

USACE Levee Safety Program

A working summary of EC 1165-2-218
USACE Levee Safety Program
Dated 2021.02.22



- Chapter 1 Background Partnership Agreements
- Chapter 2 USACE Levee Safety Program
- Chapter 3 Levee Inspections and Site Visits
- Chapter 4 Risk Assessment
- Chapter 5 Operations, Maintenance, Repair, Replacement, and Rehabilitation
- Chapter 6 Sharing Levee Information



Chapter 1

Background

Partnership agreements

- Levee Project Authorizations-written partnership agreement between USACE and levee sponsors-required. (1-2(c))
 - Sponsor and USACE roles and responsibilities are unique to each levee project
 - “items of local cooperation” specified including O&M
- Levee Safety Program (LSP)and policies do not add requirements to the levee sponsor that are not part of their project agreement.
 - Activities in LSP will be assigned and planned as appropriate to reflect existing agreements (1-3 (c))

USACE recognizes that not everyone has these agreements at this point. So far they don't have a work around for this.



Coordination with Other Federal Programs

- Data from the LSP can be used to address community requests to accredit levees consistent with the NFIP. (1-4(a))
- Information from LSP can be used by PL84-99 Rehabilitation Program (1-4(b))
- A subset of items evaluated during LSP inspections are part of criteria that determine eligibility for PL 84-99 Rehabilitation Program (1-4 (b)(1))
- LSP information can be used for Section 408 permitting (1-4 (c)(1))



Proposed Changes to PL 84-99 Eligibility Criteria (1-4(B)(2))

- Currently the only information used to determine a levee's continued eligibility in the PL 84-99 Rehabilitation Program is a subset of items in the levee inspection checklist that relate to how a levee is maintained-risk defined by a single aspect.
- Risk now has 2 additional aspects:
 - Consequence: the urban v rural question
 - Frequency: how often the levee actually is loaded in flood
- Future criteria will also include accounting for how a levee has performed in the past.
- Changes will have to go through the rulemaking and public input process.



PROPOSED ELIGIBILITY CRITERIA

OPERATION, MAINTENANCE, INSPECTIONS

Assesses how well levee sponsors address operation and maintenance and monitoring activities that can most affect levee performance, addressing the most critical items first.

LEEVE SPONSOR EMERGENCY PREPAREDNESS

Assesses pre-planned activities outlining roles and responsibilities implemented during a flood event, such as identifying stockpile of necessary supplies and equipment to operate.

SHARING INFORMATION

Assesses how levee sponsors have shared information related to the performance and operation of their levee with community leaders and emergency managers.

PARTICIPATION IN LEEVE SAFETY PROGRAM ACTIVITIES

Assesses levee sponsor participation in activities, such as risk assessments and formal inspections, and promotes developing stronger relationships between levee sponsors and USACE to encourage dialogue and problem solving.

Will this include compliance with 33 CFR 208.10?

Will formal Emergency Action Plans fashioned after the dam safety model be required?

Will there be a quantitative checklist that assesses how sponsors are rated with respect to sharing information?

Will there be a quantitative checklist for risk assessments, formal inspections, and encouraging dialog and problem solving with USACE?



INSPECTION CHECKLIST

18 ITEMS USED BY THE PL 84-99 REHABILITATION PROGRAM



LEVEE EMBANKMENTS

- | | |
|-----------------------|---------------------------------------------------|
| 1 Encroachments | 5 Animal control |
| 2 Closure structures | 6 Culverts/discharge pipes |
| 3 Slope stability | 7 Underseepage relief wells/ toe drainage systems |
| 4 Erosion/bank caving | |



FLOODWALLS

- | | |
|--------------------------------------------------------|----------------------------------------------------|
| 8 Encroachments | 11 Foundation of concrete structures |
| 9 Closure structures | |
| 10 Tilting, sliding, settlement of concrete structures | 12 Underseepage relief wells/ toe drainage systems |



INTERIOR DRAINAGE

- | |
|------------------------------------------|
| 13 Culverts/discharge pipes |
| 14 Sluice/slide gates |
| 15 Flap gates/ flap valves/ pinch valves |



PUMP STATIONS

- | |
|------------------------------------------|
| 16 Intake and discharge pipelines |
| 17 Sluice/slide gates |
| 18 Flap gates/ flap valves/ pinch valves |



CHANNELS

Levees only receive a rating for the items they have. Each item can receive a rating of acceptable, minimally acceptable, or unacceptable.

33 CFR 208.10(b)(1) Maintenance lists additional items that are to be maintained and inspected.

- 90 day inspection cycle
- Semi annual reporting



What if I receive an unacceptable rating?

- Sponsors remain temporarily eligible for PL 84-99 while addressing issues.
- Sponsors will be required to develop a plan to address issues with the levee and demonstrate progress to remain eligible.
- If dealing with issues across an entire levee segment, consider the USACE System Wide Improvement Framework (SWIF) process.



System Wide Improvement Framework (SWIF)

- Allows non-federal sponsors a process to remain temporarily eligible for PL 84-99 while correcting unacceptable O&M as part of a broader, system-wide improvement to the levee system.
- Applicant has up to 2 years to develop the plan.
- Identify solutions that optimize resources:
 - Prioritize improvements and corrective actions based on risk
 - Coordinate overlapping or competing programs and requirements.
- SWIF is appropriate:
 - Where need to address multiple engineering deficiencies AND O&M deficiencies
 - Involved multiple levee segments/systems
 - Time and coordination needed for endangered species habitat or Native American concerns



SWIF Process

- 2 step process:
 - Letter of intent
 - Submission of a SWIF plan within 2 years.
- Not intended for correction of an individual O&M deficiency
- Not a process for acceptance into PL 84-99
- Opportunity to transition levees over time to USACE standards
- Could improve the case for Capital Outlay funding



Chapter 2 USACE Levee Safety Program

- The USACE Levee Safety Program includes the following elements: (2-1(d))
 - Inspections
 - Risk Assessments
 - Levee Operation, Maintenance, Repair, Replacement and Rehabilitation
 - Sharing Levee Information
 - National Levee Database



What levees are included?

- Federally authorized and USACE operated or maintained (2-2(f)(1))
- Federally authorized and locally operated and maintained (2-2(f)(2))
- Non-federally authorized and locally operated and maintained, active in the PL 84-99 Rehabilitation Program (2-2(g)(2)(a))



Non-federally authorized and active In PL 84-99

- Locally constructed, operated, hand maintained, and active within PL 84-99 are subject to policies set by PL 84-99
- If in the PL 84-99 program then the levee is inspected by USACE using the 18 inspection items used for determination of eligibility



Chapter 3

Levee inspections and site visits

Inspection frequency

- USACE Districts will perform a Formal Inspection-walking inspection-on each federally authorized levee at a minimum of every 5 years to assess and document the physical condition of the levee system. (3-2(a), Table 3-1)
- USACE may do special inspections before, during or immediately after a flood, and in other circumstances such as after earthquakes or after major structural modifications. (3-2(b))
- Sponsors will do their own inspections and provide to USACE as specified in their project agreements (3-2 (d))

Note: these requirements do not supersede those reporting requirements found in 33 CFR 208.10(a)(6) which require the Superintendent to submit a semiannual report to the USACE District Engineer



Inspections: Process, Report Approval

- USACE will conduct inspections on a system basis using the Levee Inspection System. (3-3(b))
- Levee sponsors will be invited to participate, and be given 30 business days notice for Formal Inspections. For special inspections, as much notice as possible will be provided. (3-3(d))
- Inspection reports for Formal Inspections will be provided to the sponsor within 30 days of the inspection for their review and comment. Final reports will be issued within 90 days of the inspection. 3-4(c), 3-4(b))
- USACE will upload the report to the National Levee Database (3-4(d))
- If eligibility for PL 84-99 or NFIP accreditation changes, USACE will contact the district Emergency Manager and appropriate FEMA Region. (3-4 (c))



Chapter 4

Risk Assessment

- Per the National Levee Safety Act, USACE will estimate the number of structures and population at risk that would be adversely impacted if the levee breaches or water levels exceed the height of the levee, and measure the probability and severity of undesirable consequences. (4-1(a))
- USACE will perform a screening level risk assessment on all federally authorized levees using currently available information (4-2(a))
- USACE and sponsor will determine if a more detailed risk assessment is needed (4-2(c))
- Risk assessment will be performed at a minimum of every 10 years (4-3(a))



Risk assessment and NFIP

- USACE Risk Assessments can be viewed as integral to the NFIP program
 - Sponsors may request USACE to perform a risk assessment or submit one following USACE's process for the purpose of receiving a recommendation for accreditation for NFIP. (4-3(c))
 - FEMA may use this information as part of a levee accreditation decision. (4-3(c)(2))
 - Must be done consistent with Engineering Construction Bulletin 2019-11, Transition Guidance for Levee System Evaluation for the NFIP (4-3(c)(1))
- USACE screening level risk assessments pull from inspection data because its available, but the processes aren't linked. *It uses top of levee for evaluation.*
- NFIP pulls from the screening level risk assessments, RIs, and PIs. *They use a river height of the 100 year flood, not top of levee.*

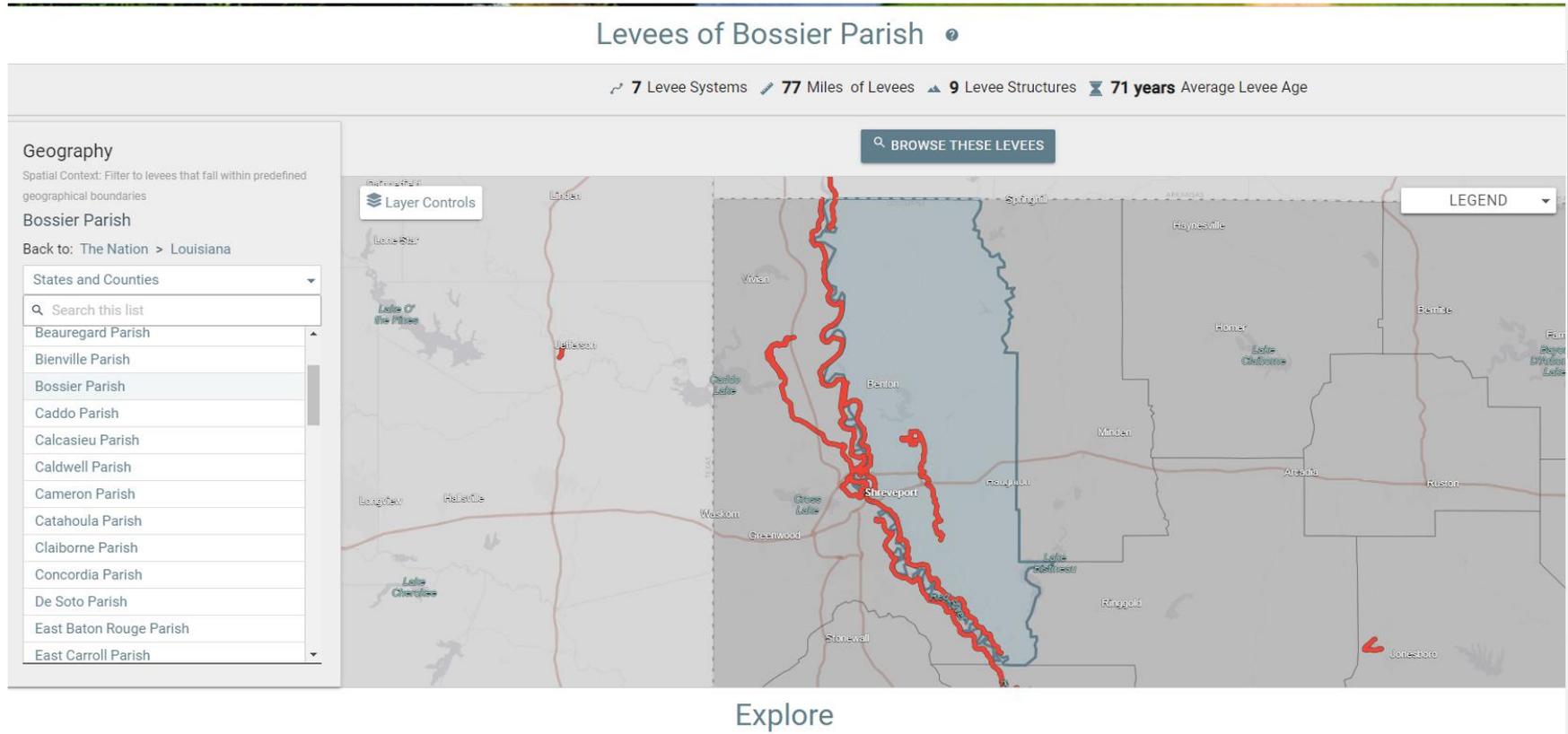


Risk assessment results and activities

- USACE will provide a summary of findings and recommended actions for screening level risk assessments. Sponsors are provided the opportunity to review and can seek reconsideration of the results. (4-5(c))
- The approved risk assessments will be provided to the levee sponsor, will be uploaded to the National Levee Database, and USACE will notify the USACE District Emergency Manager and FEMA. (4-5 (g))



What information does the National Levee Database display?



Screening Level Risk assessment information is displayed at public level.

← National Levee Database

HOME ADVANCED SEARCH DASHBOARD MAP MORE SIGN IN

Red Chute Bayou Info Map DOWNLOAD DATA ?

Location Bossier City, Bossier Parish, Louisiana USACE Districts Vicksburg FEMA Regions 6

SUMMARY SYSTEM SEGMENTS RISK FEMA - NFIP/FIRM FEATURES PROFILE ATTACHMENTS

Levee System Overview VIEW

The Red Chute Levee System is located entirely in Bossier County, Louisiana on the left descending bank of the Red Chute Bayou and is operated and maintained by Bossier Levee District. It has a total length of 16.39 miles, which protects 20.16 square miles. The levee system begins at Station 0+00 at the intersection of Louisiana Highway 612 (Sligo Rd.) and Poverty Point Road, which runs on top of the levee. The levee runs northerly along the right descending bank of the Bodcau Lake tributary where it crosses Range Road and continues northerly crossing the Pacific Railroad due West of Bodcau, Louisiana. The levee continues north for approximately one mile where it crosses Interstate I-20 and continues to run adjacent to the Bodcau Lake tributary for approximately 5 miles, where it breaks from the tributary and continues due North for approximately 4 miles and takes a westward bend where it will tie into higher ground at the southeastern perimeter of Black Bayou Reservoir. No design or as-built drawings can be located for the original levee. The original levee system was completed in 1948. The levee was extended 10.85 miles in 1965. The flood of record was October 2009. During this flood, the Red Chute levee was sandbagged and flood fought by as much as two feet in some places. The levee functioned properly even with widespread overtopping of the levee crown. The Red Chute Levee System consists 16.39 miles of earthen levee, 19 corrugated metal pipes (CMP), 2 reinforced concrete box culverts, and 2 plastic conduits; all of which contain sluice gated closures or flap gated closures.

Levee Performance and Potential Lost Benefits VIEW

In Progress

Risk Low

What is Behind the Levee?

Population	Structures	Property Value
2,935	1,183	\$498M

Structure and Features VIEW

Total Miles	Length of Embankment (miles)
18.92 Miles	16.39

Length of Floodwall (miles)	Year Constructed
0	No Data Entered

Maximum Height	Number of Closure Structures
15.00	No Data Entered

Key Documents VIEW

Levee System Summary ↓

FEMA - NFIP/FIRM Information VIEW

FIRM Status
Non-Accredited Levee System

USACE Rehabilitation Status VIEW

Status
Active

Layer Controls

LEGEND

Map labels: Ferguson, Meadowview Park, Sligo, Red Chute, Eastwood, Bodcau Means, Red Chute At Police Base, Sligo, Old Chute Golf Club, Gurus, Blenheim, Arkadele At Police Base.



Chapter 5

Operations, Maintenance, Repair, Replacement And Rehabilitation

- Done by the sponsor (5-1(b))
- Sponsors have been provided an Operations and Maintenance Manual (5-2(a))
- Specifics are in the partnership agreement. (5-2(c))



Chapter 6

Sharing Levee Information

- Levee sponsors communicate levee condition, performance, and potential impacts (6-1(b))
- Levee sponsors may also communicate consequence information, or where sponsors don't have the authority or responsibility, USACE may communicate that information. (6-1(c))
- USACE will make some information publically available in the National Levee Database. (6-1(c))
- USACE can assist levee sponsors by providing the tools and information for the community (6-3 (c))



The Levee System Summary

- USACE to work with levee sponsors to develop the comprehensive source of publicly available information in the National Levee Database to include (6-4 (a) & (b))
 - Background on the levee system
 - Current levee condition and anticipated performance
 - Areas of focus for the levee sponsor
 - NFIP status
 - PL 84-99 Rehabilitation Program Status



Chapter 7

Inventory of Levees

- USACE required to create a publically available inventory of levees (7-1(a))
- The inventory includes (7-1(b))
 - Levee location
 - General condition information
 - Estimate of number of structures and population within the leveed area



National Levee Database

- USACE Districts will maintain the following data: (7-2 (b))
 - Levee location (GIS)
 - Physical levee attributes and features
 - Estimate of number of structures and population within the leveed area
 - Design and construction documents
 - Inspection and risk assessment information
 - Levee accreditation status in NFIP

