US Army Corps of Engineers®

# Flood Damage Reduction System Inspection Report

Name of System: _____

Public Sponsor(s): _____

Public Sponsor Representative: _____

Sponsor Phone: _____

Sponsor Email: _____

Corps of Engineers Inspector: _____ Date of Inspection: _____

Inspection Report Prepared By: _____ Date Report Prepared: _____

Internal Technical Review (for Periodic Inspections) By: D _____ Date of ITR: _____

Final Approval By: _____ Date Approved: _____

Type of Inspection:

- ☐ **Initial Eligibility Inspection**
- ☐ **Continuing Eligibility Inspection (Routine)**
- ☐ **Continuing Eligibility Inspection (Periodic)**

Overall System Rating:

- ☐ **Acceptable**
- ☐ **Minimally Acceptable**
- ☐ **Unacceptable**

Contents of this Report:

- ☐ **Instructions**
- ☐ **Initial Eligibility Inspection**
- ☐ **General Items for All Flood Control Works**
- ☐ **Levee Embankments**
- ☐ **Concrete Floodwalls**
- ☐ **Sheet Pile and Concrete I-walls**
- ☐ **Interior Drainage System**
- ☐ **Pump Stations**
- ☐ **FDR system Channels**

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.

US Army Corps of Engineers®

# Flood Damage Reduction System
# Public Sponsor Pre-Inspection Report

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 system maintenance program.

| |
|---|
| 1. Levee system and district: (name of the system and levee district) |
| 2. Reporting period: (month/day/year to month/day/year) |
| 3. Summary of maintenance required by last inspection report: |
| 4. Summary of maintenance performed this reporting period: |
| 5. Summary of maintenance planned next reporting period: |
| 6. Summary of changes to system since last inspection: |
| 7. Problems/ issues requiring the assistance of the US Army Corps of Engineers: |

## 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 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

# General Instructions for the Inspection of Flood Damage Reduction 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 Flood Damage Reduction "systems" as complete and independent units, regardless of relevant "project" or "segment" boundaries.

| 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 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 system from performing as intended during the next flood event. | One or more items are rated as Unacceptable and would prevent the 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. |

# Initial Eligibility

**For use only during Initial Eligibility Inspections of Non-Federally Constructed Flood Damage Reduction Systems**

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 1. Public Sponsor (A or U only) | | **A** | The Public Sponsor is a legally constituted public body with full authority and capability to perform the terms of its agreement as the non-Federal partner of the Corps for a system, able to pay damages, if necessary, in the event of its failure to perform. The public sponsor may be a State, County, City, Town, Federally recognized Indian Tribe or tribal organization, Alaska Native Corporation, or any political subpart of a State or group of states that has the legal and financial authority and capability to provide the necessary cash contributions and the lands, easements, rights-of-way, relocations, borrow, and dredged or excavated materials disposal areas (LERRD's) necessary for the system, and who could legally hold and save the Federal government free from damages that could potentially arise during post-flood rehabilitations or other work on the system. | |
| | | **U** | The system does not have a public sponsor as defined above. | |
| 2. Flood Protection (A or U only) | | **A** | The principal function of the system is to protect people or property from floods. | |
| | | **U** | The system was built or is primarily used for channel alignment, navigation, recreation, fish and wildlife, land reclamation, drainage, to protect against land erosion or tidal inflows, or for some other non-flood related purpose. | |
| 3. System Completion | | **A** | System construction is fully completed. | |
| | | **U** | The system is still under construction. | |
| 4. Construction Compliance (A or U only) | | **A** | Appropriate local, State, tribal, and/or Federal permits (right-of-way, easements, regulatory permits, etc.), or waivers thereof, have been obtained for FDR system construction and subsequent modifications. The system was constructed in accordance with all applicable Federal, state and local codes, ordinances, and applicable laws. | |
| | | **U** | The appropriate permits (or waivers thereof) have not been obtained for the system, or the system was not constructed in accordance with applicable codes, ordinances, and laws. | |
| 5. Primary Levee | | **A** | In the case of a levee system, the levee is a primary levee or is a secondary levee which is designed to protect human life. | |
| | | **U** | The levee is a secondary levee and was not designed to protect human life. | |
| | | **N/A** | The FDR system is not a levee system. | |
| 6. Minimum Elevation[1] (A or U only) | | **A** | • **Urban Levees and Floodwalls**- Minimum elevation corresponding to a flood level with 10% probability of occurring in a given year (10-year flood).<br>• **Agricultural Levees and Floodwalls**- Minimum elevation corresponding to a flood level with 20% probability of occurring in a given year (5-year flood).<br>• **Flood Damage Reduction Channels**- Minimum capacity is for a flood with a 10% probability of occurring in a given year (10-year flood). Improved channels must additionally provide drainage for at least 1.5 square miles of land and have a capacity of at least 800 cfs. (Interior drainage channels within the protected area of a levee system are not considered to be flood damage reduction channels under the RIP.) | |
| | | **U** | The FDR system does not meet requirements for minimum elevation, capacity, or drainage area. | |

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

[1] Depending on available data and local Corps policy, the minimum elevation required may be calculated using traditional methods, with the addition of 1 foot of freeboard in agricultural areas and 2 feet of freeboard in urban areas, or using annual exceedance probability, which numerically accounts for the natural variation and uncertainty when estimating discharge-probability and stage-discharge functions so that additional requirements for elevation are based on the level of uncertainty in the data.

# Initial Eligibility

**For use only during Initial Eligibility Inspections of Non-Federally Constructed Flood Damage Reduction Systems**

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 7. Physical Location and Cross Section (A or U only) | | **A** | The physical location, cross section, and other design elements of the FDR system are sufficient to provide reliable flood protection. The FDR system forms a properly closed system. See Table 5-4, EP 500-1-1. | |
| | | **U** | The FDR system was not constructed in an appropriate location, does not have an appropriate cross section, is not a properly closed system, or has other shortcomings with design elements necessary for providing reliable flood damage reduction. | |
| 8. Embankment Fill Material[1] | | **A** | Embankment fill material is uniform and adequately compacted throughout the entire FDR system, and the type of embankment material is suitable to prevent slides and seepage problems. | |
| | | **U** | Embankment fill material is not uniform, or there is no compaction and evidence indicates a need for compaction, or the type of embankment material is unsuitable and is likely to contribute to the development of slides or seepage problems. | |
| 9. Foundations[1] | | **A** | Foundation material and construction methods adequately address piping, sand boils, seepage, or settlements that would reduce the level of protection. | |
| | | **U** | Foundation material and construction methods are such that excessive uncontrolled seepage, sand boils, and piping will occur. Performance history indicates significant uncontrolled seepage, sand boils or piping. | |
| 10. Erosion Control | | **A** | Erosion protection is capable of handling the designed flow velocity for the level of protection for the entire FDR system. The FDR system is protected against bank caving and slides in all necessary areas, and has adequate drainage to protect FDR system slopes from runoff erosion. | |
| | | **U** | Erosion protection is not present and there is evidence indicating a need for erosion protection. | |
| 11. Interior Drainage System[2] (including culverts, gates, pump stations) | | **A** | Given the level of protection provided by the FDR system, interior drainage structures are appropriately sized, situated, and constructed to move anticipated runoff and seepage out of the protected area. Pump stations will not become inundated during regular operation and their power system is adequately designed and reliable. | |
| | | **U** | Interior drainage structures are undersized, poorly constructed, poorly situated, or unreliably designed. | |
| | | **N/A** | The issue of interior drainage does not apply to this type of FDR system. | |
| 12. Structures[2] | | **A** | Structures are designed and constructed to withstand anticipated loadings. | |
| | | **U** | Structures are unreliably designed or inadequately constructed. | |

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

[1] This item should be evaluated based on a review of performance history. If this is not available, some form of engineering assessment is required.

[2] Documentation (plans, at a minimum) required for any necessary engineering evaluation is to be provided by the public sponsor.

# General Items for All Flood Damage Reduction Systems

**For use during all inspections of all Flood Damage Reduction Systems**

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 1. Operations and Maintenance Manuals | | **A** | Levee Owner's Manual, O&M Manuals, and/or manufacturer's operating instructions are present. | |
| | | **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** | 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. | |
| | | **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) | | **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. | |
| | | **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 systems**

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 1. Unwanted Vegetation Growth[1] | | **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. | |
| | | **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 to be removed to reestablish or ascertain levee integrity. | |
| 2. Sod Cover | | **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. Encroach-ments | | **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. | |
| | | **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. | |
| 4. Closure Structures (Stop Log, Earthen Closures, Gates, or Sandbag Closures) (A or U only) | | **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 system. | |

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

[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.

## Levee Embankments

**For use during Initial and Continuing Eligibility Inspections of levee systems**

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 5. Slope Stability | | **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** | 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[1] | | **A** | No observed depressions in crown. Records exist and indicate no unexplained historical changes. | |
| | | **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 | | **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. | |
| | | **M** | There are some infrequent minor depressions less than 6 inches deep in the levee crown, embankment, or access roads that will pond water. | |
| | | **U** | There are depressions greater than 6 inches deep that will pond water. | |
| 9. Cracking | | **A** | Minor longitudinal, transverse, or desiccation cracks with no vertical movement along the crack. No cracks extend continuously through the levee crest. | |
| | | **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 then the height of the levee. | |
| | | **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. | |
| 10. Animal Control | | **A** | Continuous animal burrow control program in place that includes the elimination of active burrowing and the filling in of existing burrows. | |
| | | **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. | |
| | | **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. | |

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

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

## Levee Embankments

**For use during Initial and Continuing Eligibility Inspections of levee systems**

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 11. Culverts/ Discharge Pipes[1]<br><br>(This item includes both concrete and corrugated metal pipes.) | | **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. | |
| | | **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. | |

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

[1] 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.

## Levee Embankments

**For use during Initial and Continuing Eligibility Inspections of levee systems**

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 12. Riprap Revetments & Bank Protection | | **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 system, or riprap is discussed in another section. | |
| 13. Revetments other than Riprap | | **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. | |
| | | **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 system. | |
| 14. Underseepage Relief Wells/ Toe Drainage Systems | | **A** | Toe drainage systems and pressure relief wells necessary for maintaining FDR 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 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 system. | |
| 15. Seepage | | **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. | |

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

# Floodwalls

**For use during Initial and Continuing Eligibility Inspections of all floodwalls**

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 1. Unwanted Vegetation Growth[1] | | **A** | A grass-only or paved zone is maintained on both sides of the floodwall, free of all trees, brush, and undesirable weeds. The vegetation-free zone extends 15 feet from both the land and riverside of the floodwall, at ground-level, to the centerline of the tree. Additionally, an 8-foot root-free zone is maintained around the entire structure, including the floodwall toe, heel, and any toe-drains. If the floodwall 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 and/or Corps policy for regional vegetation variance. | |
| | | **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 floodwall. | |
| | | **U** | Significant vegetation growth (brush, weeds, or any trees greater than 2 inches in diameter) is present within the zones described above. This vegetation threatens the operation or integrity of the floodwall and must be removed. | |
| 2. Encroach-ments | | **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 floodwall. | |
| | | **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 the floodwall. | |
| 3. Closure Structures (Stop Log Closures and Gates) (A or U only) | | **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 system. | |

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

[1] 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.

# Floodwalls

**For use during Initial and Continuing Eligibility Inspections of all floodwalls**

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 4. Concrete Surfaces | | **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. | |
| | | **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. | |
| 5. Tilting, Sliding or Settlement of Concrete Structures[1] | | **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. | |
| 6. Foundation of Concrete Structures[2] | | **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. For the purposes of inspection, the erosion or scour is not closer to the riverside face of the wall than twice the floodwall's underground base width if the wall is of L-wall or T-wall construction; or if the wall is of sheetpile or I-wall construction, the erosion is not closer than twice the wall's visible height. Additionally, rate of erosion is such that the wall is expected to remain stabile until the next inspection. | |
| | | **U** | Erosion or bank caving observed that is closer to the wall than the limits described above, or is outside these limits but may lead to structural instabilities before the next inspection. Additionally, if the floodwall is of I-wall or sheetpile construction, the foundation is unacceptable if any turf, soil or pavement material got washed away from the landside of the I-wall as the result of a previous overtopping event. | |

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

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

[2] 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.

# Floodwalls

**For use during Initial and Continuing Eligibility Inspections of all floodwalls**

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 7. Monolith Joints | | **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. | |
| | | **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. | |
| | | **N/A** | There are no monolith joints in the floodwall. | |
| 8. Underseepage Relief Wells/ Toe Drainage Systems | | **A** | Toe drainage systems and pressure relief wells necessary for maintaining FDR 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 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 system. | |
| 9. Seepage | | **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. | |

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

## 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 | | **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. | |
| | | **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. Encroach-ments | | **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. | |
| | | **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 | | **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** | 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. | |

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

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

## Interior Drainage System

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

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 5. Concrete Surfaces (Such as gate wells, outfalls, intakes, or culverts) | | **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. | |
| | | **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[1] (Such as gate wells, outfalls, intakes, or culverts) | | **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[2] (Such as culverts, inlet and discharge structures, or gatewells.) | | **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 stabile 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. | |

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

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

[2] 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.

## Interior Drainage System

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

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 8. Monolith Joints | | **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. | |
| | | **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. | |
| | | **N/A** | There are no monolith joints in the interior drainage system. | |
| 9. Culverts/Discharge Pipes[1] | | **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. | |
| | | **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. | |

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

[1] 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.

## Interior Drainage System

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

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 10. Sluice / Slide Gates[1] | | **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. | |
| 11. Flap Gates/ Flap Valves/ Pinch Valves[2] | | **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** | 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** | 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. | |

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

[1] 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.

[2] Proper operation of this item must be demonstrated during the inspection.

## Interior Drainage System

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

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 14. Riprap Revetments of Inlet/ Discharge Areas | | **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 system, or riprap is discussed in another section. | |
| 15. Revetments other than Riprap | | **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 are no such revetments protecting this feature of the system. | |

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

# 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** | 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** | 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 | | **A** | Safety compliance inspection reports by applicable local, state, or federal agencies available for review. | |
| | | **M** | No safety compliance inspection reports are available for review. | |
| 4. Communi-cations (A or M only) | | **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** | 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** | 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. | |

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

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

# Pump Stations

**For use during Initial and Continuing Eligibility Inspections of pump stations**

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 7. Pumps[1] | | **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** | 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 | | **A** | Clear of debris, sediment, or other obstructions. Procedures are in place to remove debris accumulation during operation. | |
| | | **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] | | **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 | | **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. | |

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

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

## Pump Stations

**For use during Initial and Continuing Eligibility Inspections of pump stations**

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 12. Fuel System for Pump Engines | | **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** | 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[1] | | **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** | 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. | |
| 16. Enclosures, Panels, Conduit and Ducts | | **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. | |

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

[1] 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.

## Pump Stations

**For use during Initial and Continuing Eligibility Inspections of pump stations**

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 17. Intake and Discharge Pipelines | | **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[1] | | **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[2] | | **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[2] | | **A** | Cranes operational and have been inspected and load tested in accordance with applicable standards within the last year. Documentation is on hand. | |
| | | **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) | | **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. | |

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

[1] 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.

[2] Proper operation of this item must be demonstrated during the inspection.

## Flood Damage Reduction Channels

**For use during Initial and Continuing Eligibility Inspections of flood damage reduction channels**

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 1. Vegetation and Obstructions | | **A** | No obstructions, vegetation, debris, or sediment accumulation within the channel. Concrete channel joints and weep holes are free of grass and weeds. | |
| | | **M** | Obstructions (including log jams), vegetation, debris, or sediment are minor and have not impaired channel flow capacity, but should be removed. Sediment shoals have not developed to the extent that they can support vegetation other than non-aquatic grasses. A limited volume of grass and weeds may be present in concrete channel joints and weep holes. | |
| | | **U** | Obstructions (including log jams), vegetation, debris or sediment have impaired the channel flow capacity. Sediment shoals are well established and support woody and/or brushy vegetation. Sediment and debris removal required to re-establish flow capacity. | |
| 2. Shoaling[1] (sediment deposition) | | **A** | No shoaling or minor, non-vegetated shoaling is present. | |
| | | **M** | More widespread vegetated and non-vegetated shoaling is present. Non-aquatic grasses are present on shoal. No trees or brush is present on shoal, and channel flow is not significantly reduced. Sediment and debris removal recommended. | |
| | | **U** | Shoaling is well established, stabilized by saplings, brush, or other vegetation. Shoals are diverting flow to channel walls. Channel flow capacity is reduced and maintenance is required. | |
| 3. Encroach-ments | | **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 channel. | |
| | | **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 the channel. | |
| 4. Erosion | | **A** | No head cutting or horizontal deviation observed. | |
| | | **M** | Head cutting and horizontal deviation evident, but is less than 1 foot from the designed grade or cross section. | |
| | | **U** | Head cutting and horizontal deviation of more than 1 foot from the designed grade or cross section. Corrective actions required to stop or slow erosion. | |

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

[1] If weather and flow conditions allow, inspectors should walk in the channel and probe shoal areas in order to estimate extent of blockage of the cross-sectional area where shoaling is present.

## Flood Damage Reduction Channels

**For use during Initial and Continuing Eligibility Inspections of flood damage reduction channels**

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 5. Concrete Surfaces | | **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. | |
| | | **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 channel. | |
| 6. Tilting, Sliding or Settlement of Concrete Structures[1] | | **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 channel. | |
| 7. Foundation of Concrete Structures[2] | | **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. For the purposes of inspection, the erosion or scour is not closer to the riverside face of the wall than twice the floodwall's underground base width if the wall is of L-wall or T-wall construction; or if the wall is of sheetpile or I-wall construction, the erosion is not closer than twice the wall's visible height. Additionally, rate of erosion is such that the wall is expected to remain stabile until the next inspection. | |
| | | **U** | Erosion or bank caving observed that is closer to the wall than the limits described above, or is outside these limits but may lead to structural instabilities before the next inspection. Additionally, if the floodwall is of I-wall or sheetpile construction, the foundation is unacceptable if any turf, soil or pavement material got washed away from the landside of the I-wall as the result of a previous overtopping event. | |
| | | **N/A** | There are no concrete items in the channel. | |

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

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

[2] 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.

## Flood Damage Reduction Channels

**For use during Initial and Continuing Eligibility Inspections of flood damage reduction channels**

| Rated Item | Rating | Rating Guidelines | | Location/ Remarks/ Recommendations |
|---|---|---|---|---|
| 8. Slab and Monolith Joints | | **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. | |
| | | **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. | |
| | | **N/A** | There are no concrete items in the channel. | |
| 9. Flap Gates/Flap Valves/ Pinch Valves[1] | | **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. | |
| 10. Riprap Revetments & Banks | | **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 system, or riprap is discussed in another section. | |
| 11 Revetments other than Riprap | | **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. | |
| | | **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 system. | |

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

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

# Flood Damage Reduction System
# Supplemental Data Sheet

This form is intended for the Corps' internal use and may not need to be updated with every inspection.

Name of System:
Sponsor:
Location:
River Basin:
Project Description:
Authority that Project was Constructed Under:
Date of Construction:
Approximate Annual Maintenance Costs:
Construction: ☐ Federally Constructed ☐ Non-Federally Constructed
Maintenance: ☐ Federally Maintained ☐ Non-Federally Maintained

National Flood Insurance Program:
a. Is the project currently in the NFIP? ☐ Yes ☐ No
b. If in the NFIP, Date of Certification (per 44 CFR 65.10):

Datum Information:
a. Datum used for the design and construction of this project is:
b. Current recommended datum for this project is:
c. Has the project been converted to the current recommended datum? ☐ Yes ☐ No

Levee Embankment Data:
a. Levee Designed Gage Function Reading/Station:
b. Level of Protection Provided:
c. Average Height of Levee:
d. Average Crown Width:
e. Average Side Slope:

Protected Features (For use in preparing estimates and PIRs):
a. Total acres protected:
b. Total agricultural production acres protected:
c. Towns:
d. Businesses:
e. Residences:
f. Roads:
g. Utilities:
h. Barns:
i. Machine Sheds:
j. Outbuildings:
k: Irrigation Systems:
l: Grain Bins:
m. Other Facilities: