



Flood Damage Reduction Segment / System Inspection Report

**US Army Corps
of Engineers®**

Name of Segment / System: Little Cal - Marshalltown

Public Sponsor(s): Little Calumet River Basin Development Commission

Public Sponsor Representative: Dan Repay

Sponsor Phone: 219-595-0599

Sponsor Email: drepay@littlecalumetriverbasin.org

Corps of Engineers Inspector: Chicago District Inspection Start Date: 6/10/2019

Inspection End Date: 6/10/2019

Inspection Report Prepared By: Yuki Galisanao, PE, PG Date Report Prepared: 7/10/2019

Internal Technical Review (for Periodic Inspections) By: William Rochford, PE, LSPM *WAR* Date of ITR: 8/6/2019

Final Approved By: John Groboski, PE, LSO GROBOSKI.JOHN.A.JR.124971 5510 Digitally signed by GROBOSKI.JOHN.A.JR.1249715510 Date: 2019.08.09 16:49:13 -05'00' Date Approved: _____

Type of Inspection:	<input type="checkbox"/> Initial Eligibility Inspection <input type="checkbox"/> Continuing Eligibility Inspection (Routine) <input checked="" type="checkbox"/> Continuing Eligibility Inspection (Periodic)	Overall Segment / System Rating:	<input type="checkbox"/> Acceptable <input checked="" type="checkbox"/> Minimally Acceptable <input type="checkbox"/> Unacceptable
Contents of Report:	<input checked="" type="checkbox"/> Instructions <input type="checkbox"/> Initial Eligibility Inspection <input checked="" type="checkbox"/> General Items for All Flood Control Works <input checked="" type="checkbox"/> Levee Embankment <input type="checkbox"/> Concrete Floodwalls <input type="checkbox"/> Sheet Pile and Concrete I-walls <input checked="" type="checkbox"/> Interior Drainage System <input checked="" type="checkbox"/> Pump Stations <input type="checkbox"/> FDR System Channels	<p>Note: In addition to the report contents indicated here, a plan view drawing of the system, with stationing, should be included with this report to reference locations of items rated less than acceptable. Photos of general system condition and any noted deficiencies should also be attached.</p> <p>Note: This inspection rating represents the Corps evaluation of operations and maintenance of the flood damage reduction system and may be used in conjunction with other information for a levee certification determination for National Flood Insurance Program (NFIP) purposes if applicable. An Acceptable Corps inspection rating, alone, does not equate to a certifiable levee for the NFIP. It is recommended for levee systems currently accredited by the Federal Emergency Management Agency (FEMA) for NFIP purposes receiving a Corps Minimally Acceptable or Unacceptable rating, be evaluated by the levee owner to determine the potential impacts to the certification for FEMA.</p>	

Little Cal Inspection
 June 10, 2019
 Sign in Sheet

Name	Organization	Team
Rick Ackerson	COE	Levee
KATHY SITKO	COE	Levee
Shelly Loughlin	COE	Levee
Michelle Doytrek	COE	EUC/Levee
Obiver King	Glam / Little Cal	Electronics
MIKE KINCEY	COE	PS
Sylvia Pincatel	COE	PS
ARON GUARDINO	COE	SG
DAN REPAY	LCRADC	All
Yuki Galeana	USACE	LV
Adam Karr	USACE	SG
Jeremy Harris	USACE	SG
Majdi Arman	USACE	PS
Rick Bishop	INDOT	Gates
John Schwarz	INDOT	
Chad Wines	Indot	Gates
Jerry W. Ford	Indot	
Ryan Chesak	INDOT	



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Flood Damage Reduction Segment / System Public Sponsor Pre-Inspection Form

The following information is to be provided by the levee district sponsor prior to an inspection. This information will be used to help evaluate the organizational capability of the levee district to manage the levee segment / system maintenance program.

1. Levee segment / system and district: (name of the segment / system and levee district) Little Cal - Marshalltown for CELRC
2. Reporting period: (month/day/year to month/day/year) 06/01/18 to 06/01/19
3. Summary of maintenance required by last inspection report: Maintained pump station on a monthly basis, cut grass, grease stems.
4. Summary of maintenance performed this reporting period: Periodic mowing of the levees. Monthly pump station inspection and maintenance. Reports for pump station will be sent. We plan on paving the top of the levee.
5. Summary of maintenance planned next reporting period: Same as listed above.
6. Summary of changes to segment / system since last inspection: N/A
7. Problems/ issues requiring the assistance of the US Army Corps of Engineers: N/A



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Public Sponsor Pre-Inspection Report

The following information is to be provided by the levee district sponsor prior to an inspection

8. Levee district organization: (elected or appointed levee district officials and key employees)

Name	Position	Mailing Address	Phone Number	Email Address
Dan Repay	Executive Director	900 Ridge Road, Suite H, Munster, IN 46321	219-595-0599	drepay@littlecalumetriverbasin.org



General Instructions for the Inspection of Flood Damage Reduction Segments / Systems

A. Purpose of USACE Inspections:

The primary purpose of these inspections is to prevent loss of life and catastrophic damages; preserve the value of Federal investments, and to encourage non-Federal sponsors to bear responsibility for their own protection. Inspections should assure that Flood Damage Reduction structures and facilities are continually maintained and operated as necessary to obtain the maximum benefits. Inspections are also conducted to determine eligibility for Rehabilitation Assistance under authority of PL 84-99 for Federal and non-Federal systems. (ER 1130-2-530, ER 500-1-1)

B. Types of Inspections:

The Corps conducts several types of inspections of Flood Damage Reduction systems, as outlined below:

Initial Eligibility Inspections	Continuing Eligibility Inspections	
	Routine Inspections	Periodic Inspections
IEIs are conducted to determine whether a non-Federally constructed Flood Damage Reduction system meets the minimum criteria and standards set forth by the Corps for initial inclusion into the Rehabilitation and Inspection Program.	RIs are intended to verify proper maintenance, owner preparedness, and component operation.	PIs are intended to verify proper maintenance and component operation and to evaluate operational adequacy, structural stability, and safety of the system. Periodic Inspections evaluate the system's original design criteria vs. current design criteria to determine potential performance impacts, evaluate the current conditions, and compare the design loads and design analysis used against current design standards. This is to be done to identify components and features for the sponsor that need to be monitored more closely over time or corrected as needed. (Periodic Inspections are used as the basis of risk assessments.)

C. Inspection Boundaries:

Inspections should be conducted so as to rate each Flood Damage Reduction "Segment" of the system. The overall system rating will be the lowest segment rating in the system.

Project	System	Segment
A flood damage reduction project is made up of one or more flood damage reduction systems which were under the same authorization.	A flood damage reduction system is made up of one or more flood damage reduction segments which collectively provide flood damage reduction to a defined area. Failure of one segment within a system constitutes failure of the entire system. Failure of one system does not affect another system.	A flood damage reduction segment is defined as a discrete portion of a flood damage reduction system that is operated and maintained by a single entity. A flood damage reduction segment can be made up of one or more features (levee, floodwall, pump stations, etc).

D. Land Use Definitions:

The following three definitions are intended for use in determining minimum required inspection intervals and initial requirements for inclusion into the Rehabilitation and Inspection Program. Inspections should be considered for all systems that would result in significant environmental or economic impact upon failure regardless of specific land use.

Agricultural	Rural	Urban
Protected population in the range of zero to 5 households per square mile protected.	Protected population in the range of 6 to 20 households per square mile protected.	Greater than 20 households per square mile; major industrial areas with significant infrastructure investment. Some protected urban areas have no permanent population but may be industrial areas with high value infrastructure with no overnight population.



E. Use of the Inspection Report Template:

The report template is intended for use in all Army Corps of Engineers inspections of levee and floodwall systems and flood damage reduction channels. The section of the template labeled "Initial Eligibility" only needs to be completed during Initial Eligibility Inspections of Non-Federally constructed Flood Damage Reduction Systems. The section labeled "General Items" needs to be completed with every inspection, along with all other sections that correspond to features in the system. The section labeled "Public Sponsor Pre-Inspection Report" is intended for completion before the inspection, if possible.

F. Individual Item / Component Ratings:

Assessment of individual components rated during the inspection should be based on the criteria provided in the inspection report template, though inspectors may incorporate additional items into the report based on the characteristics of the system. The assessment of individual components should be based on the following definitions.

Acceptable Item	Minimally Acceptable Item	Unacceptable Item
The inspected item is in satisfactory condition, with no deficiencies, and will function as intended during the next flood event.	The inspected item has one or more minor deficiencies that need to be corrected. The minor deficiency or deficiencies will not seriously impair the functioning of the item as intended during the next flood event.	The inspected item has one or more serious deficiencies that need to be corrected. The serious deficiency or deficiencies will seriously impair the functioning of the item as intended during the next flood event.

G. Overall Segment / System Ratings:

Determination of the overall system rating is based on the definitions below. Note that an Unacceptable System Rating may be either based on an engineering determination that concluded that noted deficiencies would prevent the system from functioning as intended during the next flood event, or based on the sponsor's demonstrated lack of commitment or inability to correct serious deficiencies in a timely manner.

Acceptable System	Minimally Acceptable System	Unacceptable System
All items or components are rated as Acceptable.	One or more items are rated as Minimally Acceptable or one or more items are rated as Unacceptable and an engineering determination concludes that the Unacceptable items would not prevent the segment / system from performing as intended during the next flood event.	One or more items are rated as Unacceptable and would prevent the segment / system from performing as intended, or a serious deficiency noted in past inspections (which had previously resulted in a minimally acceptable system rating) has not been corrected within the established timeframe, not to exceed two years.

H. Eligibility for PL84-99 Rehabilitation Assistance:

Inspected systems that are not operated and maintained by the Federal government may be Active in the Corps' Rehabilitation and Inspection Program (RIP) and eligible for rehabilitation assistance from the Corps as defined below:

If the Overall System Rating is Acceptable	If the Overall System Rating is Minimally Acceptable	If the Overall System Rating is Unacceptable
The system is active in the RIP and eligible for PL84-99 rehabilitation assistance.	The system is Active in the RIP during the time that it takes to make needed corrections. Active systems are eligible for rehabilitation assistance. However, if the sponsor does not present USACE with proof that serious deficiencies (which had previously resulted in a minimally acceptable system rating) were corrected within the established timeframe, then the system will become Inactive in the RIP.	The system is Inactive in the RIP, and the status will remain Inactive until the sponsor presents USACE with proof that all items rated Unacceptable have been corrected. Inactive systems are ineligible for rehabilitation assistance.

I. Reporting:

After the inspection, the Corps is responsible for assembling an inspection report (or a summary report if it was a Periodic Inspection) including the following information:

- a. All sections of the report template used during the inspection, including the cover and pre-inspection materials. (Supplemental data collected, and any sections of the template that weren't used during the inspection do not need to be included with the report.)
- b. Photos of the general system condition and noted deficiencies.
- c. A plan view drawing of the system, with stationing, to reference locations of items rated less than acceptable.
- d. The relative importance of the identified maintenance issues should be specified in the transmittal letter.
- e. If the Overall System Rating is Minimally Acceptable, the report needs to establish a timeframe for correction of serious deficiencies noted (not to exceed two years) and indicate that if these items are not corrected within the required timeframe, the system will be rated as Unacceptable and made Inactive in the Rehabilitation Inspection Program.

J. Notification:

Reports are to be disseminated as follows within 30 days of the inspection date.

If the Overall System Rating is Acceptable	If the Overall System Rating is Minimally Acceptable	If the Overall System Rating is Unacceptable
Reports need to be provided to the local sponsor and the county emergency management agency.	Reports need to be provided to the local sponsor, state emergency management agency, county emergency management agency, and to the FEMA region.	Reports need to be provided to the local sponsor, state emergency management agency, county emergency management agency, FEMA region, and to the Congressional delegation within 30 days of the inspection.

General Items for All Flood Damage Reduction Segments / Systems

For use during all inspections of all Flood Damage Reduction Segments / Systems

Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
1. Operations and Maintenance Manuals	A	A	Levee Owner's Manual, O&M Manuals, and/or manufacturer's operating instructions are present.	Sponsor has complete set of O&M Manuals.
		M	Sponsor manuals are lost or missing or out of date; however, sponsor will obtain manuals prior to next scheduled inspection.	
		U	Sponsor has not obtained lost or missing manuals identified during previous inspection.	
2. Emergency Supplies and Equipment (A or M only)	A	A	The sponsor maintains a stockpile of sandbags, shovels, and other flood fight supplies which will adequately supply all needs for the initial days of a flood fight. Sponsor determines required quantity of supplies after consulting with inspector.	The Local Sponsor has taken over maintaining flood fighting supplies from Gary. They share storage with Munster at their facility on Calumet and have a number of pallets of empty sandbags available. The Munster Public Works facility is about 14 miles from Marshalltown and would take about 35 minutes to travel along Ridge Road to avoid any road closures that may be impacted by flooding.
		M	The sponsor does not maintain an adequate supply of flood fighting materials as part of their preparedness activities.	
3. Flood Preparedness and Training (A or M only)	M	A	Sponsor has a written system-specific flood response plan and a solid understanding of how to operate, maintain, and staff the FDR system during a flood. Sponsor maintains a list of emergency contact information for appropriate personnel and other emergency response agencies.	Flood fighting is usually performed by the community. Gary has limited resources and a lot of turn over. They rely heavily on others to provide supplies and assistance. Updated Flood Handbooks were provided in 2019.
		M	The sponsor maintains a good working knowledge of flood response activities, but documentation of system-specific emergency procedures and emergency contact personnel is insufficient or out of date.	

Key: A = Acceptable. M = Minimally Acceptable; Maintenance is required. U = Unacceptable. N/A = Not Applicable. FDR = Flood Damage Reduction



Levee Embankments

For use during Initial and Continuing Eligibility Inspections of levee segments / systems

Rated Item	Rating	Rating Guidelines	Location/Remarks/Recommendations
1. Unwanted Vegetation Growth ¹	M	A The levee has little or no unwanted vegetation (trees, bush, or undesirable weeds), except for vegetation that is properly contained and/or situated on overbuilt sections, such that the mandatory 3-foot root-free zone is preserved around the levee profile. The levee has been recently mowed. The vegetation-free zone extends 15 feet from both the landside and riverside toes of the levee to the centerline of the tree. If the levee access easement doesn't extend to the described limits, then the vegetation-free zone must be maintained to the easement limits. Reference EM 1110-2-301 or Corps policy for regional vegetation variance.	LCMR_2019_a_0013: Station_1 NA: Station_2 NA: Vegetation close to landside toe.: Cut. (M) LCMR_2019_a_0023: Station_1 NA: Station_2 NA: Vegetation on riverside toe.: Cut. (M) LCMR_2019_a_0049: Station_1 NA: Station_2 NA: Vegetation close to riverside toe.: Cut. (M) LCMR_2019_a_0051: Station_1 NA: Vegetation close to landside toe.: Cut. (M) LCMR_2019_a_0053: Station_1 NA: Vegetation on riverside toe.: Cut. (M) LCMR_2019_a_0055: Station_1 NA: Vegetation close to riverside toe.: Cut. (M)
		M Minimal vegetation growth (brush, weeds, or trees 2 inches in diameter or smaller) is present within the zones described above. This vegetation must be removed but does not currently threaten the operation or integrity of the levee.	
		U Significant vegetation growth (brush, weeds, or any trees greater than 2 inches in diameter) is present within the zones described above and must be removed to reestablish or ascertain levee integrity.	
2. Sod Cover	A	A There is good coverage of sod over the levee.	
		M Approximately 25% of the sod cover is missing or damaged over a significant portion or over significant portions of the levee embankment. This may be the result of over-grazing or feeding on the levee, unauthorized vehicular traffic, chemical or insect problems, or burning during inappropriate seasons.	
		U Over 50% of the sod cover is missing or damaged over a significant portion or portions of the levee embankment.	
		N/A Surface protection is provided by other means.	
3. Encroachments	M	A No trash, debris, unauthorized farming activity, structures, excavations, or other obstructions present within the easement area. Encroachments have been previously reviewed by the Corps, and it was determined that they do not diminish proper functioning of the levee.	LCMR_2019_a_0001: Station_1 NA: Broken pole.: Repair. (M) LCMR_2019_a_0007: Station_1 NA: Piece of lumber on riverside slope.: Remove. (M) LCMR_2019_a_0009: Station_1 NA: Woody debris on landside slope.: Remove (M) LCMR_2019_a_0015: Station_1 NA: Tree limb on riverside toe.: Remove. (M) LCMR_2019_a_0019: Station_1 NA: Log on riverside toe.: Remove. (M) LCMR_2019_a_0037: Station_1 NA: New fence on riverside slope. USACE was not informed prior to installation.: Request as part of a 408 permit. (M) LCMR_2019_a_0043: Station_1 NA: Log pile on landside slope.: Remove. (M) LCMR_2019_a_0047: Station_1 NA: Logs on riverside slope.: Remove. (M) LCMR_2019_a_0057: Station_1 NA: Woody debris on
		M Trash, debris, unauthorized farming activity, structures, excavations, or other obstructions present, or inappropriate activities noted that should be corrected but will not inhibit operations and maintenance or emergency operations. Encroachments have not been reviewed by the Corps.	
		U Unauthorized encroachments or inappropriate activities noted are likely to inhibit operations and maintenance, emergency operations, or negatively impact the integrity of the levee.	

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Levee Embankments

For use during Initial and Continuing Eligibility Inspections of levee segments / systems

Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
				landside toe.: Remove. (M)
4. Closure Structures (Stop Log, Earthen Closures, Gates, or Sandbag Closures) (A or U only)	NA	A	Closure structure in good repair. Placing equipment, stoplogs, and other materials are readily available at all times. Components are clearly marked and installation instructions/ procedures readily available. Trial erections have been accomplished in accordance with the O&M Manual.	
		U	Any of the following issues is cause for this rating: Closure structure in poor condition. Parts missing or corroded. Placing equipment may not be available within the anticipated warning time. The storage vaults cannot be opened during the time of inspection. Components of closure are not clearly marked and installation instructions/ procedures are not readily available. Trial erections have not been accomplished in accordance with the O&M Manual.	
		N/A	There are no closure structures along this component of the FDR segment / system.	
5. Slope Stability	A	A	No slides, sloughs, tension cracking, slope depressions, or bulges are present.	
		M	Minor slope stability problems that do not pose an immediate threat to the levee embankment.	
		U	Major slope stability problems (ex. deep seated sliding) identified that must be repaired to reestablish the integrity of the levee embankment.	
6. Erosion/ Bank Caving	A	A	No erosion or bank caving is observed on the landward or riverward sides of the levee that might endanger its stability.	
		M	There are areas where minor erosion is occurring or has occurred on or near the levee embankment, but levee integrity is not threatened.	
		U	Erosion or caving is occurring or has occurred that threatens the stability and integrity of the levee. The erosion or caving has progressed into the levee section or into the extended footprint of the levee foundation and has compromised the levee foundation stability.	
7. Settlement ²	A	A	No observed depressions in crown. Records exist and indicate no unexplained historical changes.	LCMR_2019_a_0011: Station_1 NA: Station_2 NA: Low crest. LIDAR shows the crest below the design elevation and BFE+2 elevation. Local Sponsor is currently repairing the levee crest to restore the height.: Provide as-builts. (M) LCMR_2019_a_0039: Station_1 NA: Low spot on crest at gateway. A 48-inch RCP crosses this location. Surveyed crest was below the design elevation and BFE+2 elevation. Local Sponsor is currently repairing the levee crest to restore the height.: Provide as-builts. (M)
		M	Minor irregularities that do not threaten integrity of levee. Records are incomplete or inclusive.	
		U	Obvious variations in elevation over significant reaches. No records exist or records indicate that design elevation is compromised.	
8. Depressions/ Rutting	M	A	There are scattered, shallow ruts, pot holes, or other depressions on the levee that are unrelated to levee settlement. The levee crown, embankments, and access road crowns are well established and drain properly without any ponded water.	LCMR_2019_a_0003: Station_1 NA: Ruts on crest.: Fill with gravel to match required crest elevation. (M) LCMR_2019_a_0005: Station_1 NA: Ruts on crest.: Fill with gravel to match required crest elevation. (M) LCMR_2019_a_0017: Station_1 NA: Ruts on crest.: Fill
		M	There are some infrequent minor depressions less than 6 inches deep in the levee crown, embankment, or access roads that will pond water.	

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Levee Embankments

For use during Initial and Continuing Eligibility Inspections of levee segments / systems

Rated Item	Rating	Rating Guidelines	Location/Remarks/Recommendations
		<p>U There are depressions greater than 6 inches deep that will pond water.</p>	<p>with gravel to match required crest elevation. (M) LCMR_2019_a_0021: Station_1 NA: 20 ft long rut on crest, filter fabric exposed.: Fill with gravel to match required crest elevation. (M) LCMR_2019_a_0025: Station_1 NA: Ruts on riverside toe, ponding water.: Fill with soil and seed. (M) LCMR_2019_a_0027: Station_1 NA: Ruts on crest, ponding water.: Fill with gravel to match required crest elevation. (M) LCMR_2019_a_0029: Station_1 NA: Ruts on the crest, ponding water.: Fill with gravel to match required crest elevation. (M) LCMR_2019_a_0031: Station_1 NA: Station_2 NA: Ruts on crest, ponding water.: Fill with gravel to match required crest elevation. (M) LCMR_2019_a_0045: Station_1 NA: Ruts on riverside toe.: Fill with soil and seed. (M) LCMR_2019_a_0059: Station_1 NA: Rutting on riverside slope: Fill to grade and seed. (M)</p>
9. Cracking	A	<p>A Minor longitudinal, transverse, or desiccation cracks with no vertical movement along the crack. No cracks extend continuously through the levee crest.</p>	
		<p>M Longitudinal and/or transverse cracks up to 6 inches in depth with no vertical movement along the crack. No cracks extend continuously through the levee crest. Longitudinal cracks are no longer than the height of the levee.</p>	
		<p>U Cracks exceed 6 inches in depth. Longitudinal cracks are longer than the height of the levee and/or exhibit vertical movement along the crack. Transverse cracks extend through the entire levee width.</p>	
10. Animal Control	A	<p>A Continuous animal burrow control program in place that includes the elimination of active burrowing and the filling in of existing burrows.</p>	
		<p>M The existing animal burrow control program needs to be improved. Several burrows are present which may lead to seepage or slope stability problems, and they require immediate attention.</p>	
		<p>U Animal burrow control program is not effective or is nonexistent. Significant maintenance is required to fill existing burrows, and the levee will not provide reliable flood protection until this maintenance is complete.</p>	

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Rated Item	Rating	Rating Guidelines	Location/Remarks/Recommendations
11. Culverts/ Discharge Pipes ³ (This item includes both concrete and corrugated metal pipes.)	A	A There are no breaks, holes, cracks in the discharge pipes/ culverts that would result in significant water leakage. The pipe shape is still essentially circular. All joints appear to be closed and the soil tight. Corrugated metal pipes, if present, are in good condition with 100% of the original coating still in place (either asphalt or galvanizing) or have been relined with appropriate material, which is still in good condition. Condition of pipes has been verified using television camera video taping or visual inspection methods within the past five years, and the report for every pipe is available for review by the inspector.	Camera inspection results submitted on 9/17/18. No issues were noted. Joints not grouted. Settlement was noted on the levee crest above the 48-inch RCP. Monitor. Perform next inspection in 2023.
		M There are a small number of corrosion pinholes or cracks that could leak water and need to be repaired, but the entire length of pipe is still structurally sound and is not in danger of collapsing. Pipe shape may be ovalized in some locations but does not appear to be approaching a curvature reversal. A limited number of joints may have opened and soil loss may be beginning. Any open joints should be repaired prior to the next inspection. Corrugated metal pipes, if present, may be showing corrosion and pinholes but there are no areas with total section loss. Condition of pipes has been verified using television camera video taping or visual inspection methods within the past five years, and the report for every pipe is available for review by the inspector.	
		U Culvert has deterioration and/or has significant leakage; it is in danger of collapsing or as already begun to collapse. Corrugated metal pipes have suffered 100% section loss in the invert. HOWEVER: Even if pipes appear to be in good condition, as judged by an external visual inspection, an Unacceptable Rating will be assigned if the condition of pipes has not been verified using television camera video taping or visual inspection methods within the past five years, and reports for all pipes are not available for review by the inspector.	
		N/A There are no discharge pipes/ culverts.	
12. Riprap Revetments & Bank Protection	A	A No riprap displacement or stone degradation that could pose an immediate threat to the integrity of channel bank. Riprap intact with no woody vegetation present.	
		M Minor riprap displacement or stone degradation that could pose an immediate threat to the integrity of the channel bank. Unwanted vegetation must be cleared or sprayed with an appropriate herbicide.	
		U Significant riprap displacement, exposure of bedding, or stone degradation observed. Scour activity is undercutting banks, eroding embankments, or impairing channel flows by causing turbulence or shoaling. Rock protection is hidden by dense brush, trees, or grasses.	
		N/A There is no riprap protecting this feature of the segment / system, or riprap is discussed in another section.	
13. Revetments other than Riprap	NA	A Existing revetment protection is properly maintained, undamaged, and clearly visible.	
		M Minor revetment displacement or deterioration that does not pose an immediate threat to the integrity of the levee. Unwanted vegetation must be cleared or sprayed with an appropriate herbicide.	

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		U	Significant revetment displacement, deterioration, or exposure of bedding observed. Scour activity is undercutting banks, eroding embankments, or impairing channel flows by causing turbulence or shoaling. Revetment protection is hidden by dense brush and trees.	
		N/A	There are no such revetments protecting this feature of the segment / system.	
14. Underseepage Relief Wells/ Toe Drainage Systems	NA	A	Toe drainage systems and pressure relief wells necessary for maintaining FDR segment / system stability during high water functioned properly during the last flood event and no sediment is observed in horizontal system (if applicable). Nothing is observed which would indicate that the drainage systems won't function properly during the next flood, and maintenance records indicate regular cleaning. Wells have been pumped tested within the past 5 years and documentation is provided.	
		M	Toe drainage systems or pressure relief wells are damaged and may become clogged if they are not repaired. Maintenance records are incomplete or indicate irregular cleaning and pump testing.	
		U	Toe drainage systems or pressure relief wells necessary for maintaining FDR segment / system stability during flood events have fallen into disrepair or have become clogged. No maintenance records. No documentation of the required pump testing.	
		N/A	There are no relief wells/ toe drainage systems along this component of the FDR segment / system.	
15. Seepage	A	A	No evidence or history of unrepaired seepage, saturated areas, or boils.	
		M	Evidence or history of minor unrepaired seepage or small saturated areas at or beyond the landside toe but not on the landward slope of levee. No evidence of soil transport.	
		U	Evidence or history of active seepage, extensive saturated areas, or boils.	

¹ If there is significant growth on the levee that inhibits the inspection of animal burrows or other items, the inspection should be ended until this item is corrected.

² Detailed survey elevations are normally required during Periodic Inspections, and whenever there are obvious visual settlements.

³ The decision on whether or not USACE inspectors should enter a pipe to perform a detailed inspection must be made at the USACE District level. This decision should be made in conjunction with the District Safety Office, as pipes may be considered confined spaces. This decision should consider the age of the pipe, the diameter of the pipe, the apparent condition of the pipe, and the length of the pipe. If a pipe is entered for the purposes of inspection, the inspector should record observations with a video camera in order that the condition of the entire pipe, including all joints, can later be assessed. Additionally, the video record provides a baseline to which future inspections can be compared.

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Inspect ID: LCMR_2019_a_0013 **Title:** USACE_CELRC_LCMR_2019_a_0013_1.jpg
Rated Item: 1. Unwanted Vegetation Growth **Caption:** Rating: Minimally Acceptable;
Remarks: Vegetation close to landside toe.; **Action:** Cut.



Inspect ID: LCMR_2019_a_0023 **Title:** USACE_CELRC_LCMR_2019_a_0023_1.jpg
Rated Item: 1. Unwanted Vegetation Growth **Caption:** Rating: Minimally Acceptable;
Remarks: Vegetation on riverside toe.; **Action:** Cut.



Levee Embankments

For use during Initial and Continuing Eligibility Inspections of levee segments / systems



Inspect ID: LCMR_2019_a_0049 **Title:** USACE_CELRC_LCMR_2019_a_0049_1.jpg
Rated Item: 1. Unwanted Vegetation Growth **Caption:** Rating: Minimally Acceptable;
Remarks: Vegetation close to riverside toe.; **Action:** Cut.



Inspect ID: LCMR_2019_a_0051 **Title:** USACE_CELRC_LCMR_2019_a_0051_1.jpg
Rated Item: 1. Unwanted Vegetation Growth **Caption:** Rating: Minimally Acceptable;
Remarks: Vegetation close to landside toe.; **Action:** Cut.



Levee Embankments

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Inspect ID: LCMR_2019_a_0053 **Title:** USACE_CELRC_LCMR_2019_a_0053_1.jpg
Rated Item: 1. Unwanted Vegetation Growth **Caption:** Rating: Minimally Acceptable;
Remarks: Vegetation on riverside toe.; **Action:** Cut.



Inspect ID: LCMR_2019_a_0055 **Title:** USACE_CELRC_LCMR_2019_a_0055_1.jpg
Rated Item: 1. Unwanted Vegetation Growth **Caption:** Rating: Minimally Acceptable;
Remarks: Vegetation close to riverside toe.; **Action:** Cut.



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Inspect ID: LCMR_2019_a_0001 **Title:** USACE_CELRC_LCMR_2019_a_0001_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Broken pole.; Action: Repair.



Inspect ID: LCMR_2019_a_0007 **Title:** USACE_CELRC_LCMR_2019_a_0007_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Piece of lumber on riverside slope.; Action: Remove.



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Inspect ID: LCMR_2019_a_0009 **Title:** USACE_CELRC_LCMR_2019_a_0009_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Woody debris on landside slope.; Action: Remove



Inspect ID: LCMR_2019_a_0015 **Title:** USACE_CELRC_LCMR_2019_a_0015_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Tree limb on riverside toe.; Action: Remove.



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Inspect ID: LCMR_2019_a_0019 **Title:** USACE_CELRC_LCMR_2019_a_0019_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Log on riverside toe.; Action: Remove.



Inspect ID: LCMR_2019_a_0037 **Title:** USACE_CELRC_LCMR_2019_a_0037_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: New fence on riverside slope. USACE was not informed prior to installation.; Action: Request as part of a 408 permit.



Levee Embankments

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Inspect ID: LCMR_2019_a_0043 **Title:** USACE_CELRC_LCMR_2019_a_0043_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Log pile on landside slope.; Action: Remove.



Inspect ID: LCMR_2019_a_0047 **Title:** USACE_CELRC_LCMR_2019_a_0047_1.jpg
Rated Item: 3. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Logs on riverside slope.; Action: Remove.



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	<p>Inspect ID: LCMR_2019_a_0057 Title: USACE_CELRC_LCMR_2019_a_0057_1.jpg Rated Item: 3. Encroachments Caption: Rating: Minimally Acceptable; Remarks: Woody debris on landside toe.; Action: Remove.</p>
	<p>Inspect ID: LCMR_2019_a_0011 Title: USACE_CELRC_LCMR_2019_a_0011_1.jpg Rated Item: 7. Settlement Caption: Rating: Minimally Acceptable; Remarks: Low crest. LIDAR shows the crest below the design elevation and BFE+2 elevation. Local Sponsor is currently repairing the levee crest to restore the height.; Action: Provide as-builts.</p>

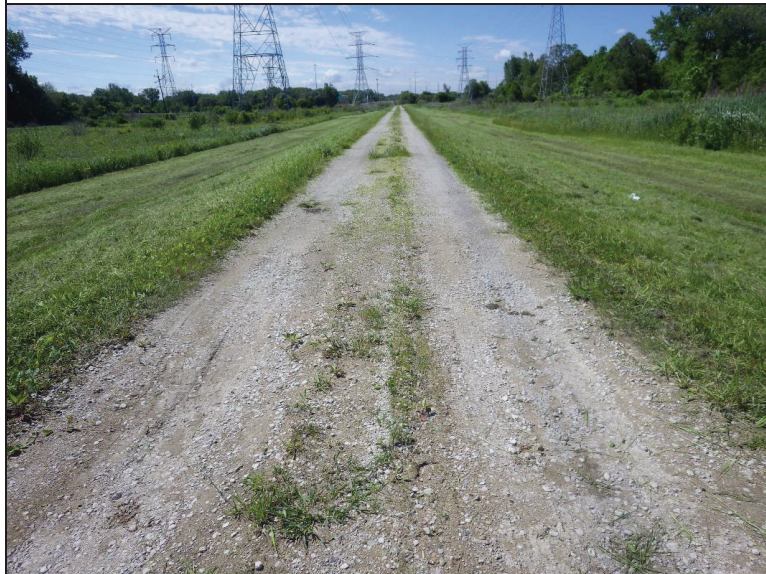


Levee Embankments

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Inspect ID: LCMR_2019_a_0039 **Title:** USACE_CELRC_LCMR_2019_a_0039_1.jpg
Rated Item: 7. Settlement **Caption:** Rating: Minimally Acceptable; Remarks: Low spot on crest at gateway. A 48-inch RCP crosses this location. Surveyed crest was below the design elevation and BFE+2 elevation. Local Sponsor is currently repairing the levee crest to restore the height.; Action: Provide as-builts.



Inspect ID: LCMR_2019_a_0003 **Title:** USACE_CELRC_LCMR_2019_a_0003_1.jpg
Rated Item: 8. Depressions/ Rutting **Caption:** Rating: Minimally Acceptable; Remarks: Ruts on crest.; Action: Fill with gravel to match required crest elevation.



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Inspect ID: LCMR_2019_a_0005 **Title:** USACE_CELRC_LCMR_2019_a_0005_1.jpg
Rated Item: 8. Depressions/ Rutting **Caption:** Rating: Minimally Acceptable; Remarks: Ruts on crest.; Action: Fill with gravel to match required crest elevation.



Inspect ID: LCMR_2019_a_0017 **Title:** USACE_CELRC_LCMR_2019_a_0017_1.jpg
Rated Item: 8. Depressions/ Rutting **Caption:** Rating: Minimally Acceptable; Remarks: Ruts on crest.; Action: Fill with gravel to match required crest elevation.



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Inspect ID: LCMR_2019_a_0021 **Title:** USACE_CELRC_LCMR_2019_a_0021_1.jpg
Rated Item: 8. Depressions/ Rutting **Caption:** Rating: Minimally Acceptable; Remarks: 20 ft long rut on crest, filter fabric exposed.; Action: Fill with gravel to match required crest elevation.



Inspect ID: LCMR_2019_a_0025 **Title:** USACE_CELRC_LCMR_2019_a_0025_1.jpg
Rated Item: 8. Depressions/ Rutting **Caption:** Rating: Minimally Acceptable; Remarks: Ruts on riverside toe, ponding water.; Action: Fill with soil and seed.



Levee Embankments

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Inspect ID: LCMR_2019_a_0027 **Title:** USACE_CELRC_LCMR_2019_a_0027_1.jpg
Rated Item: 8. Depressions/ Rutting **Caption:** Rating: Minimally Acceptable; Remarks:
Ruts on crest, ponding water.; Action: Fill with gravel to match required crest elevation.



Inspect ID: LCMR_2019_a_0029 **Title:** USACE_CELRC_LCMR_2019_a_0029_1.jpg
Rated Item: 8. Depressions/ Rutting **Caption:** Rating: Minimally Acceptable; Remarks:
Ruts on the crest, ponding water.; Action: Fill with gravel to match required crest elevation.



Levee Embankments

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Inspect ID: LCMR_2019_a_0031 **Title:** USACE_CELRC_LCMR_2019_a_0031_1.jpg
Rated Item: 8. Depressions/ Rutting **Caption:** Rating: Minimally Acceptable; Remarks:
Ruts on crest, ponding water.; Action: Fill with gravel to match required crest elevation.



Inspect ID: LCMR_2019_a_0045 **Title:** USACE_CELRC_LCMR_2019_a_0045_1.jpg
Rated Item: 8. Depressions/ Rutting **Caption:** Rating: Minimally Acceptable; Remarks:
Ruts on riverside toe.; Action: Fill with soil and seed.



Levee Embankments

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Inspect ID: LCMR_2019_a_0059 **Title:** USACE_CELRC_LCMR_2019_a_0059_1.jpg
Rated Item: 8. Depressions/Rutting **Caption:** Rating: Minimally Acceptable; Remarks:
Rutting on riverside slope; Action: Fill to grade and seed.



Interior Drainage System

For use during Initial and Continuing Eligibility Inspections of interior drainage systems

Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
1. Vegetation and Obstructions	M	A	No obstructions, vegetation, debris, or sediment accumulation noted within interior drainage channels or blocking the culverts, inlets, or discharge areas. Concrete joints and weep holes are free of grass and weeds.	LCMR_2019_a_0002: Station_1 NA: Vegetation around inlet.: Cut. (M) LCMR_2019_a_0035: Station_1 NA: Trees at outlet.: Cut. (M)
		M	Obstructions, vegetation, debris, or sediment are minor and have not impaired channel flow capacity or blocked more than 10% of any culvert openings, but should be removed. A limited volume of grass and weeds may be present in concrete channel joints and weep holes.	
		U	Obstructions, vegetation, debris, or sediment have impaired the channel flow capacity or blocked more than 10% of a culvert opening. Sediment and debris removal required to re-establish flow capacity.	
2. Encroachments	M	A	No trash, debris, unauthorized structures, excavations, or other obstructions present within the easement area. Encroachments have been previously reviewed by the Corps, and it was determined that they do not diminish proper functioning of the interior drainage system.	LCMR_2019_a_0033: Station_1 NA: Couch in drainage channel.: Remove. (M) LCMR_2019_a_0041: Station_1 NA: New fence around inlet and outlet. USACE was not informed prior to installation.: Request as part of a 408 permit. (M)
		M	Trash, debris, unauthorized structures, excavations, or other obstructions present, or inappropriate activities noted that should be corrected but will not inhibit operations and maintenance or emergency operations. Encroachments have not been reviewed by the Corps.	
		U	Unauthorized encroachments or inappropriate activities noted are likely to inhibit operations and maintenance, emergency operations, or negatively impact the integrity of this component of the interior drainage system.	
3. Ponding Areas	NA	A	No trash, debris, structures, or other obstructions present within the ponding areas. Sediment deposits do not exceed 10% of capacity.	
		M	Trash, debris, excavations, structures, or other obstructions present, or inappropriate activities that will not inhibit operations and maintenance. Sediment deposits do not exceed 30% of capacity.	
		U	Trash, debris, excavations, structures, or other obstructions, or other encroachments or activities noted that will inhibit operations, maintenance, or emergency work. Sediment deposits exceeds 30% of capacity.	
		N/A	There are no ponding areas associated with the interior drainage system.	
4. Fencing and Gates ¹	A	A	Fencing is in good condition and provides protection against falling or unauthorized access. Gates open and close freely, locks are in place, and there is little corrosion on metal parts.	
		M	Fencing or gates are damaged or corroded but appear to be maintainable. Locks may be missing or damaged.	
		U	Fencing and gates are damaged or corroded to the point that replacement is required, or potentially dangerous features are not secured.	
		N/A	There are no features noted that require safety fencing.	
5. Concrete Surfaces (Such as gate)	A	A	Negligible spalling, scaling or cracking. If the concrete surface is weathered or holds moisture, it is still satisfactory but should be seal coated to prevent freeze/ thaw damage.	

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Rated Item	Rating	Rating Guidelines	Location/Remarks/Recommendations
wells, outfalls, intakes, or culverts)		M	Spalling, scaling, and open cracking present, but the immediate integrity or performance of the structure is not threatened. Reinforcing steel may be exposed. Repairs/ sealing is necessary to prevent additional damage during periods of thawing and freezing.
		U	Surface deterioration or deep cracks present that may result in an unreliable structure. Any surface deterioration that exposes the sheet piling or lies adjacent to monolith joints may indicate underlying reinforcement corrosion and is unacceptable.
		N/A	There are no concrete items in the interior drainage system.
6. Tilting, Sliding or Settlement of Concrete and Sheet Pile Structures ² (Such as gate wells, outfalls, intakes, or culverts)	A	A	There are no significant areas of tilting, sliding, or settlement that would endanger the integrity of the structure.
		M	There are areas of tilting, sliding, or settlement (either active or inactive) that need to be repaired. The maximum offset, either laterally or vertically, does not exceed 2 inches unless the movement can be shown to be no longer actively occurring. The integrity of the structure is not in danger.
		U	There are areas of tilting, sliding, or settlement (either active or inactive) that threaten the structure's integrity and performance. Any movement that has resulted in failure of the waterstop (possibly identified by daylight visible through the joint) is unacceptable. Differential movement of greater than 2 inches between any two adjacent monoliths, either laterally or vertically, is unacceptable unless it can be shown that the movement is no longer active. Also, if the floodwall is of I-wall construction, then any visible or measurable tilting of the wall toward the protected side that has created an open horizontal crack on the riverside base of a monolith is unacceptable.
		N/A	There are no concrete items in the interior drainage system.
7. Foundation of Concrete Structures ³ (Such as culverts, inlet and discharge structures, or gatewells.)	A	A	No active erosion, scouring, or bank caving that might endanger the structure's stability.
		M	There are areas where the ground is eroding towards the base of the structure. Efforts need to be taken to slow and repair this erosion, but it is not judged to be close enough to the structure or to be progressing rapidly enough to affect structural stability before the next inspection. The rate of erosion is such that the structure is expected to remain stable until the next inspection.
		U	Erosion or bank caving observed that may lead to structural instabilities before the next inspection.
		N/A	There are no concrete items in the interior drainage system.
8. Monolith Joints	A	A	The joint material is in good condition. The exterior joint sealant is intact and cracking/ desiccation is minimal. Joint filler material and/or waterstop is not visible at any point.
		M	The joint material has appreciable deterioration to the point where joint filler material and/or waterstop is visible in some locations. This needs to be repaired or replaced to prevent spalling and cracking during freeze/ thaw cycles, and to ensure water tightness of the joint.

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Rated Item	Rating	Rating Guidelines	Location/Remarks/Recommendations
		<p>U The joint material is severely deteriorated or the concrete adjacent to the monolith joints has spalled and cracked, damaging the waterstop; in either case damage has occurred to the point where it is apparent that the joint is no longer watertight and will not provide the intended level of protection during a flood.</p> <p>N/A There are no monolith joints in the interior drainage system.</p>	
9. Culverts/ Discharge Pipes ⁴	A	<p>A There are no breaks, holes, cracks in the discharge pipes/ culverts that would result in significant water leakage. The pipe shape is still essentially circular. All joints appear to be closed and the soil tight. Corrugated metal pipes, if present, are in good condition with 100% of the original coating still in place (either asphalt or galvanizing) or have been relined with appropriate material, which is still in good condition. Condition of pipes has been verified using television camera video taping or visual inspection methods within the past five years, and the report for every pipe is available for review by the inspector.</p> <p>M There are a small number of corrosion pinholes or cracks that could leak water and need to be repaired, but the entire length of pipe is still structurally sound and is not in danger of collapsing. Pipe shape may be ovalized in some locations but does not appear to be approaching a curvature reversal. A limited number of joints may have opened and soil loss may be beginning. Any open joints should be repaired prior to the next inspection. Corrugated metal pipes, if present, may be showing corrosion and pinholes but there are no areas with total section loss. Condition of pipes has been verified using television camera video taping or visual inspection methods within the past five years, and the report for every pipe is available for review by the inspector.</p> <p>U Culvert has deterioration and/or has significant leakage; it is in danger of collapsing or as already begun to collapse. Corrugated metal pipes have suffered 100% section loss in the invert. HOWEVER: Even if pipes appear to be in good condition, as judged by an external visual inspection, an Unacceptable Rating will be assigned if the condition of pipes has not been verified using television camera video taping or visual inspection methods within the past five years, and reports for all pipes are not available for review by the inspector.</p> <p>N/A There are no discharge pipes/ culverts.</p>	Camera inspection results submitted on 9/17/18. No issues were noted. Joints not grouted. Settlement was noted on the levee crest above the 48-inch RCP. Monitor. Perform next inspection in 2023.
10. Sluice / Slide Gates ⁵	M	<p>A Gates open and close freely to a tight seal or minor leakage. Gate operators are in good working condition and are properly maintained. Sill is free of sediment and other obstructions. Gates and lifters have been maintained and are free of corrosion. Documentation provided during the inspection.</p> <p>M Gates and/or operators have been damaged or have minor corrosion, and open and close with resistance or binding. Leakage quantity is controllable, but maintenance is required. Sill is free of sediment and other obstructions.</p> <p>U Gates do not open or close and/or operators do not function. Gate, stem, lifter and/or guides may be damaged or have major corrosion.</p> <p>N/A There are no sluice/ slide gates.</p>	LCMR_2019_a_0004: Station_1 NA: Gate did not fully close due to sediment on the bottom.: Clean. (M)

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Interior Drainage System

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Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
11. Flap Gates/ Flap Valves/ Pinch Valves ¹	A	A	Gates/ valves open and close easily with minimal leakage, have no corrosion damage, and have been exercised and lubricated as required.	
		M	Gates/ valves will not fully open or close because of obstructions that can be easily removed, or have minor corrosion damage that requires maintenance.	
		U	Gates/ valves are missing, have been damaged, or have deteriorated to the point that they need to be replaced.	
		N/A	There are no flap gates.	
12. Trash Racks (non-mechanical)	A	A	Trash racks are fastened in place and properly maintained.	
		M	Trash racks are in place but are unfastened or have bent bars that allow debris to enter into the pipe or pump station, bars are corroded to the point that up to 10% of the sectional area may be lost. Repair or replacement is required.	
		U	Trash racks are missing or damaged to the extent that they are no longer functional and must be replaced. (For example, more than 10% of the sectional area may be lost.)	
		N/A	There are no trash racks, or they are covered in the pump stations section of the report.	
13. Other Metallic Items	A	A	All metal parts are protected from corrosion damage and show no rust, damage, or deterioration that would cause a safety concern.	
		M	Corrosion seen on metallic parts appears to be maintainable.	
		U	Metallic parts are severely corroded and require replacement to prevent failure, equipment damage, or safety issues.	
		N/A	There are no other significant metallic items.	
14. Riprap Revetments of Inlet/ Discharge Areas	A	A	No riprap displacement or stone degradation that could pose an immediate threat to the integrity of channel bank. Riprap intact with no woody vegetation present.	
		M	Minor riprap displacement or stone degradation that could pose an immediate threat to the integrity of the channel bank. Unwanted vegetation must be cleared or sprayed with an appropriate herbicide.	
		U	Significant riprap displacement, exposure of bedding, or stone degradation observed. Scour activity is undercutting banks, eroding embankments, or impairing channel flows by causing turbulence or shoaling. Rock protection is hidden by dense brush, trees, or grasses.	
		N/A	There is no riprap protecting this feature of the segment / system, or riprap is discussed in another section.	
15. Revetments other than Riprap	NA	A	No riprap displacement or stone degradation that could pose an immediate threat to the integrity of channel bank. Riprap intact with no woody vegetation present.	

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Rated Item	Rating	Rating Guidelines	Location/Remarks/Recommendations
	M	Minor riprap displacement or stone degradation that could pose an immediate threat to the integrity of the channel bank. Unwanted vegetation must be cleared or sprayed with an appropriate herbicide.	
	U	Significant riprap displacement, exposure of bedding, or stone degradation observed. Scour activity is undercutting banks, eroding embankments, or impairing channel flows by causing turbulence or shoaling. Rock protection is hidden by dense brush, trees, or grasses.	
	N/A	There are no such revetments protecting this feature of the segment / system.	

¹ Proper operation of this item must be demonstrated during the inspection.

² The sponsor should be monitoring any observed movement to verify whether the movement is active or inactive.

³ Inspectors must have as-built drawings available during the inspection so that the lateral distance to the heel and toe of the floodwalls can be determined in the field.

⁴ The decision on whether or not USACE inspectors should enter a pipe to perform a detailed inspection must be made at the USACE District level. This decision should be made in conjunction with the District Safety Office, as pipes may be considered confined spaces. This decision should consider the age of the pipe, the diameter of the pipe, the apparent condition of the pipe, and the length of the pipe. If a pipe is entered for the purposes of inspection, the inspector should record observations with a video camera in order that the condition of the entire pipe, including all joints, can later be assessed. Additionally, the video record provides a baseline to which future inspections can be compared.

⁵ Proper operation of the gates (full open and closed) must be demonstrated during the inspection if no documentation is available. Be aware of both manual and electrical operators.

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Inspect ID: LCMR_2019_a_0002 **Title:** USACE_CELRC_LCMR_2019_a_0002_1.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Minimally Acceptable;
Remarks: Vegetation around inlet.; **Action:** Cut.



Inspect ID: LCMR_2019_a_0035 **Title:** USACE_CELRC_LCMR_2019_a_0035_1.jpg
Rated Item: 1. Vegetation and Obstructions **Caption:** Rating: Minimally Acceptable;
Remarks: Trees at outlet.; **Action:** Cut.



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Inspect ID: LCMR_2019_a_0033 **Title:** USACE_CELRC_LCMR_2019_a_0033_1.jpg
Rated Item: 2. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: Couch in drainage channel.; Action: Remove.



Inspect ID: LCMR_2019_a_0041 **Title:** USACE_CELRC_LCMR_2019_a_0041_1.jpg
Rated Item: 2. Encroachments **Caption:** Rating: Minimally Acceptable; Remarks: New fence around inlet and outlet. USACE was not informed prior to installation.; Action: Request as part of a 408 permit.



Interior Drainage System

For use during Initial and Continuing Eligibility Inspections of interior drainage systems



Inspect ID: LCMR_2019_a_0004 **Title:** USACE_CELRC_LCMR_2019_a_0004_1.jpg
Rated Item: 10. Sluice/ Slide Gates **Caption:** Rating: Minimally Acceptable; Remarks: Gate did not fully close due to sediment on the bottom.; Action: Clean.



Pump Stations

For use during Initial and Continuing Eligibility Inspections of pump stations

Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
1. Pump Stations Operating, Maintenance, Training, & Inspection Records	A	A	Operation, maintenance and inspection records are present at the pump station and are being used and updated, and personnel have been trained in pump station operations. Names and last training date shown in the record book.	
		M	Operation, maintenance and inspection records are present but not adequately used and updated.	
		U	No operation, maintenance and inspection records are present, or refresher training for personnel has not been conducted.	
2. Pump Station Operations and Maintenance Equipment Manuals	A	A	Operation and Maintenance Equipment Manuals and/or posted operating instructions are present and updated as required, and adequately cover all pertinent pump station features. O&M manuals include points of contact for manufacturers and suppliers of major equipment used in the facility.	
		M	Operation and Maintenance Equipment Manuals and/or posted operating instructions are present and adequately cover all pertinent pump station features. However, they are incomplete and the necessary updates have not been made.	
		U	Operation and Maintenance Equipment Manuals are not available.	
3. Safety Compliance	M	A	Safety compliance inspection reports by applicable local, state, or federal agencies available for review.	LCMR_2019_a_0066: Station_1 NA: PS-MR: Arc-flash warning signs needed.: Provide proper Arc-Flash warning signs per latest NFPA 70 and NFPA70E 310.3(C). (M)
		M	No safety compliance inspection reports are available for review.	
4. Communications (A or M only)	A	A	A telephone, cellular phone, two-way radio, or similar device is available to pump station operator and maintenance personnel.	
		M	A telephone, cellular phone, two-way radio, or similar device is not available to pump station operator and maintenance personnel.	
5. Plant Building	A	A	The building is in good structural condition with no major foundation settlement problems. The roof is not leaking, intake & exhaust louvers are clear of debris, fans are operational, etc.	
		M	There are minor structural defects, minimal foundation settlement, leaks, or other conditions noted that need repair. Defects do not threaten the structural integrity or stability of the building, and will not impact pumping operations.	
		U	The structural integrity or stability of the building is threatened, or there is damage to the building that threatens safety of the operator or impacts pumping operations.	
6. Fencing and Gates ¹	A	A	Fencing is in good condition and provides protection against falling or unauthorized access. Gates open and close freely, locks are in place, and there is little corrosion on metal parts.	
		M	Fencing or gates are damaged or corroded but appear to be maintainable. Locks may be missing or damaged.	
		U	Fencing and gates are damaged or corroded to the point that replacement is required, or potentially dangerous features are not secured.	

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Pump Stations

For use during Initial and Continuing Eligibility Inspections of pump stations

Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		N/A	There are no features noted that require safety fencing.	
7. Pumps ¹	A	A	All pumps are properly maintained and lubricated. Systems are periodically tested and documented for review. No vibration, cavitation noises or unusual sounds are noted when the pump is operated. Bearing temperature sensor records don't indicate any problems.	
		M	Minor deficiencies noted that need to be closely monitored or repaired, such as the presence of slight vibrations, leakage of packing gland, bearing temperature sensors are inoperable or no record is present. However, the pumps are operational and are expected to perform through the next period of usage.	
		U	Major deficiencies identified that may significantly reduce pumping operations. For example, bearing sensor records indicate problems, excessive vibration noted, impellers are badly corroded, or there are eroded or missing blades.	
8. Motors, Engines, Fans, Gear Reducers, Back Stop Devices, etc.	A	A	All items are operational. Preventative maintenance and lubrication is being performed and the system is periodically subjected to performance testing. Instrumentation, alarms, bearing sensors and auto shutdowns are operational.	
		M	Systems have minor deficiencies, but are operational and will function adequately through the next flood. Bearing sensors are not operational.	
		U	One or more of the primary motors or systems is not operational, or noted deficiencies have not been corrected.	
9. Sumps / Wet well	M	A	Clear of debris, sediment, or other obstructions. Procedures are in place to remove debris accumulation during operation.	LCMR_2019_a_0060: Station_1 NA: PS-MR: Sump discharges back to intake.: Check operations. (M) LCMR_2019_a_0068: Station_1 NA: PS-MR: Debris in wet well.: Clean. (M)
		M	Debris, sediment, or other obstructions may be present and must be removed, but the sump/wet well will function as intended during the next flood. Procedures are in place to remove debris accumulation during operation.	
		U	Large debris or excessive silt present which will hinder or damage pumps during operation, or no procedures established to remove debris accumulation during operation.	
10. Mechanical Operating Trash Rakes ¹	NA	A	Drive chain, bearing, gear reducers, and other components are in good operating condition and are being properly maintained.	
		M	The trash rake is in need of maintenance, but is still operational.	
		U	Trash rake not operational or deficiencies will inhibit operations during the next flood event.	
		N/A	There are no mechanical trash rakes.	
11. Non-Mechanical Trash Racks	M	A	Trash racks are fastened in place and properly maintained.	LCMR_2019_a_0064: Station_1 NA: PS-MR: Debris at inlet.: Remove. (M)
		M	Trash racks are in place but are unfastened or have bent bars that allow debris to enter into the pipe or pump station, bars are corroded to the point that up to 10% of the sectional area may be lost. Repair or replacement is required.	

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Pump Stations

For use during Initial and Continuing Eligibility Inspections of pump stations

Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
		U	Trash racks are missing or damaged to the extent that they are no longer functional and must be replaced. (For example, more than 10% of the sectional area may be lost.)	
		N/A	There are no trash racks, or they are covered in the pump stations section of the report.	
12. Fuel System for Pump Engines	A	A	Fuel system is operational, day tank present and operational, fuel fresh and rotated regularly.	
		M	Fuel system is operational and of adequate capacity, but day tank is missing or fuel is not fresh and rotated regularly.	
		U	Fuel system not functional.	
		N/A	No fuel system.	
13. Power Source	A	A	The normal power source and backup generators, if installed, are operational, properly exercised and well maintained. Surge protection, grounding, lightning protection, transformers, and automatic/manual transfer of main power to backup system is working.	
		M	Normal power source and backup units, if applicable, are operational with minor discrepancies or maintenance, inspection and exercising record is present but not up to date. Preventative maintenance or repairs are required.	
		U	Normal power source or generators are not operational and must be repaired; or generator, if required, is not on site.	
14. Electrical Systems ²	A	A	Operational and maintained free of damage, corrosion, and debris. Preventative maintenance and system testing is being performed periodically.	
		M	Operational with minor discrepancies. Preventative maintenance or repairs are required, but the components are expected to function adequately during the next flood event.	
		U	Components of the electrical system will not function adequately during the next flood event and must be replaced.	
15. Megger Testing on Pump Motors and Critical Power Cables	A	A	Results of megger tests on pump motors or critical power cables show that the insulation meets manufacturer's or industry standards. Tested within the last year.	
		M	Megger testing not conducted within the past year. If megger tests on pump motors indicate that insulation resistance is below the manufacturer's or industry standard, but the resistance can be corrected with proper application of heat, this is minimally acceptable. (The application of heat does not relate to critical power cables.)	
		U	Megger tests not conducted within past two years, or tests indicate that insulation resistance is low enough that the equipment will not be able to meet design standards of operation; or evidence of arcing or shorting is detected visually.	

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Pump Stations

For use during Initial and Continuing Eligibility Inspections of pump stations

Rated Item	Rating	Rating Guidelines		Location/Remarks/Recommendations
16. Enclosures, Panels, Conduit and Ducts	A	A	All enclosures, panels, conduits, and ducts are protected from corrosion damage and show no rust, damage, or deterioration that would cause a safety concern.	
		M	Minor surface corrosion which appears to be maintainable. Cleaning and painting required.	
		U	Severely corroded and must be replaced to prevent failure, equipment damage, or safety issues.	
17. Intake and Discharge Pipelines	A	A	Intake and discharge pipelines have no corrosion and paint is intact, except for minor touch up required. Pipe couplings and anchors have no leakage or corrosion.	
		M	Intake and discharge pipelines have minor corrosion and repair and painting is required. Pipe coupling with anchors have minor leakage, corrosion and require bolts to be tightened.	
		U	Intake and discharge pipelines have major corrosion and replacement is required. Pipe coupling with anchors have major leakage and is heavily corroded and requires replacement.	
18. Sluice/ Slide Gates ³	NA	A	Gates open and close freely to a tight seal or minor leakage. Gate operators are in good working condition and are properly maintained. Sill is free of sediment and other obstructions. Gates and lifters have been maintained and are free of corrosion. Documentation provided during the inspection.	
		M	Gates and/or operators have been damaged or have minor corrosion, and open and close with resistance or binding. Leakage quantity is controllable, but maintenance is required. Sill is free of sediment and other obstructions.	
		U	Gates do not open or close and/or operators do not function. Gate, stem, lifter and/or guides may be damaged or have major corrosion.	
		N/A	There are no sluice/ slide gates.	
19. Flap Gates/ Flap Valves/ Pinch Valves ¹	A	A	Gates/ valves open and close easily with minimal leakage, have no corrosion damage, and have been exercised and lubricated as required.	
		M	Gates/ valves will not fully open or close because of obstructions that can be easily removed, or have minor corrosion damage that requires maintenance.	
		U	Gates/ valves are missing, have been damaged, or have deteriorated to the point that they need to be replaced.	
		N/A	There are no gates on discharge lines from pump station.	
20. Cranes ¹	NA	A	Cranes operational and have been inspected and load tested in accordance with applicable standards within the last year. Documentation is on hand.	

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Pump Stations

For use during Initial and Continuing Eligibility Inspections of pump stations

Rated Item	Rating	Rating Guidelines	Location/Remarks/Recommendations
		M Cranes have not been inspected or operationally tested within the past year, or there are visible signs of corrosion, oil leakage, etc, requiring maintenance. U Cranes are not operational, and this may prevent the pump station from functioning as required. No documentation available on cranes. N/A There are no cranes.	
21. Other Metallic Items (Equipment, Ladders, Platform Anchors, etc)	M	A All metal parts are protected from corrosion damage and show no rust, damage, or deterioration that would cause a safety concern. M Corrosion seen on metallic parts appears to be maintainable. U Metallic parts are severely corroded and require replacement to prevent failure, equipment damage, or safety issues. N/A There are no other significant metallic items.	LCMR_2019_a_0062: Station_1 NA: PS-MR: Bracket falling off.: Repair. (M)

¹ Proper operation of this item must be demonstrated during the inspection.

² Check motor control center, circuit breakers, pilot lights, volt meters, ammeters, sump level indicator, gate position indicators, remote operating systems, including SCADA and telemetry systems. Also, check interior and exterior lighting; especially lighting near trash rack screens, ladders, walkways, etc.

³ Proper operation of the gates (full open and closed) must be demonstrated during the inspection if no documentation is available. Be aware of both manual and electrical operators.

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US Army Corps
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Pump Stations

For use during Initial and Continuing Eligibility Inspections of pump stations



Inspect ID: LCMR_2019_a_0066 **Title:** USACE_CELRC_LCMR_2019_a_0066_1.jpg
Rated Item: 3. Safety Compliance **Caption:** Rating: Minimally Acceptable; Remarks: PS-MR: Arc-flash warning signs needed.; Action: Provide proper Arc-Flash warning signs per latest NFPA 70 and NFPA70E 310.3(C).



Inspect ID: LCMR_2019_a_0060 **Title:** USACE_CELRC_LCMR_2019_a_0060_1.jpg
Rated Item: 9. Sumps/ Wet well **Caption:** Rating: Minimally Acceptable; Remarks: PS-MR: Sump discharges back to intake.; Action: Check operations.



Pump Stations

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Inspect ID: LCMR_2019_a_0068 **Title:** USACE_CELRC_LCMR_2019_a_0068_1.jpg
Rated Item: 9. Sumps/ Wet well **Caption:** Rating: Minimally Acceptable; Remarks: PS-MR: Debris in wet well.; Action: Clean.



Inspect ID: LCMR_2019_a_0064 **Title:** USACE_CELRC_LCMR_2019_a_0064_1.jpg
Rated Item: 11. Non-Mechanical Trash Racks **Caption:** Rating: Minimally Acceptable; Remarks: PS-MR: Debris at inlet.; Action: Remove.



Pump Stations

For use during Initial and Continuing Eligibility Inspections of pump stations



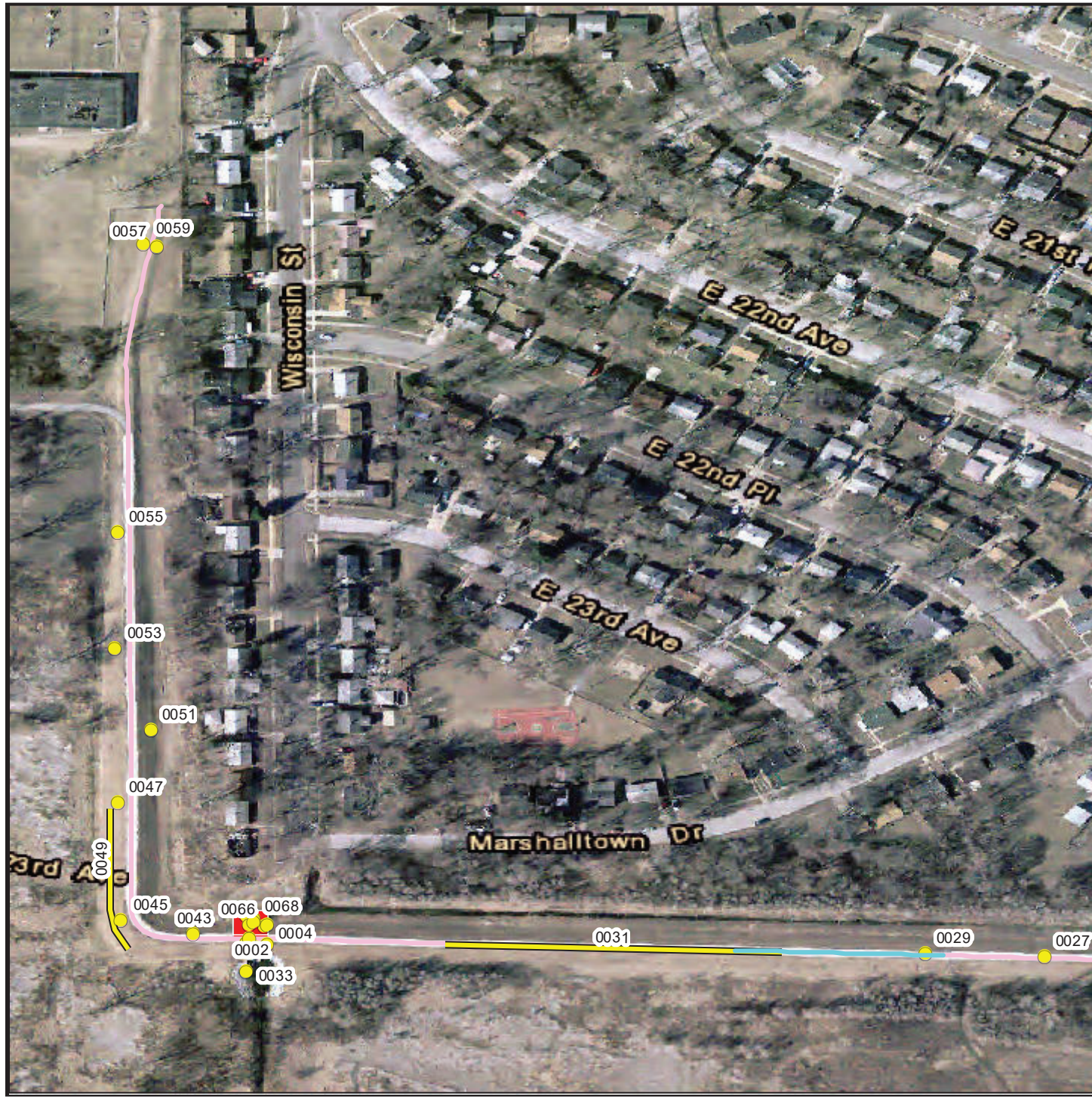
Inspect ID: LCMR_2019_a_0062 **Title:** USACE_CELRC_LCMR_2019_a_0062_1.jpg
Rated Item: 21. Other Metallic Items (Equipment, Ladders, Platform Anchors, etc)
Caption: Rating: Minimally Acceptable; Remarks: PS-MR: Bracket falling off.; Action: Repair.



Levee Inspection Map

Little Cal - Marshalltown

Location: Gary IN
Year/cycle: 2019 a
Inspection type: Periodic
Inspected by: USACE Chicago District
Inspection date(s): June 10, 2019
Observation ID prefix:
USACE_GELRC_LCMR_2019_a
Map created: 06 August 2019

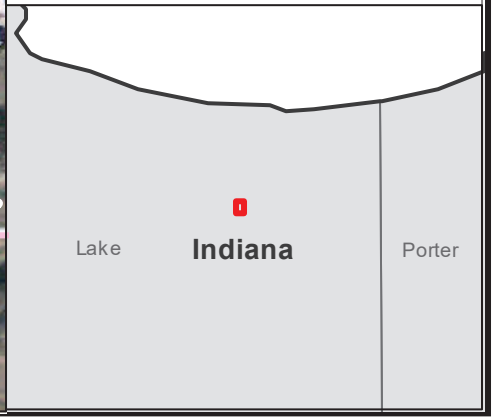
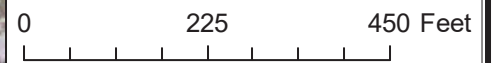


Observation Points

- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable

Observation Lines

- Acceptable
- Minimally Acceptable
- Unacceptable
- Not Applicable



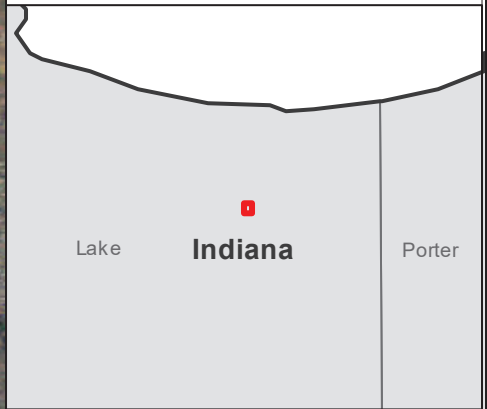
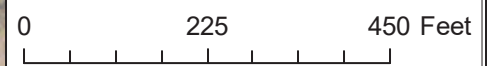


Levee Inspection Map

Little Cal - Marshalltown

Location: Gary IN
 Year/cycle: 2019 a
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 Observation ID prefix:
 USACE_CELRC_LCMR_2019_a
 Map created: 06 August 2019

- Observation Points**
- Acceptable
 - Minimally Acceptable
 - Unacceptable
 - Not Applicable
- Observation Lines**
- Acceptable
 - Minimally Acceptable
 - Unacceptable
 - Not Applicable



Rehabilitation Program Eligibility Determination

In order to be eligible, all of the following items must be rated A, M, N/A, or Yes.
 Note: Item numbers listed below refer to their placement in the Inspection Checklist.

Name of Segment/System: Marshalltown		
Public Sponsor(s): Little Calumet River Basin Development Commission		
Sponsor Representative: Dan Repay		
Sponsor Phone: 219-595-0599		
Sponsor Email: drepay@littlecalumetriverbasin.org		
Inspection Date: 6/10/19 - 6/11/19		
Rehabilitation Program Eligibility Determination		
Yes	<input checked="" type="checkbox"/>	Public sponsor provided maintenance information per the Public Sponsor Pre-Inspection Form.
No	<input type="checkbox"/>	
Yes	<input type="checkbox"/>	Non-federal levee system meets Initial Eligibility criteria.
No	<input type="checkbox"/>	
N/A	<input checked="" type="checkbox"/>	
If either of the above items is marked "No" the levee system is not eligible.		
Rating	Rated Item	
Levee Embankments		
A	<input type="checkbox"/>	3. Encroachments
M	<input checked="" type="checkbox"/>	
U	<input type="checkbox"/>	
A	<input type="checkbox"/>	4. Closure structures (Stop Log, Earthen Closures, Gates, or Sandbag Closures)
U	<input type="checkbox"/>	
N/A	<input checked="" type="checkbox"/>	
A	<input checked="" type="checkbox"/>	5. Slope Stability
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
A	<input checked="" type="checkbox"/>	6. Erosion/ Bank Caving
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
A	<input checked="" type="checkbox"/>	10. Animal Control
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
A	<input checked="" type="checkbox"/>	11. Culverts/Discharge Pipes (This item includes both concrete and corrugated metal pipes.)
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
N/A	<input type="checkbox"/>	
A	<input type="checkbox"/>	14. Underseepage Relief Wells/Toe Drainage Systems
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
N/A	<input checked="" type="checkbox"/>	

Floodwalls		
A	<input type="checkbox"/>	2. Encroachments
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
A	<input type="checkbox"/>	3. Closure Structures (Stop Log Closures and Gates)
U	<input type="checkbox"/>	
N/A	<input type="checkbox"/>	
A	<input type="checkbox"/>	5. Tilting, Sliding, or Settlement of Concrete Structures
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
A	<input type="checkbox"/>	6. Foundation of Concrete Structures
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
A	<input type="checkbox"/>	8. Underseepage Relief Wells/Toe Drainage Systems
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
N/A	<input type="checkbox"/>	
Interior Drainage Systems		
A	<input checked="" type="checkbox"/>	9. Culvert/Discharge Pipes
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
N/A	<input type="checkbox"/>	
A	<input type="checkbox"/>	10. Sluice/Slide Gates
M	<input checked="" type="checkbox"/>	
U	<input type="checkbox"/>	
N/A	<input type="checkbox"/>	
A	<input checked="" type="checkbox"/>	11. Flap gates/Flap Valves/Pinch Valves
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
N/A	<input type="checkbox"/>	
Pump Stations		
A	<input checked="" type="checkbox"/>	17. Intake and Discharge Pipelines
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
A	<input type="checkbox"/>	18. Sluice/Slide Gates
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
N/A	<input checked="" type="checkbox"/>	
A	<input checked="" type="checkbox"/>	19. Flap Gates/Flap Valves/Pinch Valves
M	<input type="checkbox"/>	
U	<input type="checkbox"/>	
N/A	<input type="checkbox"/>	

Rehabilitation Program Status		
Active	<input checked="" type="checkbox"/>	System meets all interim eligibility criteria, including having received a rating of A, M, N/A or Yes for all subsets items and is therefore eligible for rehabilitation assistance.
Inactive	<input type="checkbox"/>	System does not meet interim eligibility requirements.
Comments:		

Final Approval By:

GROBOSKI.J Digitally signed by
OHN.A.JR.1 GROBOSKI.JOHN.A.J
249715510 R.1249715510
Date: 2019.08.09
16:54:10 -05'00'

John Groboski, P.E.
Levee Safety Officer