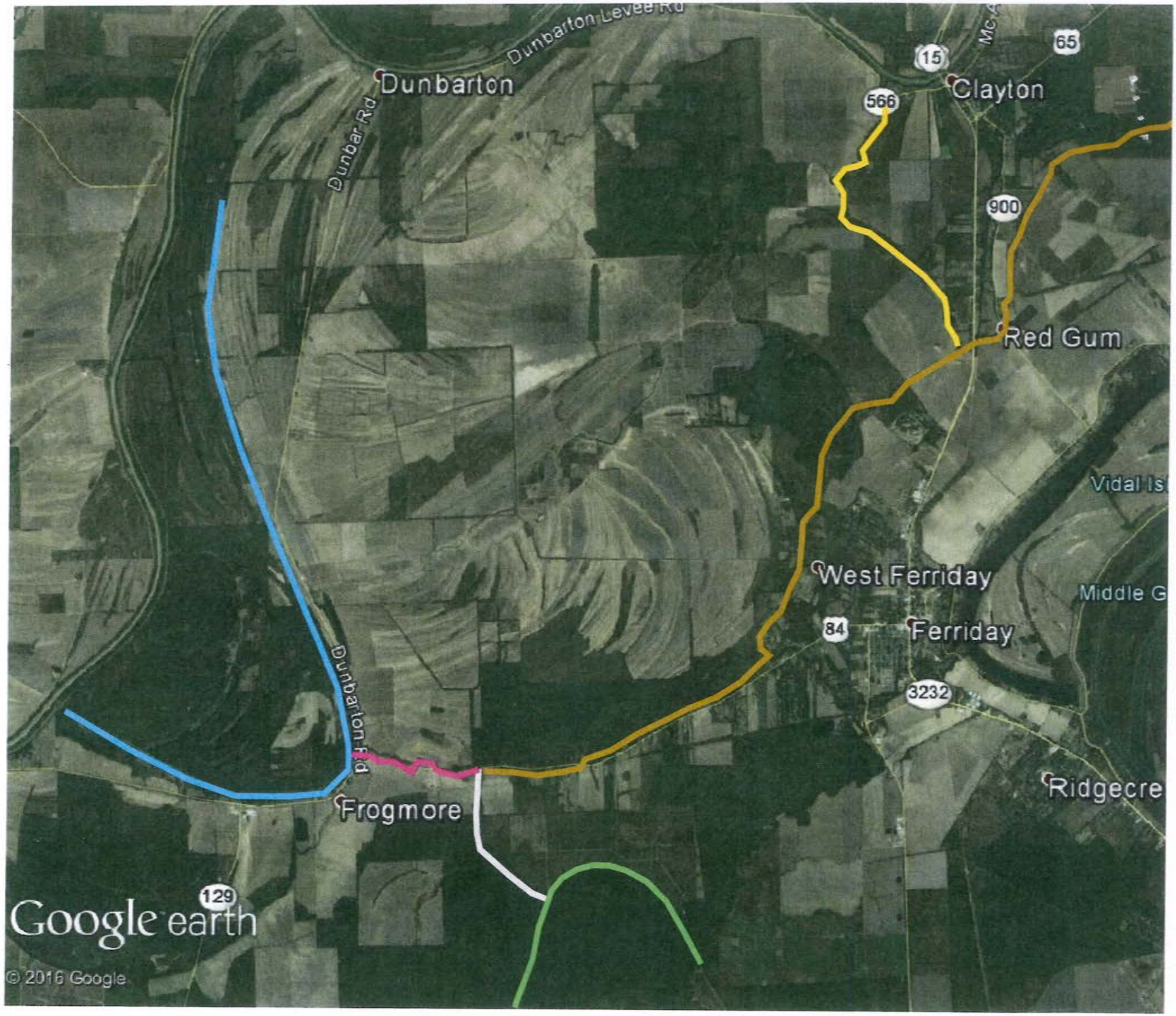
Field	Landuse	Acres
1	Pasture	78.8

USDA

Prepared with assistance from USDA-Natural Resources Conservation Service

0 330 660 990 1,320 1,650 Feet

N W E S


Dunbarton
Dunbarton Levee Rd
Dunbar Rd
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65
Clayton
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Red Gum
Vidal Is
West Ferriday
Middle G
84
Ferriday
3232
Dunbarton Rd
Frogmore
Ridgecre
129
Google earth
© 2016 Google

Hydraulic and Hydrology Study of Proposed Drainage System Improvements For Concordia Parish, Louisiana

Submitted by:
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December 31, 2015

Revised per IEPR Comments June 2017
Amended to Address FEMA Questions October 2020
Revised for FEMA Format October 2021

Executive Summary:

An H&H Study was undertaken for the Cocodrie Bayou drainage basin in Concordia Parish, Louisiana to determine what improvements could be made to reduce recurrent flooding in the northern portion of the parish. Four alternatives were considered (1) Do nothing, (2) Dredge Cocodrie Bayou, (3) Install a drainage structure in the Tensas River Levee at the location where Brushy Bayou discharged into the Tensas River prior to the levee's construction, and (4) Make localized drainage improvements at seven known drainage bottleneck sites in the northern portion of the parish. Of these four, the third was determined to be the only feasible alternative.

Modeling of the drainage basin was performed for existing conditions and for the alternative selected (Brushy Bayou Drainage Structure). The results of this modeling indicated that installation of the Brushy Bayou Drainage Structure would reduce water surface levels in the Cocodrie System by up to two feet.

Project Description and History: Concordia Parish is ringed by levees, the Mississippi River Levee on the eastern side and the Red River Basin Levee on the north, west and south sides. Figure 1 presents Concordia Parish, the levee system and the various drainage arteries associated with the Parish.

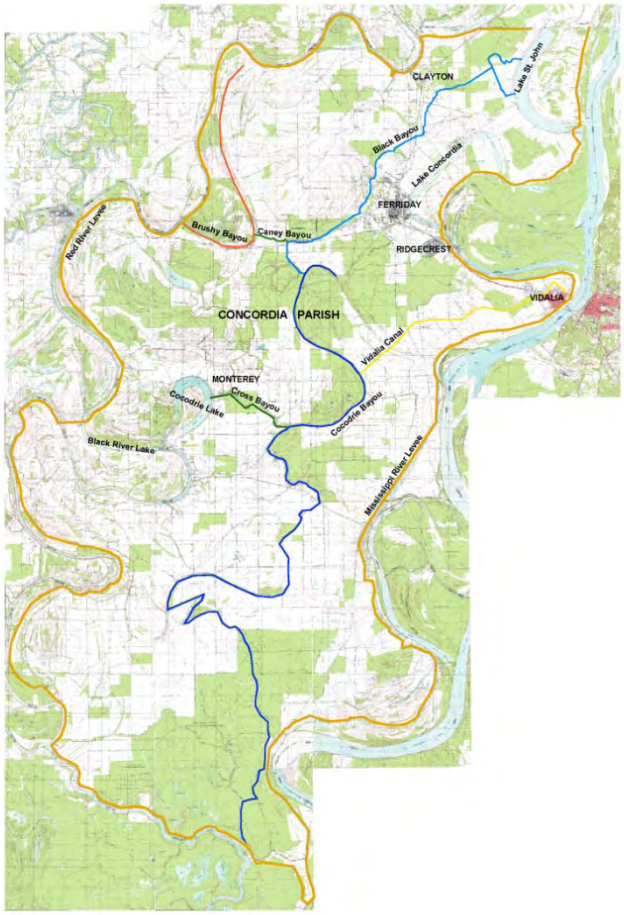

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Figure 1

Concordia Parish

As seen from Figure 1, Cocodrie Bayou is the primary drainage artery for the parish with Black Bayou acting as the primary drainage tributary for Ferriday and Clayton and the Vidalia Canal acting as the primary drainage tributary for Vidalia. Ferriday, Ridgecrest and Vidalia are where the largest concentration of homes and businesses are located in Concordia Parish. Cocodrie Bayou is a narrow, heavily wooded bayou and is a major restriction on the drainage systems serving the northern, most populous portions of the parish, backing storm water up in the tributaries that drain them and resulting in flooding.

Presented in Figures 2 through 7 are pictures of flooding that occurred during the January 10, 2013 event, a five-year storm.

Figure 2

Concordia Park House Flooding

January 10, 2013

Figure 3

Concordia Park House Flooding

January 10, 2013

Figure 4

Concordia Park House Flooding

January 10, 2013

Figure 5

Concordia Park Flooding

January 10, 2013

Figure 6

Mooselodge Road House Flooding

January 10, 2013

Figure 7

House Flooding Hwy 84 Just West of Ferriday

January 10, 2013

Purpose and Need: Clearly improvements are needed in the Cocodrie Bayou drainage system to alleviate the recurrent flooding that is being experienced.

Alternatives Considered: Four alternatives were considered: (1) Do nothing, (2) Dredge and cleanout Cocodrie Bayou, (3) Construct a drainage structure in the Tensas levee at the location where Brushy Bayou used to discharge into the Tensas River prior to the levee being constructed, and (4) Make improvements to isolated, known drainage bottlenecks in the northern portion of the parish.

1. Do nothing: The parish could leave the system as it is and continue to experience the flooding that it is currently seeing. This alternative would result in continued Flood Insurance

claims and costs and hardship on the residents in those areas where flooding occurs. For these reasons, this alternative was given no further consideration.

2. Dredge and cleanout Cocodrie Bayou: Cocodrie Bayou is classified by the US Fish and Wildlife Department as a scenic river and therefore, no clearing, widening or dredging activities may occur. For this reason, this alternative was given no further consideration.

3. Construct a drainage structure at Brushy Bayou discharge to Tensas River: This alternative would restore the drainage pathway that existed prior to the Tensas levee being constructed in the 1950's. This alternative would remove approximately 26 percent of the floodwater currently being passed through the Cocodrie system upstream of where the Vidalia Canal ties into the system, thus reducing the water surface in Cocodrie Bayou and thus the tailwater elevations for all the canals and ditches that drain the northern portion of the parish.

4. Make improvements at seven isolated locations to improve localized drainage in the northern portion of the parish: There are seven known minor bottlenecks to drainage within the northern portion of the Parish:

Site 1: Ridgecrest Canal Culverts

Site 2: Vidalia Canal widening at the Vidalia Sewer Lagoon

Site 3: Primary Drainage Culverts, Ferriday

Site 4: Lake Concordia Gate

Site 5: Lake St. John Weir and Gates

Site 6: Buckner Bayou Culverts

Site 7: Primary Drainage Culverts, Clayton

Implementation of improvements at these sites would only dump more water quicker into a system that is already overloaded. While these improvements might improve drainage in the area just upstream of them, it would only increase the problem downstream.

Of these, Alternative No. 3 was selected as the only viable, effective solution. Once Alternative No. 3 was in place, then Concordia Parish could utilize its own resources to address the sites presented in Alternative No. 4. The location of the sites discussed above as Alternatives 3 and 4 are shown in Figure 8. Alternative No. 3 is shown as Site 8 in Figure 8.

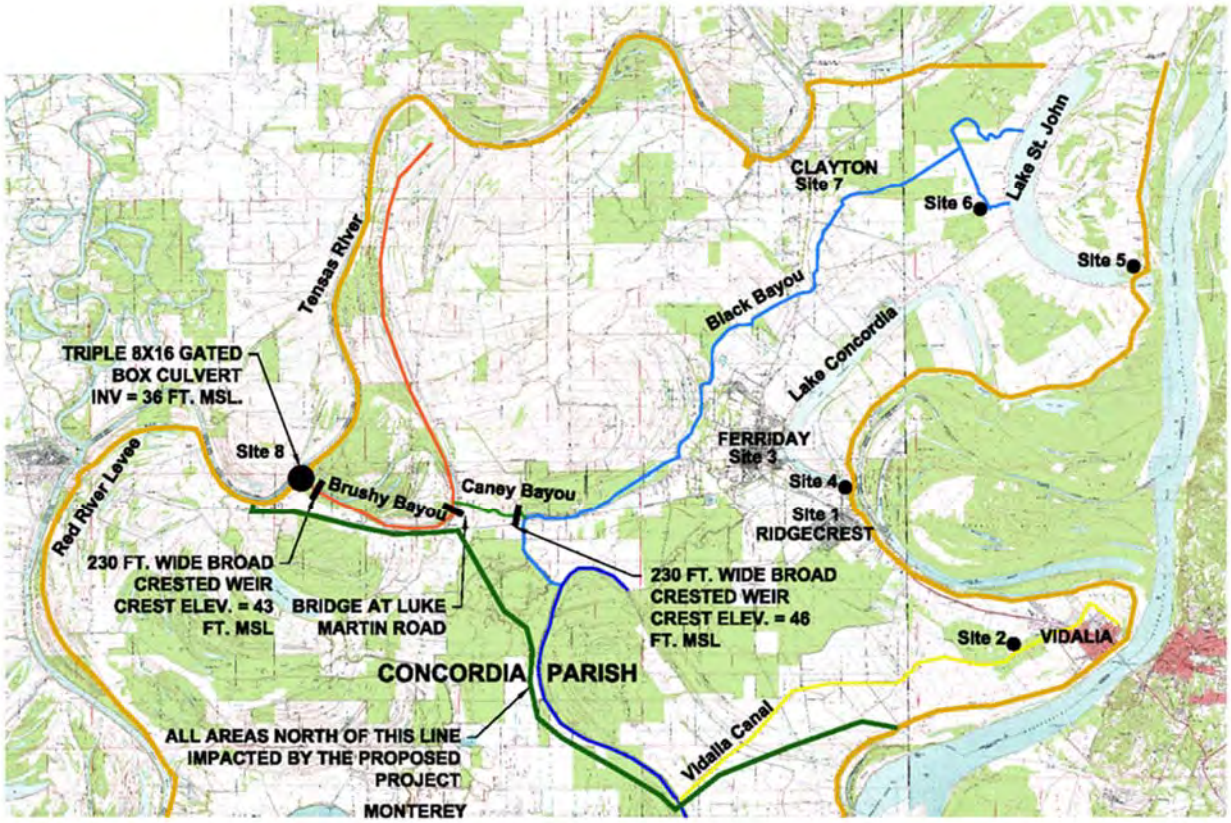


Figure 8

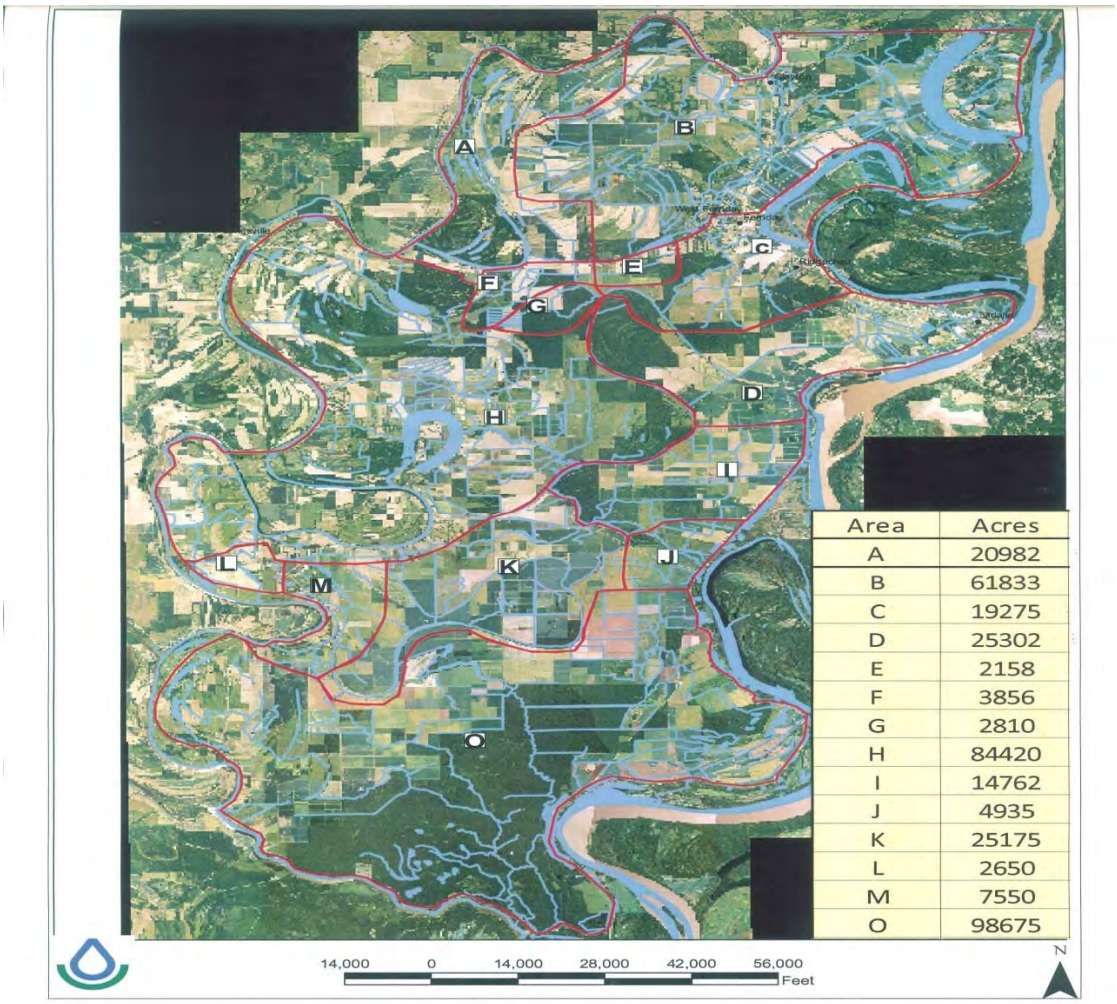
Proposed Drainage Improvements

Proposed Solution: In order to reduce flooding in the upper reaches of the Parish due to the restriction of Cocodrie Bayou, it is being proposed to divert the entire flow being handled by Brushy Bayou and Caney Bayou into the Tensas River. This is where this flow went originally prior to the construction of the Red River Levee system in the 1950's. The flow from the Brushy system would be discharged to the Tensas via a gated box culvert. This box culvert would have an invert elevation of 36 ft. MSL which is above the normal pool of the Tensas River approximately 90% of the time and which would allow drainage of Brushy Bayou to the Tensas River a majority of the time. In order to maintain the current water level in Brushy Bayou of approximately 43 ft. MSL, a broad crested weir with a width of 230 feet would be installed just upstream from the proposed box culvert. Also as part of this project, a bridge would be installed where Brushy Bayou crosses Luke Martin Road, replacing four, 40 inch diameter concrete culverts in order to eliminate any flow restrictions at that point. Finally, a broad crested weir

identical in width to that mentioned previously with a crest elevation of 46 feet MSL would be installed in Caney Bayou just upstream of where Caney Bayou crosses under Highway 84. The purpose of this weir is to insure that the flow resulting from the Brushy and Caney Bayou watersheds is diverted toward the Tensas River and out of Cocodrie Bayou while still providing for the ability for flow to go to Cocodrie in the event that the Tensas River was higher than 43 feet (when the gates would be closed on the proposed box culvert) and a storm event occurs in the parish. A USACE Section 408 Permit will be required to install the gated box culvert.

Hydraulic and Hydrology Study: To determine the effectiveness of the proposed improvements, a hydraulic/hydrology study was performed using HEC/RAS methods utilizing field collected cross-sections for the various systems modeled along with LIDAR surface information for Concordia Parish to develop a complete surface model for the system. Field surveyed cross-sections were collected every 1,500 feet for the entire length of Cocodrie Bayou from the USACE weir at Wild Cow Bayou on the downstream end up to its connection with the Ridgecrest drainage ditch on the north. Field surveyed cross-sections were collected every 1,000 feet for the Vidalia Canal and Black Bayou (including Cross-Bayou) for their entire lengths. Finally, field surveyed cross-sections were collected every 500 feet for Caney Bayou and Brushy Bayou. These bayous provide the drainage paths for the areas where the majority of past flood insurance claims have been made, namely Concordia Park (Vidalia Canal), Bell Grove/Vail Acres (Vidalia Canal), Ridgecrest (Cocodrie Bayou), Levens Addition (Black Bayou), Doty Road (Black Bayou), Washington Heights (Black Bayou).

Presented in Figure 9 are the acreages of the major drainage basins associated with Concordia Parish.



Area	Acres
A	20982
B	61833
C	19275
D	25302
E	2158
F	3856
G	2810
H	84420
I	14762
J	4935
K	25175
L	2650
M	7550
O	98675

Figure 9

Concordia Parish Drainage Basin Areas

As can be seen from Figure 9 and referencing back to Figure 8, Area A feeds Brushy and Caney Bayous, Areas B, E, F & G feed Black Bayou, Areas C, H, I, J, K & M feed Cocodrie Bayou and Area D feeds the Vidalia Canal.

Storm flows were calculated for each of these basins utilizing the methods presented in "Flood flow frequency of streams in the alluvial plain of the lower Mississippi River in Mississippi, Arkansas and Louisiana" by M.M. Landers, USGS, 1985. The flows calculated along with the data used to make those calculations are presented in Table 1.

Table 1

Storm Water Flows For Studied Basins

Basin	Area (Sq. Mi.)	Basin Length (Miles)	Slope (Ft./Mi.)	Q5 (cfs)	Q10 (cfs)	Q25 (cfs)
A	39.06	11.86	1.69	1853	2158	2585
B	90.33	17.78	0.84	2508	2868	3351
C	30.12	13.58	0.66	955	1050	1177
D	39.53	12.12	2.56	2160	2567	3153
E	3.37	3.56	3.65	483	557	665
F	6.03	3.94	2.79	712	821	980
G	4.39	3.67	4.36	649	760	924
H	147.53	11.36	1.41	6101	7332	9048
I	23.07	7.95	2.51	1632	1923	2341
J	7.71	3.79	2.9	927	1081	1304
K	39.34	17.05	0.65	1074	1183	1329
M	11.80	1.70	2.05	1865	2199	2673

As seen from Table 1, the Brushy Bayou drainage basin (Basin A = 1853 cfs) is responsible for approximately 26% of the storm water flow in Cocodrie Bayou up to the point where the Vidalia Canal discharges into Cocodrie (Basins A,B,C, E, F, G = 7160 cfs).

Utilizing these flows and the surface models developed, a HEC/RAS model was developed. The model was calibrated using flows and water surface elevations from the flooding that occurred in January 2013. This was done by inputting flows that were measured during the event into the model. Then, the Manning's n values were adjusted until the model reproduced the water surface elevations measured during this period. The calibration values were used throughout the model, except along the ditches that feed into Vidalia Canal which were surrounded by more complex topography. In these areas, Manning's n values were increased to produce results that are representative of these features. The overbank Manning's n values produced from calibration where higher than would be estimated from observing the land usage and topography, but the discharges calibrated represent a storm event with a more frequent return interval than the events modeled (resulting in a narrower floodplain), and thus the higher, more conservative value was used. Once the model had been calibrated, it was run for the existing conditions and the proposed improved conditions for the Q5, Q10, and Q25 storm events.

Results: Presented in Figures 10 through 12 are the profiles of the existing condition versus the proposed improvements condition for the Cocodrie System (includes Cocodrie and Black Bayous) using the Q5, Q10 and Q25 storm event flows, respectively.

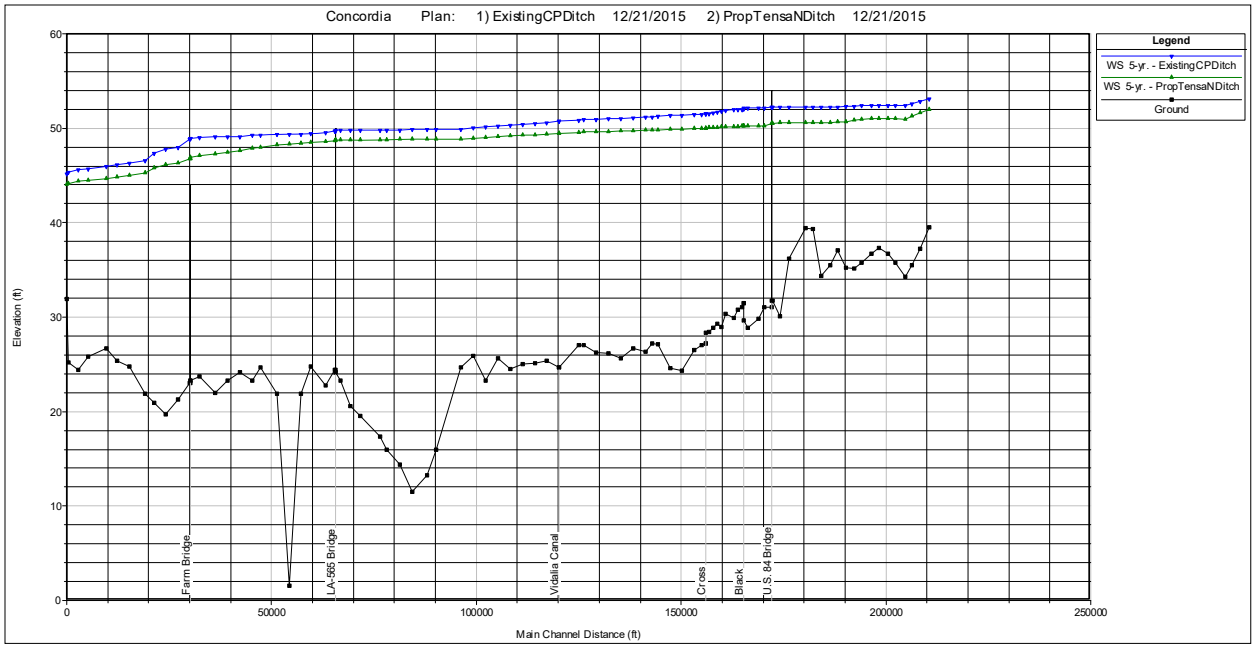


Figure 10

Cocodrie System Hydraulic Profile for Q5 Under Existing and Proposed Conditions

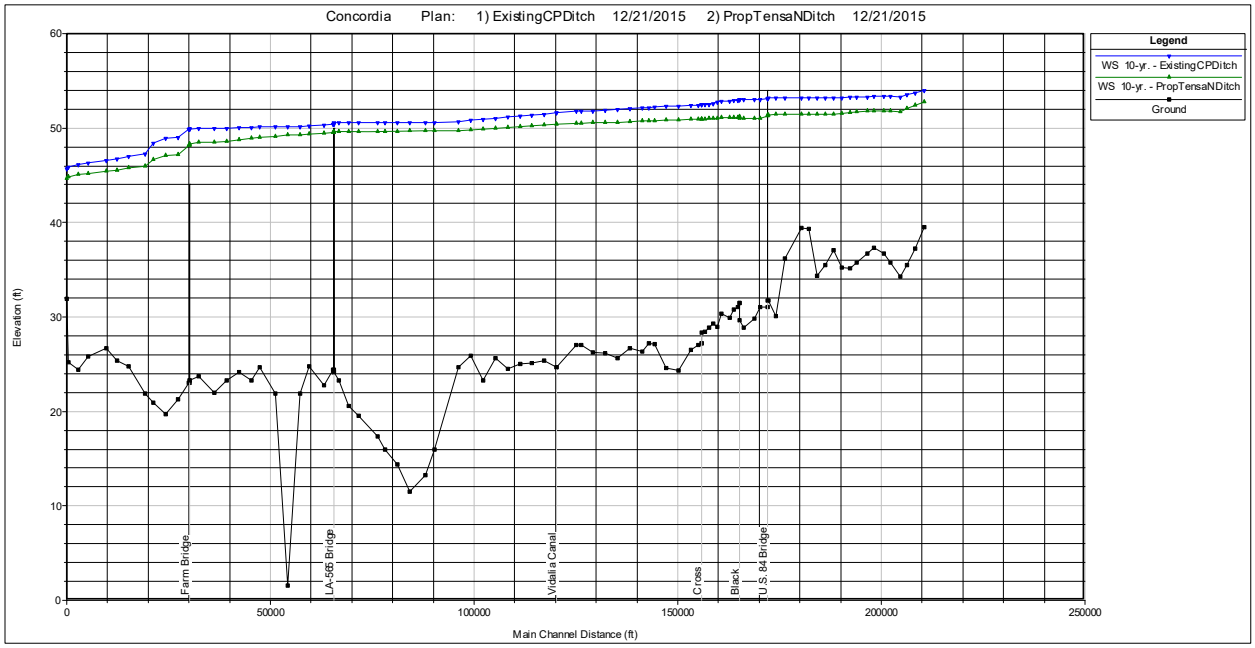


Figure 11

Cocodrie System Hydraulic Profile for Q10 Under Existing and Proposed Conditions

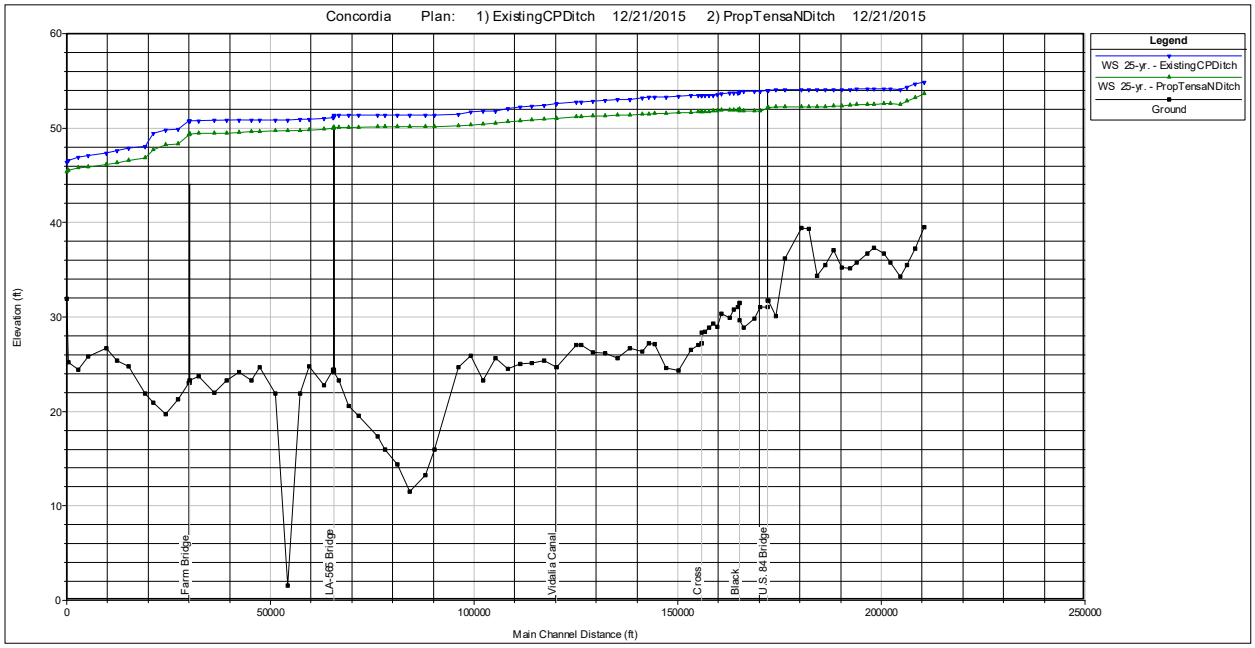


Figure 12

Cocodrie System Hydraulic Profile for Q25 Under Existing and Proposed Conditions

Examination of Figures 10 through 12 indicates that the proposed improvements of installing a gated box culvert at the end of Brushy Bayou to allow it to drain into the Tensas River along with a bridge at Luke Martin Road to be able to pass the additional flow drops the hydraulic grade-line by approximately two feet over the entire length of Cocodrie Bayou. During these model runs, it was determined that the bridge length at Luke Martin Road would need to be 100 feet and that the diversion weir proposed for Caney Bayou was not required.

Presented in Figures 13 through 15 are the profiles of the existing condition versus the proposed improvements condition for the Vidalia Canal using the Q5, Q10 and Q25 storm event flows, respectively.

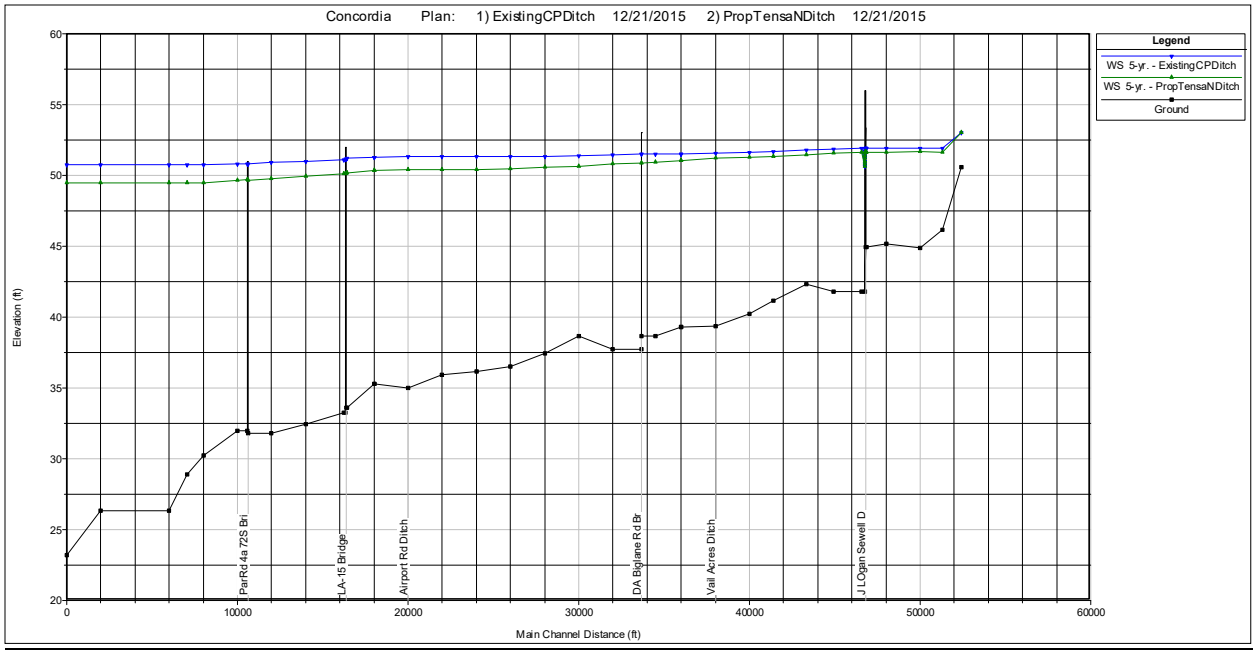


Figure 13

Vidalia Canal Hydraulic Profile for Q5 Under Existing and Proposed Conditions

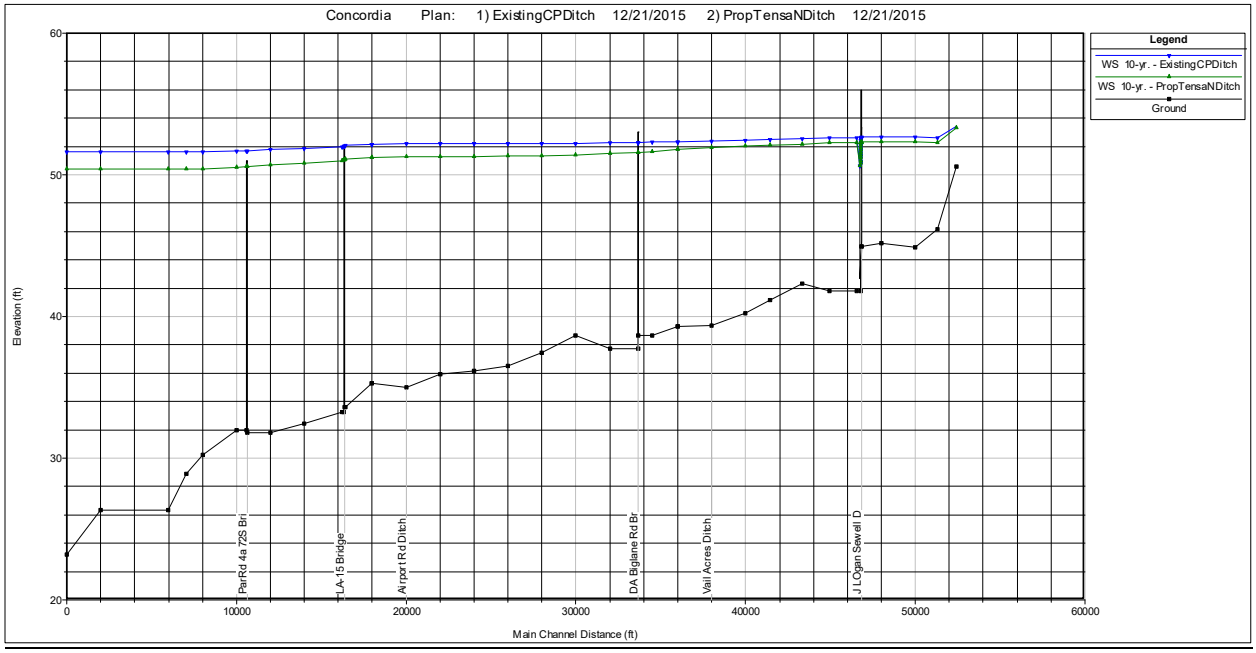


Figure 14

Vidalia Canal Hydraulic Profile for Q10 Under Existing and Proposed Conditions

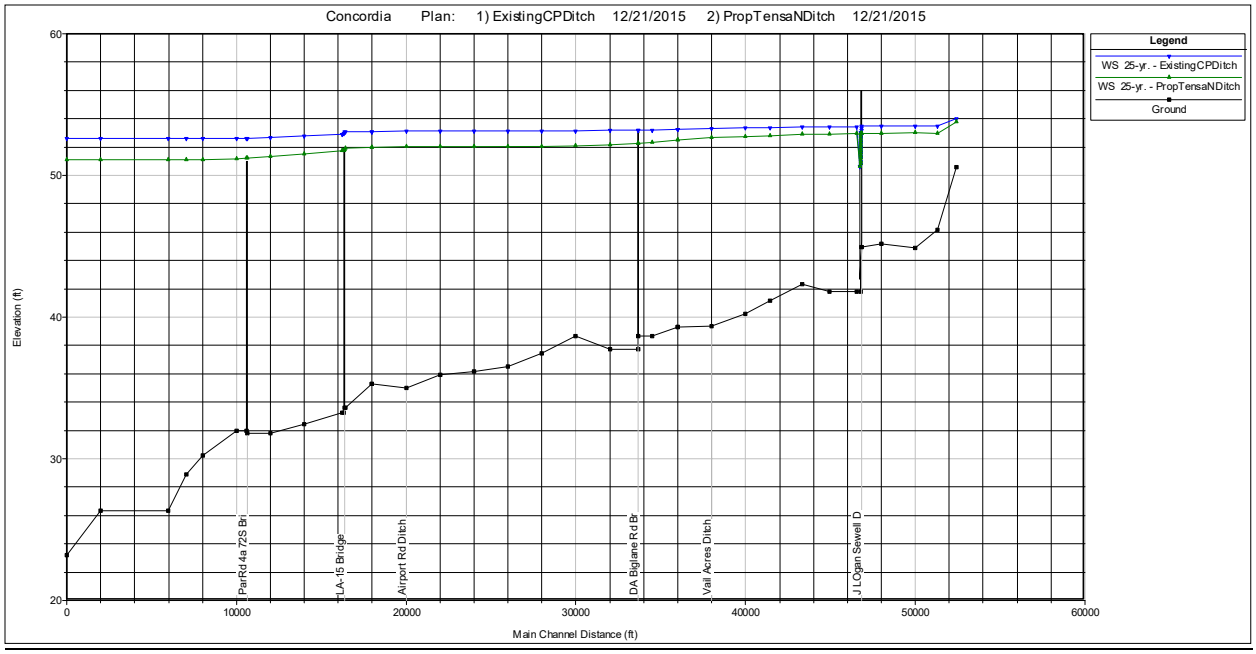


Figure 15

Vidalia Canal Hydraulic Profile for Q25 Under Existing and Proposed Conditions

Examination of Figures 13 through 15 indicates that the proposed improvements drop the hydraulic grade-line by approximately six inches to 18 inches in the Vidalia Canal. Given the relative flatness of the parish (averages ¼" drop in 100 yards), reducing the hydraulic grade line by even six inches is significant.

Utilizing the model results and the hydraulic grade lines presented, inundation maps were generated for the 5-year and 10-year storm events. These events were selected because they represent the storms for which the latest potential flood insurance claim data is available, that being the storm event in September 2008, the one in August 2010 and the one in January 2013. Presented in Table 2 is the Record of Climatological Observations for the Vidalia Station for the month of September 2008. The flood event culminated on September 4th after 5.45 inches of rain was received on the 2nd, 4.80 inches was received on the 3rd, and finally 1.45 inches was received on the 4th. Presented in Table 3 is the Record of Climatological Observations for the Vidalia Station for the month of August 2010. The flood event occurred on August 18th when 6.75 inches of rain was recorded in 24 hours. Presented in Table 4 is the Record of Climatological Observations for the Ferriday Station for the month of January 2013. The flood event occurred on January 10th and 11th when a total of 8.58 inches of rain was recorded in a 48-hour period with 6.93 inches of this occurring in a 24-hour period on January 10th.

Table 2

Rainfall Data for September 2008 Storm Event

September 2nd , 3rd & 4th

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Elev: 60 ft. Lat: 31.565° N Lon: 91.433° W

Station: **VIDALIA NUMBER 2, LA US GHCND:USC00169357**

Record of Climatological Observations
These data are quality controlled and may not be identical to the original observations.
Generated on 12/29/2015

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: Unknown Observation Time Precipitation: 0800

Preliminary	Year	Month	Day	Temperature (F)			Precipitation(see **)					Evaporation		Soil Temperature (F)					
				24 hrs. ending at observation time		at Observation	24 Hour Amounts ending at observation time				At Obs Time			4 in depth			8 in depth		
				Max.	Min.		Rain, melted snow, etc. (in)	Flag	Snow, ice pellets, hail (in)	Flag	Snow, ice pellets, hail, ice on ground (in)	24 Hour Wind Movement (mi)	Amount of Evap. (in)	Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
	2008	9	1				0.00		0.0		0								
	2008	9	2				5.45		0.0		0								
	2008	9	3				4.80		0.0		0								
	2008	9	4				1.45		0.0		0								
	2008	9	5				0.00		0.0		0								
	2008	9	6				0.00		0.0		0								
	2008	9	7				0.00		0.0		0								
	2008	9	8				0.00		0.0		0								
	2008	9	9				0.00		0.0		0								
	2008	9	10				0.05		0.0		0								
	2008	9	11				0.33		0.0		0								
	2008	9	12				0.36		0.0		0								
	2008	9	13				0.20		0.0		0								
	2008	9	14				0.00		0.0		0								
	2008	9	15				0.95		0.0		0								
	2008	9	16				0.00		0.0		0								
	2008	9	17				0.00		0.0		0								
	2008	9	18				0.00		0.0		0								
	2008	9	19				0.00		0.0		0								
	2008	9	20				0.00		0.0		0								
	2008	9	21				0.00		0.0		0								
	2008	9	22				0.00		0.0		0								
	2008	9	23				0.00		0.0		0								
	2008	9	24				0.00		0.0		0								
	2008	9	25				0.00		0.0		0								
	2008	9	26				0.00		0.0		0								
	2008	9	27				0.00		0.0		0								
	2008	9	28				0.00		0.0		0								
	2008	9	29				0.00		0.0		0								
	2008	9	30				0.00		0.0		0								
			Summary				13.59		0.0										

The "" flags in Preliminary indicate the data have not completed processing and qualitycontrol and may not be identical to the original observation
Empty, or blank, cells indicate that a data observation was not reported.
*Ground Cover: 1=Grass; 2=Fallow; 3=Bare Ground; 4=Brome grass; 5=Sod; 6=Straw mulch; 7=Grass muck; 8=Bare muck; 0=Unknown
"s" This data value failed one of NCDC's quality control tests.
"T" values in the Precipitation category above indicate a TRACE value was recorded.
"A" values in the Precipitation Flag or the Snow Flag column indicate a multiday total, accumulated since last measurement, is being used.
Data value inconsistency may be present due to rounding calculations during the conversion process from SI metric units to standard imperial units.

Table 3

Rainfall Data for August 2010 Storm Event

August 18th.

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Elev: 54 ft. Lat: 31.647° N Lon: 91.565° W

Station: **FERRIDAY 1.1 NNW, LA US GHCND:US1LACN0002**

Record of Climatological Observations
These data are quality controlled and may not be identical to the original observations.
Generated on 12/23/2015

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: Unknown Observation Time Precipitation: Unknown

Preliminary	Year	Month	Day	Temperature (F)			Precipitation(see **)					Evaporation		Soil Temperature (F)					
				24 hrs. ending at observation time		at Observation	24 Hour Amounts ending at observation time				At Obs Time			4 in depth			8 in depth		
				Max.	Min.		Rain, melted snow, etc. (in)	Flag	Snow, ice pellets, hail (in)	Flag	Snow, ice pellets, hail, ice on ground (in)	24 Hour Wind Movement (mi)	Amount of Evap. (in)	Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
	2010	8	1				0.00		0.0										
	2010	8	2				0.00		0.0										
	2010	8	3				0.00		0.0										
	2010	8	4				0.00		0.0										
	2010	8	5				0.00		0.0										
	2010	8	6				0.12												
	2010	8	7				0.00		0.0										
	2010	8	8				0.28												
	2010	8	9				0.00		0.0										
	2010	8	10				0.19												
	2010	8	11				0.00		0.0										
	2010	8	12				0.00		0.0										
	2010	8	13				0.00		0.0										
	2010	8	14				0.35												
	2010	8	15				0.00		0.0										
	2010	8	16				0.00		0.0										
	2010	8	17				T												
	2010	8	18				6.75												
	2010	8	19				0.02												
	2010	8	20				0.08												
	2010	8	21				T												
	2010	8	22				0.00		0.0										
	2010	8	23				0.17												
	2010	8	24				0.00		0.0										
	2010	8	25				0.00		0.0										
	2010	8	26				0.00		0.0										
	2010	8	27				0.00		0.0										
	2010	8	28				0.00		0.0										
	2010	8	29				0.25												
	2010	8	30				0.02												
	2010	8	31				0.01												
			Summary				8.24		0.0										

The '*' flags in Preliminary indicate the data have not completed processing and qualitycontrol and may not be identical to the original observation
Empty, or blank, cells indicate that a data observation was not reported.
*Ground Cover: 1=Grass; 2=Fallow; 3=Bare Ground; 4=Brome grass; 5=Sod; 6=Straw mulch; 7=Grass muck; 8=Bare muck; 0=Unknown
"s" This data value failed one of NCDC's quality control tests.
"T" values in the Precipitation category above indicate a TRACE value was recorded.
"A" values in the Precipitation Flag or the Snow Flag column indicate a multiday total, accumulated since last measurement, is being used.
Data value inconsistency may be present due to rounding calculations during the conversion process from SI metric units to standard imperial units.

Table 4

Rainfall Data for August 2013 Storm Event

January 10th and 11th

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service
Elev: 54 ft. Lat: 31.647° N Lon: 91.565° W
Station: **FERRIDAY 1.1 NNW, LA US GHCND:US1LACN0002**

Record of Climatological Observations
These data are quality controlled and may not be identical to the original observations.
Generated on 12/23/2015

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Observation Time Temperature: Unknown Observation Time Precipitation: Unknown

Preliminary	Year	Month	Day	Temperature (F)			Precipitation(see **)					Evaporation		Soil Temperature (F)					
				24 hrs. ending at observation time		at Observation	24 Hour Amounts ending at observation time				At Obs Time	24 Hour Wind Movement (mi)	Amount of Evap. (in)	4 in depth			8 in depth		
				Max.	Min.		Rain, melted snow, etc. (in)	Flag	Snow, ice pellets, hail (in)	Flag	Snow, ice pellets, hail, ice on ground (in)			Ground Cover (see *)	Max.	Min.	Ground Cover (see *)	Max.	Min.
	2013	1	1				1.15												
	2013	1	2				1.02												
	2013	1	3																
	2013	1	4																
	2013	1	5				0.07												
	2013	1	6				0.69												
	2013	1	7																
	2013	1	8																
	2013	1	9				0.37												
	2013	1	10				6.93												
	2013	1	11				1.65												
	2013	1	12				0.07												
	2013	1	13																
	2013	1	14				0.61												
	2013	1	15				0.59												
	2013	1	16				1.87												
	2013	1	17				0.27												
	2013	1	18																
	2013	1	19																
	2013	1	20																
	2013	1	21																
	2013	1	22																
	2013	1	23																
	2013	1	24																
	2013	1	25																
	2013	1	26																
	2013	1	27																
	2013	1	28																
	2013	1	29																
	2013	1	30				0.75												
	2013	1	31																
			Summary				16.04		0										

The "*" flags in Preliminary indicate the data have not completed processing and qualitycontrol and may not be identical to the original observation
Empty, or blank, cells indicate that a data observation was not reported.
*Ground Cover: 1=Grass; 2=Fallow; 3=Bare Ground; 4=Brome grass; 5=Sod; 6=Straw mulch; 7=Grass muck; 8=Bare muck; 0=Unknown
"s" This data value failed one of NCDC's quality control tests.
"T" values in the Precipitation category above indicate a TRACE value was recorded.
"A" values in the Precipitation Flag or the Snow Flag column indicate a multiday total, accumulated since last measurement, is being used.
Data value inconsistency may be present due to rounding calculations during the conversion process from SI metric units to standard imperial units.

Presented in Table 5 is the NOAA Point Precipitation Frequency Estimates Table for Concordia Parish.

Table 5

Concordia Parish Precipitation Frequency Table

NOAA Atlas 14, Volume 9, Version 2 VIDALIA #2
Station ID: 16-9357
Location name: Vidalia, Louisiana, US*
Latitude: 31.5653°, Longitude: -91.4331°
Elevation:
Elevation (station metadata): 60 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.512 (0.432-0.611)	0.590 (0.497-0.704)	0.718 (0.602-0.858)	0.823 (0.687-0.987)	0.968 (0.780-1.19)	1.08 (0.850-1.33)	1.19 (0.906-1.50)	1.30 (0.951-1.67)	1.45 (1.02-1.90)	1.56 (1.07-2.07)
10-min	0.750 (0.632-0.894)	0.864 (0.728-1.03)	1.05 (0.882-1.26)	1.21 (1.01-1.45)	1.42 (1.14-1.74)	1.58 (1.25-1.95)	1.74 (1.33-2.19)	1.91 (1.39-2.44)	2.12 (1.49-2.78)	2.29 (1.57-3.03)
15-min	0.914 (0.771-1.08)	1.05 (0.887-1.26)	1.28 (1.07-1.53)	1.47 (1.23-1.76)	1.73 (1.39-2.12)	1.93 (1.52-2.38)	2.13 (1.62-2.67)	2.33 (1.70-2.98)	2.59 (1.82-3.39)	2.79 (1.91-3.69)
30-min	1.39 (1.17-1.66)	1.61 (1.36-1.93)	1.97 (1.66-2.36)	2.27 (1.89-2.72)	2.67 (2.15-3.27)	2.98 (2.35-3.68)	3.28 (2.50-4.13)	3.59 (2.62-4.60)	3.99 (2.80-5.21)	4.29 (2.94-5.68)
60-min	1.88 (1.59-2.25)	2.17 (1.83-2.59)	2.66 (2.23-3.18)	3.08 (2.56-3.69)	3.67 (2.97-4.52)	4.14 (3.27-5.15)	4.63 (3.54-5.85)	5.14 (3.77-6.62)	5.84 (4.11-7.67)	6.38 (4.38-8.46)
2-hr	2.37 (2.01-2.81)	2.73 (2.31-3.23)	3.34 (2.82-3.97)	3.88 (3.25-4.62)	4.67 (3.81-5.73)	5.31 (4.23-6.57)	5.98 (4.60-7.53)	6.70 (4.95-8.59)	7.69 (5.46-10.1)	8.48 (5.65-11.2)
3-hr	2.67 (2.27-3.15)	3.06 (2.60-3.61)	3.75 (3.17-4.44)	4.38 (3.68-5.19)	5.32 (4.37-6.53)	6.10 (4.88-7.54)	6.94 (5.37-8.73)	7.84 (5.83-10.1)	9.13 (6.52-11.9)	10.2 (7.04-13.3)
6-hr	3.20 (2.73-3.75)	3.66 (3.13-4.29)	4.51 (3.84-5.29)	5.29 (4.48-6.23)	6.49 (5.37-7.94)	7.50 (6.05-9.23)	8.60 (6.70-10.8)	9.79 (7.33-12.5)	11.5 (8.28-14.9)	12.9 (9.00-16.8)
12-hr	3.75 (3.22-4.36)	4.33 (3.71-5.04)	5.36 (4.59-6.25)	6.30 (5.36-7.37)	7.72 (6.42-9.37)	8.92 (7.23-10.9)	10.2 (7.99-12.7)	11.6 (8.71-14.6)	13.5 (9.81-17.5)	15.1 (10.6-19.6)
24-hr	4.36 (3.76-5.03)	5.06 (4.37-5.85)	6.29 (5.41-7.28)	7.38 (6.32-8.57)	8.99 (7.50-10.8)	10.3 (8.40-12.5)	11.7 (9.23-14.4)	13.2 (10.0-16.6)	15.3 (11.2-19.6)	17.0 (12.0-21.8)
2-day	5.04 (4.38-5.78)	5.86 (5.09-6.73)	7.27 (6.29-8.35)	8.49 (7.30-9.79)	10.3 (8.58-12.2)	11.7 (9.55-14.0)	13.2 (10.4-16.0)	14.7 (11.2-18.3)	16.9 (12.4-21.4)	18.6 (13.3-23.8)
3-day	5.49 (4.79-6.27)	6.37 (5.54-7.28)	7.86 (6.82-8.99)	9.14 (7.89-10.5)	11.0 (9.21-13.0)	12.5 (10.2-14.8)	14.0 (11.1-16.9)	15.6 (11.9-19.2)	17.8 (13.1-22.4)	19.5 (13.9-24.8)
4-day	5.87 (5.13-6.68)	6.77 (5.91-7.71)	8.29 (7.21-9.46)	9.60 (8.31-11.0)	11.5 (9.64-13.5)	13.0 (10.7-15.4)	14.5 (11.5-17.5)	16.1 (12.3-19.8)	18.3 (13.5-23.0)	20.1 (14.4-25.4)
7-day	6.86 (6.02-7.76)	7.77 (6.81-8.80)	9.31 (8.14-10.6)	10.6 (9.25-12.1)	12.5 (10.6-14.7)	14.1 (11.6-16.6)	15.6 (12.5-18.8)	17.3 (13.3-21.1)	19.5 (14.5-24.4)	21.3 (15.4-26.8)
10-day	7.69 (6.77-8.68)	8.64 (7.60-9.75)	10.2 (8.98-11.6)	11.6 (10.1-13.2)	13.6 (11.6-15.9)	15.2 (12.6-17.9)	16.9 (13.5-20.2)	18.6 (14.4-22.7)	21.0 (15.6-26.1)	22.9 (16.6-28.7)
20-day	9.99 (8.84-11.2)	11.2 (9.89-12.5)	13.2 (11.6-14.8)	14.9 (13.1-16.8)	17.4 (14.8-20.1)	19.4 (16.1-22.5)	21.4 (17.3-25.3)	23.5 (18.2-28.4)	26.4 (19.7-32.5)	28.6 (20.9-35.6)
30-day	12.0 (10.7-13.4)	13.5 (11.9-15.0)	15.8 (14.0-17.7)	17.8 (15.7-20.0)	20.6 (17.6-23.6)	22.8 (19.1-26.4)	25.0 (20.3-29.5)	27.3 (21.3-32.8)	30.4 (22.8-37.2)	32.7 (24.0-40.6)
45-day	14.8 (13.2-16.4)	16.5 (14.7-18.3)	19.3 (17.1-21.4)	21.6 (19.0-24.0)	24.6 (21.0-28.0)	26.9 (22.5-30.9)	29.2 (23.7-34.2)	31.5 (24.6-37.5)	34.4 (25.9-41.9)	36.6 (26.9-45.2)
60-day	17.3 (15.4-19.1)	19.2 (17.2-21.3)	22.3 (19.8-24.7)	24.7 (21.9-27.5)	27.9 (23.8-31.5)	30.2 (25.3-34.5)	32.4 (26.3-37.6)	34.5 (26.9-40.9)	37.0 (27.9-44.8)	38.8 (28.7-47.9)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

From Table 5, it is seen that the storm events that occurred in 2008, 2010 and the 2013 fall somewhere between the 5-year and the 10-year recurrence interval and thus these storm events were used for the inundation maps which are presented in Figures 16 through 25.

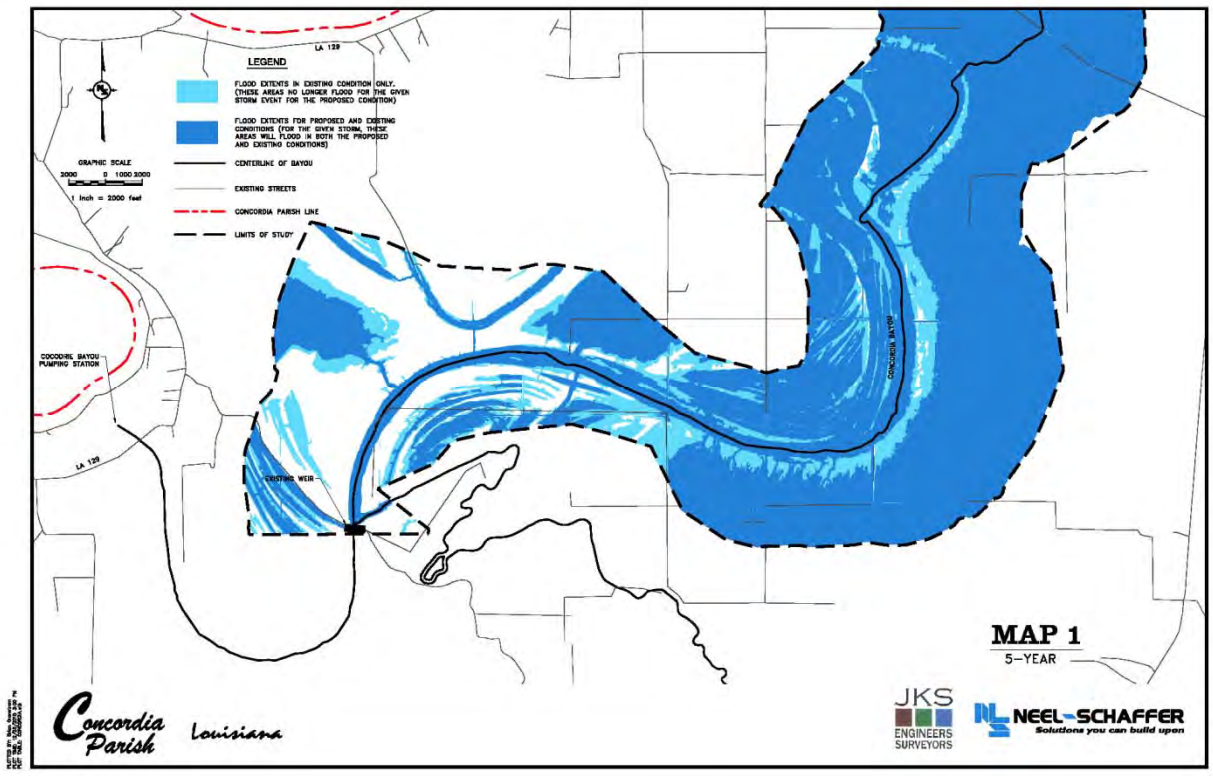


Figure 16

Inundation Map for Lower Cocodrie

5-Year Storm Event

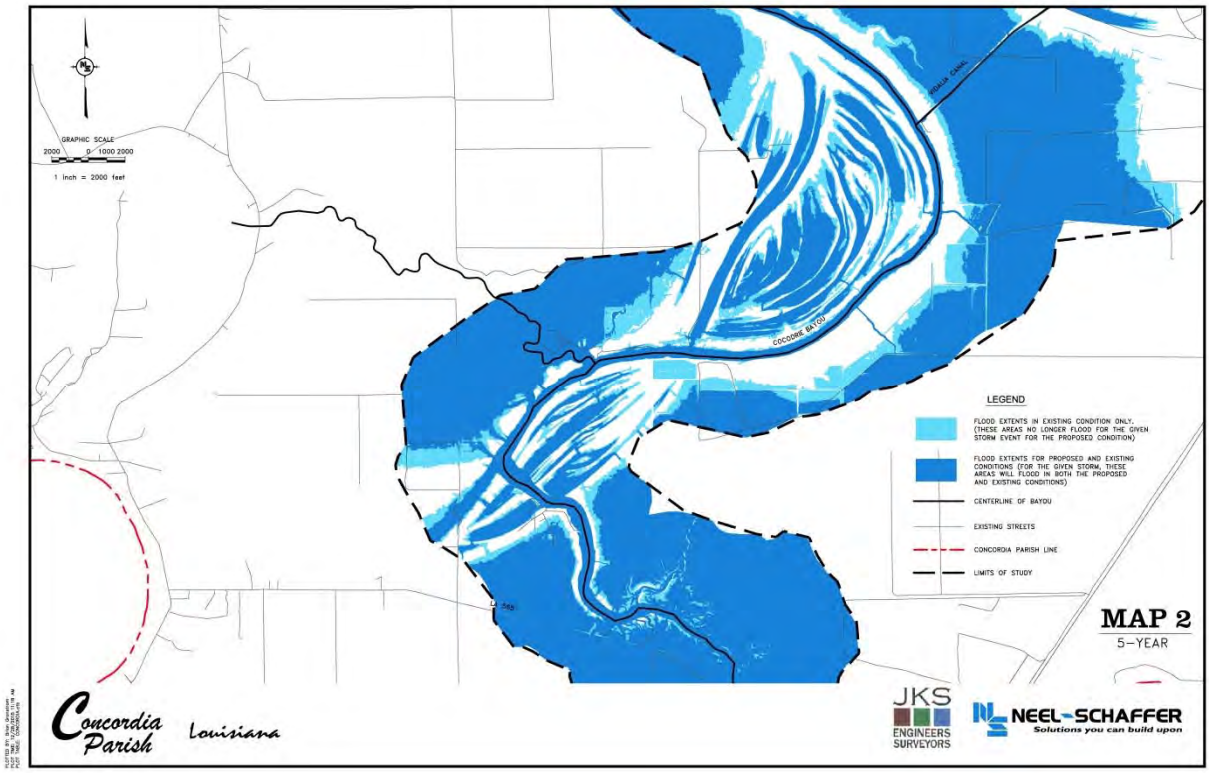


Figure 17

Inundation Map for Middle Cocodrie

5-Year Storm Event

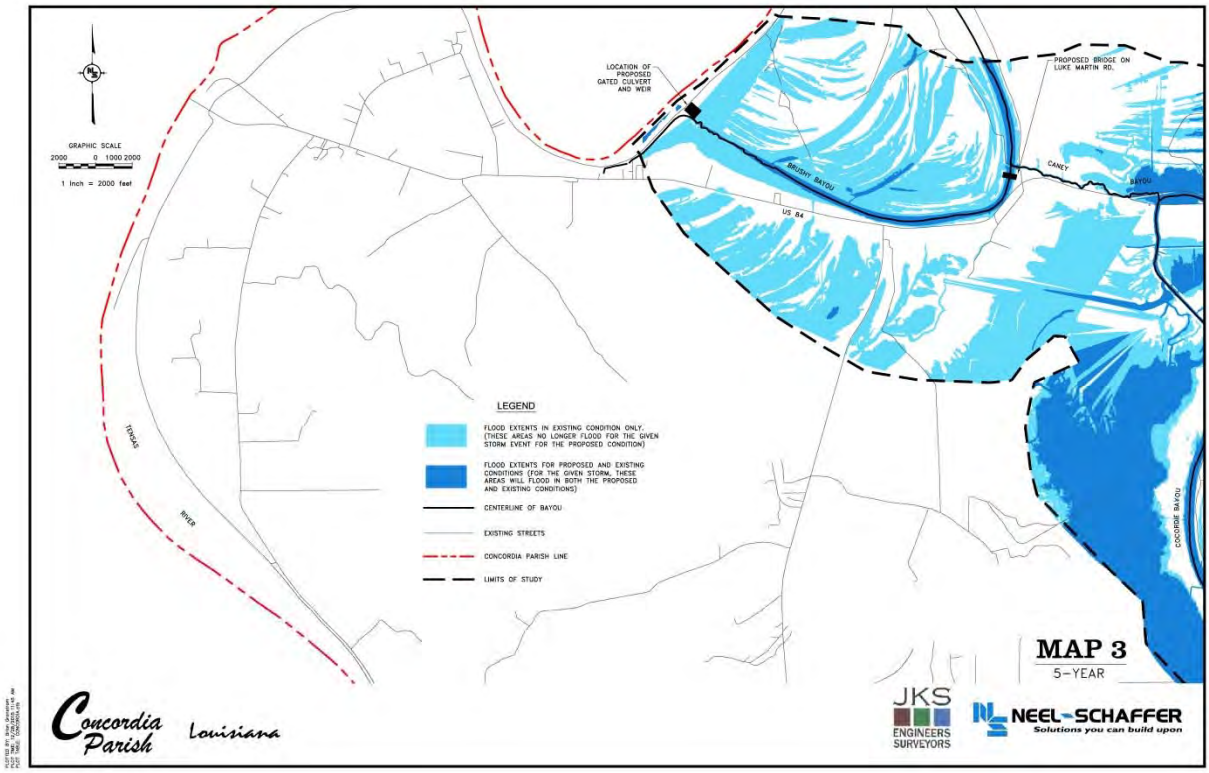


Figure 18

Inundation Map for Brushy Bayou

5-Year Storm Event

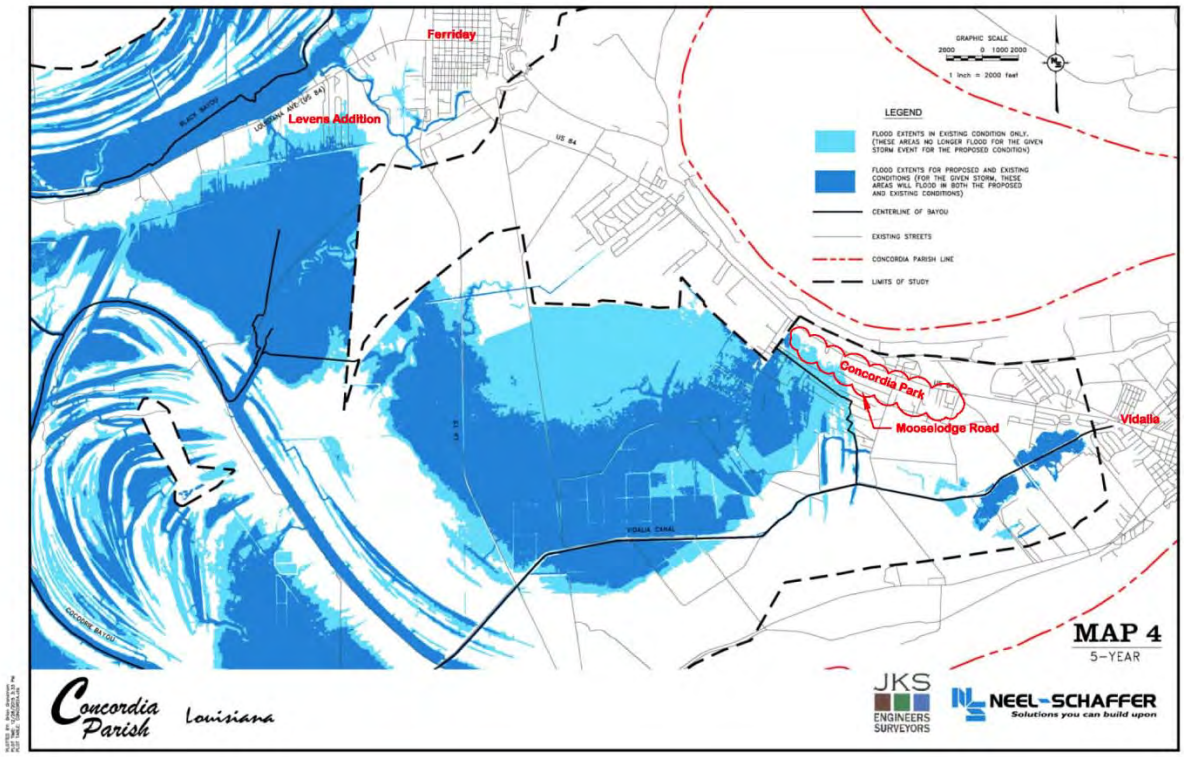


Figure 19

Inundation Map for Upper Cocodrie/Vidalia Canal

5-Year Storm Event

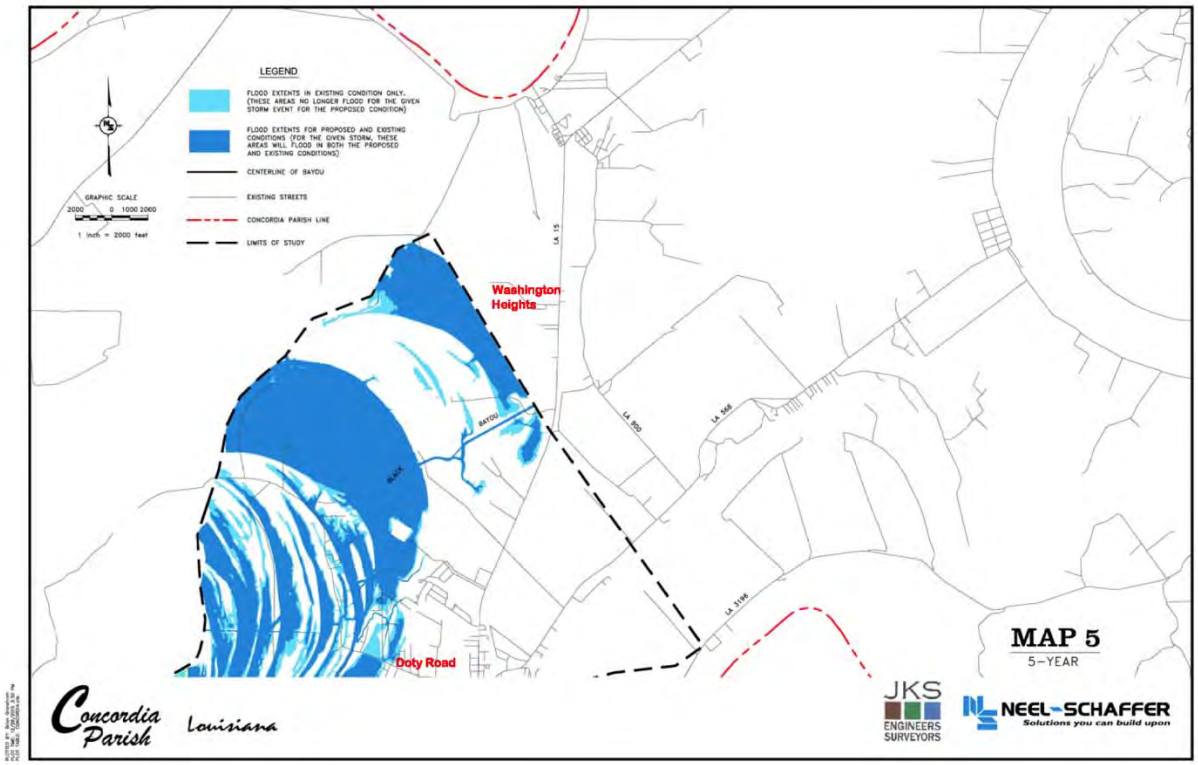


Figure 20

Inundation Map for Upper Black Bayou

5-Year Storm Event

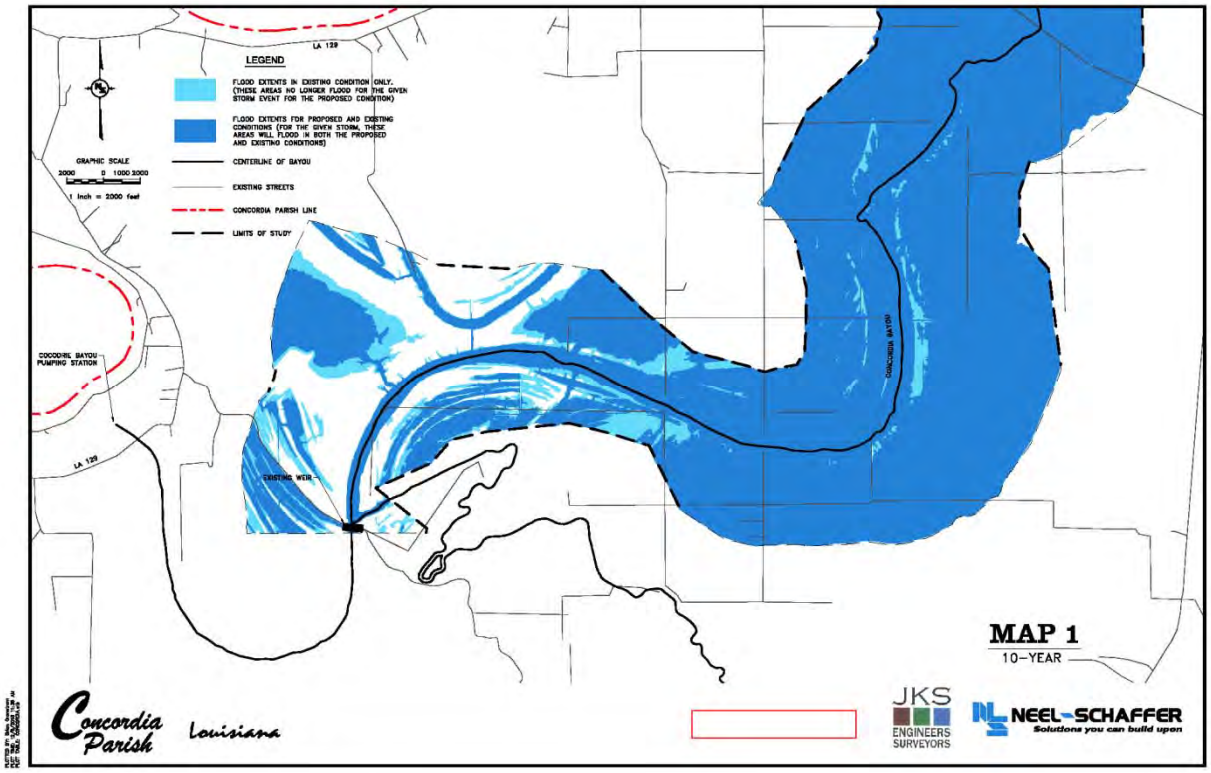


Figure 21

Inundation Map for Lower Cocodrie

10-Year Storm Event

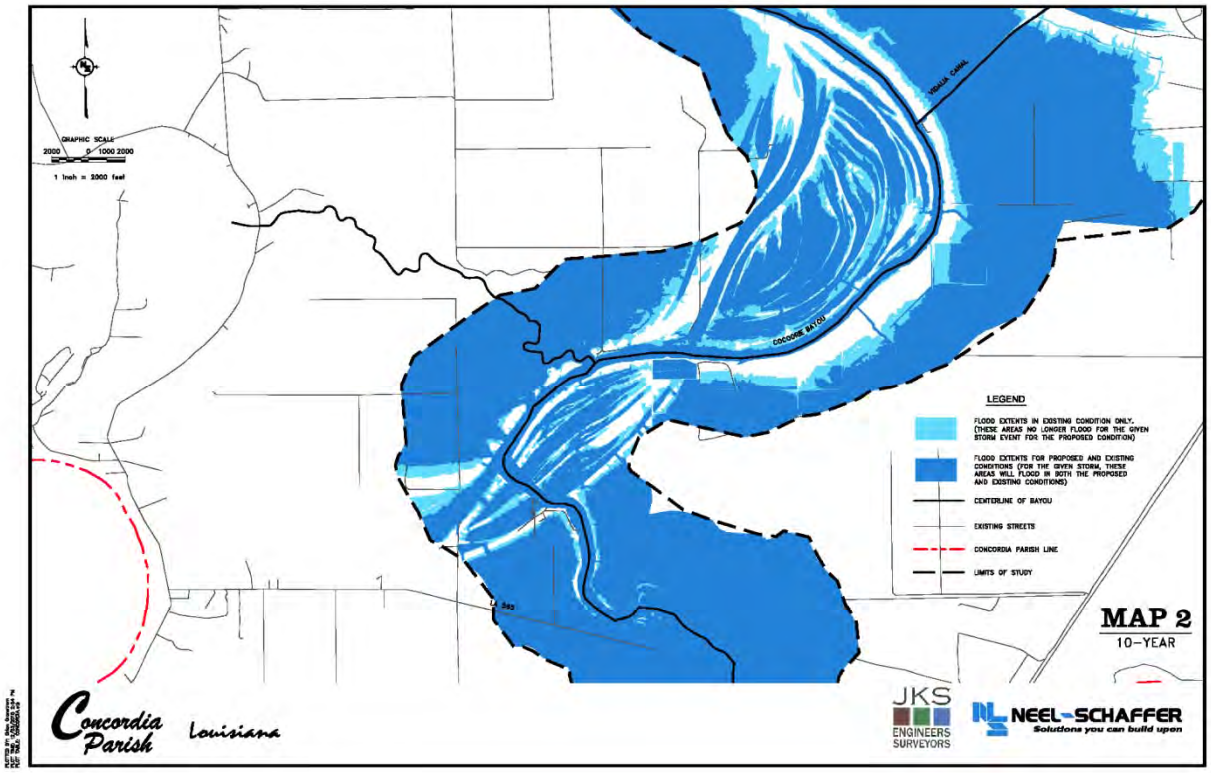


Figure 22

Inundation Map for Middle Cocodrie

10-Year Storm Event

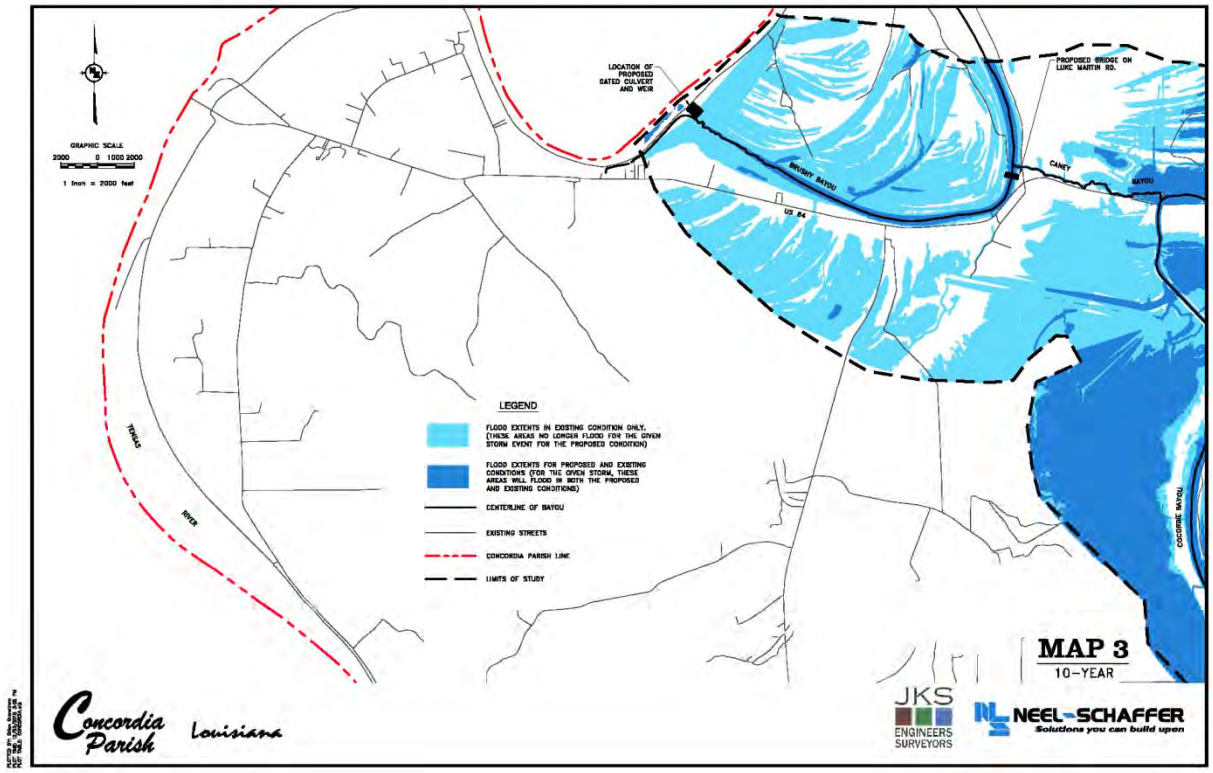


Figure 23

Inundation Map for Brushy Bayou

10-Year Storm Event

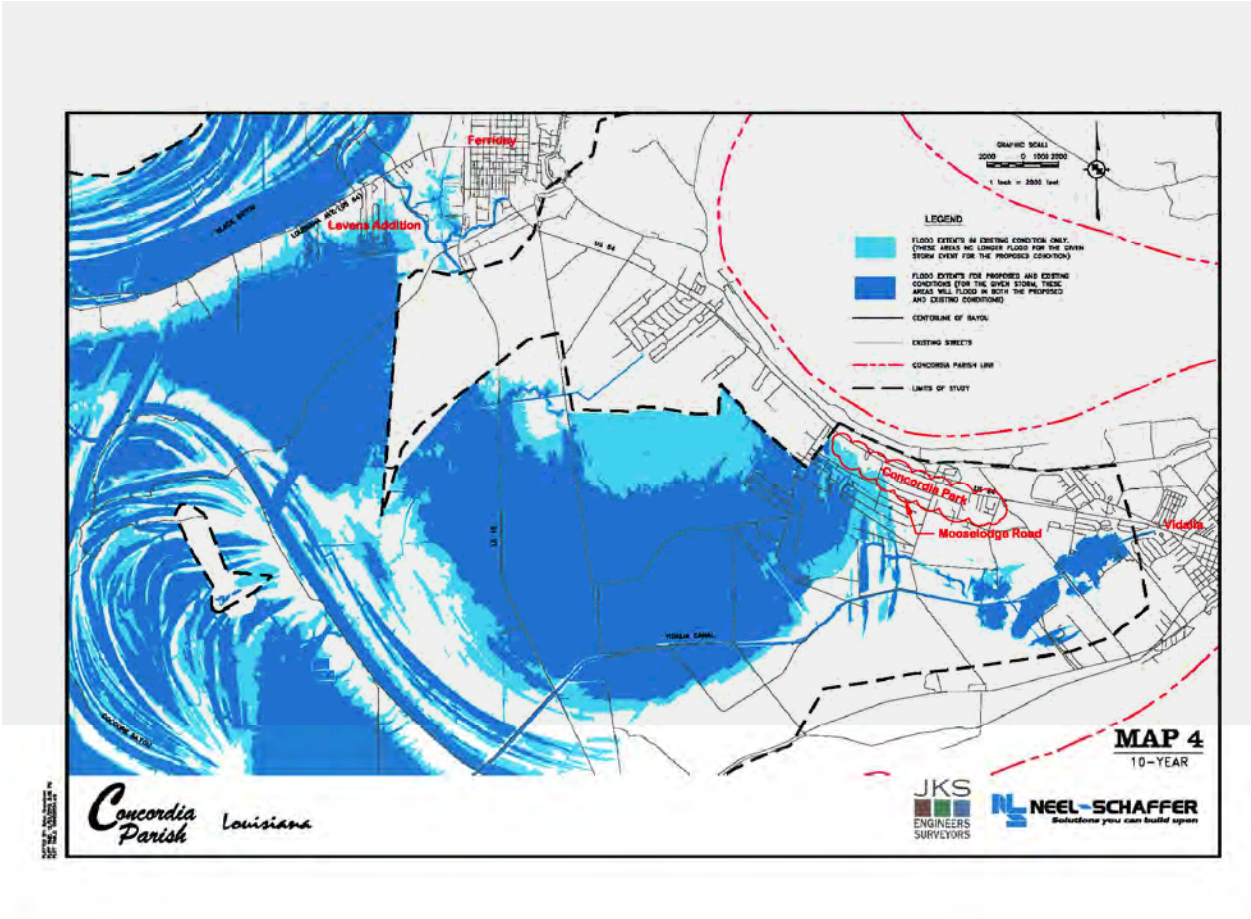


Figure 24

Inundation Map for Upper Cocodrie/Vidalia Canal

10-Year Storm Event

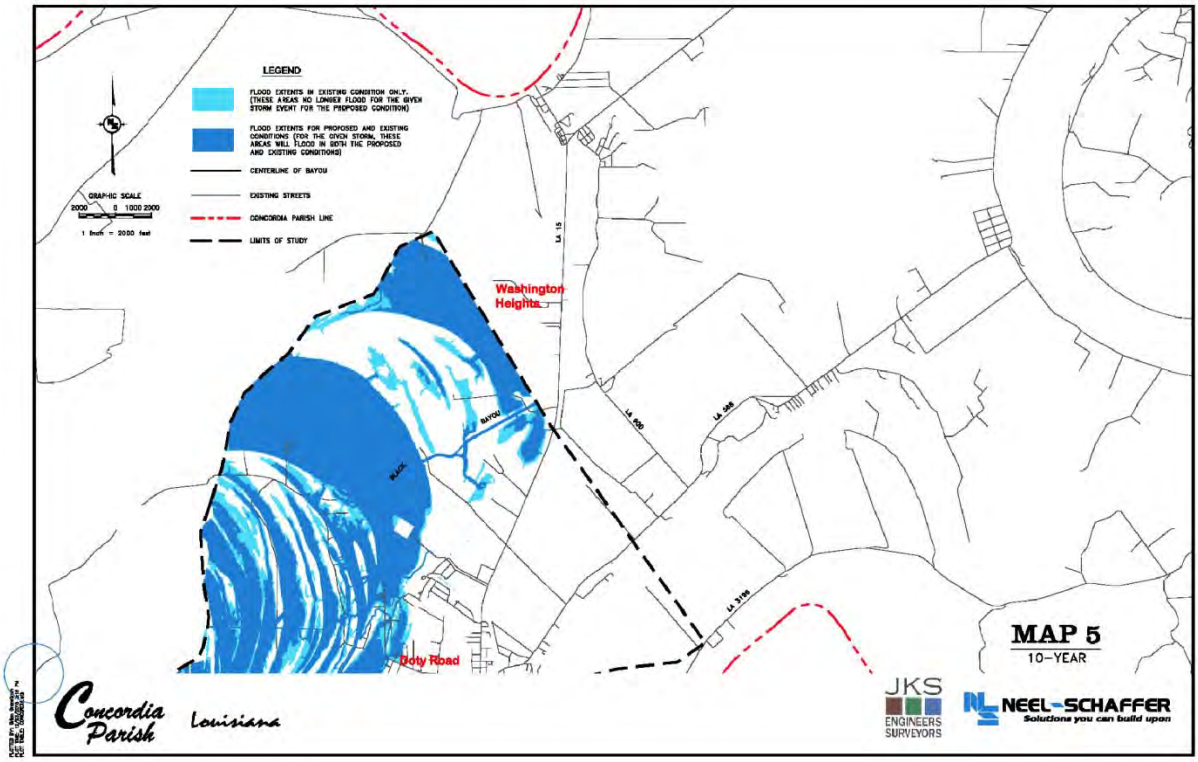


Figure 25

Inundation Map for Upper Black Bayou

10-Year Storm Event

As seen from Figures 16 through 25, the diversion of the Brushy Bayou drainage basin to the Tensas River reduces flooded areas under both the 5 and 10 year events. It is important to note that while an area may still show water covering it in the proposed case, the depth of that water has been reduced by approximately 6 to 18 inches which is indicated by the profiles in Figures 10 through 15.

Finally, the Tensas River was modelled from the proposed Brushy Structure down to just past the point where Cocodrie Bayou dumps into it to determine if there was any detrimental effect (raising of the water surface elevation) associated with discharging the Brushy Bayou flow into the Tensas. Modelled was a flood event in the Tensas River that occurs 10% of the time each year along with the flow out of the Brushy structure for a 5-year storm in the interior of the parish. For this condition, the water surface elevation in the Tensas at the location of the proposed culvert increases from approximately 40.02 ft. to 41.27 ft. These water surface elevations are still below top bank elevation of the Tensas (54 feet) and

are well below the 100-year flood elevation for the Tensas River which is between 63 and 64 feet in this area. At higher flood events for the Tensas, i.e. when the water surface elevation is above 43 feet, the gates on the Brushy culvert would be closed, thus eliminating any additional discharge to the Tensas. Therefore, this proposed project will have no effect on the Tensas River from a flooding standpoint.

Conclusions and Recommendations:

Examination of the modeling results presented for the existing conditions versus those of the selected alternative, the Brushy Bayou Drainage Structure, indicates that implementation of this alternative will reduce the water surface elevation in the Cocodrie system by up to two feet and the water surface elevation in the Vidalia Canal by up to 18 inches. Based on these results, it is recommended that Alternative No. 3, the Brushy Bayou Drainage Structure, be constructed to alleviate flooding in the northern portions of Concordia Parish.

Statement Of Compliance:

The proposed project is in compliance with NFIP, local floodplain ordinances, state stormwater management requirements, DOTD requirements, USACE, levee district, and other federal including 44 CFR 65.3, state, and local laws as applicable.

AMENDMENT TO ORIGINAL H&H REPORT:

During its review of the H&H Study, FEMA questioned why the inundation maps did not show flooding in some of the areas where damage mitigation was being claimed, namely Concordia Park and Ferriday. This amendment explains the rationale used for making those claims.

As stated in the report, the main drainage ways of concern within the parish, i.e. Cocodrie Bayou, Black Bayou, Vidalia Canal, Cross Bayou and Brushy Bayou were modelled and studied using existing flows and proposed flows. The proposed flows would be those that would result from the installation of the drainage structure in the Tensas Levee to remove the Brushy Bayou flow from the Cocodrie system thereby relieving some of the hydraulic pressure on Cocodrie Bayou. It was beyond the scope of this H&H Study to collect field data on and model individual neighborhood ditches which fed into the primary system being modelled. However, given that these primary systems are the tail waters for all the neighborhood ditches, it can be inferred that a drop in water surface elevation in these primary systems would also result in a drop in the water surface elevation in the tributary systems not modelled. For reference, Figure A1 shows the locations of the primary drain ways that drain Concordia Park into the Vidalia Canal.

The inundation maps (Figures 16 through 25) were generated using the field surveyed cross-sections collected along the major drain ways, which extended approximately 50 to 100 feet beyond the top of bank in most cases, and publicly available LIDAR surface data for Concordia Parish which was used to tie to the cross-sections and extend the study surface into the surrounding areas of concern. However, given the relative flatness of the Parish (1/4" in 100 yards equivalent) coupled with the inherent elevation error associated with any large scale LIDAR surface such as the one used here, the inundation maps were only presented as an general indication of the reduction in flooded area and not as a definitive indication of the reduction of flooding in specific areas.

It is felt that Figures 10 through 15, the graphs of the hydraulic grade lines associated with Cocodrie Bayou (Figures 10-12) and the Vidalia Canal (Figures 13-15) for the 5, 10 and 25 year storm events under both existing and proposed conditions provide a better indication of the reduction of flooding that any area along those drain ways experience. These Figures were revised and are attached below to show clearly where the ditches that drain Concordia Park and Ferriday tie into the main drain ways. On these revised graphs, it can be seen what the reduction in tailwater is for these ditches from the existing condition to the proposed condition.

To further investigate the drop in water surface elevation in the Concordia Park area, modelling was performed along the eastern ditch shown in Figure A1 from its discharge into the Vidalia Canal and up along its channel approximately 9,000 ft using LIDAR surface data. The 9,000 ft section would be at the point where the ditch crosses Parish Road 4B147 (Roundtree Road) as shown in Figure A1. The cross-sections at Station 9000 generated from this modelling effort are presented as Figures A2 through A6 and the results of this modeling are summarized in Table A1. From Table A1 it can be seen that the

water surface elevation in this vicinity is dropped by approximately 1.3 feet by implementation of the proposed solution.

TABLE A1

SUMMARY OF CONCORDIA DITCH FROM LIDAR MODELING RESULTS

Station	Existing 5yr WSE	Proposed 5yr WSE	Existing 10yr WSE	Proposed 10yr WSE
9000	57.5	56.2	57.6	56.3
8000	57.5	56.1	57.6	56.3
7000	57.5	56.0	57.6	56.2

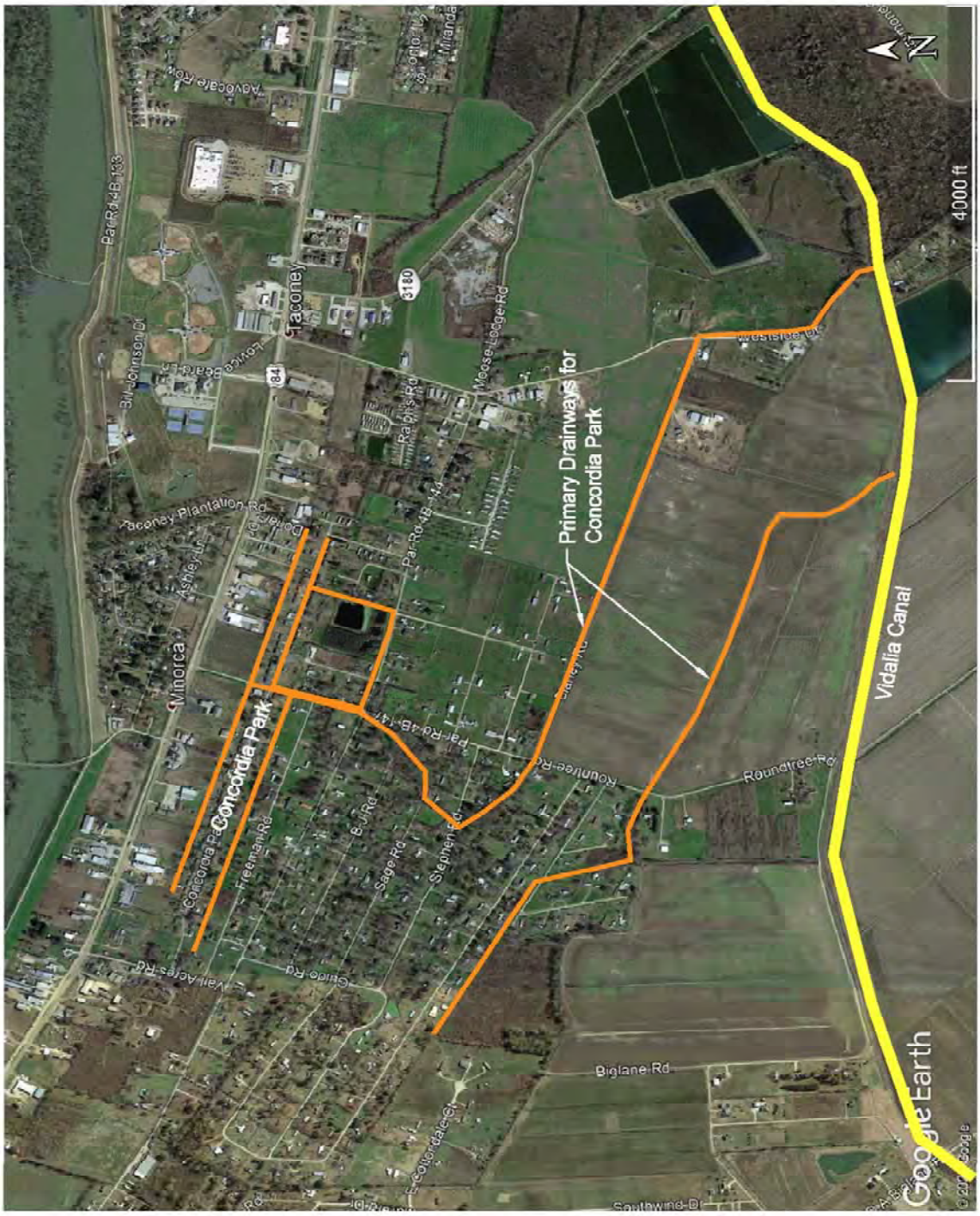


Figure A1

Concordia Park Drain Ways Feeding into Vidalia Canal

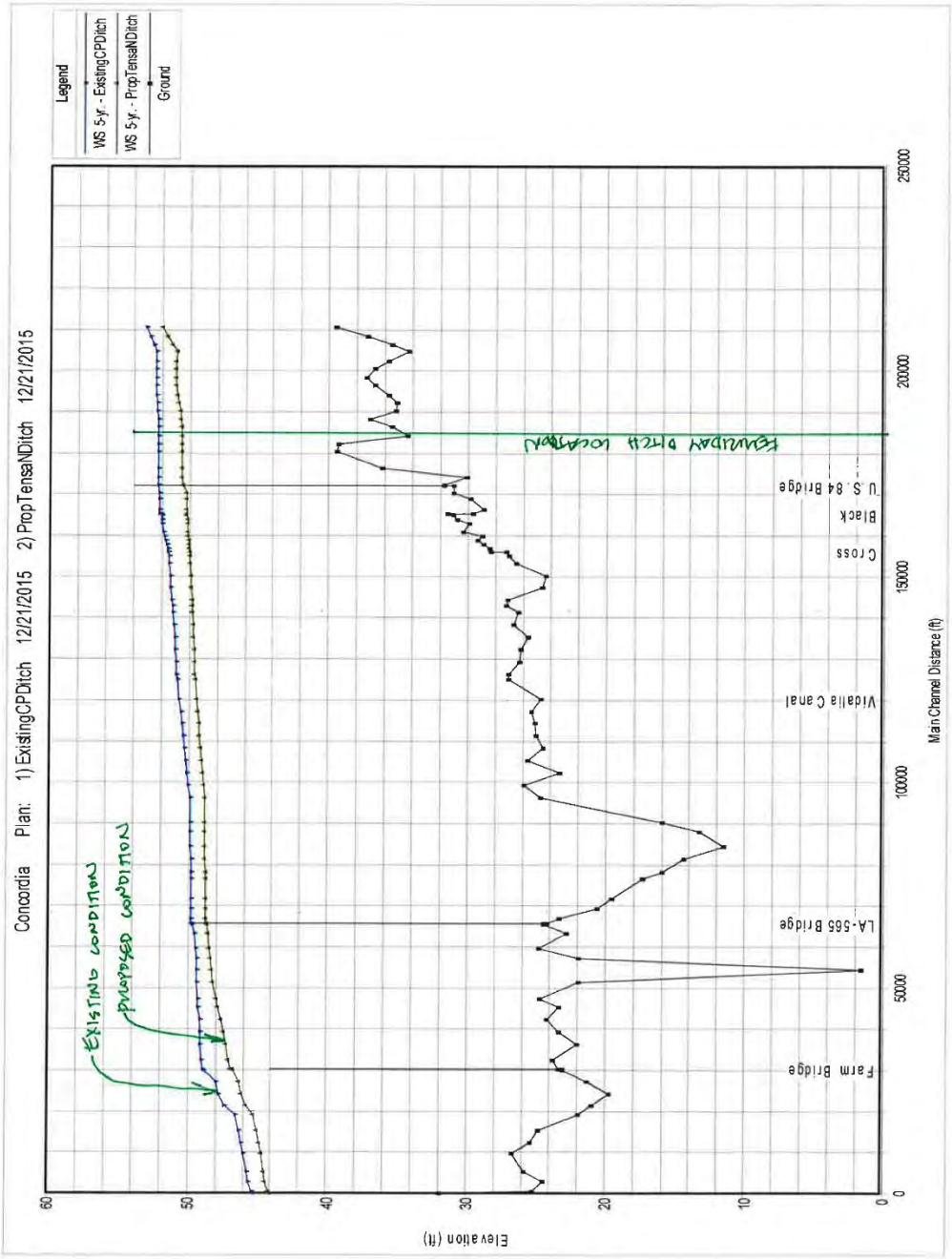


Figure 10 Cocodrie Bayou Hydraulic Profile for Q5, Existing and Proposed Conditions – Revised to Show Ferriday Ditch Locations

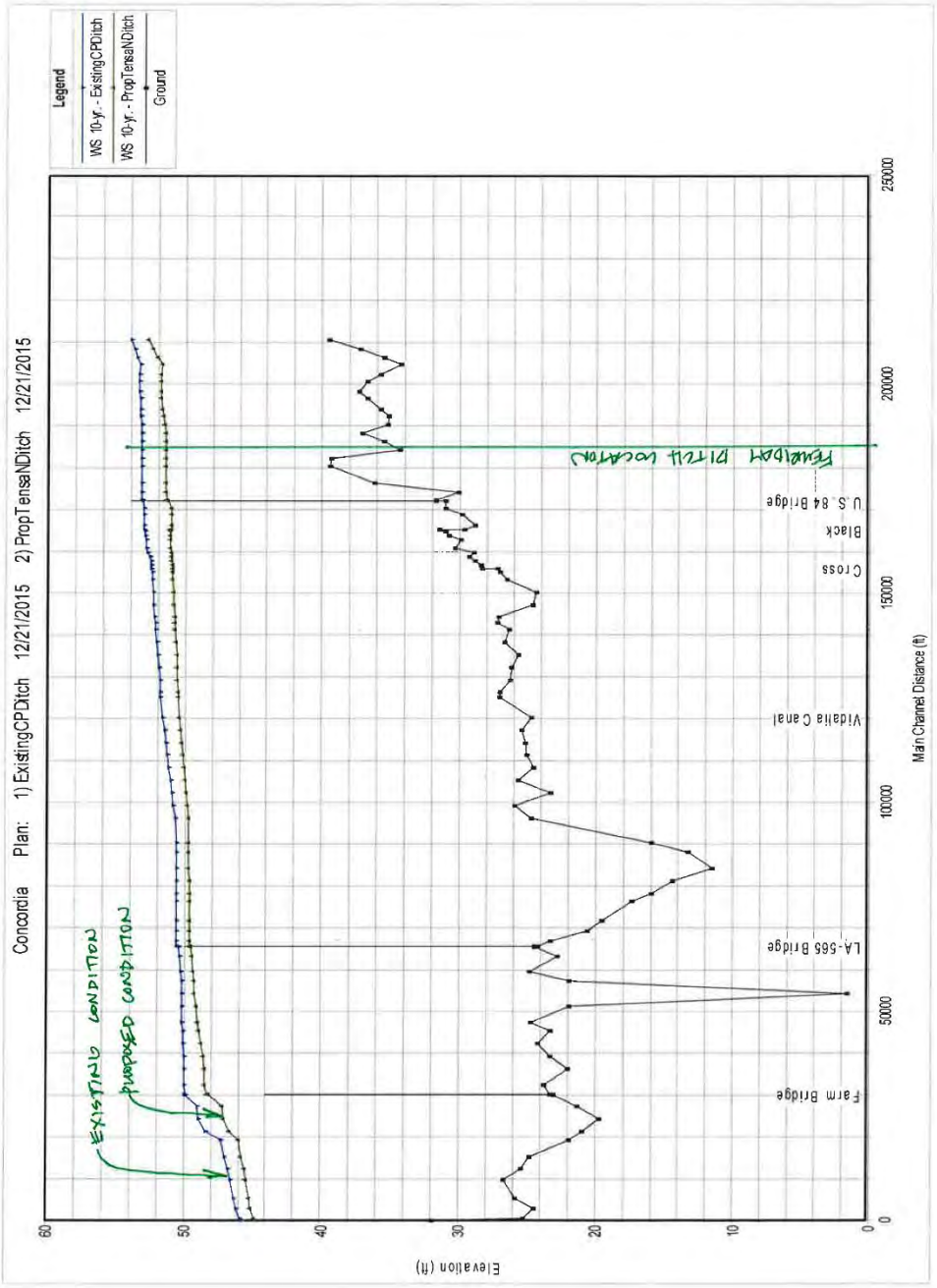


Figure 11 Cocodrie Bayou Hydraulic Profile for Q10, Existing and Proposed Conditions – Revised to Show Ferriday Ditch Location

JKS

NEEL-SCHAFFER

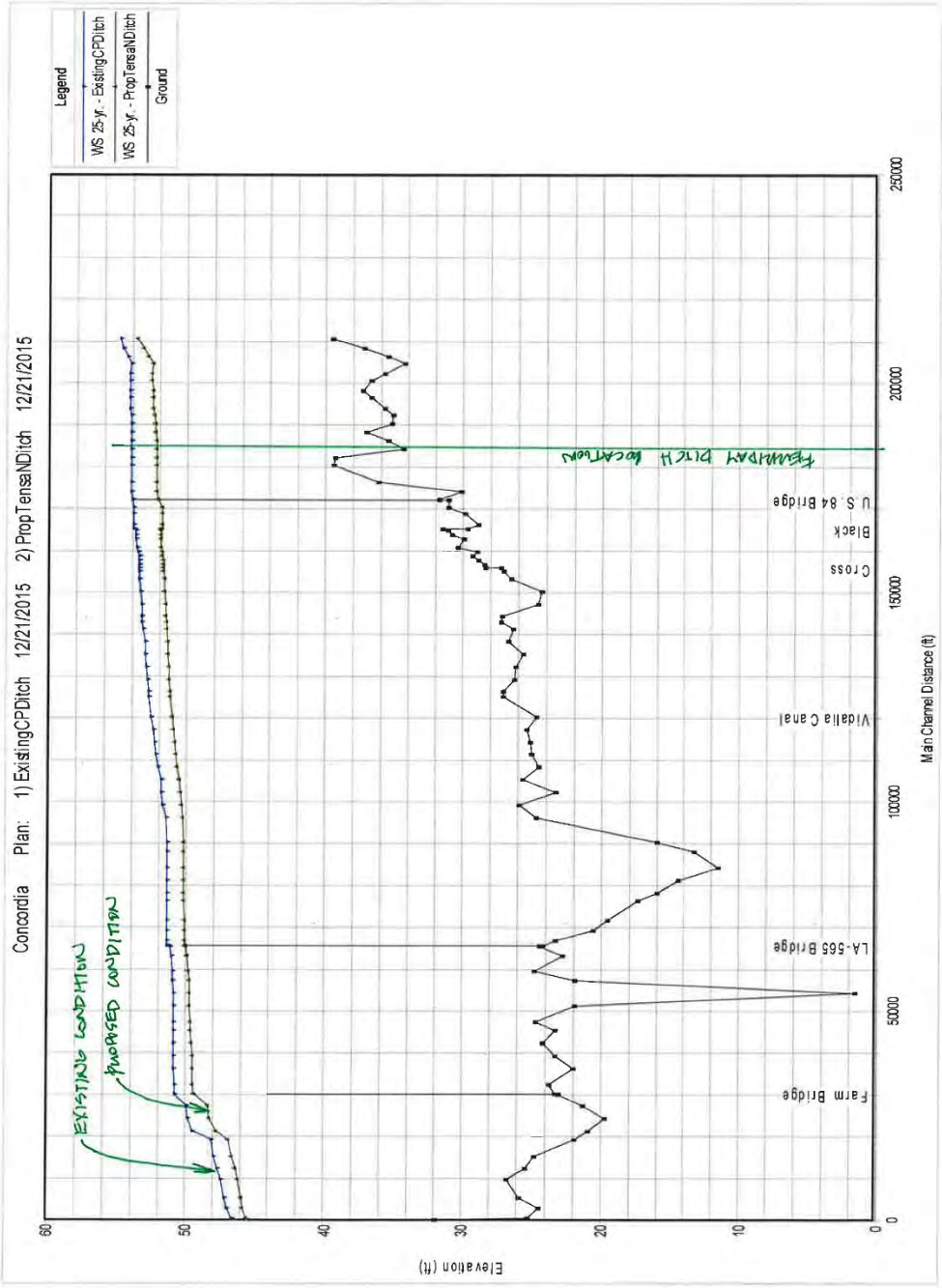


Figure 12 Cocodrie Bayou Hydraulic Profile for Q25, Existing and Proposed Conditions – Revised to Show Ferriday Ditch Locations

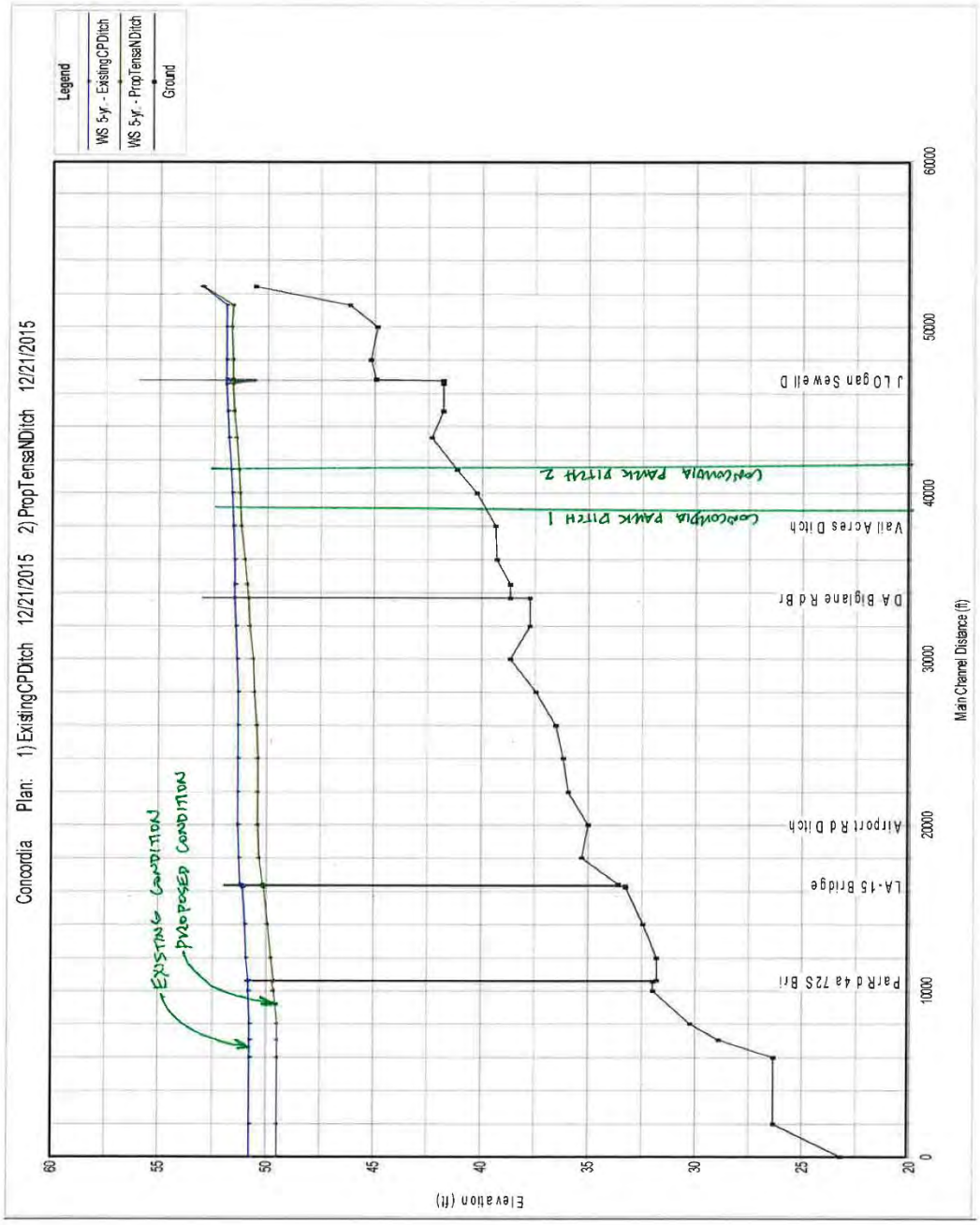


Figure 13 Vidalia Canal Hydraulic Profile for Q5, Existing and Proposed Conditions - Revised to Show Concordia Park Ditch Locations

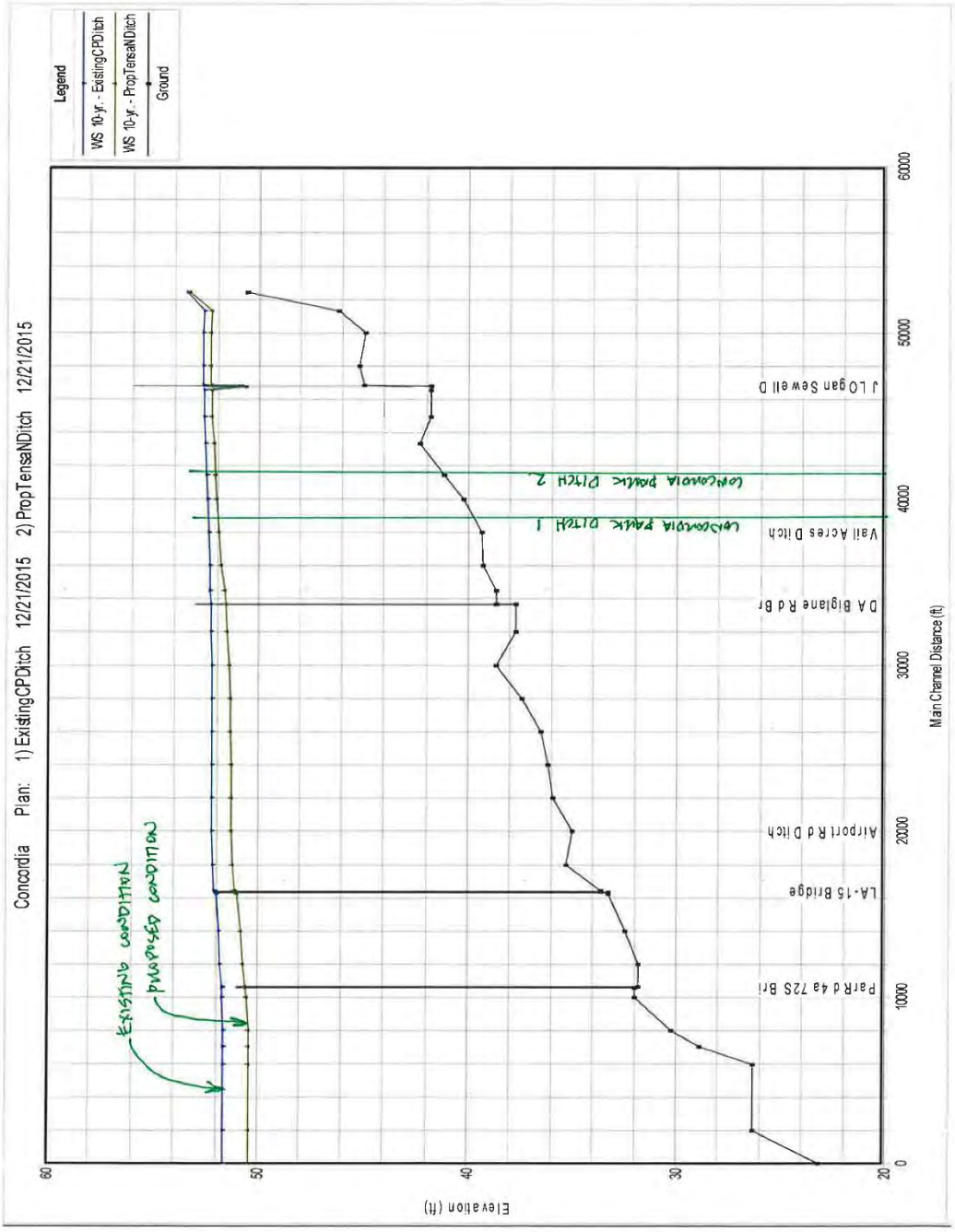


Figure 14 Vidalia Canal Hydraulic Profile for Q10, Existing and Proposed Conditions – Revised to Show Concordia Park Ditch Locations

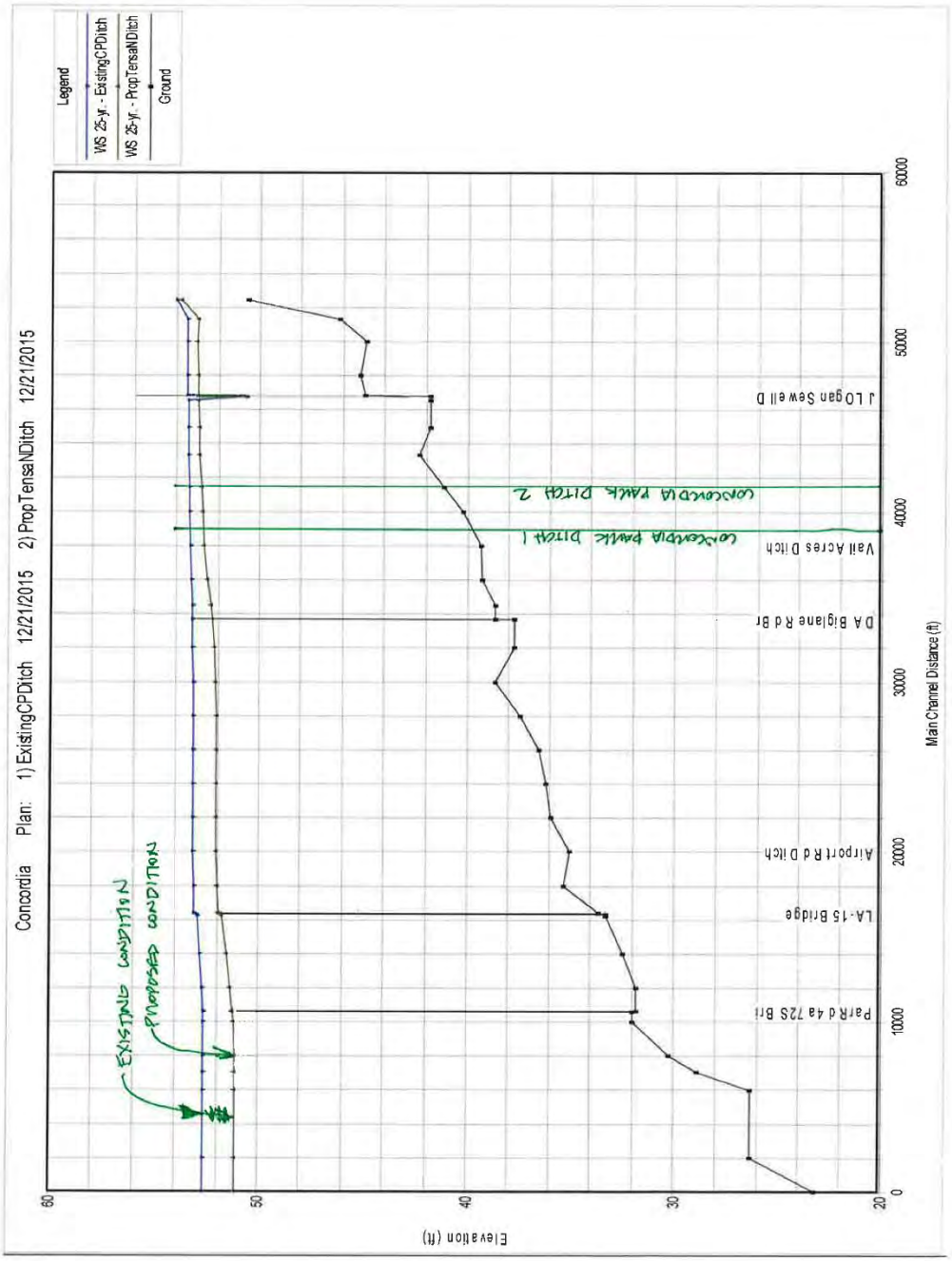


Figure 15 Vidalia Canal Hydraulic Profile for Q25, Existing and Proposed Conditions – Revised to Show Concordia Park Ditch Locations

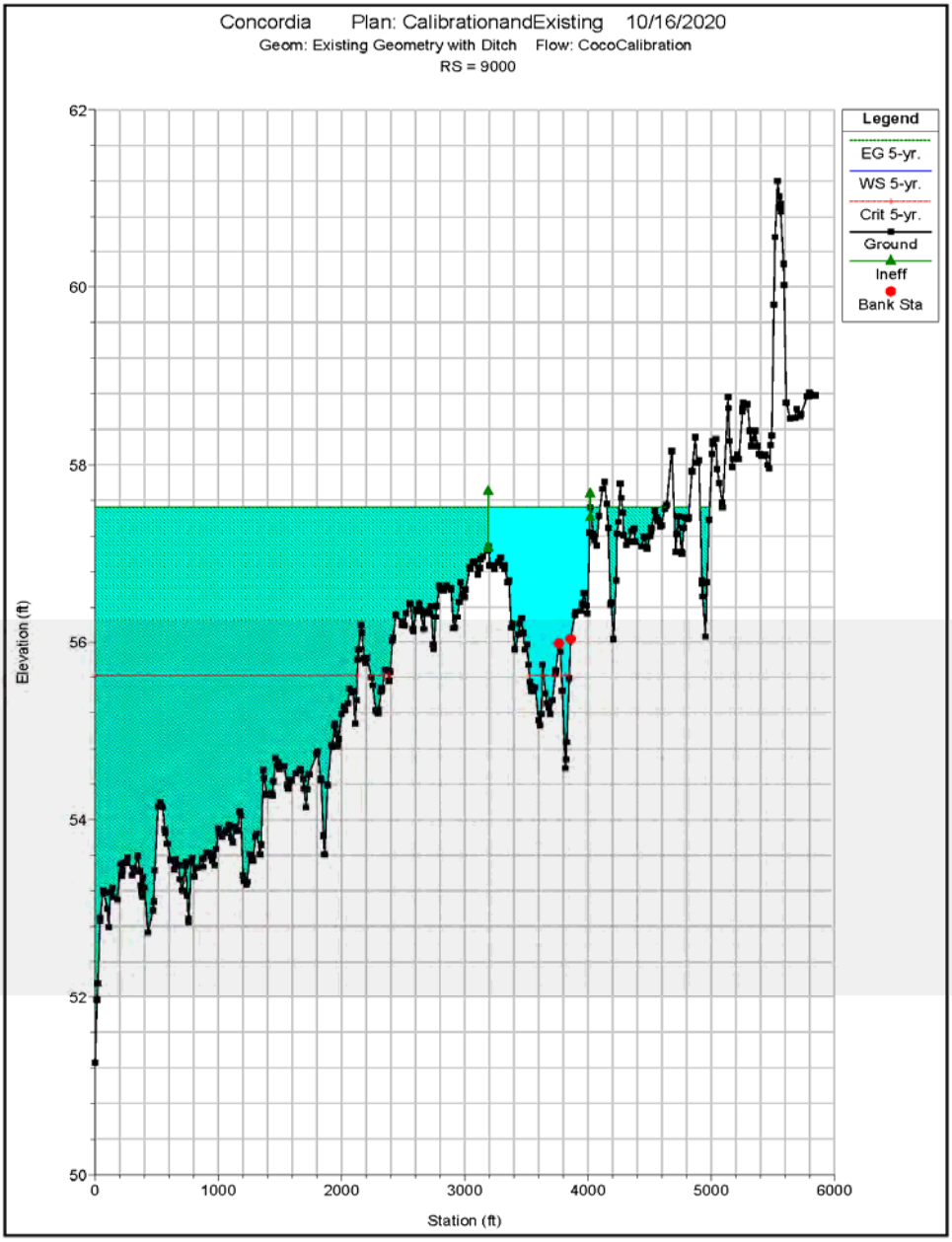


Figure A2

Concordia Park East Ditch Cross-Section – 5 yr Existing

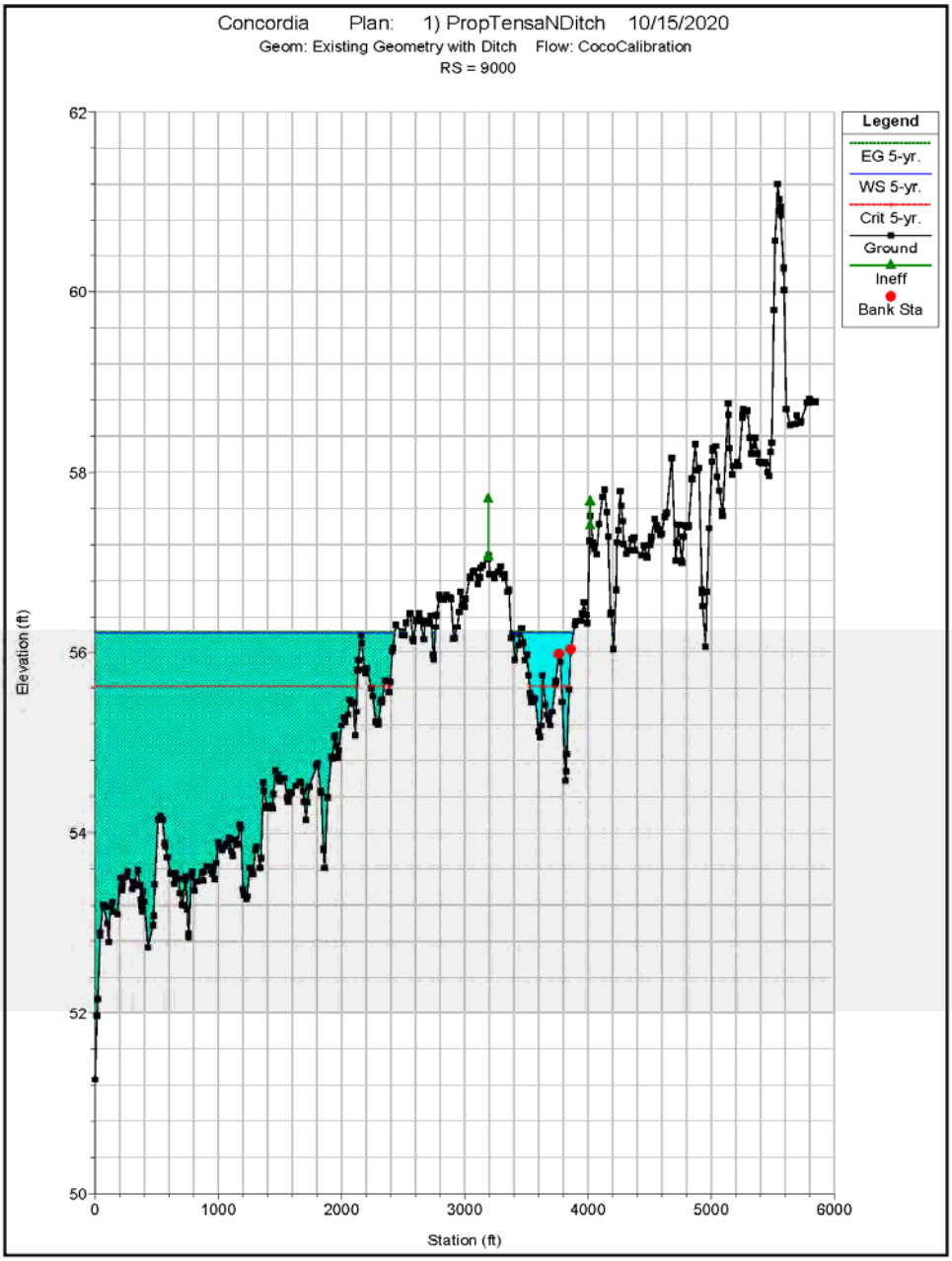


Figure A3

Concordia Park East Ditch Cross-Section - 5 yr Proposed

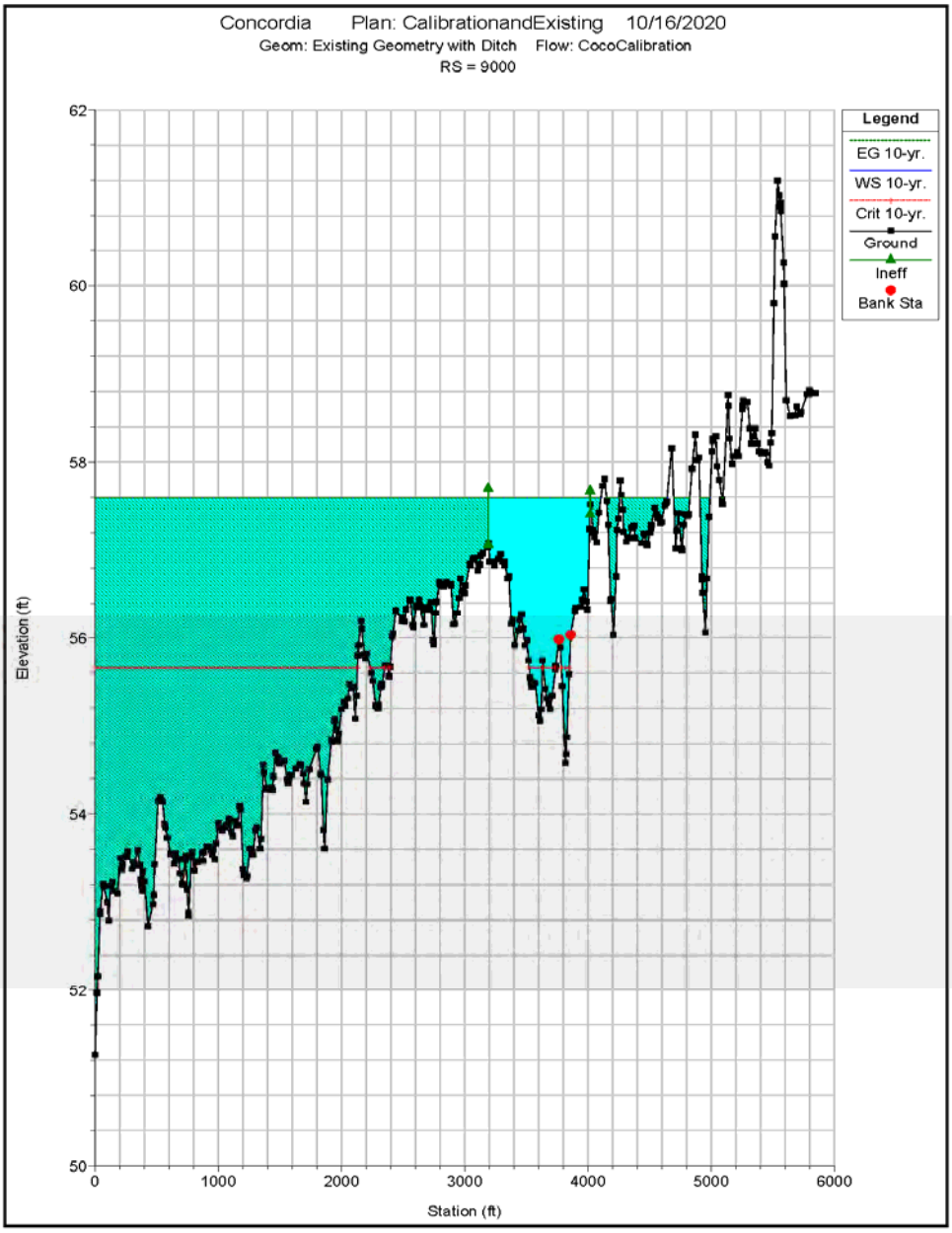


Figure A4

Concordia Park East Ditch Cross-Section – 10 yr Existing

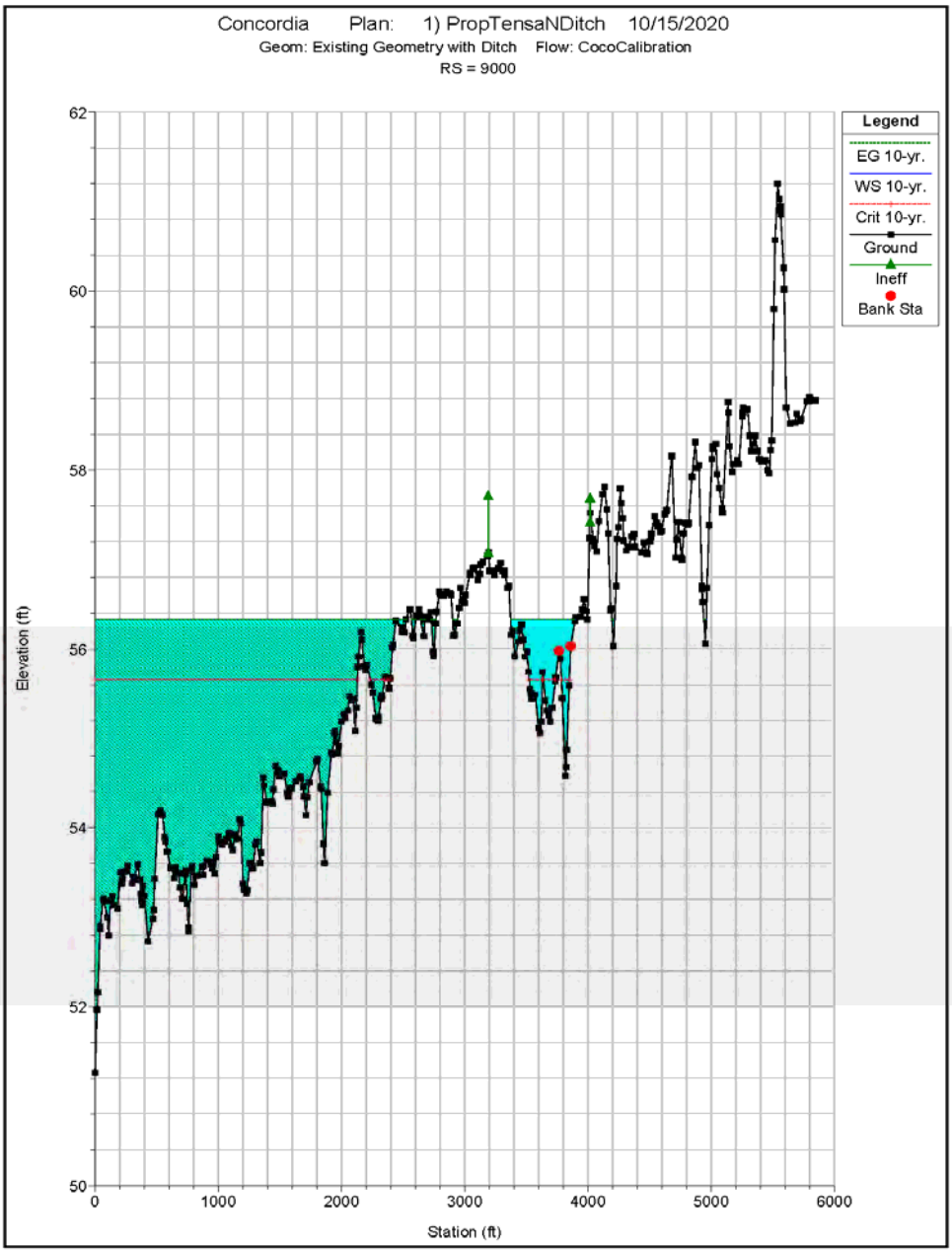


Figure A6

Concordia Park East Ditch Cross-Section – 10 yr Proposed

APPENDIX A

HEC-RAS NATIVE FILES

(Submitted Digitally)

APPENDIX B

GIS FILES

(Submitted Digitally)

APPENDIX C

MODEL OUTPUT RESULTS

(Submitted Digitally)

JKS
ENGINEERS
SURVEYORS

Jordan, Kaiser & Sessions, LLC
279 Lower Woodville Road | Natchez, MS 39120
TEL 601-442-3628
www.jksllc.com

March 12, 2018

Fifth Louisiana Levee District Board of Commissioners
Jason Trichell
102 Burnside Drive
Tallulah, LA 71282

Re: USACE 408 Alteration Permission Request
Brushy Bayou Drainage Structure Project
USACE Project No. - MVK-2016-633
Concordia Parish, Louisiana

Jason,

On behalf of the Concordia Parish Police Jury, we are submitting a U.S. Army Corps of Engineer's 408 Alteration Permission Request to the Fifth Louisiana Levee District for review and approval.

All attachments are listed below. Due to file size of the original document, we have attached a low resolution copy of the Additional Geotechnical Analysis Report dated 1-18-2017. We have included a link in this email to download the original document in a higher resolution.

If you should have any questions or comments, please do not hesitate in contacting us.

Sincerely,

JORDAN, KAISER & SESSIONS, LLC

Gary "Brant" Jones, E.I.

Attached: 408 Alteration Permission Request Form
Plan Sheets for the Brushy Bayou Drainage Structure
Initial Geotechnical Report (2-25-2016)
Additional Geotechnical Analyses Report (1-18-2017)(Low Resolution)
Project Location Aerial Map

HARRISON
Law, LLC

Andrew J. Harrison, Jr.
Kyle T. Townsley

Arnold W. Reitze, Jr.*
Of Counsel
*Admitted in DC

December 7, 2021

By Email

Mr. Spencer Dixon
U.S. Army Corps of Engineers
4155 Clay Street
Vicksburg, MS 39183-3435

Re: Confirmation of Purchase of 28.4 Mitigation Credits
Concordia Parish Police Jury, MVK-2016-00633
Big Lake Mitigation Bank

Dear Mr. Dixon:

The **Concordia Parish Police Jury** has purchased **28.4** bottomland hardwoods mitigation credits from Triple S Farms, Inc., Sponsor of the Big Lake Mitigation Bank, for unavoidable impacts associated with work authorized by the referenced Department of the Army permit. The Big Lake Mitigation Bank assumes the responsibility for the permittee's compensatory mitigation requirements (i.e., to implement, assure performance, and provide long-term management of the compensatory mitigation project) in accordance with provisions of the Mitigation Banking Instrument governing this bank.

With kindest personal regards, I remain

Sincerely,
WETLANDS MITIGATION STRATEGIES, LLC

Andrew J. Harrison, Jr.

cc: Sandi Burley. by email
Erik Burley, by email

301 N. Main Street, Suite 820 • Baton Rouge, Louisiana 70801
Phone 225-388-0065 • Fax 225-388-0501 • E-mail ajh@harrisonlawllc.com

NEEL-SCHAFFER
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landscape architects

July 15, 2021

GOHSEP
Attn.: Mr. Roland Spano, Jr.
7667 Independence Blvd
Baton Rouge, LA 70806

RE: 1603-427 Concordia Parish EHP

Dear Mr. Spano,

In a recent email to Eric Mayo with Rostan Solutions, LLC, you asked what would be the impacts in the Brushy Bayou watershed when the gates at the proposed structure in the Tensas Levee are closed. When the gates are closed, this system reverts to its current status as it is today, i.e. Brushy Bayou will flow to the east and discharge into Cocodrie Bayou. With regard to the construction of a bridge at Luke Martin Road, this bridge is replacing four, 40 inch diameter culverts (total existing flow area = 35 sq.ft), with a 100 foot opening under the new bridge (total new flow area >500 sq.ft.). Therefore, the bridge at Luke Martin Road is clearly an improvement whether Brushy Bayou flow is to the west (gates open) or to the east (gates closed). In fact, during their review, the USACE asked that profiles be generated along the Brushy Bayou/Caney Bayou portion of the project (from Tensas Levee to crossing at Hwy 84). I've attached these for your reference. You'll see that the water surface elevations on the existing model are approximately 5 feet higher than in the proposed.

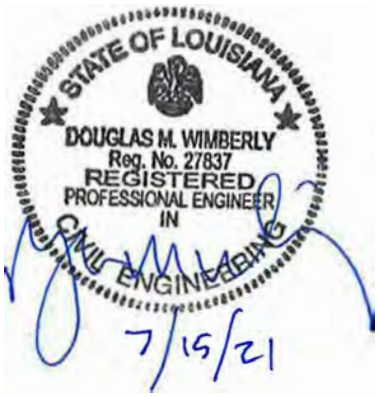
If you have any questions regarding this information, please give me a call.

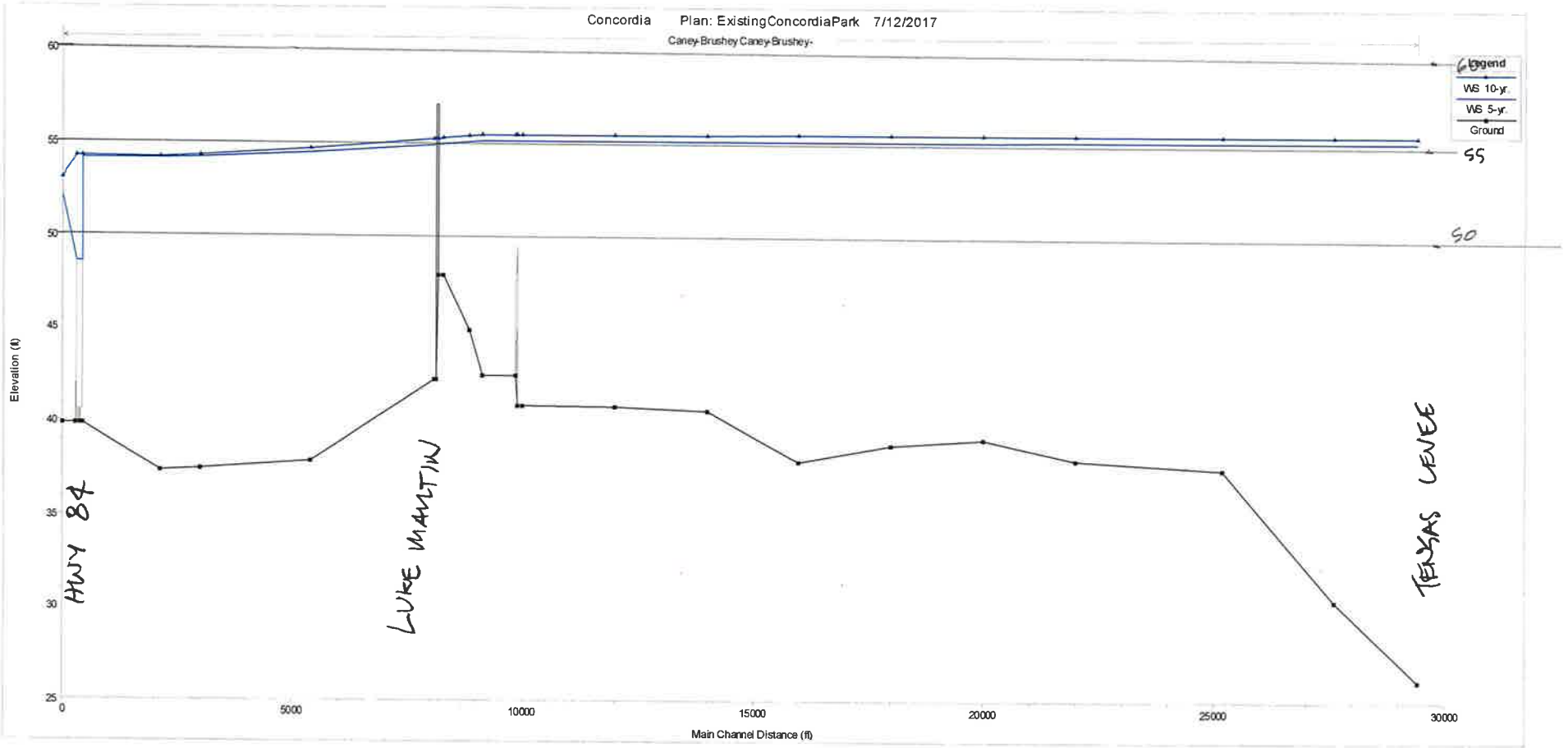
Sincerely,

NEEL-SCHAFFER, INC.

Douglas M. Wimberly, PS, PE
Vice President

Encl.




Concordia Plan: ExistingConcordiaPark 7/12/2017
Caney-Brushey Caney-Brushey-
Legend
WS 10-yr
WS 5-yr
Ground
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55
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45
40
35
30
25
Elevation (ft)
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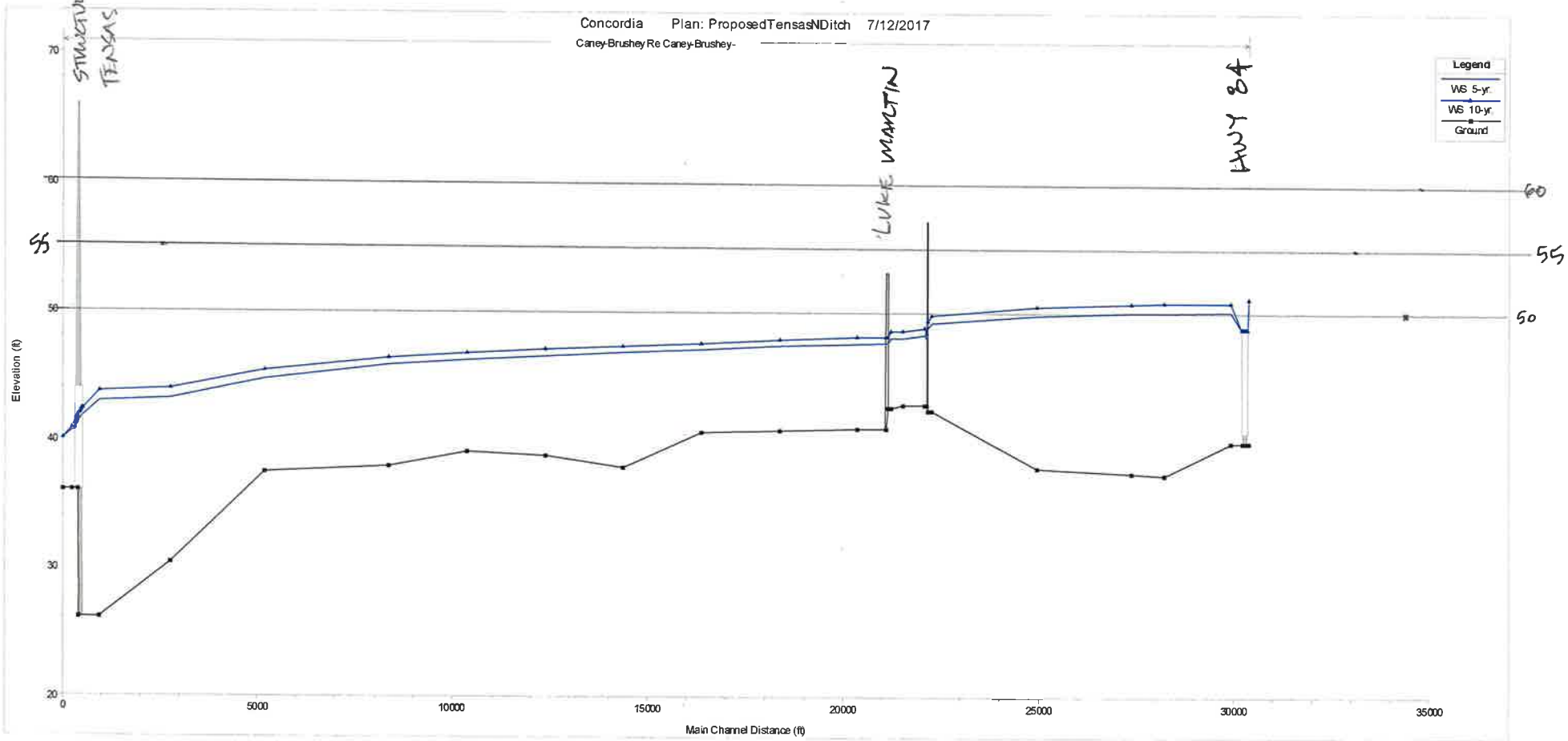
25000
30000
Main Channel Distance (ft)
HWY 84
LUKE MARTIN
TEXAS LEVEE


STRUCTURE AT TENSAS LEVEE
LUKE MARTIN
HWY 84
Concordia Plan: ProposedTensasNDitch 7/12/2017
Caney-Brushey Re Caney-Brushey-
Legend
WS 5-yr
WS 10-yr
Ground
Elevation (ft)
Main Channel Distance (ft)
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Concordia Parish Policy Jury

Project #: 1603-0427 LA

RFI Response

5/12/2020

RFI #1

1. **Please revise the above SOW details (Block 18) to include the new borrow pit location including the dimensions of the borrow pit, depth of excavation, and acreage.**

Please see the following language, which was sent to USACE by email on January 24, 2020 (Attachment A):

> Fill material for the proposed project will be obtained from a proposed borrow pit site on an adjacent tract owned by Ben Taunton, et ux (Parcel #0500012100A), identified in the attached Borrow Pit map. The proposed borrow pit consists of two locations: (1) Primary area and (2) Secondary area. The Primary area is the landowner's preferred location for dirt excavation. In the event additional dirt is needed, the Secondary area will be utilized.
>
> The Primary area is 1.87 acres.[1] The Secondary area is 1.15 acres. Both areas consist of improved pastureland, Emergent Wetlands (PEM). This area will be Section 404 excavation only, with no permit required.
>
> Point coordinates have been created at the corner of the areas to provide boundaries for each excavation area on the ground. The Secondary area is adjacent to the 1,500 foot line from the levee toe as seen on the Borrow Pit map. Excavation is not to go passed this area. The applicant is also advised to create a buffer approximately 15 feet from the edge of the Secondary area to ensure no encroachment within 1,500 feet of the levee.
>
> The applicant proposes to excavate approximately 20,000 cubic yards of material from this borrow pit, while excavating down to a minimum elevation of 46.0 ft. with a maximum cut of approximately 6 ft.
>
> The process of excavation and transport of the fill material will consist of capture of the fill material using a track-hoe or similar bucket retrieval methods. The excavated material will be loaded into a transport vehicle and taken directly to the appropriate location for improvements. The approximate center of the Primary

[1] Please note the Primary Area has been expanded westward enlarging the total surface area to 2.96 acres. This expansion is reflected in an additional submission to USACE in which they confirmed no change to their 404 and/or 408 review. Please see the response to Question #3 below, as well as Attachment A to this RFI.

Area is (31.61250, -91.72754). The approximate center of the Second Area is

2. **Regarding the borrow pit maps provided in Attachments A and C of the recent RFI response packet, the images are missing a legend, and the items are not clearly defined.**

    a. What are the red outlined areas?

The maps provided in the Joint Review Form (JRF) response are static prints from the online map that has been circulated to various stakeholders and needs to be viewed in conjunction with this response. The link to the map is below:

https://rostan.maps.arcgis.com/apps/webappviewer/index.html?id=d2bcc56c7bf64875ad159643872ea829

This map provides the geographical boundaries of the project footprint, rights-of-ways (ROW), and the proposed borrow area.

The red outlined area represents the ROW that will be used to access the Brushy Bayou project area. This GIS shapefile was provided by the contracted engineer, Jordan, Kaiser & Sessions, LLC (JKS).

b. What is the purple/pink outlined area?

The purple outline represents the proposed ROW from Hwy 84 to the borrow area and from the borrow area to the project footprint. There are two proposed access routes to the borrow area. The preferred option is to use the ROW through the Calvert property (red outline) until near the southeast corner of the borrow area and then veer left into the Taunton property. The second option is to access the property using only the Taunton's property. This latter option is represented with the purple ROW access from Hwy 84.

c. The image shows several GPS coordinates including the coordinates for the borrow pit. To what do the other points correspond?

A request was made by USACE to provide GPS coordinates of the borrow area and the ROW. Points were placed at each corner of the borrow area. Additionally, points were placed at the beginning, end, and each major vertices of the ROW corridors.

3. **In an email dated 1/27/2020 it was stated that both borrow pit tracts have been sent to USACE and have been determined outside of 404/408 jurisdiction and that this determination would be confirmed in writing. Has a letter stating that information been received from the USACE?**

On January 29, 2020, USACE responded to a request from the Parish's consultant, confirming that there would be no Section 404 or 408 review required for the proposed borrow pit locations. This email correspondence is documented in Attachment A.

RFI #2

1. **Please update the above narrative description (Blocks 18 and 21) if it has changed.**

The items sited from the permit application have not changed.

2. **Based on aerial imagery it appears there is already a road feature in the proposed access road area.**

    a. **Will any work happen outside the existing footprint of the existing road? Will the existing road be improved in any way? Will it be widened? Or will a new road be created?**

There is indeed an existing road in the proposed ROW. This road will be improved by adding a stone base, reshaping, and added drainage improvements with a side ditch in needed areas. These improvements will widen the road, especially with the required drainage. All work will be performed within the 50' ROW servitude.

    b. **What is the existing condition of the road?**

The road is currently a dirt/grass road with limited gravel. This road has not been used in 4-5 years. Previous access was made through the adjacent property.

    c. **What are the dimensions of the proposed access road?**

The proposed access road will be an 18' wide stone base road with varying ditch widths due to depths of the road and ditch.

FEMA HM 1603-427
RFI FROM EHP/GOHSEP
RECEIVED JUNE 19, 2020

2d	QUESTION: Is the proposed access road temporary or permanent? If the road is permanent, has it or will it be analyzed in the H&H. RESPONSE: The road will be a road improvement project and will serve as a permanent road. Land easements and right of ways have been executed to provide for this. The original H&H study was focused on the major drainage features (i.e. Cocodrie Bayou, Vidalia Canal, etc.), which was a region wide focus on the impacts of the Brushy Bayou project. The culverts were not added to this study as it was not a part of this major drainage study. The Parish is attaching basic flow capacities that were used to calculate the necessary sizes to ensure existing water flow along the access road.
3	QUESTION: Are the drainage features being installed new installations; replacement of existing culverts, or upgrades? RESPONSE: New. The new access road was formerly a farm turn row. The road will be upgraded for use to include installation of culverts.
3a	QUESTION: What are the existing features (length, width, type)? RESPONSE: The existing road to be used was originally a field turn row. Using this road allows for more direct access to the structure without interfering with water lines, further digging, and fencing. The current length of the proposed road is 4,700'. The width is 18'. The type is dirt with some portions gravel.
3b	QUESTION: What are the proposed features to be installed if different from the narrative above (i.e. three (3) 24-inch CMP culverts tow (2) 24-inch CMP culverts, etc.)? There are 5 culverts being installed. All 5 culverts are 36' long. The width and description of the culverts are as follows: Station 14+86.54 - From 24" Corrugated Metal Pipe (CMP) to 30" Reinforced Concrete Pipe Arch (RCPA) Station 22+17.19 - From 24" Corrugated Metal Pipe (CMP) to 30" Reinforced Concrete Pipe Arch (RCPA) Station 34+95.33 - From 24" Corrugated Metal Pipe (CMP) to 30" Reinforced Concrete Pipe Arch (RCPA) Station 39+12.55 - From 24" Corrugated Metal Pipe (CMP) to 18" Reinforced Concrete Pipe (RCP) Station 40+77.66 - From 24" Corrugated Metal Pipe (CMP) to 18" Reinforced Concrete Pipe (RCP)
3c	QUESTION: Why are they being installed? Culverts are being installed to support the drainage needed along the road to minimize base damages to the improved road.

3d	QUESTION: Where are they located? Please provide GPS coordinates for each of the culverts both existing and those proposed. The GPS coordinates for these culverts are the following have been added to the Parish's Online map, which can be viewed here: https://rostan.maps.arcgis.com/apps/webappviewer/index.html?id=d2bcc56c7bf64875ad159643872ea829 The X,Y coordinates for the culverts are as follows: -91.726531, 31.618567 -91.726700, 31.618139 -91.726747, 31.617000 -91.726844, 31.613494 -91.726842, 31.611486
3e	QUESTION: If the culverts are existing and are being replaced with the same shape, size, capacity then an H&H is not necessary. If they are being upgraded please supply a simple H&H update that shows no adverse impacts of the culverts being installed. The Parish is providing Attachment A to show the flow rate calculations that were used to size the culverts. It is the Parish engineer's opinion that the culvert sizes utilitize will have no adverse impacts on the area and will in fact protect the roads from base damage.
3f	QUESTION: The permit application mentions ditches on both sides of the access road. Will these be newly created ditches or modifications to existing ones? Please provide details. Both. Ditches currently exist on one side of the road but additional ditching will be needed on both sides of the road to improve drainage.

JKS ENGINEERS SURVEYORS

Jordan, Kaiser & Sessions, LLC
279 Lower Woodville Road | Natchez, MS 39120
TEL 601-442-3628
www.jksllc.com

July 20, 2021

Concordia Parish Police Jury
Joseph Parker, Sr.
4001 Carter Street, Rm. 1
Vidalia, LA 71373

Re: Brushy Bayou Drainage Structure
Access Road Culvert Design and Calculations
Concordia Parish Drainage Project
Concordia Parish, Louisiana

Dear Mr. Parker,

In regard to the sizing of the culverts for the proposed access road to the proposed Brushy Bayou Drainage Structure, these culverts have been designed hydraulically as not to impact the existing storm waters upstream or downstream. If you should have any questions or comments, please do not hesitate in contacting us.

Sincerely,

C. Hayden Kaiser, III, P.E.
JORDAN, KAISER & SESSIONS, LLC

Attached: Culvert Design Calculations and Location (4 Pages)

Culverts:

	Culvert	Invert Elev	Top of Road Elev	Pipe Length
①	Station 14+86.54	Inv. 56.10	℄ Road El. - 59.10	Len. 36'
②	Station 22+17.19	Inv. 54.50	℄ Road El. - 59.50	Len. 36'
③	Station 34+25.33	Inv. 47.90	℄ Road El. - 50.82	Len. 36'
④	Station 39+12.55	Inv. 49.20	℄ Road El. - 52.21	Len. 36'
⑤	Station 40+77.66	Inv. 50.00'	℄ Road El. - 52.91'	Len. 36'

Ditches:

	Culvert	Basin Limits Start → End
①	Station 14+86.54	12+75 → 20+75 ✓
②	Station 22+17.19	20+75 → 28,25 ✓
③	Station 34+95.32	28+25 → 37+80 ✓
④	Station 39+12.55	37+80 → 39+90 ✓
⑤	Station 40+77.66	39+90 → 42+60 ✓

Location:

	Culverts	
①	STA. 1486.54 -	Lat. - N 31° 36' 41.35" 31.61148611°
		Long - W91° 43' 36.63" 91.72684167°
②	STA 22+17.19 -	Lat. - N 31° 36' 48.58" 31.61349444°
		Long. - W 91° 43' 36.64" 91.72684044°
③	STA 34+94.85	Lat. - N31° 37' 01.20" 31.61700000°
		Long. - W91° 43' 36.19" 91.72671778°
④	STA 39+12.07	Lat. - N 31° 37' 05.30" 31.61813889°
		Long. - 091° 43' 36.12" 91.72670000°
⑤	STA 40+77.29	Lat. - N 31° 37' 00.84 31.61690667°
		Long. - W 91° 43' 35.51 91.72653056°

Size:

Station 14+86.54 - 30" RCPA
Station 22+17.19 - 30" RCPA
Station 34+94.85 - 36" RCPA
Station 39+12.0 - 18" RCP
Station 40+77.29 - 18" RCP

Station 14+86.54 Culvert

Slope = 188.00' (Elev. − 186.00' Elev.) / 720 Lin Ft = 0.28%

Drain Length: 720 Lin Ft. (L)

Area: 12.25 Ac. (A)

Rational Method for flow:

Q = C · I · A
= 0.3 · 7 in/hr · 12.25 ac
= 25.73 cfs

Culvert Size: (7 ft/sec Max. Velocity)

$\frac{25.73 \text{ ft}^3}{\text{sec}} \Big| \frac{\text{sec}}{7 \text{ ft}} = 3.68 \text{ ft}^2$

$A = \pi R^2$

$3.68 \text{ ft}^2 = \pi R^2$

$R = \sqrt{3.68 / \pi}$

$R = 1.[illegible] = 13.06''$

$D = 26.[illegible]''$

Use 30" Reinforced Concrete [illegible] (RCPA)

Station 22+17.19 Culvert

Slope

Drain Length ~12'

Area: 12.33 ac.

Q = 0.3 · 7 in/hr · 12.33 = 25.89

Culvert Size:

$25.89 \text{ ft}^3/\text{sec} \div 7 \text{ ft/s} = 3.70 \text{ ft}^2$

$R = \sqrt{3.70 / \pi} = 1.09 \text{ ft} = 13.08''$

$D = 26.16''$

Use 30" RCPA

Station 39+25.50 Culvert –

Slope =

Drainage Length = 1107'

Area = 11.76 Ac.

Q = 0.3 × 7 × 11.76 = 24.70

Culvert Size:

24.70 ÷ 7 ft/s = 3.53 ft²

R = $\sqrt{3.53/\pi}$ = 1.06'

d = 25.[illegible]"

Use = 30" RCP

Station 39+12.55 Culvert –

Slope =

Drainage Length = 510

Area = 1.47 Ac

Q = 0.3 × 7 × 1.47 Ac. = 3.09

Culvert Size:

3.09 ÷ 7 ft/s = 0.4461²

R = $\sqrt{0.44/\pi}$ = 0.01'

d = [illegible] (18" [illegible])

Use = 18" [illegible] (RCP) [illegible]

Station 40+77.66 Culvert –

Slope =

Drainage Length = 202'

Area = 0.26 ac.

Culvert Size: Same size as station 39+12.55

Use = 18" RCP

L-[illegible] BJT	[illegible]	Drainage [illegible] Calcs. Cont.	[illegible] 1-20-20	8/

Station 14+86.54 [illegible] Culvert

Slope = (188' - 186.0')/720 = 0.3% (S)

191 ov 2

Drain Length = 720' (L)

Area = 12.25 ac. (A)

Q = CIA Rational
= 0.7 · 7 in/hr · 140 ac
= 686 cfs

$94.43\,ft^2 \mid \frac{1 s}{7 ft} = 12.43\,ft^2$

$\pi r^2 = \sqrt{\frac{10.43\,ft^2}{\pi}}$

r = 1.82
d =

SCS: (LADOTD Hydraulics Manual)
Rainfall Depth = 7.8 in
CN = 80

$R = \frac{(7.8 - 0.2 \cdot (1000/80 - 10))^2}{7.8 + 0.8\,(1000/80 - 10)}$

$R_1 = \frac{50.29}{8.44} = 7.8''$

$TC = \frac{L^{0.8}\,(1000/CN - 9)^{0.7}}{1140\,(S)^{0.5}}$

$TC = \frac{720^{0.8}\,(1000/80 - 9)^{0.7}}{1140\,(0.3)^{0.5}}$

TC = 0.74 hr, [illegible] 0.7?

Qp = 0.62 × 4.8 × 12.25 = 748[illegible]
= Q × R × A

4
5

PHASE I CULTURAL RESOURCES SURVEY OF CONCORDIA PARISH DRAINAGE IMPROVEMENTS, CONCORDIA PARISH, LOUISIANA

Draft Report

October 8, 2020

Submitted to

Federal Emergency Management Agency (FEMA)
U.S. Department of Homeland Security
Louisiana Recovery Office
1500 Main Street
Baton Rouge, Louisiana 70802

Coastal Environments, Inc.
1260 Main Street
Baton Rouge, Louisiana 70802

PHASE I CULTURAL RESOURCES SURVEY OF CONCORDIA PARISH DRAINAGE IMPROVEMENTS, CONCORDIA PARISH, LOUISIANA

BY
BENJAMIN DAVIS
SARA HAHN
AND
DAVID B. KELLEY

DRAFT REPORT

October 8, 2020

Submitted to

Federal Emergency Management Agency (FEMA)
U.S. Department of Homeland Security
Louisiana Recovery Office
1500 Main Street
Baton Rouge, Louisiana 70802

COASTAL ENVIRONMENTS, INC.
1260 Main Street
Baton Rouge, Louisiana

David B. Kelley, Ph.D.
Principal Investigator

ABSTRACT

In August of 2020 Coastal Environments, Inc. (CEI) conducted a Phase I cultural resources survey of proposed improvements to the Brushy Bayou drainage structure in Concordia Parish, Louisiana. The project will involve taking fill from two borrow areas and require the use of two access roads. The area surveyed covered 14.32 acres. No archaeological sites were located in this area; however, three structures were recorded in the APE. None of these structures are recommended as being eligible for nomination to the National Register of Historic Places. Based on the results of this survey the project will have no effect on historic properties.

TABLE OF CONTENTS

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ACKNOWLEDGEMENTS

We would like to thank the people who assisted us during the fieldwork. Cheraki Williams of the Federal Emergency Management Agency oversaw the project and provided assistance throughout the work.

CHAPTER 1

INTRODUCTION

Project Description

This report presents the results of a Phase I cultural resources survey undertaken for the Concordia Parish Drainage Project, Concordia Parish, Louisiana. The survey was conducted by Coastal Environments, Inc. (CEI) under contract to FEMA. The project area encompassed 14.32 acres (5.8 hectares) between U.S. Highway 84 and the Tensas River just east of Athlone, Louisiana (Figure 1-1). The survey examined two borrow areas and access roads that will be used for improvements to a drainage structure on Brushy Bayou at its junction with the Tensas River.

Report Organization

The remainder of this report is organized in the following fashion. Chapter 2 discusses the environmental setting and the history of land-use in the area. Previously recorded archaeological sites in the project vicinity, and others in the region of comparable age, are discussed in Chapter 3. Field and laboratory methodology are described in Chapter 4. Results of the Phase I survey are presented in Chapter 5, and conclusions and recommendations appear in Chapter 6.

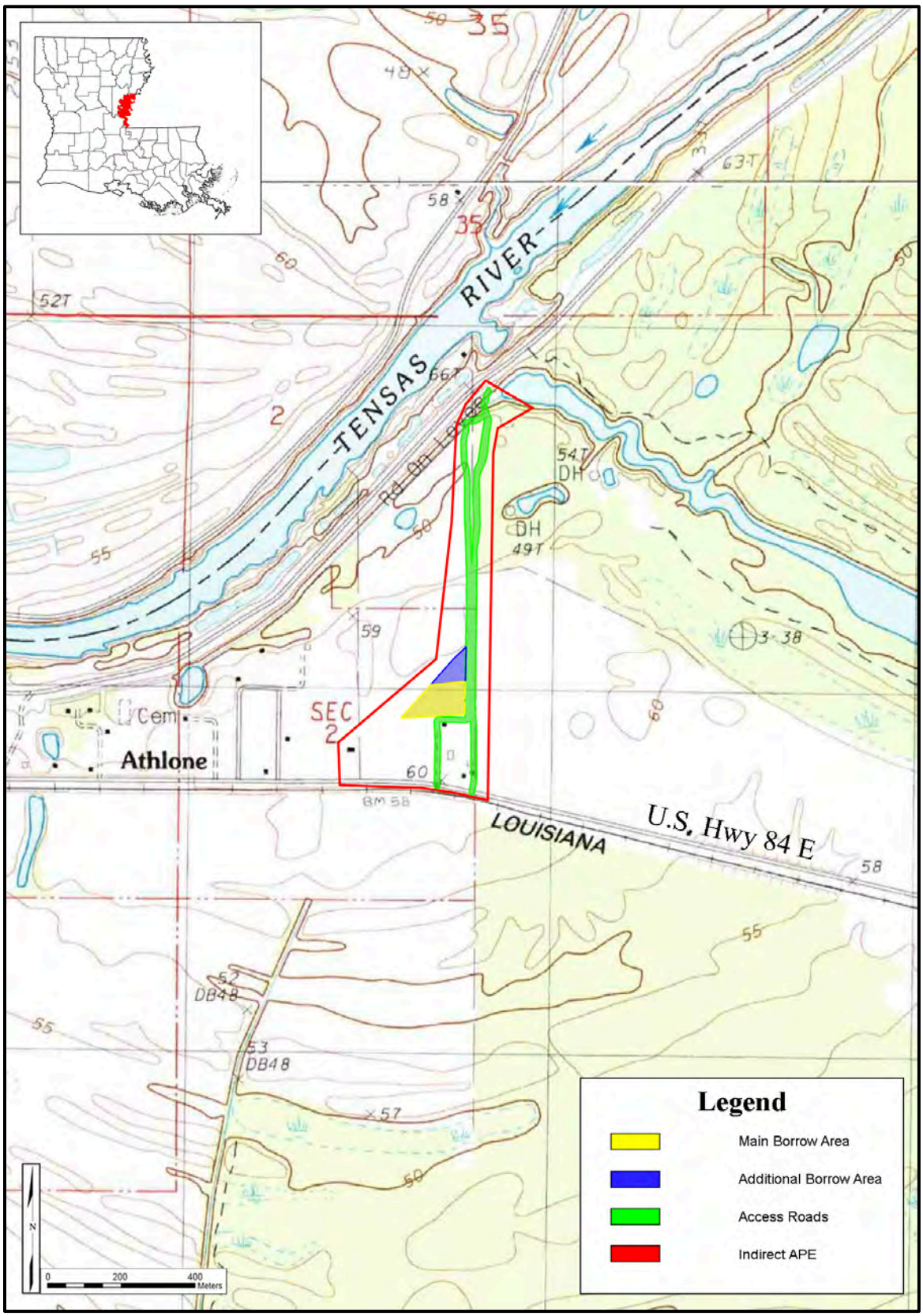


Figure 1-1. Topographic map of project area, including direct and indirect APE (USGS Frogmore 7.5' topographic map 1983).

CHAPTER 2

ENVIRONMENTAL SETTING AND LAND USE HISTORY

Geology

The project area is located within the Lower Mississippi Valley and more specifically within a subdivision of it known as the Tensas Basin (Saucier 1994:27). The near-surface deposits within the project area are associated with a former meander belt of the Mississippi River known as the Walnut Bayou Meander Belt (Figure 2-1). This meander belt formed around 4,500 B.P and was abandoned by 2,500 B.P (Saucier 1994:Figure 50). The Tensas River is an underfit stream that re-occupied the former Mississippi River channels sometime after 2,500 B.P. The direct APE is situated on natural levee deposits of the Tensas River that overlie earlier Mississippi River natural levees. The surrounding topography is characterized by natural levees, oxbow lakes, bayous, and backswamps resulting from the meandering courses of the Tensas and Mississippi rivers. Brushy Bayou, adjoining the direct APE to the north, occupies a former Tensas River channel.

The soils of the Concordia Drainage project area differ between the southern and northern halves of the APE. These Holocene Mississippi River meander belt alluvial soils are coarsest along the natural levees and become finer as they grade into the backswamps, and point bar swales. The northern half is mapped as Tensas-Alligator complex, a clay-rich, poorly drained soil is typically located within flood plains, such as that of the Tensas River (Soil Survey Staff 2020). The southern half of the APE rests on natural levee deposits of the Mississippi and Tensas rivers and contains multiple soil types. Primarily, these are Dundee loam and Tensas silty clay loam, both of which are typically found on natural levees.

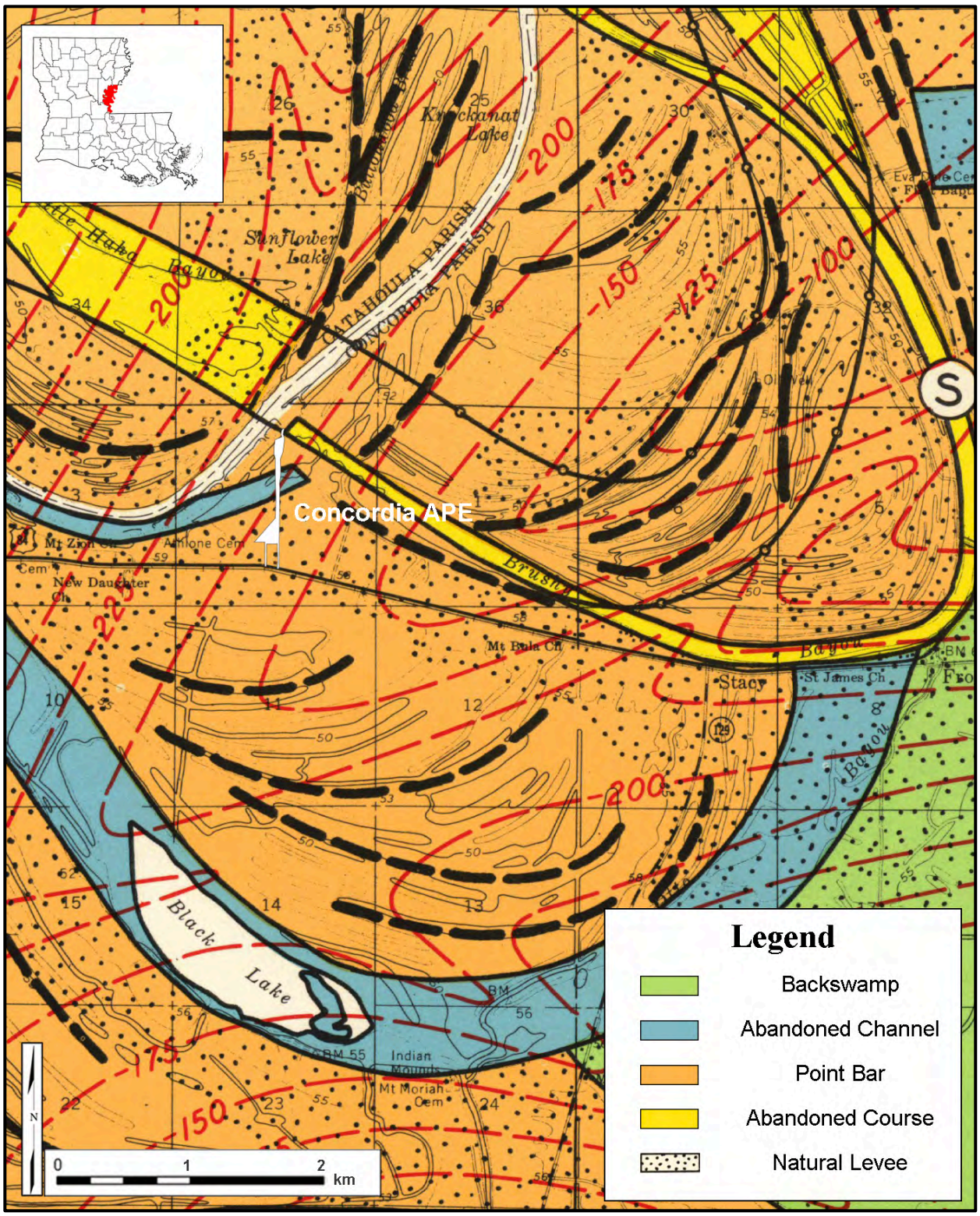


Figure 2-1. Near-surface geology in the vicinity of the Concordia drainage project (after Saucier 1967).

Land Use History

Seasonal inundation of the low-lying backswamps and bayous across this landscape was a limiting factor for settlement in this part of Concordia Parish. Prior to European settlement, indigenous peoples inhabited the region, as evidenced by multiple prehistoric mound sites, including the mound complex at the Troyville site (16CT7), located in nearby Jonesville, the Frogmore Mound (16C09) on Frogmore Plantation, and the DePrato mound (16CO37) in Ferriday, Louisiana. Protohistoric native groups that inhabited this and surrounding areas prior to and during early European contact were the Taensas, Ouachita, and Natchez (Kniffen et al. 1987:48-57; Works Projects Administration 1931).

Very little European settlement occurred in the project vicinity until the Spanish period and then it took place mainly along the Black and Little rivers. Population in the area remained sparse. The 1769 census ordered by Governor Alejandro O'Reilly counted a population of 110 white people in the Ouachita District, which covered most of northeastern Louisiana and southern Arkansas (Mitchell and Calhoun 1937:294). The Tensas Basin apparently remained largely vacant. In 1786, Governor Esteban Miró granted Don Juan Heverard (also spelled "Hebrard") a large tract of land where the Ouachita, Tensas and Little rivers converged to form Black River. The convergence itself became known as Trinity. Heverard was awarded the rights to operate a ferry to facilitate travel between the Natchez post and the posts of Rapides, Natchitoches, and Ouachita. How long the ferry operated and Heverard remained in the area are unclear (Mitchell and Calhoun 1937:295-296).

The first documented Spanish land grant in Concordia Parish was awarded to Louis Bringier in 1796, due to services rendered by his father, Marius Bringier (Figure 2-2) (Cole 1932a:53, 1932b:435). Emanuel Marius Pons Bringier was born in southern France and immigrated to Louisiana in 1783 (Arthur 1971:426; Bauer 2011:1-3; Lanoux 2007:34). His oldest surviving child, Paul Louis Bringier, was born in New Orleans in 1784 (Copy of baptismal certificate for Pablo Luis Bringier 25 June 1797, Folder 5, The Robert Judice Collection Bringier Papers: 1771-1942, E.L.25.1988, The Historic New Orleans Collection, New Orleans, Louisiana; Arthur 1971:426-430; Bauer 2011:25; Seebold 1971:83-86). The Bringiers would become one

of the wealthiest planter families in Louisiana and ultimately acquired a dozen Mississippi River plantations.

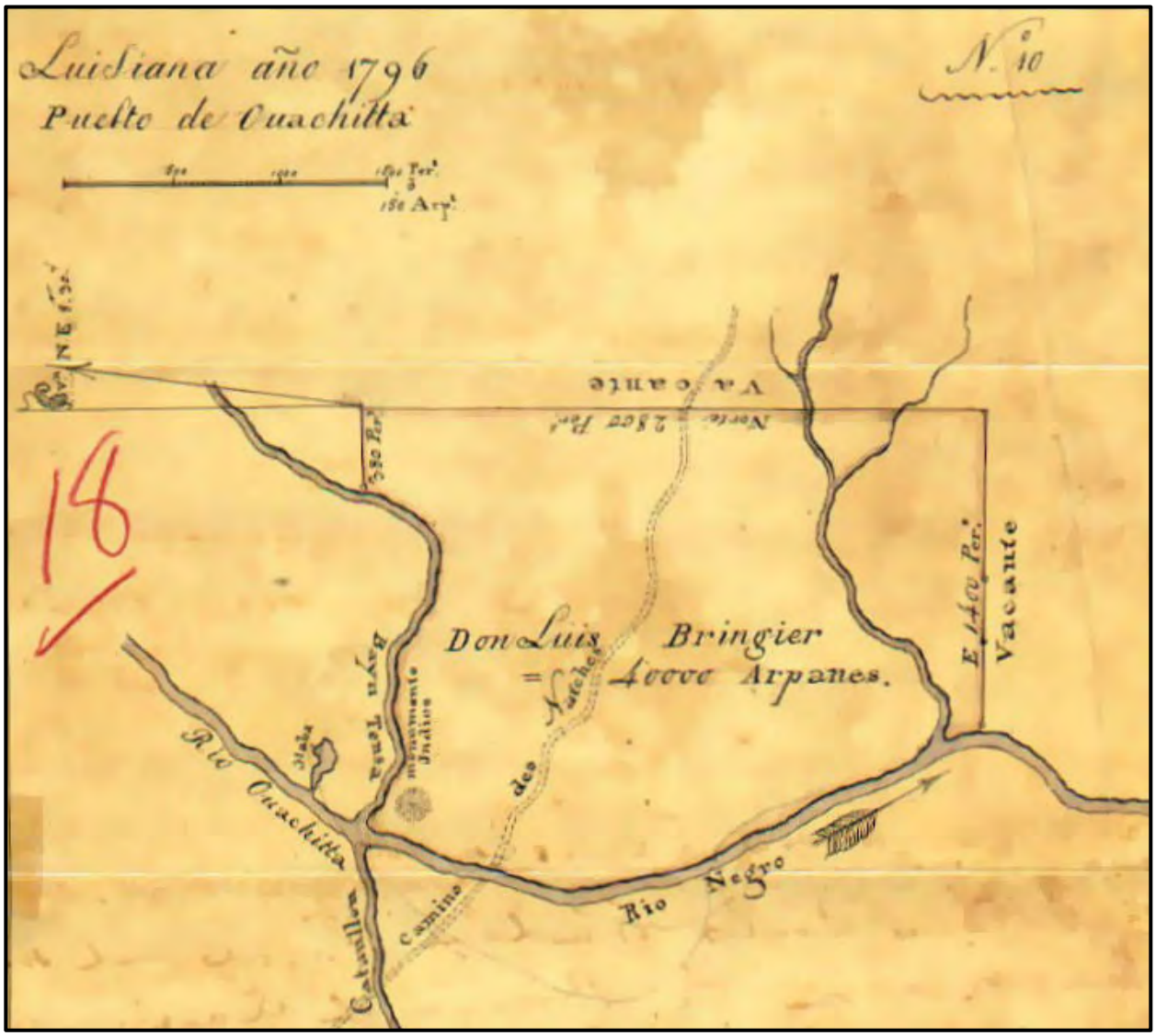


Figure 2-2. Detail of a 1796 survey by Carlos Trudeau of a Spanish land grant to Louis Bringier (Trudeau 1796). Note that North is to the left on this map.

As the only Spanish grant on the Black River, Louis Bringier's claim encompassed some 40,000 arpents (almost 34,000 acres) and was located at the junction of the Black and Tensas rivers (Cole 1932b:435). A Spanish road linking Natchitoches to Natchez, passed through his land, which may also have contained a large Indian mound. Whether this mound was part of the Troyville Mound complex (possibly plotted on the wrong side of Black River), or an undocumented mound, is unclear. The present project area, and most of Township 7 North,

Range 7 East (North of the Red River District) were located within the Bringier grant (Figure 2-3).

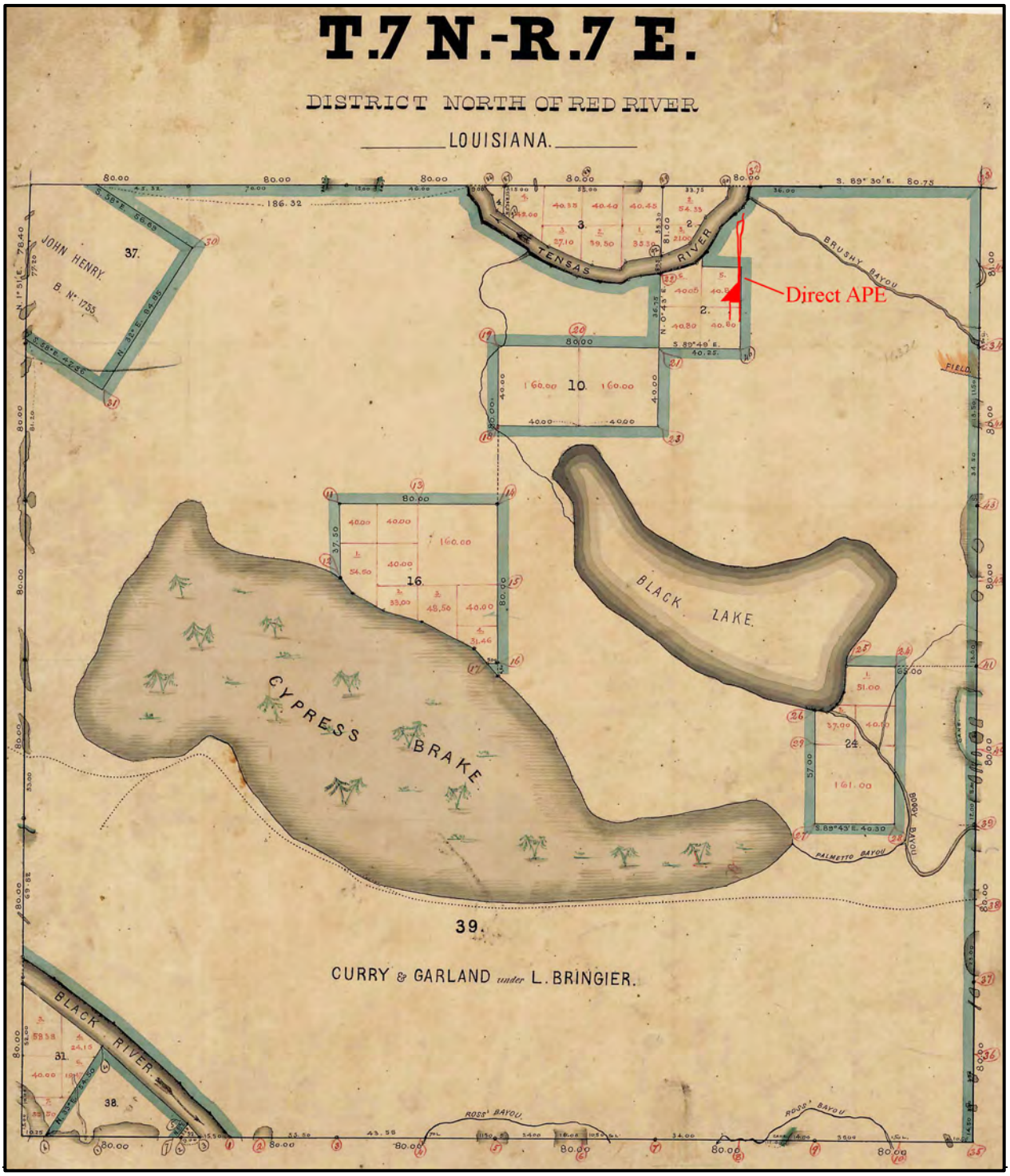


Figure 2-3. Official Plat map of Township 7 North, Range 7 East, North of the Red River District, Louisiana (Boyd 1853).

Louis Bringier never resided on his Concordia Parish land and left Louisiana in 1807. An Indian trader on the Missouri frontier before the War of 1812, Bringier witnessed the 1811-1812 New Madrid earthquake and was the first European to document the Toltec Mounds site in Arkansas (Bringier 1821:20-22, 37-38). Bringier returned to Louisiana in circa 1814 to fight in the Battle of New Orleans and subsequently became Surveyor for the city of New Orleans and Surveyor General of Louisiana (Surveyors Historical Society 2012:2).

Lumbering was one of the earliest industries practiced in Concordia parish. According to an 1850 article in *DeBow's Southern and Western Review*:

> *Many raftsmen and wood-choppers lived on the waters of the parish, and cut thousands of trees out of the numerous bayous, lakes and sloughs, which were floated to New-Orleans or other points. In 1828, during the ever-memorable high-water, hundreds of trees were cut two and three miles back from Black River, and floated out...* [Kilpatrick 1850:41].

Settlers did not arrive in the western part of the parish until 1837-1838. Most were from Rapides and Avoyelles parishes in Louisiana, or Adams, Amite, and Franklin counties in Mississippi. They generally owned few slaves and planted small crops of corn (Kilpatrick 1850:41). Between 1830 and 1840, the parish population more than doubled from 4,652 to 10,682, as multiple cotton plantations were established, and numerous slaves imported to work them. In 1840, the parish produced some 48,726 bales of cotton, 401,781 bushels of corn, 6,721 bushels of oats, and 36,496 bushels of potatoes (Forshey 1841). Early planters in the Frogmore vicinity included John F. Gillespie and David S. Stacy (Figure 2-4). Lumbering, however, remained profitable, as nine steam-powered sawmills in the parish produced 41,000 board feet of lumber in 1840 (Forshey 1841).

The rights to the old Bringier grant were conveyed to Thomas Curry and Rice Garland. However, their title to the land was not confirmed until 1844. Thomas Curry, of Concordia Parish, was a District Court Judge (1842 to 1846), while Rice Garland, from St. Landry Parish, was a U.S Representative (1834-1840) and later an Associate Justice of the Louisiana Supreme Court (1841-1846) (Cole 1932b:435-436).

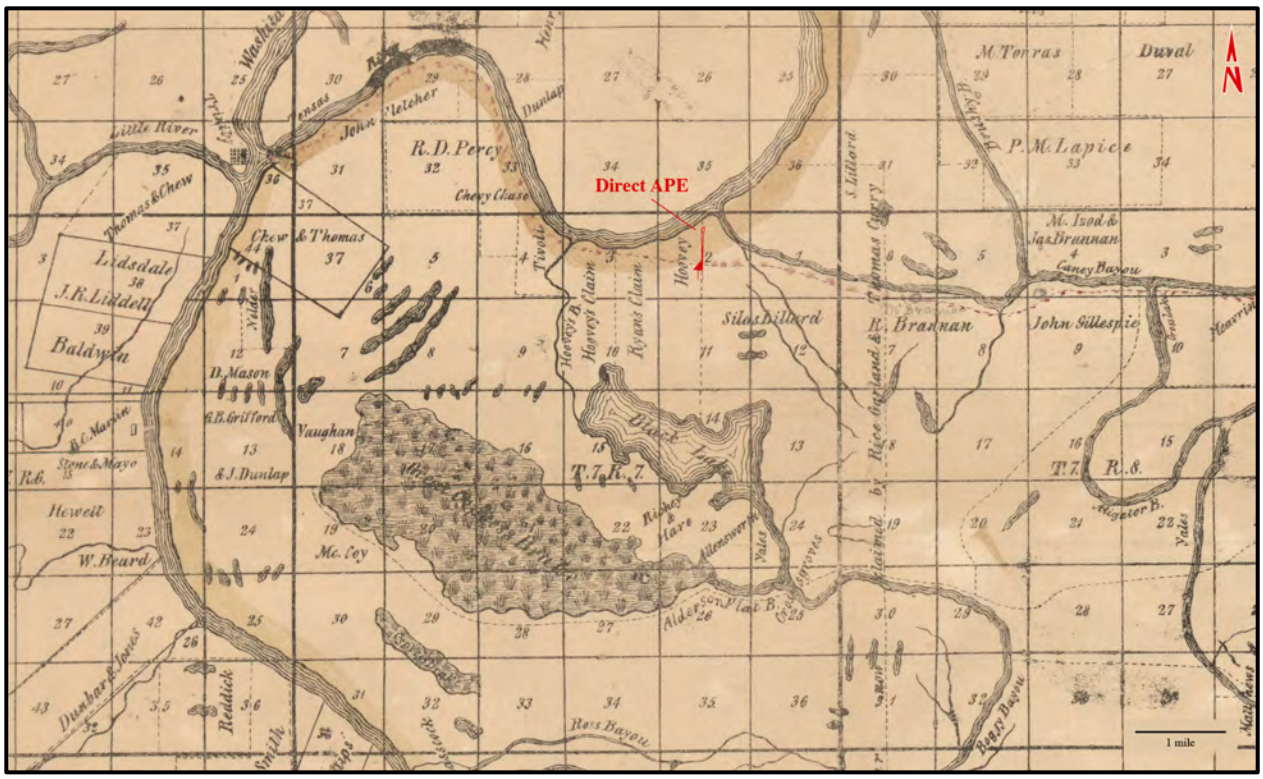


Figure 2-4. Detail of Caleb G. Forshey's 1841 *Topographic Map of the Parish of Concordia, State of Louisiana, Projected from Actual Surveys* (Forshey 1841).

The 1841 Forshey map suggests that Silas Lillard and Jacob, John, or Henry Hoover ("Hoovey") may have farmed and/or purchased parts of Section 2 by that year (see Figure 2-4). Both men were parish residents in 1830 when Lillard owned 23 slaves and Hoover between nine and 13 (U.S Census 1830). Neither lived in the project direct APE, though Hoover may have resided further to the west. Lillard was a major slave trader who operated out of Natchez and Virginia and owned part of the former Providence Plantation, near Vidalia, in the late 1840s (Yagyu 2006:204, 282, 306).

Garland and Curry subdivided the remainder of the Bringier grant in 1855 and sold tracts to various individuals (Cole 1932b:436; *The Tensas Gazette* 1931). Early landowners in the project vicinity included George R. Carradine and Frederick J. Bowie. The former purchased Lots 2 and 3 in Section 2, and the eastern half of the northeastern corner of adjoining Section 3, totaling 151.08 acres, while the latter bought 162.45 acres consisting of the southwest quarter of Section 2 (U.S. Tract Book, Volume 35, p. 67, Louisiana State Land Office, Baton Rouge) (see Figure 2-5). Carradine, a merchant, planter and Natchez resident, operated the steam packet

George Washington between Natchez and New Orleans in 1841 (*The Mississippi Free Trader* 1841:3). By 1850, he owned a plantation above Natchez (*The Natchez Courier* 1850:3). Frederick J. Bowie was likely the F.J. Bowie of Adams County, Mississippi, mentioned in several Mississippi newspapers between 1836 and 1851. Bowie and Carradine may have speculated in Concordia Parish land and/or extended their plantation holdings into Louisiana (*The Mississippi Free Trader* 1836:4; *The Natchez Courier* 1850:3). By 1860, 84 percent of Concordia Parish land belonged to large slave holders, 81 percent of whom were absentee, while slaves outnumbered free residents by 10 to one (Cusick et al. 1995:5-16).

During the Civil War, the project direct APE remained unoccupied and was located slightly upriver of, and across the Tensas from, Ritchie's Landing. A good road extended from the juncture of the Black, Little and Ouachita rivers east along the south bank of the Tensas, passed Ritchie's Landing, and continued along the south bank of Brushy Bayou, through Frogmore and ultimately to Vidalia. A "Very Bad" road extended due south from the good road, along the eastern margin of Section 2, and reached Black Lake before turning west toward the Black River (Figure 2-5). Likely a descendant of the old Spanish Road, antecedents of the good road were present in the project vicinity by 1840 (Forshey 1841).

During the Civil War Union activity in the project vicinity began in May 1863 when Commander S. E. Woodworth led a Federal flotilla up the Ouachita River to attack and capture Fort Beauregard at Harrisonburg in neighboring Catahoula Parish (Bearss 1964-65, 341-347). After the fall of Vicksburg, Union Admiral David Porter sent a squadron of light-draft gunboats onto the Tensas and Ouachita rivers where it destroyed three steamboats, a sawmill, and a large supply of ordnance, commissary, and quartermaster stores (Bearss 1964-65:350-352). Confederate forces reoccupied Fort Beauregard in September 1863, but abandoned it shortly thereafter. Federal troops entered Fort Beauregard on September 5, and search parties were sent into Harrisonburg to look for stored supplies. They found and destroyed a large quantity of ammunition stored in the jail and courthouse, as well as corn and other provisions discovered in several homes prior to retreating to Mississippi (Bearss 1964-65:368-372).

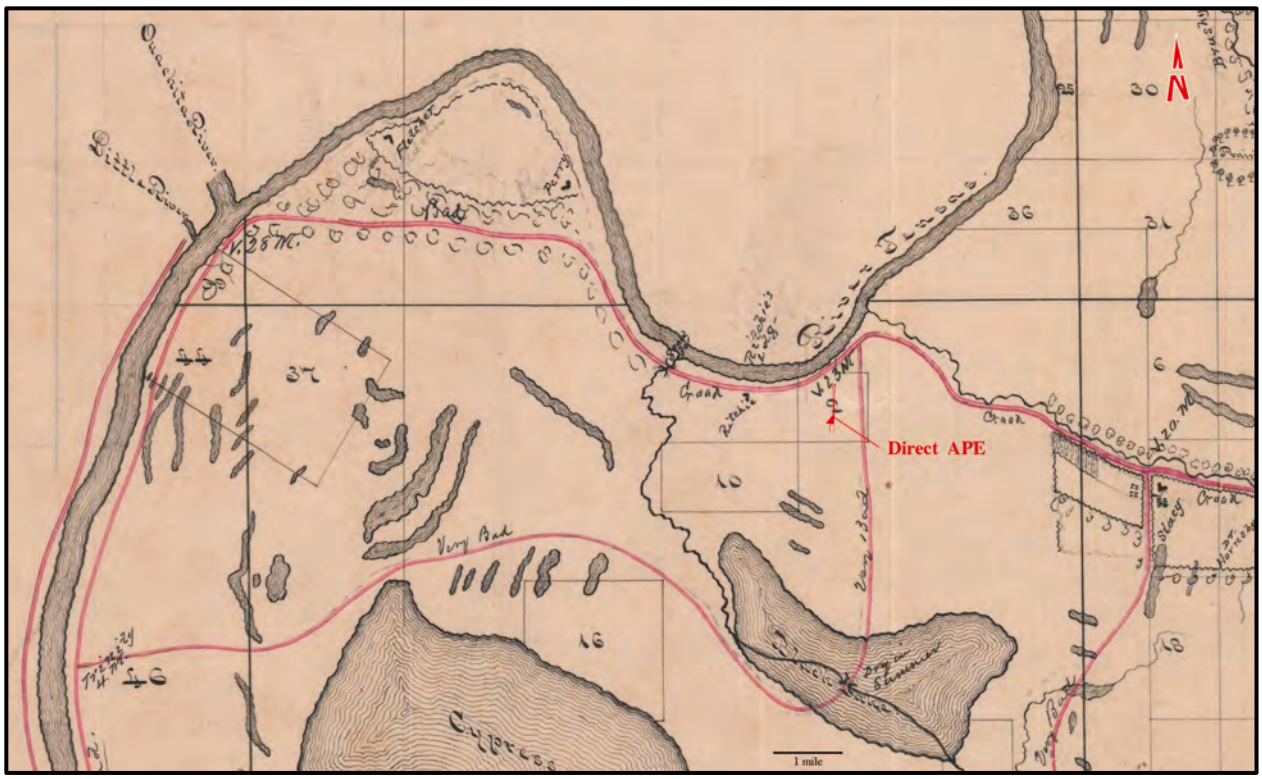


Figure 2-5. Detail of a ca. 1865 captured Confederate map of northern Concordia Parish (U.S. War Department 1865).

When Fort Beauregard was reoccupied by Confederate troops in early 1864, a Federal flotilla was dispatched up the Black and Ouachita rivers to destroy it. On the morning of March 2, six gunboats fired on the fort. Confederate gunners returned fire effectively from behind an Indian mound but retreated when ammunition ran low. The Union gunners fired directly into Harrisonburg, and a large landing party was sent ashore. They found Fort Beauregard abandoned, and demolition teams torched several buildings at the fort and in Harrisonburg before retreating down the Ouachita toward Trinity, about 8 km (5 mi) west of the project area. Concordia Parish saw no other action during the Civil War (Bearss 1964-65:26-37).

At the end of the war, the agricultural South was economically devastated. The loss of slave labor and credit bankrupted planters, while levees were neglected, and flooding reduced land values. The parish population stagnated, as wage, share, and tenant farmers struggled to raise corn, cotton, and range stock (Cusick et al. 1995:5-21). Geographer Samuel H. Lockett described Concordia Parish in around 1870:

Corn, cotton, and potatoes are the chief products of Concordia. Its population is 9,977 souls, of which 719 only are whites. Vidalia is the courthouse town and the only village of any size in the parish, It contains between 500 and 600 inhabitants and does a thriving business for its population [Locket 1969:107].

Athlone Place Plantation was likely formed in the late 1870s as the parish's economy began to recover. A serious break in the Tensas River levee fronting this cotton plantation occurred in 1880 (*The Times-Democrat* 1880:3) (Figure 2-6). A major Mississippi River flood in 1893 submerged, either in whole or in part, 31 Concordia Parish plantations on the Black River, and another 31 on the Tensas, including Athlone Place and its neighbors, Frogmore, Brushy Bayou, Moreau, and Chevy Chase (see Figure 2-6). The Tensas plantations then had some 8,000 acres in cotton and corn (*The Daily Picayune* 1893:1).

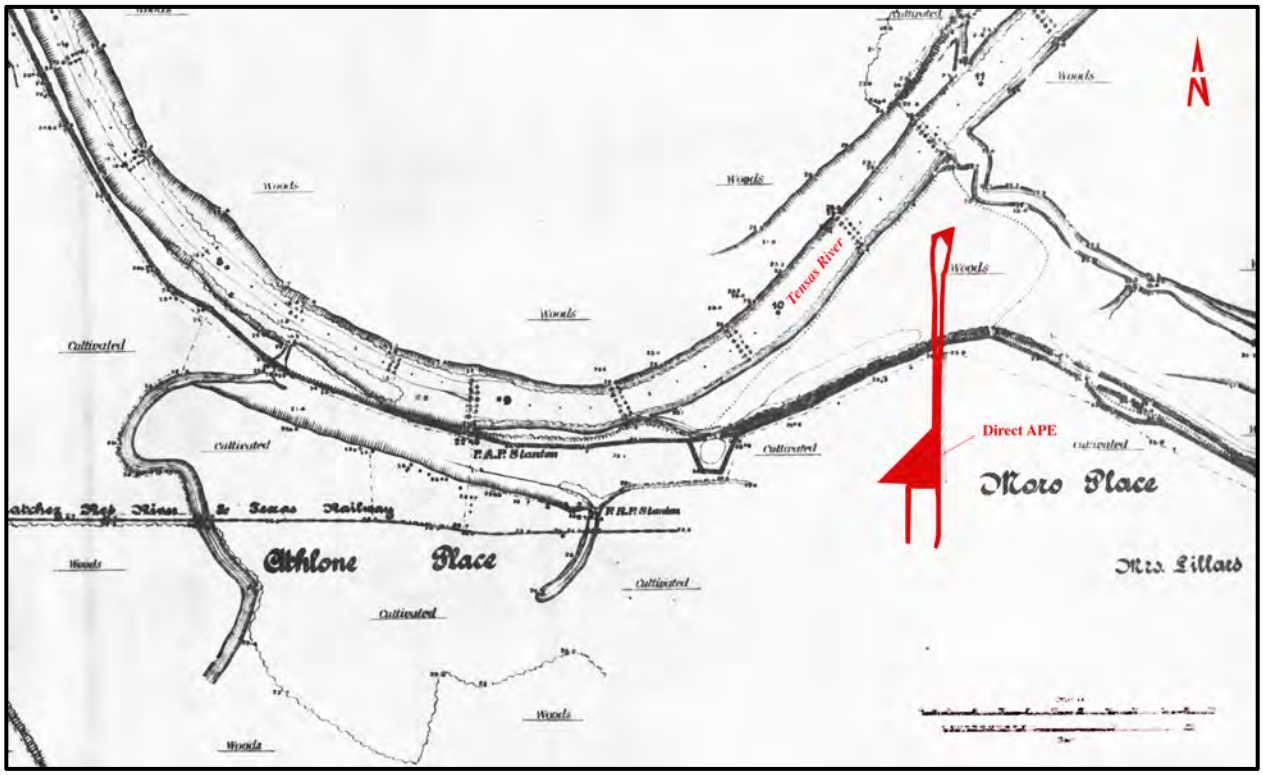


Figure 2-6. Detail of the U.S. Engineer Department's 1896 & 1899 *Survey of the Ouachita River and Tributaries: Bayou Macon and Tensas River* (U.S. War Department 1899).

In 1889, the Louisiana & Arkansas Railway was constructed. This new railway crossed Concordia Parish, as well as Athlone Place Plantation, and connected Vidalia to Hope, Arkansas

(see Figure 2-5). The arrival of the railroad facilitated commercial lumbering in Concordia Parish and created railroad towns such as Ferriday, located some 17 km (10 mi) east of the project area (Cusick et al. 1995:5-19). A railroad station was established at Athlone, and stave and sawmills established on nearby plantations boasting gum, cypress, oak, pecan, cottonwood, and other marketable timber (*The Lumberman* 1917:64). The Louisiana & Arkansas was ultimately absorbed by the Illinois Central Railroad. In the project vicinity, U.S. Highway 84 was constructed adjacent to the railroad tracks in the 1930s (Figure 2-7). No residences or other structures were located within the direct APE through 1939 (U.S. War Department 1939).

Agriculture remained the focus of the Concordia Parish economy through the twentieth century. Despite the effects of the boll weevil in 1909-1910, cotton production persisted, boomed during World War I, but declined during the Great Depression (Cusick et al. 1995:5-23). Like much of Concordia Parish, Athlone Place was inundated by the 1927 Mississippi River Flood (Figure 2-8). Mechanization in the mid-twentieth century led to a population decline as tenants left the parish's farms. Oil production helped to slow this trend from the 1950s through the 1970s (Cusick et al. 1995:5-23, 5-24, 5-26). A house and outbuildings were built in the southeastern corner of the indirect APE between 1939 and 1957 (U.S. Geological Survey [USGS] 1957; U.S. War Department 1939). The project direct APE remained agricultural and unoccupied through 1957 (USGS 1957) (Figure 2-9). Another outbuilding stood on US 84 to the east of the previously mentioned house by 1961, but was gone by 1977 (Figures 2-10 and 2-11) (USGS 1961, 1977). The railroad spur line through Athlone Place was removed between 1961 and 1977 (USGS 1961, 1977). Soybeans supplanted cotton as Concordia's primary cash crop in the 1960s and 1970s, with catfish farming contributing to the economy in more recent decades (Cusick et al. 1995:5-24 to 5-26). A house was erected in the southwestern corner of the indirect APE between 1977 and 1983 (USGS 1977, 1983). Within the direct APE, an unimproved road ran from US 84 to the circa-1950 residence by 1977. This road was extended back to Swayze Levee Road, paralleling the Tensas, between 1983 and 1998 (USGS 1983, 1998).

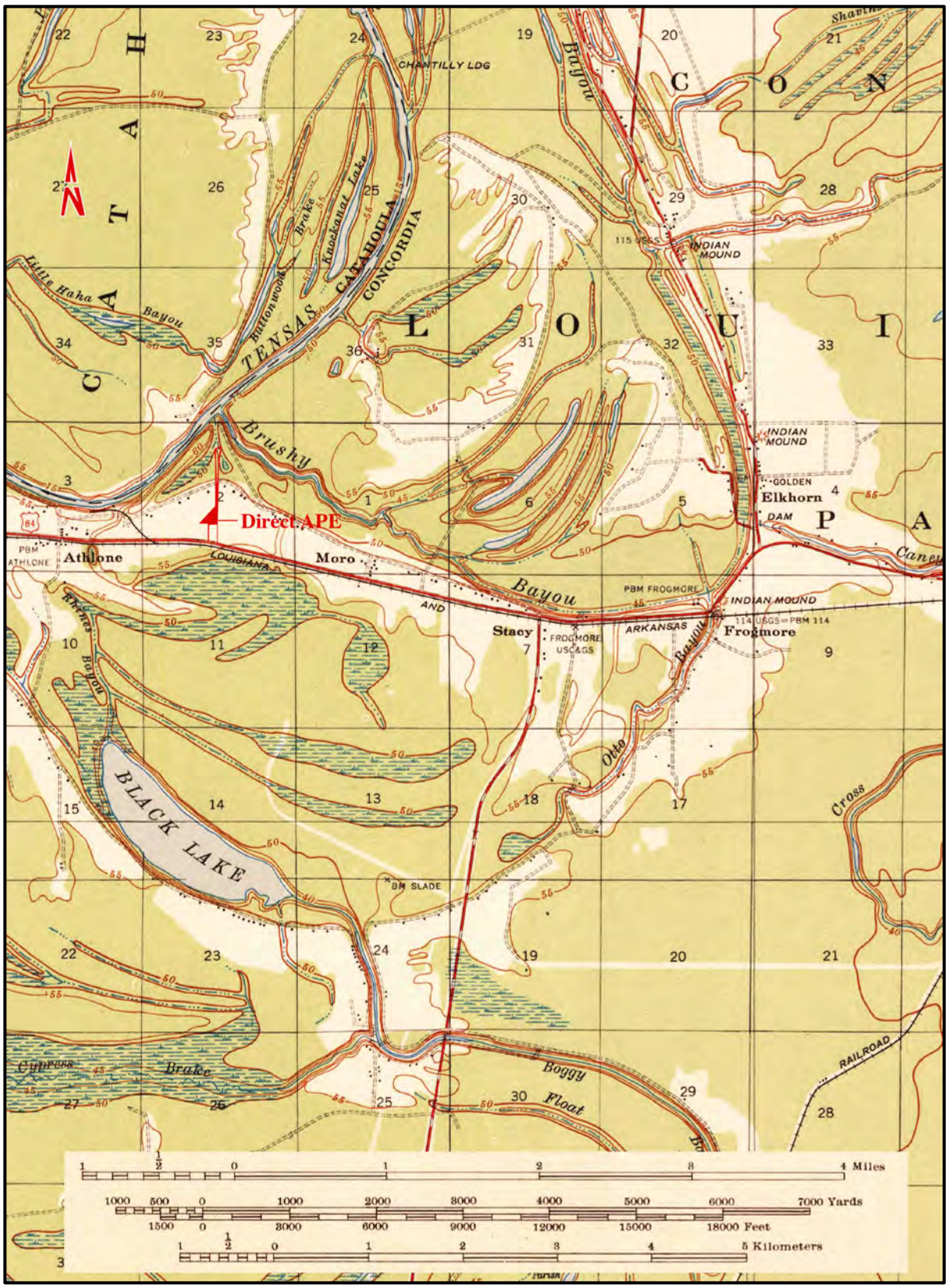


Figure 2-7. Detail of the U.S. War Department's 1939 *Red Gum, La.-Miss.* quadrangle map (U.S. War Department 1939).

Figure 2-8. Subsiding water from the 1927 Mississippi River Flood on Athlone Place Plantation (Ewing 1927).

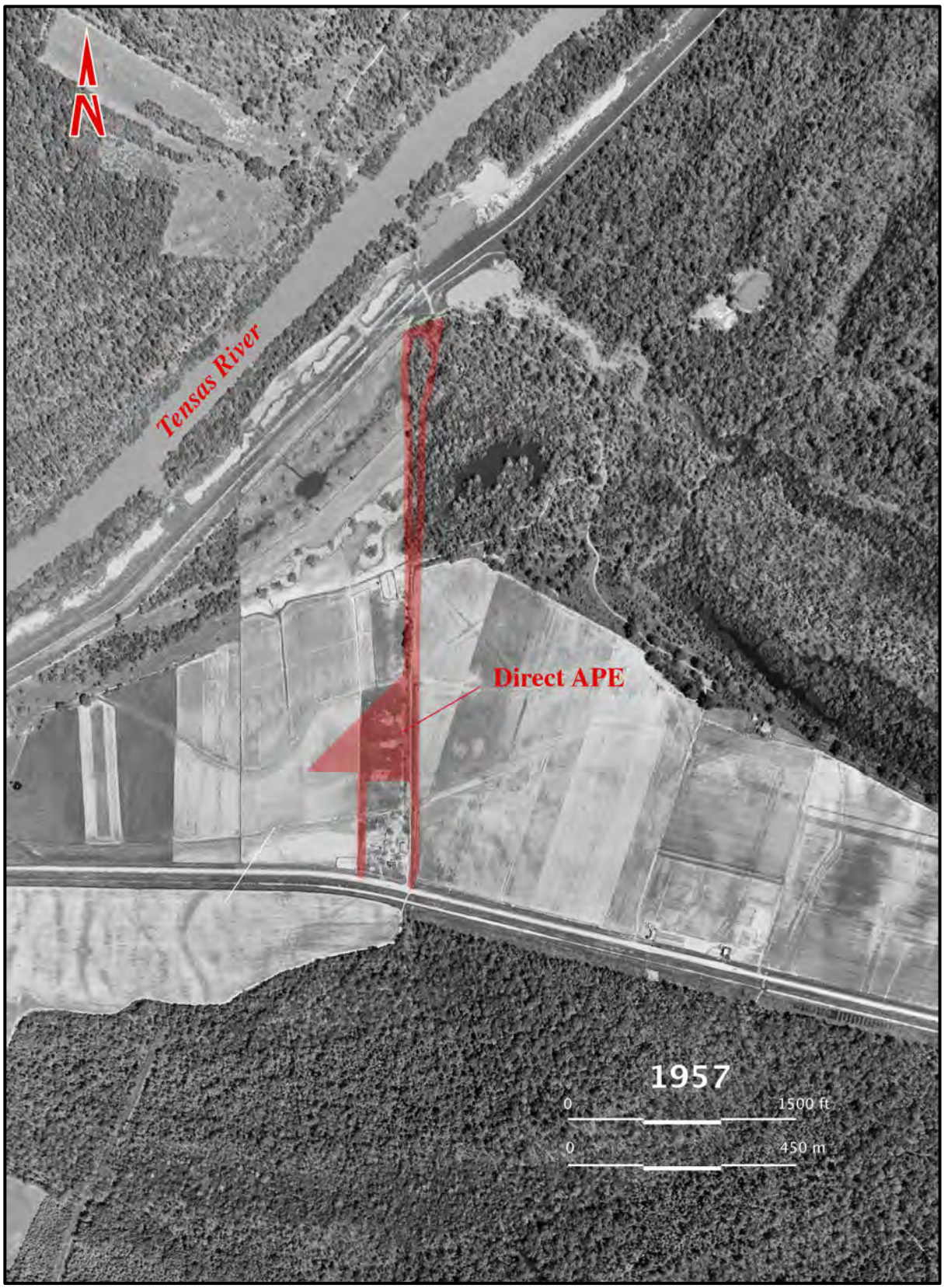


Figure 2-9. Detail of the U.S. Geological Survey's 1957 aerial image of Concordia Parish (U.S. Geological Survey 1957).

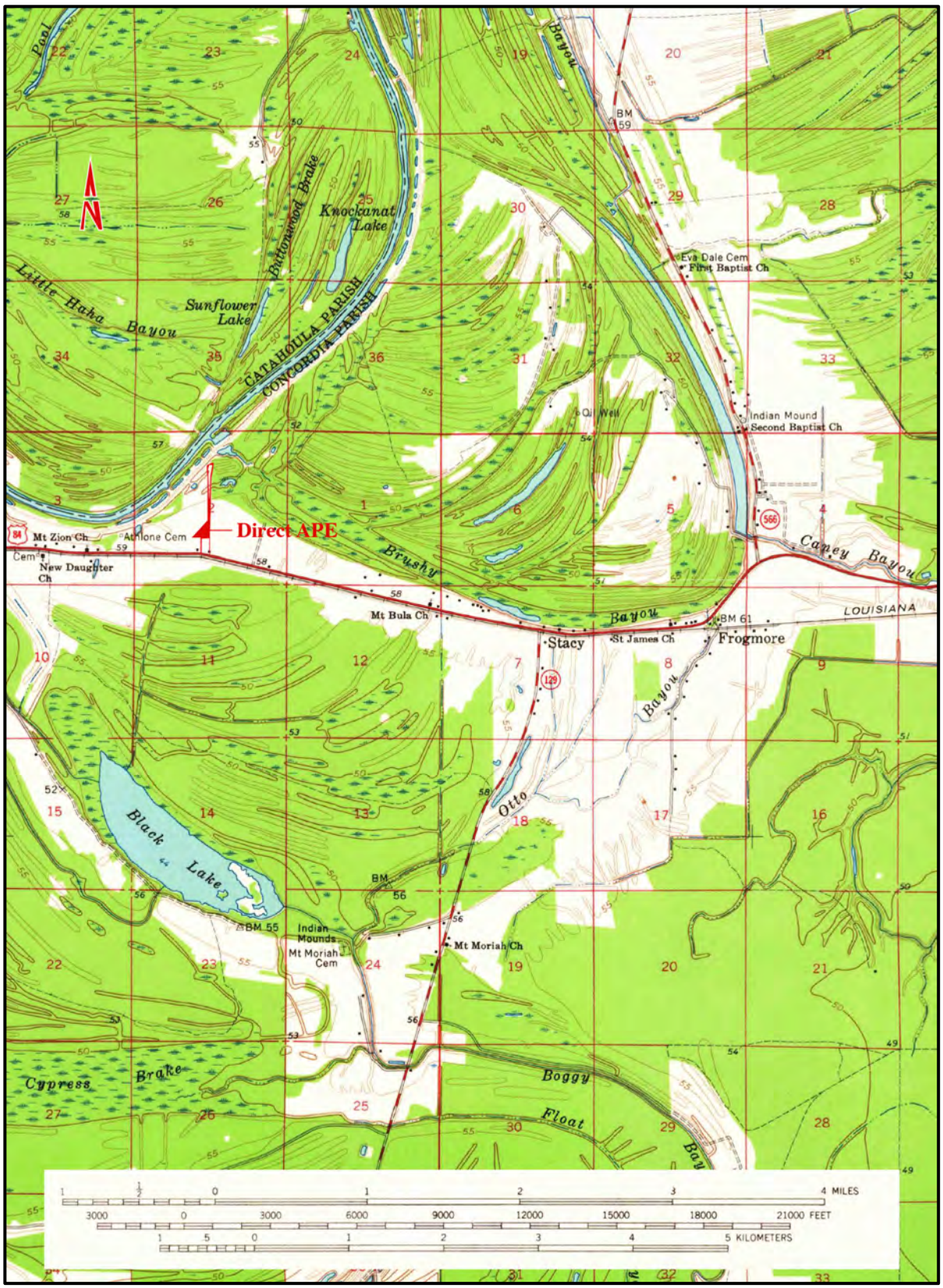


Figure 2-10. Detail of the U.S. Geological Survey's 1961 *Ferriday, La.-Miss.* quadrangle map (U.S. Geological Survey 1961).

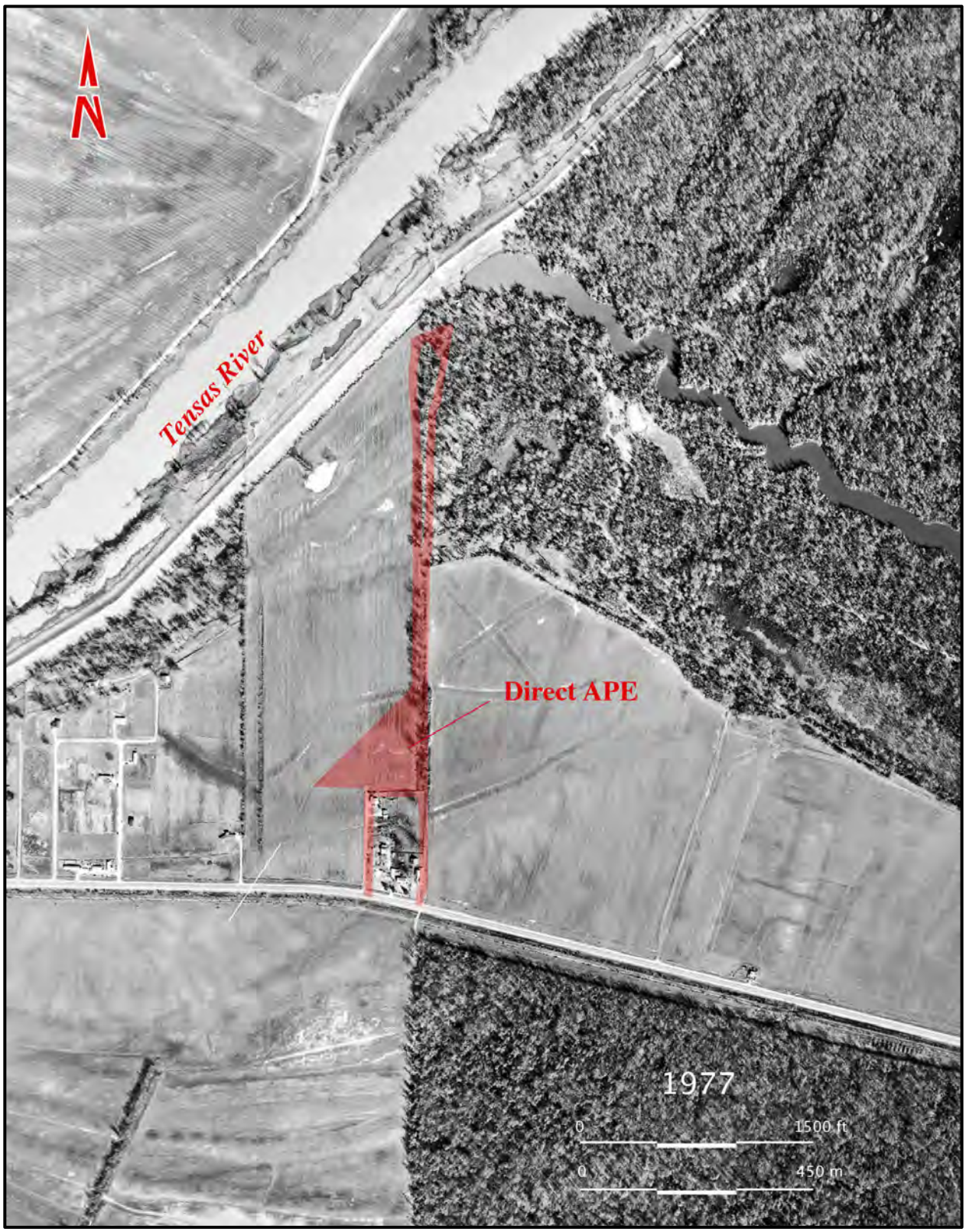


Figure 2-11. Detail of the U.S. Geological Survey's 1977 aerial image of Concordia Parish (U.S. Geological Survey 1977).

CHAPTER 3

PREVIOUS INVESTIGATIONS

In preparation for this project, an archaeological and historical background study was conducted to determine what types of cultural resources may be encountered during the survey. Archaeological site forms on file at the Division of Archaeology, Louisiana Department of Culture, Recreation and Tourism (LDOA), were consulted to identify all previously recorded archaeological sites within one mile (1.6 km) of the project area. Within these parameters, there was only one previous cultural resource investigation documented with an associated report, but there were five previously recorded sites listed (Tables 3-1 and 3-2).

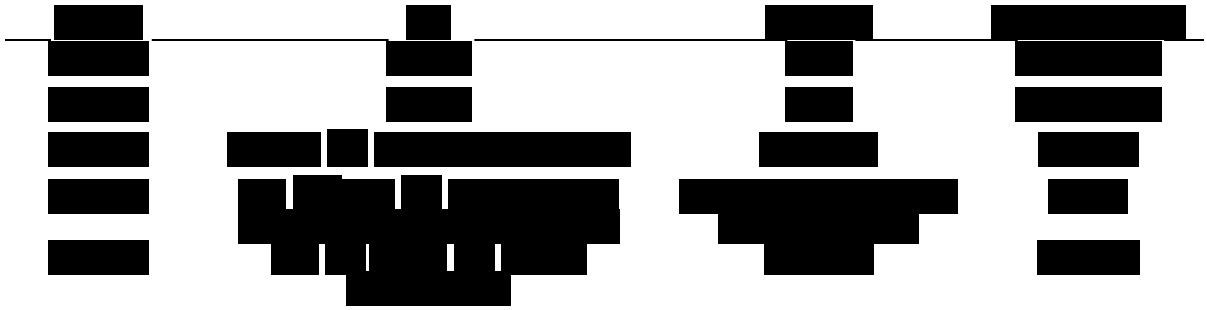
Table 3-1. [redacted]

[redacted]

Archaeology Along the Lower Tensas: Cultural Resources Investigations Relating to Items 2A and 2B of the Sicily Island Levee Project, Catahoula Parish, Louisiana (22-2235)

Between March 6th and April 13th, 1995 Coastal Environments, Inc. conducted a Phase I cultural resources survey along 20.5 km (12.8 miles) of right-of-way associated with the proposed construction of the Sicily Island Levee Project. [redacted]

Table 3-2. [redacted]



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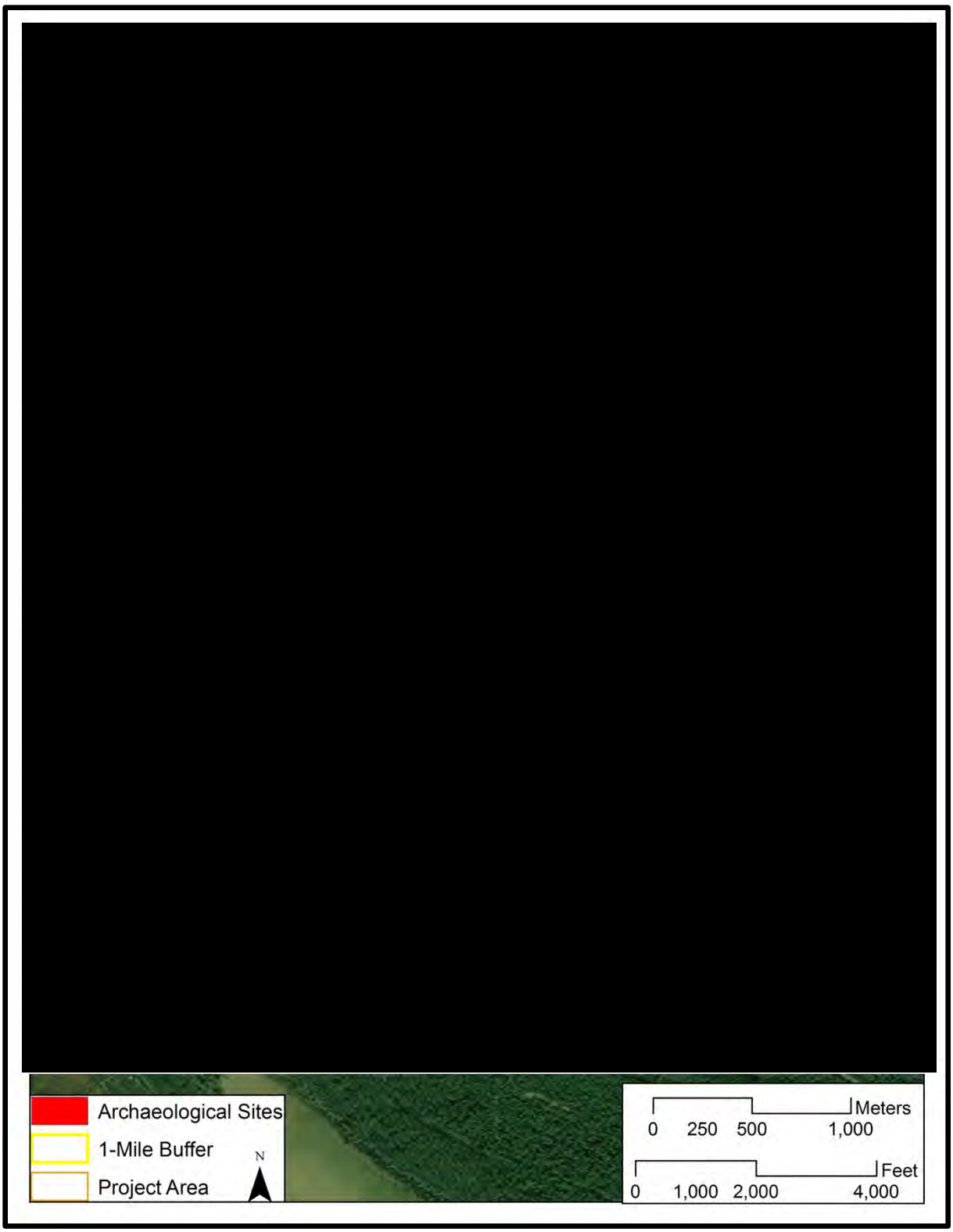

Figure 3-1. Previously recorded archaeological sites within one mile of the project area.

CHAPTER 4

METHODS

Archaeology

The archaeological Phase 1 survey for this project involved the survey of two borrow areas as well as a proposed access road. In total, the combined size of the survey area was 5.8 hectares. The archaeological crew, Benjamin Davis and Caleb Foreman, excavated shovel tests across the entire area at Louisiana's high probability standard of 30 m intervals. In total, 85 shovel tests were excavated. 23 of these shovel tests were excavated within the two borrow areas and 62 tests were excavated along the proposed access road routes. All shovel tests were excavated to a depth of at least 50 cm below surface, or to sterile subsoil. All fill from these tests were screened through ¼ in. wire mesh. In the instance that gravel and shell from existing farm roads prevented testing in an area, the shovel test was offset within the project area to avoid these obstacles.

When cultural materials were encountered, the limits of the site were determined through delineation. Delineation entailed digging additional shovel tests at 10-meter intervals in each cardinal direction until two negative shovel tests are recorded on all sides. If sites were encountered, photographs and sketch maps were made of each site and delineation.

Standing Structures

Louisiana Historic Resource Inventory and NRHP files for the State of Louisiana are maintained by the LADHP. Each recorded standing structure over fifty years of age is assigned a binomial number (e.g., 28-01000 [Parish Number + Structure Number]) by the LADHP. The LADHP houses Louisiana Historic Resource Inventory (LHRI) forms and corresponding reports for all recorded standing structures. It also maintains USGS 7.5-minute quadrangle maps and DOTD city maps depicting the locations of these structures.

Historic maps and aerial photographs were consulted to determine if extant structures located within the APE were constructed prior to 1975.

An architectural survey was conducted within the Concordia Parish Drainage Improvement architectural APE determined prior to the project commencement. All structures located within the APE and constructed prior to 1975 were examined. Although 1970 is the 50-year cutoff date, construction rarely occurs within a year of the survey. Therefore, A five-year buffer was employed to include standing structures that will meet the 50-year requirement by the time project construction actually commences. All structures that predate 1975 were also reported to LADHP. Digital LHRI forms were completed and two digital photographs taken of each structure recorded. The location of each structure was plotted on project aerial maps. Each structure was examined in terms of NRHP eligibility, and recommendations of either not eligible or eligible were made.

Curation

The artifact collection and associated records from this project will be curated at the curation facility of the Louisiana Division of Archaeology in Baton Rouge, Louisiana.

CHAPTER 5

RESULTS

Archaeological Survey

An archaeological survey was conducted within the proposed Concordia Parish Drainage Project direct APE, which encompassed approximately 14.32 acres (5.8 hectares). [redacted]. Also, 4.12 acres (1.67 hectares) of this total project area make up the borrow areas and 10.2 acres (4.13 hectares) make up the access road portion (Figure 5-1). At the time of the field survey, the project area had not been flagged or otherwise marked. The project boundaries were determined using a survey limit plan provided by FEMA and a Trimble Geo7X with sub-meter accuracy. As the borrow area portion of the project area was greater than 30-m in both width and length, the survey crew shovel tested this area on a 30-m interval grid along 7 transects of varying length. The access road portion of the project area was less than 30-m wide, so the survey crew walked a single transect down the center of this corridor, and excavated shovel tests at 30-m intervals.

In total, eighty-five (85) shovel tests were excavated along these transects (see Figure 5-1). Each shovel test measured approximately 30 cm (11.7 in) in diameter and was excavated until sterile subsoil was encountered. The contents of each shovel test were screened through ¼ -in wire mesh. A typical shovel test contained 0 to 30 cm of dark grayish brown (10YR 4/2) silty clay, 30 to 50 cm of dark grayish brown (10YR 4/2) silty clay mottled with yellowish brown (10YR 5/6) silty clay. In addition to these 85 shovel tests, two auger tests were excavated within the borrow portion of the project area. Both of these auger tests produced very similar profiles. They contained 0 to 30 cm of dark grayish brown (10YR 4/2) silty clay, 30 to 50 cm of dark grayish brown (10YR 4/2) silty clay mottled with

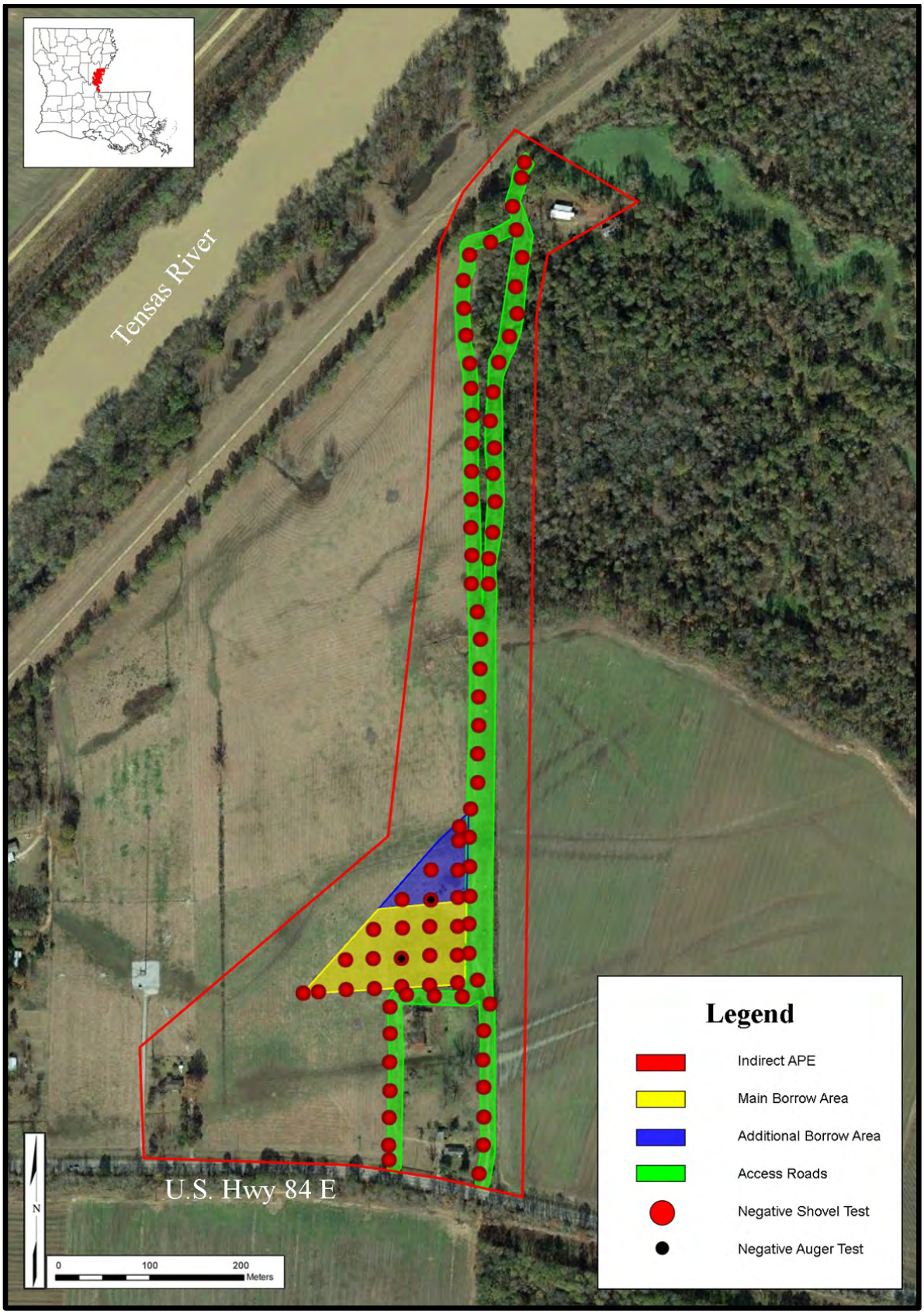

Figure 5-1. Locations of shovel tests and auger tests within the project area.

yellowish brown (10YR 5/6) silty clay, 50 to 110 cm of dark gray (10YR 4/1) silty clay mottled with yellowish brown (10YR 5/6) silty clay, and 110 to 190 cm gray (10YR 5/1) clay mottled with yellowish brown (10YR 5/6) clay (Figure 5-2).

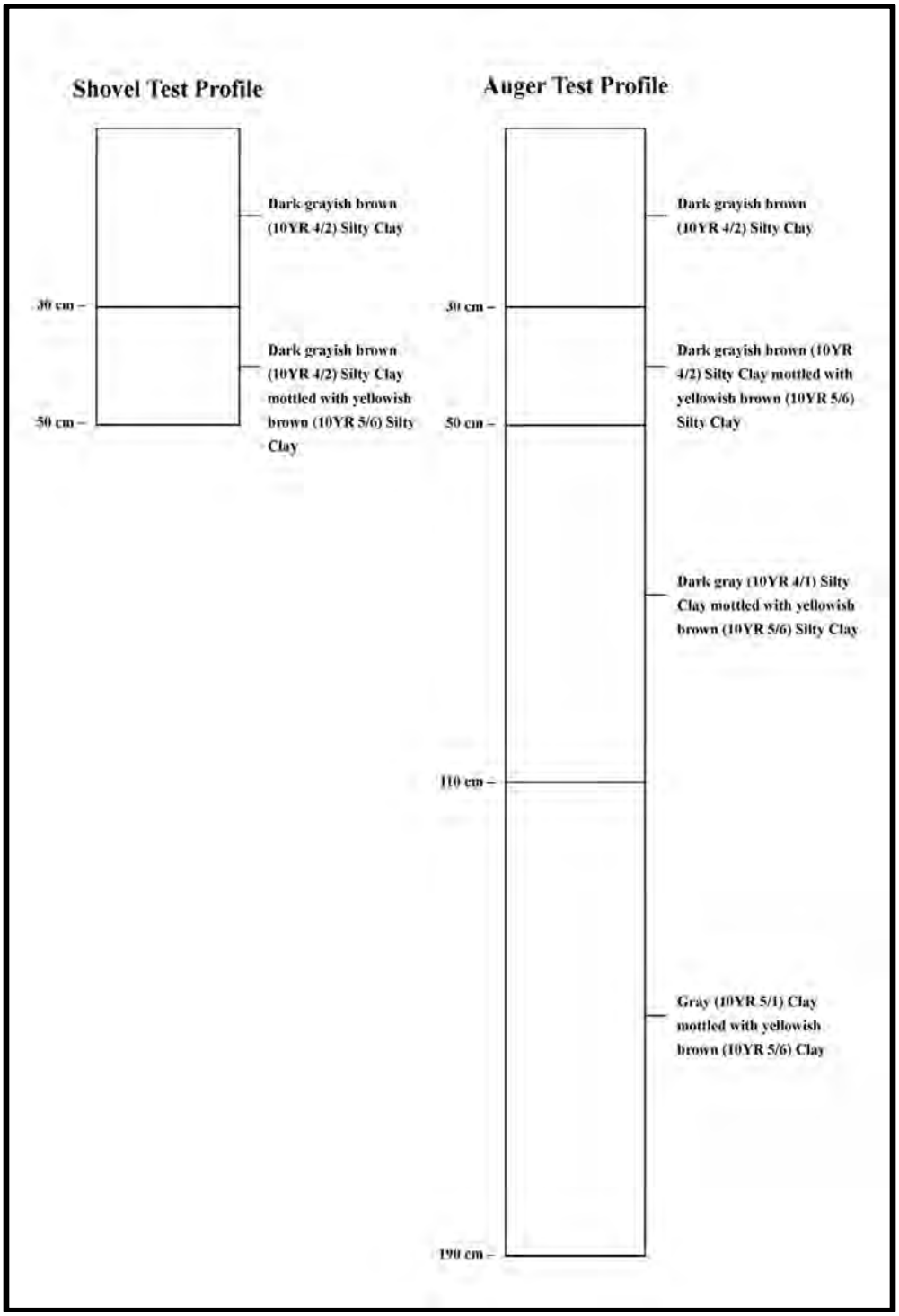

Figure 5-2. Representative profiles of shovel tests and auger tests excavated within the direct APE.

In addition, all clearings, tree falls, and exposed ground surfaces were visually examined for cultural remains. Ground surface visibility was moderately good in the borrow areas (Figure 5-3) and along the potions of the access road corridor (Figure 5-4), but the portions of the access road corridor in standing forest in the northern half of the project area were poor due to high weeds and undergrowth. All of the shovel tests and auger tests excavated within the Concordia Parish Drainage project direct APE were negative, and no artifacts or cultural deposits were present on the ground surface within the direct APE.

Figure 5-3. Overview photo of borrow areas within the direct APE. (View is to the northwest. Date: 8/13/20)

Figure 5-4. Crewmember excavating a shovel test within the direct APE for the proposed access road. (View is to the south. Date: 8/13/20)

Architectural Survey

Within the Concordia Parish Drainage project indirect APE, CEI examined a total of three structures that were constructed during or prior to 1975 (Figure 5-5). The indirect APE, measuring approximately 50.4 acres (20.4 hectares), commences along U.S. Highway 84 just 50 meters east of the southeastern corner of the project area. The indirect APE boundary continues west parallel and adjacent to U.S. Highway 84 for 410 meters, at which point the boundary goes directly North for 120 meters. From this point the indirect APE boundary turns to the northeast for 356 meters. The indirect APE boundary then continues North staying within 60 meters of the project area. It roughly follows the edge of the project area to its most northern extent, jutting 115 meters to the east away from the edge of the project area at its most northeastern point in order to include a hunting camp at the back of the property.

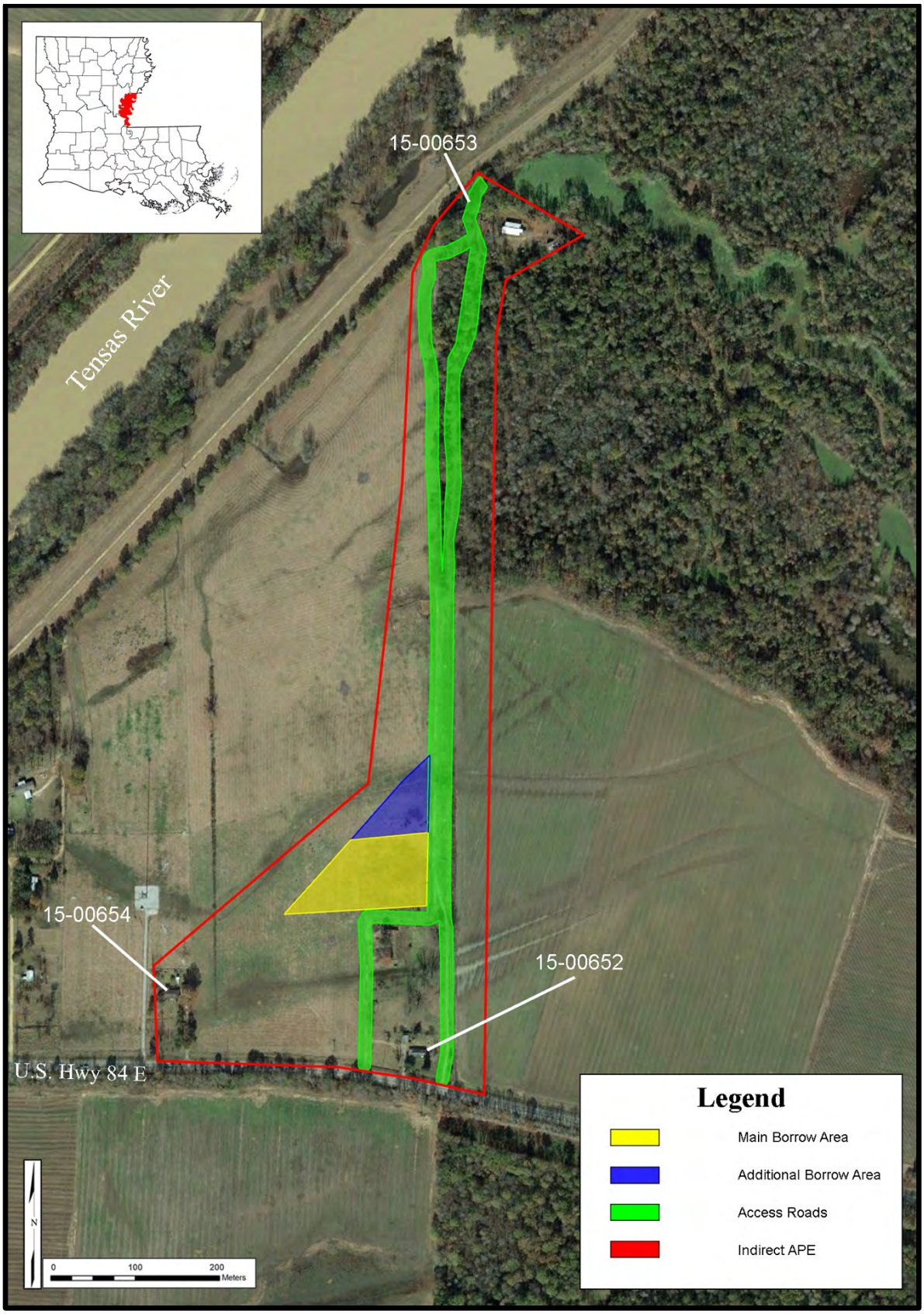

Figure 5-5. Locations of standing structures within the APE.

Following this, the indirect APE boundary continues to roughly follow the edge of the project area South to its starting point. The three structures examined by CEI in August 2020 include: a minimal traditional cottage (15-00652), a one-story camper trailer (15-00653), and a ranch house (15-00654). Each is described below.

The first structure recorded (15-00652) is located at 13155 U.S. Highway 84 and was constructed circa 1950 (see Figure 5-5). It is a one-story, side-gabled, asphalt shingled minimal traditional cottage with a front gabled porch (Figure 5-6). It has clapboard siding, aluminum horizontal 2/2 windows, and two chimneys. It rests on an unknown pier foundation. The main façade has applied decorative shutters. Also, a screened porch was added along the west elevation at an unknown date. Both chimneys are brick and internal, but one is slope off center while the other is ridge center. The estimated age of construction for structure 15-00652 is 1950. This estimate is based on the structure's style, USGS aerial

Figure 5-6. Structure 15-00652, a minimal traditional cottage. View is to the North.

imagery and topographic maps. Image number 1VNG000070130 from the USGS aerial imagery archive dates to April 4th, 1957 and shows a structure standing at this location. Additionally, there is no structure shown at this location on the Red Gum, LA USGS topographic map from 1939 (1941 edition).

The second structure recorded (15-00653) is located in the far rear of the property at 13155 U.S. Highway 84 and was constructed circa 1955 (Figure 5-6). It is a one-story camper trailer with a flat roof, metal siding, jalousie windows and a metal door (Figure 5-8). The exterior of the camper trailer is composed of aluminum and measures 13 meters long and 3 meters wide. The trailer sits on aluminum footings that sit on concrete piers. It is abandoned. This structure was not visible on any aerial imagery. The estimated date for age of construction is 1955. This estimate is based on the style and appearance of the structure.

Figure 5-7. Structure 15-00653, a camper trailer. View is to the East.

The third structure recorded (15-00654) is located at 13029 U.S. Highway 84 and was constructed circa 1975 (see Figure 5-5). It is a one-story brick veneered ranch house with a hipped roof and a v-shaped floor plan (Figure 5-8). This form is referred to as an alphabet ranch type in some areas (Cloues 2010:139). The windows appear to be aluminum with 6/6 pane configurations, and the door is a paneled and part glazed replacement. The house rests on a concrete slab and has applied decorative shutters flanking the windows along the front façade. There is an integral garage visible along the main façade. The chimney is an interior brick chimney along the roof slope, and the roof cladding consists of asphalt shingles. The estimated age of construction for this structure is 1975. This estimate is based on both structure style and USGS aerial imagery. The structure is not present on USGS archival image 1VNG000070129 dating to April 4th 1957, but can be seen on USGS archival image 1VEAJ00010138 dating to January 21st, 1976.

Figure 5-8. Structure 15-00654, a ranch house with a v-shaped floor plan. View is to the Northwest.

Although Structures 15-00652 and 15-00654 retain their integrity, they are not considered eligible for listing on the NRHP under Criterion C, as they do not "embody distinctive characteristics of a type, period or method of construction; represent the work of a master; or possess high artistic value" (National Park Service 1991:17). They are also not considered eligible for listing on the NRHP under Criteria A and B as they are not "associated with events that have made a significant contribution to the broad patterns of our history" (National Park Service 1991:2), nor are they "associated with the lives of persons significant in our past" (National Park Service 1991:2). The present-day appearance of structure 15-00653, however, displays significant dilapidation and damage to its exterior and interior as well. It has likely sat abandoned for many years. Additionally, it is likewise not considered eligible for listing on the NRHP under Criteria A, B, or C (National Park Service 1991).

CHAPTER 6

SUMMARY AND RECOMMENDATIONS

The cultural resources survey of the Concordia Parish Drainage Project recorded three standing structures, but no archaeological sites. The absence of archaeological sites could be due to the relatively small size of the survey area. The structures are not recommended as being eligible for nomination to the National Register of Historic Places. Based on the results of this survey the project will have no effect on historic properties.

REFERENCES

Arthur, Stanley Clisby (editor)
1971 [1931] *Old Families of Louisiana*. Claitor's Publishing Division, Baton Rouge, Louisiana.

Autin, W. J., S. A. Bums, B. J. Miller, R. T. Saucier, and J. I. Snead
1991 Quaternary Geology of the Lower Mis- sissippi Valley. In *Quaternary Non-Glacial Geology of the Conterminous United States*, edited by R. B. Morrison, pp. 547-582. The Geology of North America. Vol. K-2. Geological Soci- ety of America, Boulder, Colorado.

Bauer, Craig A.
2011 *Creole Genesis, The Bringier Family and Antebellum Plantation Life in Louisiana*. University of Louisiana at Lafayette Press, Lafayette.

Bearss, Edwin A.
1964-65 The Story of Fort Beauregard. *Louisiana Studies* 3(4):330-384, 4(1):3-40.

Boyd, R.W.
1853 *T.7 N.-R.7 E. District North of Red River Louisiana*. Official Plat map of Township 7 North, Range 7 East, North of the Red River District, Louisiana. Document No; 523.03066_1. Louisiana State Land Office, Baton Rouge.

Bringier, Louis
1821 Notices of the Geology, Mineralogy, Topography, Productions, and Aboriginal Inhabitants of the Regions Around the Mississippi and its Confluent Waters–in a Letter from L. Bringier, Esq. of Louisiana to Rev. Elias Cornelius–Communicated for this Journal. In *The American Journal of Science and Arts*. Vol. III:15-46. New Haven, Connecticut.

Cloues, Richard
2010 *Ranch Houses in Georgia: A Guide to House Types (Sub-Types)*. Georgia Department of Natural Resources, Historic Preservation Division.

Cole, Robert Dabney
1932a A History of Concordia Parish Louisiana, I. *Louisiana Historical Quarterly* 15(1):44-67.

1932b A History of Concordia Parish Louisiana, III. *Louisiana Historical Quarterly* 15(3):428-452.

Cusick, James G., Todd McMakin, Shannon Dawdy, and Jill-Karen Yakubik
1995 *Cultural Resources Documentation, Black River Bridge at Jonesville, JCT. LA 3037 to LA 565 Catahoula and Concordia Parishes Route LA-US 84*. Earth Search, Inc., New Orleans. Submitted to Frederic R. Harris, Inc., New Orleans. 22-1854.

The Daily Picayune [New Orleans, Louisiana]
1893 State News. LVII (153), Monday, 26 June:1.

Ewing, J.G.
1927 Mississippi River Flood of 1927 Album (Mss. 4373), Louisiana and Lower Mississippi Valley Collections, LSU Libraries, Baton Rouge, Louisiana.

Fair, James R.
1997 *The Louisiana & Arkansas Railway.* Northern Illinois University Press.

Forshey, Caleb G.
1841 *Topographic Map of the Parish of Concordia, State of Louisiana, Projected from Actual Surveys*. Map No. G4013.C8G46 1841 .F6. Library of Congress, Washington, D.C.

Hunter, Donald G., Dayna Bowker Lee, Whitney J. Autin, Carey L. Coxe, and Katherine M. Roberts
1999 *Archaeology Along the Lower Tensas: Cultural Resources Investigations Relating to Items 2A and 2B of the Sicily Island Levee Project, Catahoula Parish, Louisiana*. Coastal Environments, Inc. Submitted to the Federal Emergency Management Agency, Louisiana Recovery Office.

Kilpatrick, A.R.
1850 An Historical Sketch of Concordia Parish. *DeBow's Review*, Vol. II, July:41.

Kniffen, Fred B., Hiram F. Gregory, George A. Stokes
1987 *The Historic Indian Tribes of Louisiana: From 1542 to the Present.* Louisiana State University Press, Baton Rouge.

Lanoux, Iris-Louise (editor)
2007 *Ascension Parish 1807-2007. Bicentennial Edition Volume One, People, Places, Things*. Ascension Parish Government, Donaldsonville.

Lockett, Samuel H.
1969 *Louisiana As It Is: A Geographical and Topographical Description of the State.* Edited by Lauren C. Post. Louisiana State University Press, Baton Rouge.

The Lumberman [St. Louis, Missouri]
1917 For Sale. LX(9), 1 November:64.

Mississippi Free Trader [Natchez, Mississippi]
1836 Jefferson Hotel. Friday, 7 October:4.

_____
1841 New Orleans and Natchez Weekly Packet. Thursday, 28 October:3.

Mitchell, Jennie O., and Robert D. Calhoun
1937 The Marquis de Maison Rouge, the Baron de Bastrop, and Colonel Abraham Morehouse, Three Ouachita Valley Soldiers of Fortune, the Maison Rouge and Bastrop Spanish Land Grants. *Louisiana Historical Quarterly* 20:289-462.

The Natchez Courier [Natchez, Mississippi]
1850 Untitled article. 21 August 21:3.

Natural Resources Conservation Service (NRCS) WebSoilSurvey
2020 Online database. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed 22 August 2020.

Saucier, Roger T.
1967 *Geological Investigation of the Boeuf- Tensas Basin, Lower Mississippi Valley*. Technical Report 3-757. U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg.

1994 *Geomorphology and Quaternary Geologic History of the Lower Mississippi Valley*. U.S. Army Corps of Engineers, Waterways Experiment Station.

Seebold, Herman de Bachelle
1971 [1941] *Old Louisiana Plantation Homes and Family Trees*. Volume Two. Pelican Publishing Company, Gretna, Louisiana. Reprint 1941.

Surveyors Historical Society
2012 Vignettes. *Backsights,* Spring 2012, 31(1):2.

Tensas Gazette [St. Joseph, Louisiana]
1931 Notes on Concordia Parish: Early History. Friday, 24 July:5.

The Times-Democrat [New Orleans, Louisiana]
1880 State News. Thursday, 7 October:3.

Trudeau, Carlos
1796 Survey of the claim of Luis Bringier. Document No. 510.0008_259. Claim Papers District N.R.R. T5N R4, 9 & 10E & T6N, R6, 7, & 9 E Book 4. Louisiana State Land Office, Baton Rouge.

United States (U.S.) Census
1830 General Population Schedules, Concordia Parish, Louisiana. U.S. Bureau of the Census, Washington, D.C.

United States Engineer Department
1899 *Survey of the Ouachita River and Tributaries: Bayou Macon and Tensas River.* Sheet 2 (1896 & 1899). U.S. Engineer Department, Washington, D.C.

United States Geological Survey (USGS)
1957 Single Frame Aerial Image No. AR1VNG0000070130, April 10, 1957. U.S.G.S. Earth Explorer.

_____
1961 *Ferriday, La.-Miss.* quadrangle. 1:62,500 series. U.S. Geological Survey, Boulder Colorado.

_____
1977 Single Frame Aerial Image No. ARVEI000030038. February 6, 1977/. U.S.G.S. Earth Explorer.

_____
1983 *Frogmore, La.* quadrangle. 1:24,000 series. U.S. Geological Survey, Boulder, Colorado.

_____
1998 Aerial image of Concordia Parish, Louisiana, 27 January 1998. U.S. Geological Survey, Washington, D.C. Electronic resource, Google Earth, Mountain View, California, accessed 9 September 2020.

U.S. War Department (USWD), Office of the Chief Engineers
ca. 1865 Parish maps of Louisiana captured from the Confederates ca. 1865. Concordia Parish. Record Group 77, Records of the Office of the Chief of Engineers, 1789-1999, Series: Civil Works Map File, 1818-1947. National Archives. Electronic document, catalog.archives.goc/id.171032018, accessed 6 August 2020.

_____
1939 *Red Gum, La.-Miss.* quadrangle. 1:62,500 series. U.S. War Department, Washington, D.C.

Works Progress Administration (WPA)
1931 *Concordia Parish History Notes.* Federal Writer's Project. Works Progress Administration, Monroe, Louisiana.

Yagyu, Tomoko
2006 Slave Traders and Planters in the Expanding South: Entrepreneurial Strategies, Business Networks, and Western Migration in the Atlantic World, 1787-1859. Unpublished Ph.D. dissertation, Department of History, University of North Carolina, Chapel Hill.

Appendix E
Other Information (Public Notice, 8-Step Process, & FONSI)

FEMA PUBLIC NOTICE OF AVAILABILITY FOR THE DRAFT ENVIRONMENTAL ASSESSMENT AND DRAFT FINDING OF NO SIGNIFICANT IMPACT FOR THE PROPOSED CONCORDIA PARISH POLICE JURY NORTHERN CONCORDIA PARISH ENHANCED FLOOD REDUCTION THROUGH BRUSHY BAYOU DRAINAGE BASIN IMPROVEMENTS AT FROGMORE AND LUKE MARTIN ROAD IN CONCORDIA PARISH, LOUISIANA

Interested parties are hereby notified that the Federal Emergency Management Agency (FEMA) has prepared a draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) in compliance with the National Environmental Policy Act (NEPA). The purpose of the draft EA is to assess the effects on the human and natural environment from improvements to the capacity of Brushy Bayou in Concordia Parish, Louisiana.

The Concordia Parish Police Jury (Subrecipient), through the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) (Recipient), applied for funding under FEMA's Hazard Mitigation Grant Program (HMGP) to reduce flooding in the upper reaches of the Parish due to restrictions and backwater flooding in primary drainage arteries and tributaries during and after storm events. The HMGP provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. In accordance with the HMGP, the Subrecipient proposes to reduce the impacts of flooding during rain events in the proposed project areas by implementing hazard mitigation measures.

The purpose and need for the project are defined by the reoccurring flooding issues experienced in the Bayou Cocodrie drainage system including the Concordia Park, Belle Grove/Vail Acres, Ridgecrest, Levens Addition, Doty Road, and Washington Heights areas within the communities of Clayton, Ferriday, Ridgecrest, Vidalia, and other surrounding areas within the Parish. These areas have experienced major flooding due to the restriction of Bayou Cocodrie and backed up stormwater, resulting in a loss of the drainage capacity for the Parish. Adequate drainage capacity is critical to expeditiously move stormwater from flood-prone areas in the drainage basin, its tributaries, and the surrounding floodplain. To address these issues, the Subrecipient proposes to improve existing drainage by diverting the entire flow handled by Brushy Bayou into the Tensas River and by expanding the capacity of the inadequate and ineffective culverts at the intersection of Luke Martin Road and Brushy Bayou to allow better drainage and reduce the negative impacts from stormwater backup. The proposed project is essential to the mitigation of the ongoing flooding of residences and property served by the drainage system. The flood control structure would be engineered and designed to convey during and up to the 25-year storm event.

The purpose of the draft EA is to analyze the potential environmental impacts associated with the Preferred Action. The draft EA evaluates a No Action Alternative and the Preferred Action Alternative, which would divert the entire flow being handled by Brushy Bayou into the Tensas River by installing a box culvert and a weir at Brushy Bayou and the Tensas River and replacing the existing culverts under Luke

Martin Road with a new bridge at the intersection of Luke Martin Road and Brushy Bayou and realign the roadway to mitigate the flood damage to residences, businesses, schools, public buildings and facilities, and streets affected by the flooding in the upper reaches of the Parish. The draft FONSI is FEMA's finding that the Preferred Action would not have a significant effect on the human and natural environment.

The draft EA and draft FONSI are available for review at the following locations: Concordia Parish Library at 1609 Third St., Ferriday, LA (Ferriday Branch) and 408 Texas St., Vidalia, LA (Vidalia Branch), Mondays through Fridays 8:00am to 5:00pm, and at 31451 Hwy. 15, Clayton, LA (Clayton Branch), Mondays through Thursdays 12:00pm to 5:00pm and Fridays 8:00am to 5:00pm. This public notice will run in the journal of record, the Concordia Sentinel, and in The Advocate and The Shreveport Times.

The document can also be downloaded from FEMA's website at http://www.fema.gov/resource-document-library. There will be a 30-day comment period beginning on September 1, 2022, and concluding on September 30, 2022, at 4 p.m. Written comments may be mailed to: DEPARTMENT OF HOMELAND SECURITY--FEMA EHP – Concordia Parish Brushy Bayou Drainage Improvements, 1500 MAIN STREET, BATON ROUGE, LOUISIANA, 70802. Comments may be emailed to fema-lirо-ehp-hma@fema.dhs.gov. Verbal comments will be accepted or recorded at 225 267-2962. If no substantive comments are received, the draft EA and associated draft FONSI will become final.

(9) 6, 7, 8, 9, 11

EXECUTIVE ORDER 11988/11990

FLOODPLAIN MANAGEMENT/WETLANDS – CHECKLIST (44 CFR Part 9)

APPLICANT:	**Concordia Parish Police Jury**
COUNTY/STATE:	**Concordia Parish/Louisiana**
COORDINATES:	**Site A:** **Drainage Structure:** 31.62083, -91.72583 **Access Rd. Culvert 1:** 31.61149, -91.72684° **Access Rd. Culvert 2:** 31.61349, -91.72684 **Access Rd. Culvert 3:** 31.61700, -91.72675 **Access Rd. Culvert 4:** 31.61814, -91.72670 **Access Rd. Culvert 5:** 31.61857, -91.72653 **Primary Borrow Pit:** 31.61250,-91.72754 **Secondary Borrow Pit:** 31.61315, -91.72743 **Site B:** **Luke Martin Rd. Bridge:** 31.61194, -91.66833
PROPOSED ACTION: *(Provide a brief scope of work)*	Implement drainage improvements to the existing drainage system by diverting water from Brushy Bayou to the Tensas River to reduce water surface elevation and improve drainage flow in the upper reaches of Concordia Parish during major storm events. Install a gated box culvert with a weir structure at the intersection of Brushy Bayou and the Tensas River levee; replace existing culverts under Luke Martin Rd. with a new bridge and realign the roadway; improve an access road with additional ditching and install five (5) culverts along the road which would become a permanent road upon project completion; and excavate dirt within the primary and secondary (if needed) borrow pits for fill material used in the construction of the proposed project.

APPLICABILITY: Actions which have the potential to affect floodplains/wetlands or their occupants, or which are subject to potential harm by location in floodplains/wetlands.

☒**YES** ☐**NO** The proposed action could potentially adversely affect the floodplain/wetlands.

Remarks: Portions of the proposed project are in the 100-year floodplain and in an undesignated floodway.

Jurisdictional wetlands have been identified in portions of the proposed project.

☒**YES** ☐**NO** The proposed action could potentially be adversely affected by the floodplain/wetlands.

Remarks: USACE Section 408 permit issued on April 2, 2021. USACE DA NWP-14 (Linear Transportation Projects) and Regional GP-32 (Regulated Activities in WOTUS Associated with the Construction of Minor Drainage and Water Level Control Structures) (MVK-2016-633) issued on December 14, 2021.

ACTION:

☐ **Review against 500 Year floodplain (for Critical Action)**

☒ **Review against 100 Year floodplain**

☐ **Not Applicable (for actions located in wetland only)**

STEP NO. 1 Determine whether the proposed action is located in the 100-year floodplain (500-year floodplain for critical actions) and/or wetland; (44 CFR §9.7).

Concordia Parish enrolled in the NFIP on April 3, 1978. Per the preliminary FIRM Panel 22029C0200D, dated January 21, 2010, the project site for the drainage structure on the Tensas River side is located within the special flood hazard area (SFHA) Zone AE, which is the 100-year floodplain or an area subjected by the 1% annual chance flood with base flood elevations (BFE) determined. The project site for the drainage structure on the Brushy Bayou side is located within an undesignated floodway and SFHA, Zone A, which is also subjected by the 1% annual chance flood, but without BFEs because detailed hydraulic analyses have not been performed. Per the preliminary FIRM Panel 22029C0200D, dated January 21, 2010, the project site for the access road is located within Zone A and Zone X (shaded). These Zone X areas are outside the SFHA, but between the limits of the base flood (1%) and the 500-year (0.2%) flood and are protected from the 100-year flood by a levee. In addition, the primary and secondary borrow pits are also located in Zone X (shaded) per the preliminary FIRM Panel 22029C0200D, dated January 21, 2010. The proposed culverts 1 and 2 along the access road are also located within Zone X (shaded). The proposed culverts 3-5, closest to the drainage structure site, are located within Zone A. Per the preliminary FIRM panel 22029C01185D, dated January 21, 2010, the project site for the proposed bridge along Luke Martin Rd. is located within an undesignated floodway and Zone A. Even though portions of the project area are not in the SFHA, they are still subjected to local flooding.

A review of the National Wetland Inventory (NWI) online mapper queried on August 10, 2021, for the proposed sites indicates that mapped wetlands are present in the project areas.

STEP NO. 2 Notify the public at the earliest possible time of the intent to carry out an action in a floodplain/wetland, and involve the affected and interested public in the decision-making process; (44 CFR §9.8)

☒ Notice was provided as part of a disaster cumulative notice:

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

Date: 11/7/2005 to 11/9/2005

☐ Project Specific Notice (e.g. EA, newspaper, public meeting, etc):

Type of Public Notice: _____

Date: _____

STEP NO. 3 Identify and evaluate practicable alternatives to locating the proposed action in a floodplain/wetland (including alternatives sites, actions and the "no action" option). (44 CFR §9.9)

Alternative Options

☐**YES** ☒**NO** Is there a practicable alternative site location outside of the floodplain/wetland?

If yes, provide the site location:

☐**YES** ☒**NO** Is there a practicable alternative action outside of the floodplain/wetland that will not affect the floodplain/wetland?

If yes, describe the alternative action:

☐**YES** ☒**NO** Is the NO Action alternative the most practicable alternative?

If a practicable alternative exists outside the floodplain/wetland, FEMA must locate the action at the alternative site.

REMARKS:

Alternative 1 (No Action): Implementation of the No Action Alternative would entail no hazard mitigation measures or enhanced flood reduction at the project sites. Consequently, this alternative would not provide any type of protection to residents of the area during peak flow events, future storms, or other emergency situations. Under this alternative, flooding would not be abated or improved and would likely continue to occur and both insured and uninsured losses would be expected. Homes and businesses previously flooded would continue to experience flood damage. The resulting potential for hazardous conditions would affect not only the residents of Concordia Parish, but also businesses and emergency responders who utilize the roadways and live in the area. This alternative would not further impact wetlands or other Waters of the U.S.

Alternative 2 (Proposed Alternative): The Proposed Alternative would be to improve the drainage in the upper, most populated sections of the Parish by diverting the water from Brushy Bayou into the Tensas River during and up to the 25-year storm event.

STEP NO. 4 Identify the potential direct and indirect impacts associated with the occupancy or modification of floodplains/wetlands and the potential direct and indirect support of floodplain/wetlands development that could result from the proposed action; (44 CFR §9.10)

☒**YES** ☐**NO** Is the proposed action in compliance with the NFIP (see 44 CFR Part 59 seq.)?

☐**N/A** Remarks:

☐**YES** ☒**NO** Does the proposed action increase the risk of flood loss?

☐**YES** ☒**NO** Will the proposed action result in an increased base discharge or increase the flood hazard potential to other properties or structures?

☒**YES** ☐**NO** Does the proposed action minimize the impact of floods on human health, safety and welfare?

☐**YES** ☒**NO** Will the proposed action induce future growth and development, which will potentially adversely affect the floodplain/wetland?

☒**YES** ☐**NO** Does the proposed action involve dredging and/or filling of a floodplain/wetlands?

☐**YES** ☒**NO** Will the proposed action result in the discharge of pollutants into the floodplain/wetlands?

☒**YES** ☐**NO** Does the proposed action avoid long and short-term adverse impacts associated with the occupancy and modification of floodplains/wetlands?

☐**N/A** Remarks:

☒**YES** ☐**NO** Will the proposed action result in any indirect impacts that will affect the natural values and functions of floodplains/wetlands?

☒**YES** ☐**NO** Will the proposed action forego an opportunity to restore the natural and beneficial values served by floodplains/wetlands?

☐**N/A** Remarks:

☐**YES** ☒**NO** Does the proposed action restore and/or preserve the natural and beneficial values served by floodplains/wetlands?

☐**N/A** Remarks:

☒**YES** ☐**NO** Will the proposed action result in an increase to the useful life of a structure or facility?

REMARKS:

Per the *Hydraulic and Hydrology Study of Proposed Drainage System Improvements for Concordia Parish, Louisiana* (H&H study report) prepared by Jordan, Kaiser, and Sessions, LLC and Neel-Schaffer, dated December 31, 2015, and the request for information response from the Subrecipient to the FEMA, dated May 3, 2021, the flood control structure is engineered and designed to convey the 25-year flood event. The proposed improvements of installing a gated box culvert at the end of Brushy Bayou would divert the Brushy Bayou discharge into the Tensas River rather than down Bayou Cocodrie. This would restore the drainage pathway that existed prior to the Tensas River levee being constructed in the 1950s. Additionally, installing the Luke Martin Rd. bridge would allow for the required flow that the existing undersized culverts could not provide. These improvements would drop the hydraulic grade-line by approximately two (2) ft. over the entire length of Bayou Cocodrie, keep water levels in Brushy Bayou at 43 ft., and remove approximately 26% of the floodwater currently being passed through the Cocodrie system upstream of where the Vidalia Canal ties into the system. Based on these results, the proposed project would alleviate flooding in the northern portions of Concordia Parish. A more detailed analysis of the impacts and mitigation efforts for this project are in Section 4.0 of the EA.

Permanent impacts would occur to wetlands under the Preferred Action Alternative; however, mitigation credits have been purchased to compensate for the unavoidable wetlands impacts. The Subrecipient purchased 28.4 bottomland hardwood mitigation credits from Triple S Farms, Inc., Sponsor of the Big Lake Mitigation Bank, for unavoidable impacts associated with work authorized under Permit MVK-2016-00633 that satisfy the permittee's obligation to the USACE to compensate for wetland impacts occurring as a result of permittee's activities involving the proposed project. Per the H&H study report, the proposed project is compliant with the NFIP, local floodplain ordinances, state stormwater management requirements, LaDOTD requirements, USACE, levee district, and other federal including 44 CFR 65.3, state, and local laws as applicable. The proposed project complies with GP-32 and NWP-14. The Subrecipient must comply with the Section 408 Terms and Conditions listed in the required Section

408 permit issued on April 2, 2021. The Subrecipient must comply with all the Special, General, and Regional Conditions listed in the required NWP-14 (MVK-2016-633) issued on December 14, 2021, which will expire on March 18, 2022. The Subrecipient must comply with all the Special and General Conditions listed in the required GP-32 (MVK-2016-633) issued on December 14, 2021, which will expire on September 25, 2024. Since the NWP-14 expires on March 18, 2022, the Subrecipient must resubmit a reverification request to the USACE so that the USACE may verify the proposed project under the newly reissued NWP-14. Once the permit is reissued, the Subrecipient must submit documentation of the reissued permit to FEMA EHP

The Subrecipient must use proper BMPs throughout the construction sequence to ensure that no secondary adverse impacts to adjacent resources occur. BMPs would be maintained until final stabilization is achieved, pre and post construction. The Subrecipient is required to coordinate with the local floodplain administrator, obtain required permits prior to initiating work, and comply with any conditions of the permit to ensure harm to and from the floodplain is minimized. The Subrecipient would be required to implement construction stormwater best management practices (BMPs) such as installing silt fences/straw bales to prevent erosion and sedimentation to surrounding, nearby or adjacent wetlands. This includes equipment storage and staging of construction to ensure that wetlands are not adversely impacted per the CWA and E.O. 11990.

STEP NO. 5 Minimize the potential adverse impacts and support to or within floodplains/wetlands to be identified under Step 4, restore and preserve the natural and beneficial values served by floodplains/wetlands; (44 CFR §9.11)

☒**YES** ☐**NO** Were flood hazard reduction techniques applied to the proposed action to minimize the flood impacts if site location is in the 100- or 500-Year floodplain/wetlands?

☐**N/A** Remarks:

☒**YES** ☐**NO** Were avoidance and minimization measures applied to the proposed action to minimize the short and long term impacts on the 100-Year floodplain/wetlands?

If no, identify measures required as a condition of the grant:

☐**N/A** Remarks:

☐**YES** ☒**NO** Were measures implemented to restore and preserve the natural and beneficial values of the floodplain/wetlands.

If no, identify measures required as a condition of the grant:

☐**N/A** Remarks:

☒**YES** ☐**NO** Is new construction or substantial improvement in a floodway, and new construction in a coastal high hazard area proposed?

If YES: Is the activity considered as functionally dependent use or a structure or facility which facilitates an open space use?

☒**YES** ☐**NO**

The Preferred Action Alternative would reduce the WSE within the Cocodrie system by approximately two (2) ft. and decrease WSE within the Vidalia Canal by approximately six (6) to 18 in. in comparison to current conditions. Appropriate sediment and ECDs would be utilized to protect all wetlands and WOTUS during the construction phase of the project from sediment or siltation issues. After construction activities are completed, the disturbed areas would be seeded to reduce erosion and minimize run-off. The Subrecipient would be required to implement construction stormwater BMPs such as installing silt fences/straw bales to prevent erosion and sedimentation to surrounding, nearby or adjacent wetlands. This includes equipment storage and staging of construction to ensure

that wetlands are not adversely impacted per the CWA and E.O. 11990. All fill would consist of clean uncontaminated fill material and shall be stored and stockpiled within upland locations.

STEP NO. 6 **Reevaluate the proposed action to determine first, if it is still practicable in light of its exposure to flood hazards, the extent to which it will aggravate the hazards to others, and its potential to disrupt floodplain/wetlands values and second, if alternatives preliminarily rejected at Step 3 are practicable in light of the information gained in Steps 4 and 5. (44 CFR §9.9)**

☒**YES** ☐**NO** The action is still practicable at a floodplain/wetland site in light of the exposure to flood risk and ensuing disruption of natural values;

☒**YES** ☐**NO** The floodplain/wetlands site is the only practicable alternative.

☒**YES** ☐**NO** There is no potential for limiting the action to increase the practicability of previously rejected non-floodplain/wetlands sites and alternative actions.

☒**YES** ☐**NO** Minimization of harm to or within the floodplain/wetlands can be achieved using all practicable means.

☒**YES** ☐**NO** The action in a floodplain/wetland clearly outweighs the requirement of E.O. 11988/11990.

FEMA shall not act in a floodplain/wetland unless it is the only practicable location.

The Preferred Action Alternative is the only practicable alternative based upon a review of possible adverse effects on the floodplain/wetland areas and community and socioeconomic expectations. Further, these actions are functionally dependent as these are culvert/bridge modifications/installations to affected streams. The actions proposed are located in the only practicable location. There are no other practicable alternate locations outside the floodplain available.

STEP NO. 7 **Prepare and provide the public with a finding and public explanation of any final decision that the floodplain/wetland is the only practicable alternative; and (44 CFR §9.12)**

☐ Check if the Initial Public Notice serves as the Final Public Notice or a Cumulative Public Notice was published. No condition required.

☐ Check if the condition was added to the REC indicating that “For actions located in the floodplain and/or wetlands, the applicant must issue a final public notice per 44 CFR Part 9.12(e) at least 15 days prior to the start of work. The final notice shall include the following: (1) A statement of why the proposed action must be located in an area affecting or affected by a floodplain or a wetland; (2) A description of all significant facts considered in making this determination; (3) A list of the alternatives considered; (4) A statement indicating whether the action conforms to applicable state and local floodplain protection standards; (5) A statement indicating how the action affects or is affected by the floodplain and/or wetland, and how mitigation is to be achieved; (6) Identification of the

responsible official or organization for implementation and monitoring of the proposed action, and from whom further information can be obtained; and (7) A map of the area or a statement that such map is available for public inspection, including the location at which such map may be inspected and a telephone number to call for information."

☒ Project Specific Notice (e.g. EA, newspaper, public meeting, etc):

Type of Public Notice:	The Advocate, Shreveport Times and Concordia Sentinel
Date:	The Advocate for one (1) day, Tuesday, September 6, 2022, and the Shreveport Times, Tuesday, September 6, 2022, through Friday, September 9, 2022, and Sunday, September 11, 2022.

EA Notice of Availability will serve as the Final Public Notice.

STEP NO. 8 **Review the implementation and post - implementation phases of the proposed action to ensure that the requirements stated in Section 9.11 are fully implemented. Oversight responsibility shall be integrated into existing processes. (44 CFR §9.11)**

☒**YES** ☐**NO** Was Grant conditioned on review of implementation and post-implementation phases to insure compliance of EO 11988?

Failure to comply with conditions enumerated in the Record of Environmental Consideration may jeopardize federal funding.

U.S. Department of Homeland Security
Federal Emergency Management Agency
Region VI
Louisiana Integration and Recovery Office
1500 Main Street
Baton Rouge, Louisiana 70802

DRAFT FINDING OF NO SIGNIFICANT IMPACT FOR THE NORTHERN CONCORDIA PARISH FLOOD REDUCTION VIA BRUSHY BAYOU DRAINAGE BASIN IMPROVEMENTS LOCATED IN CONCORDIA PARISH, LOUISIANA HAZARD MITIGATION GRANT PROGRAM *HMGP 1603-0427/DR-1603-LA*

BACKGROUND

The Concordia Parish Police Jury, the Subrecipient, through the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) (Recipient), has requested federal funding through the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Grant Program (HMGP) to improve the drainage in the upper reaches of the Parish during and after major storm events.

The intersection of Brushy Bayou and the Tensas River was the natural drain point before the installation of the levee along the Tensas River. This is where the flow went originally prior to the construction of the Red River levee system in the 1950s. In order to reduce flooding in the upper reaches of the Parish, the Subrecipient proposes to divert the entire flow being handled by Brushy Bayou into the Tensas River, returning to the natural flow that existed prior to construction of the levee system. The proposed project is essential to the mitigation of the ongoing flooding of residences, businesses, schools, and public buildings served by the Bayou Cocodrie drainage system.

The specific need of this project is to effectively alleviate flooding of homes and local roads experienced during and after major storm events due to the backing up of stormwater in the tributaries. The alternatives considered include: 1) No Action Alternative, and 2) the Preferred Action Alternative, Divert Water from Brushy Bayou to the Tensas River at Frogmore and Improve Brushy Bayou Hydraulics under Luke Martin Road to Reduce Water Surface Elevations During and Up to the 25-Year Storm Event (Preferred Action Alternative).

The Preferred Action Alternative would implement drainage improvements to the existing drainage system to reduce water surface height during storm events. Components of this project involve installing a gated box culvert through the Tensas River levee at Brushy Bayou including flood gates and a weir structure, improvements to an access road, and replacing existing culverts with a bridge and realignment of the roadway at the intersection of Luke Martin Road and Brushy Bayou. The proposed project would divert the Brushy Bayou discharge into the Tensas River

rather than down Bayou Cocodrie. In addition, installing a bridge at Luke Martin Road would allow for more efficient flow that the existing undersized culverts could provide. A complete description of these alternatives is included in the EA, which is incorporated by reference in this document.

An Environmental Assessment (EA) was prepared in accordance with FEMA Instruction 108-1-1 and the Department of Homeland Security (DHS) Instruction 023-01-001-01, Rev. 1, pursuant to Section 102 of the National Environmental Policy Act of 1969 (NEPA), as implemented by the regulations promulgated by the President's Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR], Parts 1500-1508). The purpose of the EA was to analyze the potential environmental impacts associated with the proposed work and alternatives, and to determine whether to prepare an Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI).

FINDINGS

FEMA has evaluated the proposed project for significant adverse impacts to physical resources (geology and soils, air quality), water resources (coastal resources, wetlands and waters of the U.S., hydrology and floodplains, surface water and water quality, groundwater, wild and scenic rivers), biological resources (Federally protected species and critical habitats, vegetation and wildlife), historic and cultural resources, socioeconomic resources (environmental justice, public health and safety, noise, traffic and transportation), and excavation and waste management issues (excavated material management, hazardous material management). The results of these evaluations as well as consultations and input from other federal and state agencies are presented in the EA.

CONDITIONS AND MITIGATION MEASURES

The following conditions must be met as part of the implementation of the project. Failure to comply with these conditions may jeopardize federal funds.

- The Subrecipient is required to obtain and comply with all local, state, and federal permits, approvals, and requirements prior to initiating work on this project.
- If fill is stored on site, the contractor would be required to appropriately cover it.
- Vehicle operation times would be kept to a minimum. Area soils must be covered and/or wetted during construction to avoid generating airborne dust (i.e., particulate air emissions).
- To reduce potential short-term effects to air quality from construction-related activities, the contractor would be responsible for using best management practices (BMP) to reduce fugitive dust generation and diesel emissions. Emissions from the burning of fuel by internal combustion engines would temporarily increase the levels of some of the criteria pollutants, including carbon dioxide (CO_2), nitrogen dioxide (NO_2), Ozone (O_3), and particulate matter less than 10 microns in diameter (PM_{10}), and non-criteria pollutants such as Volatile Organic Compounds (VOCs). To reduce these emissions, running times for

fuel-burning equipment should be kept to a minimum and engines should be properly maintained.

- If any change to the scope of work is located in wetlands or other areas subject to the jurisdiction of the U. S. Army Corps of Engineers (USACE), the Subrecipient should contact the USACE directly regarding permitting issues. If a USACE permit is required, part of the application process may involve a water quality certification from the Louisiana Department of Environmental Quality (LDEQ).

- Off-site locations of activities such as borrow, disposals, haul-and detour-roads and work mobilization site developments may be subject to the Department of the Army (DA) regulatory requirements and may have an impact to a DA project.

- Proper signage is required to clearly identify the adjacent wetland boundaries to avoid potentially adverse impacts from construction vehicles/equipment/supplies that accidentally leave the boundaries of the approved rights-of-way (ROW).

- Any adverse impacts to adjacent wetlands resulting from the construction of this project would jeopardize receipt of federal funding. This includes equipment storage and staging of construction to ensure that wetlands are not adversely impacted per the Clean Water Act (CWA) and Executive Order (E.O.) 11990.

- All fill would consist of clean uncontaminated fill material and shall be stored and stockpiled within upland locations.

- Any changes or modifications to the proposed project would require a revised wetland jurisdictional determination.

- The Subrecipient shall properly install adequate erosion/siltation control measures around construction areas that require land-based earthwork (i.e. excavation and/or deposition of fill materials, land contouring, machinery rutting, fill maneuvering and redistribution, etc.) to aid in preventing project related sediment, debris, and other pollutants from entering adjacent wetlands or waters. Acceptable measures include but are not limited to the proper use and positioning of temporary silt fences, straw bales, fiber/core logs, wooden barriers, seeding or sodding of exposed soils, or other approved U. S. Environmental Protection Agency (USEPA) construction site stormwater runoff control and best management practices. Control techniques shall be installed prior to the commencement of earthwork activities and maintained until the project is complete and/or the subject areas are stabilized. Ensure that the Subrecipient provides adequate and appropriate mitigation for impacts to wetland functions.

- The Subrecipient must use proper BMPs throughout the construction sequence to ensure that no secondary adverse impacts to adjacent resources occur. BMPs would be maintained until final stabilization is achieved, pre and post construction.

- It is the intent to perform the work within the dry season and during periods of low flow, to the extent practical. This schedule would reduce the likelihood of sediment transport within the adjacent resources.

- The Subrecipient must comply with the Section 408 Terms and Conditions listed in the required Section 408 permit issued on April 2, 2021. Per the Section 408 permission letter from the USACE, the structure and associated features are subject to compliance with the following terms and conditions as well as the Limits of Authorization, Indemnification and Hold Harmless, Reevaluation of Permission, and Conduct of Work Under this Permission included in the letter. These authorizations were based upon a preliminary determination that there appear to be jurisdictional areas on the property subject to regulation pursuant to Section 10 of the Rivers and Harbors Act of 1899 (RHA) and/or Section 404 of the CWA.

- The Subrecipient has also agreed to bear all operation and maintenance obligations in accordance with the Cooperative Endeavor Agreement between the Concordia Parish Police Jury and the Fifth Louisiana Levee District signed on June 20, 2017. The Subrecipient must follow all federal, state, and local regulations required for the performance of the proposed activity. The work must be carefully coordinated with Fifth Louisiana Levee District and the Corps of Engineers Vicksburg District.

- During construction of the project, the Subrecipient may be required to implement Interim Risk Reduction Measures (IRRMs) to prevent backwater flooding form the river to the land side of the levee prior to the Tensas River reaching 55 ft. on Clayton, LA gage. IRRMs could include temporary flood fighting measures such as backfilling the work area or placement of barriers to prevent backwater flooding.

- Please be advised that funding may be required for the USACE Vicksburg District via a funding agreement with the Concordia Parish Police Jury to conduct Corps Construction Oversight activities during construction and to conduct a post construction on-site inspection of the completed alteration to document final condition of the project. This requirement would be separate from the Concordia Parish Police Jury's responsibility to administer and ensure the contract work meets USACE policies. The Subrecipient must coordinate with Robin Blake at 318-336-5226 of the Vicksburg District's Vidalia Area Office prior to commencement and through completion of any work. Once permission is granted, the Subrecipient must notify the Vicksburg District at least 30 days before work is started so that post-permission oversight can be performed by USACE. The Subrecipient must schedule a final inspection with the Vicksburg District within 30 days after completion of the work. The Subrecipient must submit a copy of "as-built" drawings within 180 days of completion of work showing the new work as it relates to identifiable features of the federal project.

- The Subrecipient must comply with all the Special, General, and Regional Conditions listed in the required Nationwide Permit 14 (NWP-14) (MVK-2016-633) issued on December 14, 2021, which will expire on March 18, 2022. The Subrecipient must comply with all the Special and General Conditions listed in the required General Permit 32 (GP-32) (MVK-2016-633) issued on December 14, 2021, which will expire on September 25,

2024. The Subrecipient must provide a signed certification of compliance stating that the authorized work was completed in accordance with the terms and conditions of the said permits including any required mitigation. These authorizations of the DA regulatory requirements do not convey any property rights, either in real estate or material or any exclusive privileges and do not authorize any injury to property or invasion of rights or local laws or regulations or obviate the requirement to obtain State or local assent required by law for the activity discussed herein.

- If there are any changes for the proposed work, or if the proposed work does not comply with the conditions of the NWP and GP, please contact Mr. Spencer Dixon at 601-631-7690 or John.S.Dixon@usace.army.mil and refer to the Identification No. MVK-2016-633.

- The Subrecipient must comply with the State of Louisiana NWP Regional Conditions (February 2017), Regional Condition 6, where dredged and/or fill material placed within wetlands and other waters must be free of contaminants, to the best of the Subrecipient's knowledge.

- The Subrecipient is required to coordinate with the local floodplain administrator, obtain required permits prior to initiating work, and comply with any conditions of the permit to ensure harm to and from the floodplain is minimized.

- Per 44 CFR 9.11(d), mitigation or minimization standards must be applied, where possible.

- Per 44 CFR 9.11(d)(4), there shall be no encroachments, including fill, new construction, substantial improvements of structures or facilities, or other development within a designated regulatory floodway that would result in any increase in flood levels within the community during the occurrence of the base flood discharge. Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within the base floodplain unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation (WSE) of the base flood more than one (1) ft. at any point within the community.

- Per 44 CFR 9.11(d)(6), no project should be built to a floodplain management standard that is less protective than what the community has adopted in local ordinances through their participation in the National Flood Insurance Program (NFIP).

- Should the site plans (including drainage design) change, the Subrecipient must submit changes to the Federal Emergency Management Agency (FEMA) Environmental and Historic Preservation (EHP) for review and approval prior to the start of construction.

- New construction must be compliant with current codes and standards.

- If the project results in a discharge to waters of the State, submittal of a Louisiana Pollutant Discharge Elimination System (LPDES) application may be necessary.

- All precautions should be observed to control nonpoint source pollution from construction activities. LDEQ has stormwater general permits for construction areas greater than or

equal to one (1) acre. The Subrecipient must contact the LDEQ Water Permits Division at 225-219-9371 to determine if the proposed project requires a permit.

- If the project results in a discharge of wastewater to an existing wastewater treatment system, that wastewater treatment system may need to modify its LPDES permit before accepting additional wastewater.

- If the project will include a sanitary wastewater treatment facility, a Sewage Sludge and Biosolids Use or Disposal Permit is required. An application of Notice of Intent will be required if the sludge management practice includes preparing biosolids for land application or preparing sewage sludge to be hauled to a landfill. Additional information: (http://www.deq.louisiana.gov/portal/tabid/2296/Default.aspx) or by contacting the LDEQ Water Permits Division at 225-219-9371.

- Water softeners generate wastewaters that may require special limitations depending on local water quality considerations. If water system improvements include water softeners, contact LDEQ Water Permits to determine if special water quality-based limitations will be necessary.

- If any solid or hazardous wastes, or soils and/or groundwater contaminated with hazardous constituents are encountered during the project, notification to LDEQ's Single-Point-of-Contact (SPOC) at 225-219-3640 is required. Additionally, precautions should be taken to protect workers from these hazardous constituents.

- All precautions should be observed to protect the groundwater of the region. BMPs should be implemented to ensure groundwater is protected.

- To ensure continued Endangered Species Act (ESA) compliance, the Subrecipient must stop work and contact the FEMA EHP if 1) the scope or location of the proposed project is changed significantly, 2) new information reveals that the action may affect listed species or designated critical habitat, 3) the action is modified in a manner that causes effects to listed species or designated critical habitat, or 4) a new species is listed, or critical habitat designated. Additional consultation as a result of any of the above conditions or if the scope or location of the proposed project is changed, coordination should occur as soon as changes are made, and the FEMA should be notified for further coordination with the U.S. Fish and Wildlife Service (USFWS). Any changes to the SOW must be reported to FEMA, as well as the results of any bat surveys conducted in the project area, and any dead, injured, or sick northern long-eared bats that are found during project implementation. If the project is not completed within one year of the date of the USFWS Information for Planning and Consultation (IPaC) verification letter (June 30, 2021), the Subrecipient must alert FEMA for additional coordination with the USFWS.

- Monitors during alligator snapping turtle (AST) nesting period of April 30th – July 31st: occurs at muddy and/or sandy-silt banks near water's edge and consists of woody debris, undercut banks, aquatic structures (e.g., tree root masses, stumps, submerged trees, etc.) and a riparian canopy. Incubation period for AST nests is approximately 98 to 130 days.

- No removal of vegetation, deadheads/snags, or woody debris from either banks or undercut banks due to species select areas with more aquatic structures to support important feeding areas for AST hatchlings & juveniles (i.e., tree root masses, stumps, submerged trees, etc.). Deadhead logs and fallen riparian woody debris, where present, provide refugia during low-water periods and resting areas for all life stages.

- Because of AST proclivity for bottom-dwelling - no waterway obstructions (i.e., no channelization which may reduce water-flows). However, a buffer might be considered per USFWS recommendations/suggestions.

- The proposed project is within the range of the Louisiana black bear. The Subrecipient must review Louisiana Black Bear Post-Delisting Monitoring Report available at https://www.fws.gov/southeast/pdf/report/louisiana-black-bear-2nd-annual-post-delisting-monitoring-report.pdf.

- Projects proposed in areas of the state that are inhabited by Black Bears should be designed to avoid adversely affecting this subspecies or its habitat.

- If construction is to be performed during the denning season, further consultation with the Louisiana Department of Wildlife and Fisheries (LDWF) is necessary. Contact the LDWF Large Carnivore Program Manager, Maria Davidson, at 337-262-2080 for any questions.

- The Subrecipient is required to protect existing individual trees through project design and implementation. If tree removal is unavoidable, the Subrecipient is required to plant two new trees for every one removed.

- Conservation measures for the LA black bear include 1) reducing the footprint of proposed actions to the maximum extent feasible, 2) avoiding impacts to potential den trees that are 36 in. or more in dia. at breast height implementing programs to prevent the habituation of bears to human-associated food sources (e.g., use of "bear-proof" waste disposal containers or daily removal of food and garbage), and 3) avoiding vegetative clearing during the black bear denning season (i.e., December 1 through April 30).

- If at any time LDWF's Wildlife Diversity Program (WDP) tracked species are encountered within the project area, contact the WDP Data Manager at 225-763-3554.

- The Subrecipient must review the National Bald Eagle Management (NBEM) Guidelines is available at: http://www.fws.gov/migratorybirds/pdf/management/nationalbaldeaglenanagementguidelines.pdf to minimize potential project impacts to bald eagles, particularly where such impacts may constitute "disturbance," which is prohibited by the Bald and Golden Eagle Protection Act (BGEPA).

- Onsite personnel should be informed of the possible presence of nesting bald eagles within the project boundary, and should identify, avoid, and immediately report any such nests to the USFWS.

- The Subrecipient must review the guidance for minimizing impacts to migratory birds for projects including communications towers (e.g. cellular, digital television, radio and

emergency broadcast) which can be found at: https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php and http://www.towerkill.com.

- If the Federal Action may impact bald or golden eagles, additional coordination with the USFWS under BGEPA may be required. Contact Ulgonda Kirkpatrick at 321-972-9089 or ulgonda.kirkpatrick@fws.gov for any questions regarding potential impacts to bald or golden eagles.

- If a bald eagle nest occurs or is discovered within or adjacent to the proposed project area, then USFWS requires an evaluation to be performed to determine whether the project is likely to disturb nesting bald eagles. The Subrecipient is required to conduct the evaluation on-line at: http://www.fws.gov/southeast/es/baldeagle. Following completion of the evaluation, that website will provide a determination of whether additional consultation is necessary. If assistance is needed in interpreting or performing an online project evaluation, contact the Division of Migratory Birds for the Southeast Region of the USFWS at 404-679-7051 or SEmigratorybirds@fws.gov.

- Extreme care must be taken during the construction process through the appropriate use and maintenance of BMPs.

- If human bone or unmarked grave(s) are present within the project area, compliance with the Louisiana Unmarked Human Burial Sites Preservation Act (Revised Statue [RS] 8:671, et seq.) is required. The Subrecipient shall notify the law enforcement agency of the jurisdiction where the remains are located within 24 hours of the discovery. The Subrecipient shall also notify FEMA and the Louisiana Division of Archaeology (LDOA) at 225-342-8170 within 72 hours of the discovery (Louisiana Unmarked Human Burial Sites Preservation Act).

- If during the course of work, archaeological artifacts (prehistoric or historic) are discovered, the Subrecipient shall stop work in the vicinity of the discovery and take all reasonable measures to avoid or minimize harm to the finds. The Subrecipient shall inform their Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) State Applicant Liaison and Hazard Mitigation Assistance contacts at FEMA, who will in turn contact FEMA Historical Preservation (HP) staff. The Subrecipient will not proceed with work until FEMA HP completes consultation with the State Historic Preservation Office (SHPO), and others as appropriate (Inadvertent Discovery Clause).

- All borrow or fill material must come from pre-existing stockpiles, material reclaimed from maintained roadside ditches (provided the designed width or depth of the ditch is not increased), or commercially procured material from a source existing prior to the event. For any FEMA-funded project requiring the use of a non-commercial source or a commercial source that was not permitted to operate prior to the event (e.g. a new pit, agricultural fields, road ROWs, etc.) in whole or in part, regardless of cost, the Subrecipient must notify FEMA and the Recipient prior to extracting material. FEMA must review the source for compliance with all applicable federal environmental planning and historic preservation laws and executive orders prior to a subrecipient or their contractor

commencing borrow extraction. Consultation and regulatory permitting may be required. Non-compliance with this requirement may jeopardize receipt of federal funding. Documentation of borrow sources utilized is required at closeout.

- During construction, the contractor would be expected to take all reasonable precautions to control site access. Impacts to public safety and security would be minimized with mitigation measures, including following Occupational Safety and Health Act/Administration (OSHA) regulations.

- The contractor must place fencing around the work area perimeters to prevent access and protect nearby residents from vehicular traffic.

- To minimize worker and public health and safety risks from project construction and closure, all construction and closure work must be done using qualified personnel trained in the proper use of construction equipment, including all appropriate safety precautions. Additionally, all activities must be conducted in a safe manner in accordance with the standards specified in OSHA regulations and the USACE safety manual.

- The contractor must post appropriate signage and fencing to minimize potential adverse public safety concerns.

- Project construction activities would be limited to normal working hours, which would not include evening and nighttime hours, and would not be expected to adversely affect residents.

- Mitigation and abatement measures would be required to reduce the noise levels to a range that would be considered acceptable.

- The Subrecipient must comply with any applicable local noise ordinances.

- Appropriate signage and barriers should be in place prior to construction activities in order to alert pedestrians and motorists of project activities and traffic pattern changes (e.g., detours or lanes dedicated for construction equipment egress).

- The contractor should implement traffic control measures, as necessary.

- Unusable equipment, debris and material shall be disposed of in an approved manner and location. In the event significant items (or evidence thereof) are discovered during implementation of the project, the Subrecipient shall handle, manage, and dispose of petroleum products, hazardous materials and toxic waste in accordance to the requirements and to the satisfaction of the governing local, state and federal agencies.

- All debris would be disposed of at a permitted landfill.

- The construction contractor shall comply with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substance release reporting requirements, if an applicable release should occur.

- If an oil discharge to water occurs, the construction contractor must notify the National Response Center (NRC) at 800-424-8802.

- Any renovation or remodeling must comply with Louisiana Administrative Code (LAC) 33:III.Chapter 28, Lead-Based Paint Activities; LAC 33:III.Chapter 27, Asbestos-Containing Materials in Schools and State Buildings (includes all training and accreditation); and LAC 33:III.5151, Emission Standard for Asbestos for any renovations or demolitions.

- If hazardous materials are unexpectedly encountered in the project area during the proposed construction operations, appropriate measures for the proper assessment, remediation, management and disposal of the contamination would be initiated in accordance with applicable federal, state, and local regulations. The contractor would be required to take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction area.

- The Louisiana Department of Natural Resources (LDNR) Office of Conservation should be contacted at 225-342-5540 if any unregistered wells of any type are encountered during construction work.

- Louisiana One Call should be contacted at 800-272-3020 at least 48 hours prior to commencing any subsurface operations.

- If any changes to bridges or guardrails involves any treated wood elements, the treated timber must be reused, recycled, or properly disposed of at permitted facilities. If the project will involve the removal or disturbance of any soils which may have contaminant concentrations that exceed the Screening Option Standards established by the LDEQ Risk Evaluation/Corrective Action Program (RECAP) Regulation, these materials may be considered a waste and disposed of at a permitted facility or might be managed as part of a Solid Waste Beneficial Use or Soil Reuse Plan in accordance with LAC 33:VII.Chapter 11. Alternately, a site-specific RECAP Evaluation might be conducted and submitted to the LDEQ.

- The Subrecipient must take any necessary steps to obtain and/or update all necessary approvals and environmental permits regarding this proposed project.

- All coordination pertaining to these activities and Subrecipient compliance with any conditions should be documented and copies forwarded to correspondence to the GOHSEP and the FEMA as part of the permanent project files.

CONCLUSIONS

Based upon the incorporated EA, and in accordance with Presidential Executive Orders 12898 (Environmental Justice), 11988 (Floodplain Management), and 11990 (Wetland Protection), FEMA has determined that the implementation of the proposed action with the conditions and mitigation measures outlined above and in the EA would not result in significant adverse effects on the quality of the natural and human environment. In addition, the proposed project does not appear to have the potential for significant cumulative effects when combined with past, present,

and reasonably foreseeable future actions. As a result of this FONSI, an Environmental Impact Statement (EIS) will not be prepared (FEMA Instruction 108-1-1) and the Preferred Action Alternative as described in the EA may proceed.

APPROVALS

Jerame J. Cramer Date
FEMA Region VI
EHP Program Lead
Louisiana Integration & Recovery Office

Brianne Schmidtke Date
FEMA Region VI
HMA Branch Chief-Mitigation