

Dam/Levee Safety Program



Public Works and Water Resources

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Dam Safety Program

Program was created by Act 733 of the 1981 Regular Legislative Session (R.S. 38:21-28)

Chapter 21 (Intent):

- It is the responsibility of the state to provide a means for the inspection, regulation, and supervision of all present or future dams within the state and the operation and maintenance of those as specified in this Chapter, both federal and nonfederal but excluding the Toledo Bend Dam, in order to prevent and correct potential hazards to downstream life and property in the event of failure of any dam.

Dam Safety Program

Chapter 22 (Definitions)

For the purposes of this Chapter, a dam is any artificial barrier which impounds or diverts water or any other liquid substance

- 25 feet or more in height, and has a capacity greater than 15 acre-ft. at maximum storage

OR

- 6 feet or more in height, and has a capacity of 50 acre-ft. or more at maximum storage

Dam Safety Program

Chapter 23 (Permit or consent required)

Chapter 24 (Rules and Regulations)

Chapter 25 (Exemptions for other programs)

Chapter 26 (Violations; orders of the Chief; remedial measures; emergency situations; designated operation and maintenance)

Chapter 27 (Damage Claims)

Chapter 28 (Penalties)

- It is unlawful for any person to violate any provision of this Chapter relative to dams, or any provision of the orders, rules, regulations, or lawful requirements of the chief engineer; or to willfully obstruct, hinder, or prevent the chief engineer, or his authorized representative, from performing the duties imposed herein;
- misdemeanor and shall be fined not more than five hundred dollars or be imprisoned for not more than six months, or both

Dam/Impoundment Inventory

633 Regulated Dams

(September 30, 2019)

- 41 High Hazard
- 68 Significant Hazard
- 524 Low Hazard



Vernon Lake Dam – Vernon Parish

Dam Safety Minimum Standards

For:

- Design
- Construction
- Modification
- Maintenance & Operation



Ivan Lake Dam – Bossier Parish

Dam Safety Program

Operation & Maintenance

- Acoustic Surveys
- Underwater Inspections
- Operation of Gates
- Emergency Action Plans



Grand Bayou Reservoir – Red River Parish

DOTD-maintained State Dams

Most of the 20 DOTD-maintained State dams are over 50 years old, some in need of several repairs.

Good News;

Thanks to State Capital Outlay funds Bayou D'Arbonne Lake spillway has had multiple repairs done and added safety features. The new Auxiliary Spillway (Tainter Gates Project) has also been completed.

- 286 LF of Buttress leaks
- 826 LF Apron Joints
- Gate Repairs
- Warning Signs
- Security Fencing and Gates

Dam Inspection Procedural Sequence

- High Hazard Dams are Inspected Annually
- Significant Hazard Dams are Inspected Every 3 years
- Low Hazard Dams are Inspected Every 5 Years
- 150 to 175 Dams are Inspected Annually, including:
 1. Planning and Scheduling
 2. Pre-inspection Activities
 3. Field Inspection
 4. Post-Inspection Activities

Field Inspection

- Conduct a detailed visual field inspection of the Dam and the Reservoir
- Check spillway location using GPS
- Measure length of the embankment, spillway, etc.
- Identify dam safety deficiencies
- Collect additional information from the dam owner and others
- Collect information downstream of the dam for development of inundation maps & EAPs

Post-Inspection Activities and Report Preparation

- Prepare Inspection Report and document deficiencies
- Determine if immediate action is required
- Distribute the Report and deficiencies to the owner and other stakeholders
- Provide dam owners with informational/educational brochures and additional guidance as necessary
- Prepare breach analysis, Inundation map, EAP, and verify the Hazard Class
- Distribute the EAPs to owners and other stakeholders
- Follow-up with the owners on the required actions identified in the report and the deficiency letters

Consequences Of Dam Failure

- U.S. dam failures in the past 30 years
- over *135 fatalities* and more than *\$2.6 billion in property damage*
- The August 2013 Percy Quinn Lake Dam failure in Mississippi, and the March 2004 failure of the Big Bay Lake Dam near Hattiesburg, Mississippi are just two examples.
- The most recent is Oroville Dam.
- A total of 32 Dams Failed 6 High Hazard, 17 Significant Hazard

Consequences of Dam Failures Big Bay Lake Dam, MS.

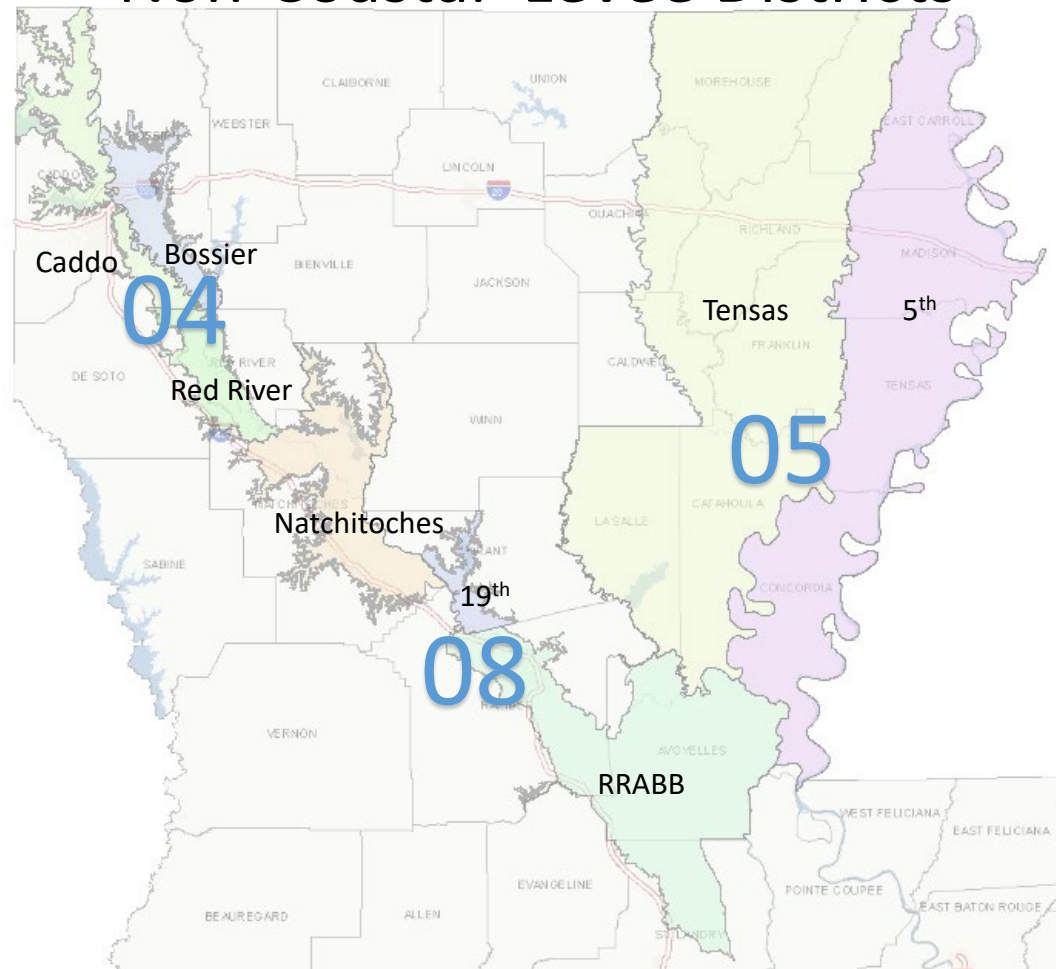


Big Bay Lake Dam

Louisiana DOTD Levee Safety Program



DOTD and Non-Coastal Levee Districts



Non-Coastal Levee Safety Program

Inspections

- Assist Levee Districts with the Quarterly Inspections
- Provide Semi-Annual Inspection Reports
- Provide Recommendations/Options for Corrective Actions
- Flood inspections / Monitoring

Inventory/Mapping

- Inventory Levee Assets
- Develop GIS Maps

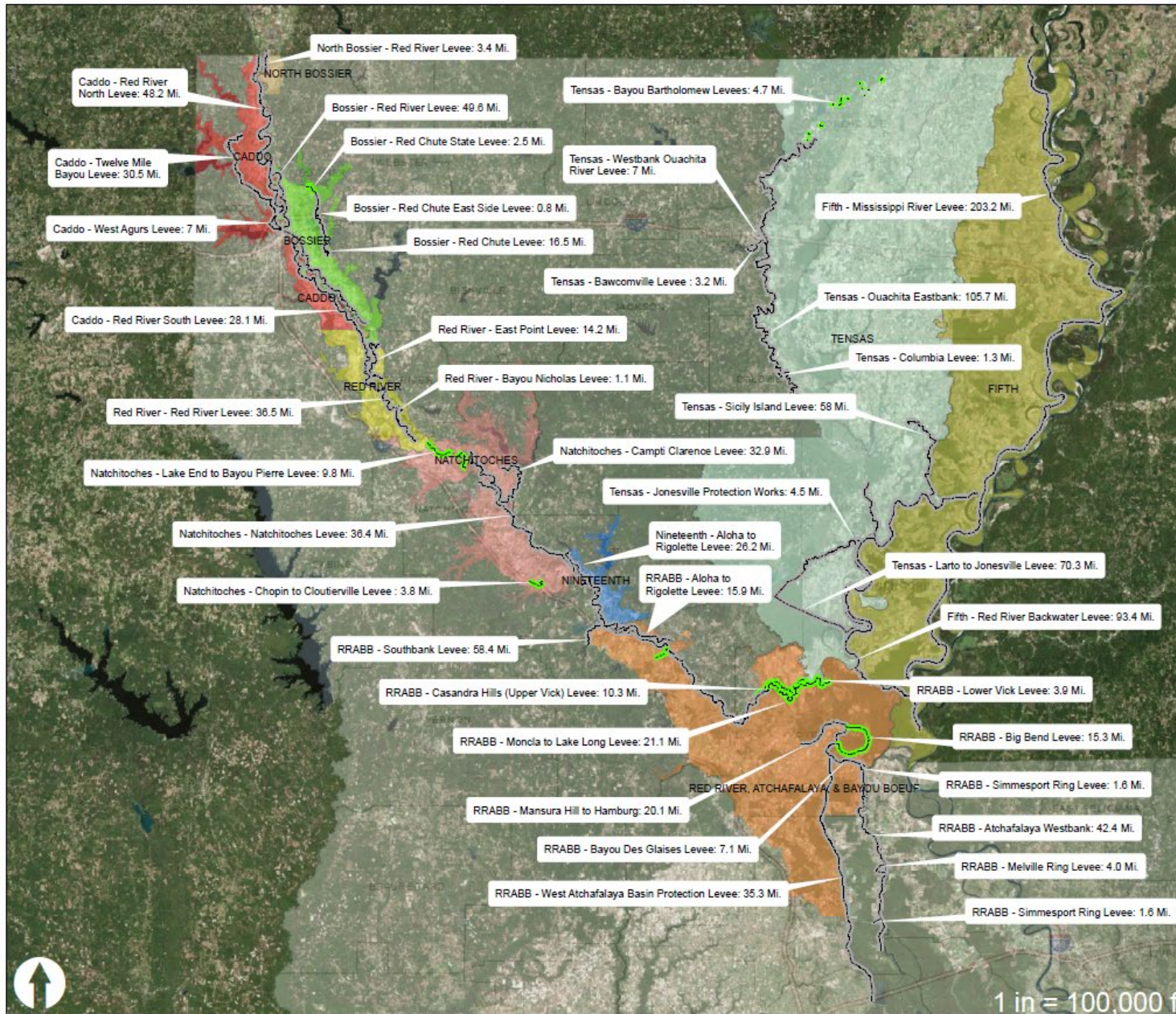
Non-Coastal Levee Safety Program

Permits

- Review permit applications
- Ensure compliance with engineering standards
- Provide Response to appropriate Levee District

Engineering Support

- Levee Design
- Surveying Support
- Drainage Design
- Cost Estimates



Levee Segments

Levee Segment	Length	Levee Type
BOSSIER		
Red Chute Levee	16.5	Federal
Red River Levee	49.6	Federal
Red Chute East Side Levee	0.8	Non-Federal
Red Chute State Levee	2.5	Non-Federal
Levee District Total (Miles)	69.4	
CADDO		
Black Bayou Pierre Island Levee	4.8	Federal
Red River South Levee	28.1	Federal
Red River South Levee	27.1	Federal
Twelve Mile Bayou Levee	30.5	Federal
West Agurs Levee	7.0	Federal
Levee District Total (Miles)	114.8	
FIFTH		
Mississippi River Levee	203.2	Federal
Red River Backwater Levee	93.4	Federal
Levee District Total (Miles)	296.6	
NATCHITOCHE		
Campi Clarence Levee	32.9	Federal
Natchitoches Levee	38.4	Federal
Chopin to Cloutierville Levee	3.8	Non-Federal
Lake End to Bayou Pierre Levee	9.8	Non-Federal
Levee District Total (Miles)	84.9	
NINETEENTH		
Aloha to Rigollette RRABB Levee	15.9	Federal
Levee District Total (Miles)	15.9	
North Bossier		
Red River Levee	3.4	Federal
Levee District Total (Miles)	3.4	
Red River		
Bayou Nicholas	1.0	Federal
East Point Levee	14.2	Federal
Red River Levee	36.5	Federal
Levee District Total (Miles)	51.7	
RRABB		
Aloha to Rigollette RRABB Levee	15.9	Federal
Atchafalaya Westbank	42.4	Federal
Bayou Des Glaises Levee	7.1	Federal
Big Bend Levee	15.3	Federal
Big Spring Ring Levee	1.7	Federal
Manassas Hill to Hamburg Levee	20.1	Federal
Melville Ring Levee	4.0	Federal
Plattville	1.4	Federal
Simmesport Ring Levee	1.8	Federal
Southbank Levee	58.4	Federal
West Atchafalaya Basin Protection Levee	35.3	Federal
Bayou Phillip	0.6	Non-Federal
Bayou Rapides North	0.9	Non-Federal
Bayou Rapides South	5.2	Non-Federal
Big Bend Levee	15.3	Non-Federal
Cassandra Hills (Upper Vick) Levee	10.3	Non-Federal
Lower Vick Levee	3.9	Non-Federal
Moncla to Lake Long Levee	21.1	Non-Federal
Levee District Total (Miles)	244.8	
Tensas		
Bawcomville Levee	3.2	Federal
Columbia Levee	1.3	Federal
Jonesville Protection Works	4.5	Federal
Larto to Jonesville Levee	70.3	Federal
Ouachita Eastbank	105.7	Federal
Sicity Island Levee	58.0	Federal
Westbank Ouachita River Levee	7.0	Federal
Bayou Bartholomew Levees	4.7	Non-Federal
Levee District Total (Miles)	244.1	
Total Levee Miles:	1,143.2	

1143.2 Miles, Quarterly

Legend

- Levee Type
- Federal
- Non-Federal



03/23/2016



The Inspection Process

(adding a Note / Observation)

- Form entry
 - Note name
 - Location (station and location on the levee)
 - Status
 - Code
 - Comments
 - Photo

Levee Inspection

Name *
0041100m, Unwanted Vegetation

Begin Station *
411+00

End Station *
Enter text

Location
 Flood Side
 Protected Side
 Both
 N/A

Feature
 Levee Slopes and Crown
 Levee Toe
 Levee Slope
 Levee Crown
 Berm
 Berm Toe

Inspection Status
 Monitor
 Resolved
 Typical Conditions
 Unresolved

Code *
222

Comments *
Enter text

Photos

View(1)
Required: 0
Allowed: unlimited



Report Format and Options

Line item report with photographs on all observations.

Red River East Bank Levee Inspection Report

Bossier Levee District

January 2012



Quarterly Inspection Report

<p>Inspected by: The Louisiana Department of Transportation and Development Public Works & Water Resources Section 64 1201 Capitol Access Road Baton Rouge, LA (225) 373-3006</p>	<p>The Red River, East Bank levee consists of approximately 49.6 miles of federal levee in Bossier and Red River Parishes, Louisiana on the east (left descending) bank of the Red River. This segment provides primary flood protection from the river to the City of Bossier City and surrounding areas and communities in Bossier Parish.</p> <p>At the time of this inspection, this segment was found to be generally in good condition. There were, however, several areas where encroaching utility lines, cattle damage, banks erosion, and general obstructions were noted. These areas are identified in the report and should be addressed by the Levee District in a timely manner.</p> <p>Special attention to the bank erosion adjacent to the Arthur Ray Teague Parkway should be given. The levee district should work with the U.S. Army Corps of Engineers to determine the best and most timely solution to this problem.</p>
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0022075m, Buried Utility Crossing	<u>Location</u>	<u>Begin Station</u>	<u>End Station</u>
Rating: Minimally Acceptable	Levee Slopes and Crown, Both Sides	220+75 <small>(30.9583, -91.9154)</small>	
Rated Item: Not Rated	Comments: Cover and slope appears adequate. There is no/inadequate signage posted.		
Recommended Actions: Have the utility owner install signage indicating the owner's name, address, phone number, and type of material transmitted in the crossing per DOTD Permit Compliance Requirements, section 3.8.			

0024100m, Fence Crossing Levee	<u>Location</u>	<u>Begin Station</u>	<u>End Station</u>
Rating: Minimally Acceptable	Levee Slopes and Crown, Both Sides	241+00 <small>(30.9528, -91.9148)</small>	
Rated Item: Encroachment	Comments: The fence is in fair/poor condition with missing sections and/or excessive small vegetative growth. The opening is at least 12' wide. The cattle guard is installed properly. There is minor erosion along the fence.		
Recommended Actions: Repair or remove fence if no longer needed. Remove vegetation by cutting or using approved herbicide. Re-grade area as needed. Install signage per DOTD Permit Compliance Requirements, section 6.5.			



Fig. 2: 0024100m, Fence Crossing Levee

0024200a, Overhead Utility Crossing	<u>Location</u>	<u>Begin Station</u>	<u>End Station</u>
Rating: Acceptable	Levee Slopes and Crown, Both Sides	242+00 <small>(30.9525, -91.9148)</small>	
Rated Item: Encroachment	Comments: Height appears adequate. Poles are located off of the levee section.		
Recommended Actions: No actions are necessary.			

Report Format and Options

Tabular report with
photographs
on selected
observations.

LE.0015600.01 - Possible Levee Setback				
Rating:	Unacceptable	<u>Location</u> Levee Slope and Crown, Both Sides	<u>Begin Station</u> 156+00	<u>End Station</u> 160+50
Rated Item:	Erosion - Bank Caving			
Comments:	Segment where existing levee has eroded and collapsed into the river.			
Recommended Actions:	Determine if top bank is adequate elevation for segment where no levee exists. If needed, construct levee offset to provide the required protection.			



Caption: Photo taken 09/11/2013 8:44 AM



Caption: Photo taken 09/11/2013 8:44 AM

LE.0016550.01 - Levee Ties Into High Bank				
Rating:	N/A	<u>Location</u> Levee Slope and Crown, Side Not Specified	<u>Begin Station</u> 165+50 (31.8578, -93.1037)	<u>End Station</u>
Rated Item:	No rated item specified			
Comments:	Levee ties into high bank.			
Recommended Actions:	None			

LE.0021075.01 - Restart of Levee				
Rating:	N/A	<u>Location</u> Levee Slope and Crown, Side Not Specified	<u>Begin Station</u> 210+75 (31.852, -93.0916)	<u>End Station</u>
Rated Item:	No rated item specified			
Comments:	Levee segment restarts at this location. It appears that the old levee eroded into river.			
Recommended Actions:	None			

LE.0021125.01 - Fence Parallels Levee				
Rating:	Minimally Acceptable	<u>Location</u> Levee Toe, Flood Side	<u>Begin Station</u> 211+25	<u>End Station</u> 219+00
Rated Item:	Encroachments			
Comments:	The fence paralleling the levee is located away from the levee section. There are several areas of vegetation and/or debris in the fence line.			
Recommended Actions:	Remove vegetation by cutting or using approved herbicide. Remove any debris. Ensure that levee maintenance/mowing activities are not obstructed.			

Report Format and Options

List report by observation type and location.

Unwanted Vegetation				
Beginning Station	Ending Station	Position	Rating	Observation
5+75	9+50	Flood Side	Minimally Acceptable	LE.000575.01 - Unwanted Vegetation
6+75		Protected Side	Minimally Acceptable	LE.000675.01 - Unwanted Vegetation
9+50		Protected Side	Minimally Acceptable	LE.000950.01 - Unwanted Vegetation
20+25	23+00	Protected Side	Minimally Acceptable	LE.002025.01 - Unwanted Vegetation
25+00		Protected Side	Minimally Acceptable	LE.002500.01 - Unwanted Vegetation
34+00	41+75	Flood Side	Minimally Acceptable	LE.003400.01 - Unwanted Vegetation
64+50		Protected Side	Minimally Acceptable	LE.006450.01 - Unwanted Vegetation
66+25		Protected Side	Minimally Acceptable	LE.006625.01 - Unwanted Vegetation
67+75	70+50	Flood Side	Minimally Acceptable	LE.006775.01 - Unwanted Vegetation

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All Observations			
Beginning Station	Ending Station	Rating	Observation
0+00		N/A	LE.000000.01 - Begin Inspection
283+50		Minimally Acceptable	LE.002835.01 - Fence Crossing Levee
288+00		Minimally Acceptable	LE.002880.01 - Partial Fence Crossing Levee
370+00		Minimally Acceptable	LE.003700.01 - Fence Crossing Levee
385+25		Acceptable	LE.0038525.01 - Fence Crossing Levee
420+50		Minimally Acceptable	LE.0042050.01 - Fence Crossing Levee
442+50		Minimally Acceptable	LE.0044250.01 - Cattle Guard
469+25		Minimally Acceptable	LE.0046925.01 - Cattle Guard
492+75		Minimally Acceptable	LE.0049275.01 - Cattle Guard
546+00		Unacceptable	LE.0054600.01 - Slide
684+00		Minimally Acceptable	LE.0068400.01 - Fence Crossing Levee
720+50		Minimally Acceptable	LE.0072050.01 - Cattle Guard
777+00		Minimally Acceptable	LE.0077700.01 - Cattle Guard
807+00		Minimally Acceptable	LE.0080700.01 - Fence Crossing Levee
851+75		Minimally Acceptable	LE.0085175.01 - Cattle Guard
883+50		Minimally Acceptable	LE.0088350.01 - Fence Crossing Levee
963+25		Minimally Acceptable	LE.0096325.01 - Fence Crossing Levee
1058+00		Minimally Acceptable	LE.0105800.01 - Fence Crossing Levee
1065+75		Minimally Acceptable	LE.0106575.01 - Overhead Utility Crossing
1070+00		Minimally Acceptable	LE.0107000.01 - Cattle Guard
1138+50		Minimally Acceptable	LE.0113850.01 - Fence Crossing Levee
1162+75	1200+00	Minimally Acceptable	LE.0116275.01 - Fence Parallels Levee
1202+75		Minimally Acceptable	LE.0120275.01 - Cattle Trails
1203+25		Minimally Acceptable	LE.0120325.01 - Fence Crossing Levee
1321+00		Minimally Acceptable	LE.0132100.01 - Fence Crossing Levee
1370+00		Minimally Acceptable	LE.0137000.01 - Overhead Utility Crossing
1380+00		Minimally Acceptable	LE.0138000.01 - Fence Crossing Levee
1534+00		Minimally Acceptable	LE.0153400.01 - Depression / Settlement
1537+75		Minimally Acceptable	LE.0153775.01 - Fence Crossing Levee
1604+00		Minimally Acceptable	LE.0160400.01 - Fence Crossing Levee
1634+75		Minimally Acceptable	LE.0163475.01 - Cattle Guard
1649+75		Minimally Acceptable	LE.0164975.01 - Cattle Guard
1670+25		Minimally Acceptable	LE.0167025.01 - Cattle Guard
1714+50		Minimally Acceptable	LE.0171450.01 - Fence Crossing Levee
1732+50		Minimally Acceptable	LE.0173250.01 - Fence Crossing Levee
1753+75		Minimally Acceptable	LE.0175375.01 - Fence Crossing Levee
1761+00		Minimally Acceptable	LE.0176100.01 - Utility Pole on Levee
1783+00		Minimally Acceptable	LE.0178300.01 - Fence Crossing Levee
1800+25		Minimally Acceptable	LE.0180025.01 - Fence Crossing Levee
1801+50		Minimally Acceptable	LE.0180150.01 - Fence Crossing Levee
1824+00		Minimally Acceptable	LE.0182400.01 - Gate Posts
1836+25		Minimally Acceptable	LE.0183625.01 - Fence Crossing Levee
1888+50		Minimally Acceptable	LE.0188850.01 - Fence Crossing Levee
1914+25		Minimally Acceptable	LE.0191425.01 - Fence Crossing Levee

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Encroachments				
Beginning Station	Ending Station	Position	Rating	Observation
3+00		N/A	Minimally Acceptable	LE.000300.01 - Overhead Utility Crossing
17+75	18+75	Protected Side	Minimally Acceptable	LE.001775.01 - Building Encroachments
18+25	20+00	N/A	Minimally Acceptable	LE.001825.01 - Encroachments
20+50		N/A	Unacceptable	LE.002050.01 - Buried Utility Crossing
20+75		Protected Side	Minimally Acceptable	LE.002075.01 - Building Encroachment
23+50	24+50	Protected Side	Minimally Acceptable	LE.002350.01 - Fence Parallels Levee
66+25		N/A	Minimally Acceptable	LE.006625.01 - Gate Only
68+25	70+00	Protected Side	Minimally Acceptable	LE.006825.01 - Fence Parallels Levee

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Report Format and Options

GIS map sheets showing

- observations
- color coded by rating

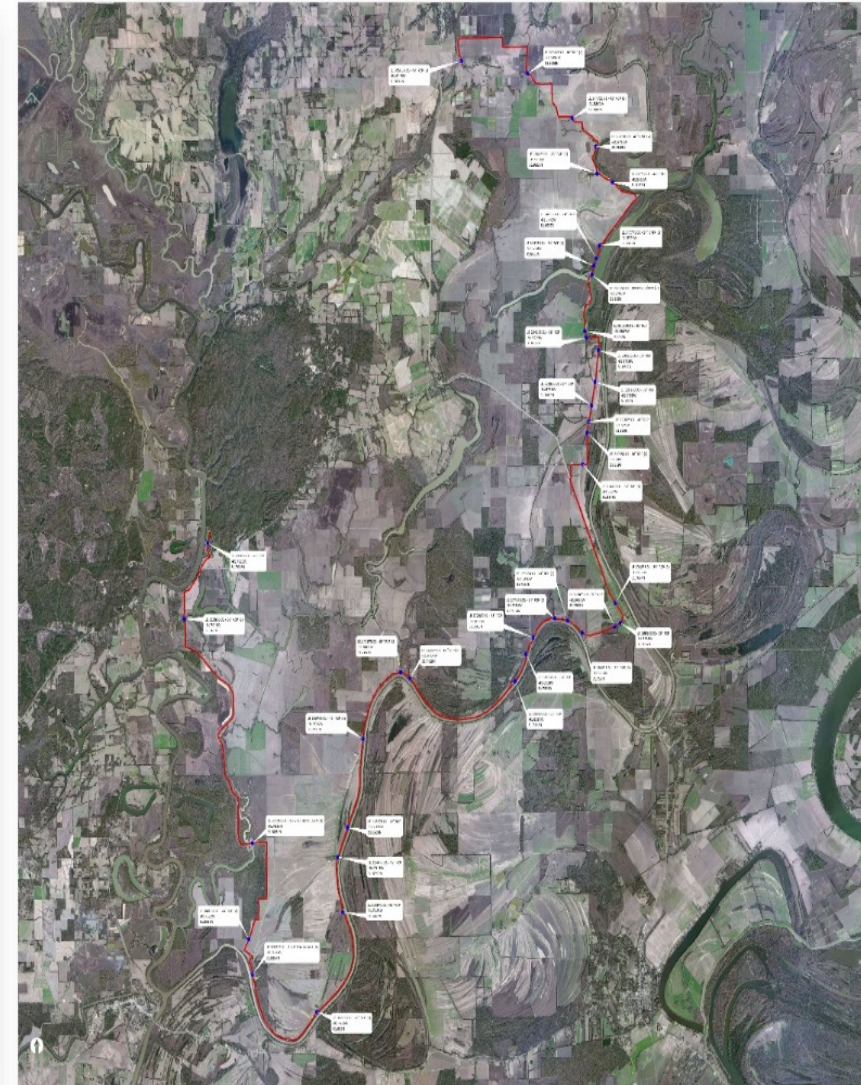
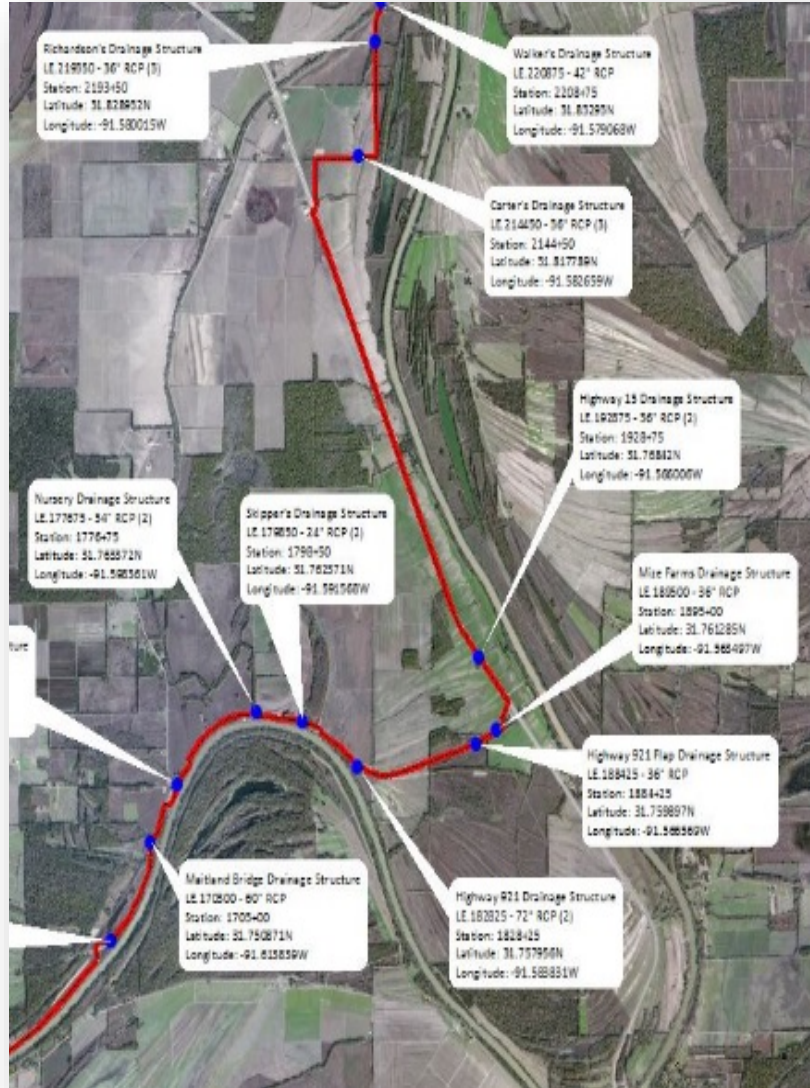


Report Format and Options

System-wide maps

- Drainage Structures (shown)
- Cattle guards, gates, fences
- Levee access, ramps, crossings

Any collected / inventoried items



Drainage Structure Inventory

Structure Name	LE	RCP	Station	Latitude	Longitude
Richardson's Drainage Structure	LE 218950	36" RCP (3)	2193+50	31.828822N	-91.580015W
Walker's Drainage Structure	LE 220875	42" RCP	2208+75	31.83289N	-91.579068W
Carter's Drainage Structure	LE 214490	36" RCP (3)	2144+90	31.817789N	-91.582659W
Highway 15 Drainage Structure	LE 192875	36" RCP (2)	1928+75	31.76812N	-91.580000W
Nursery Drainage Structure	LE 177675	36" RCP (2)	1776+75	31.762872N	-91.583361W
Slipper's Drainage Structure	LE 179850	24" RCP (2)	1798+50	31.762571N	-91.581560W
Mize Farms Drainage Structure	LE 189500	36" RCP	1895+00	31.761285N	-91.585407W
Highway 921 Flip Drainage Structure	LE 188425	36" RCP	1884+25	31.759897N	-91.588580W
Maitland Bridge Drainage Structure	LE 170500	60" RCP	1705+00	31.752871N	-91.613859W
Highway 921 Drainage Structure	LE 183825	72" RCP (2)	1828+25	31.757958N	-91.588831W

Tensas Basin Levee District Structure Map Sicily Island Levee



Flood Fight Assistance

Flood Fight Services

- Slide identification /monitoring
- Monitoring sand boils
- Seepage identification and monitoring
- Sand bagging / Hesco baskets
- Road closures
- Pumps



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