US Army Corps of Engineers

ENGINEERING AND CONSTRUCTION BULLETIN

No. 2026-8 **Issuing Office:** CECW-EC **Issued:** 26 Feb 26 **Expires:** 26 Feb 28

SUBJECT: Spillway Inspection Instructions

CATEGORY: Guidance

1. References:

a. FEMA, Dam Safety: An Owner's Guidance Manual, August 1987.

b. USACE, ER 1110-2-1156, Engineering and Design, Safety of Dams – Policy and Procedures, March 2014.

2. Purpose. This ECB documents the instructions for completing a spillway inspection using the current version of the USACE Spillway Inspection Checklist Template (V2 as of 15-Oct-2025) and are intended to supplement the inspection requirements in ER 1110-2-1156. Spillway inspections are to include a review of available historical data and visual field observations. The overall dam inspection, site investigations, detailed gate inspections, reservoir rim inspections, and observations of downstream inundation areas are outside the scope of this spillway inspection ECB. The spillway inspection findings must be documented in the Spillway Inspection Checklist Template (Attachment 1) and Spillway Inspection Photo Log Template (Attachment 2). The spillway inspection will be conducted in conjunction with Periodic Inspections (PI) or Periodic Assessments (PA), at a minimum, and after first flow or a significant flow event.

3. Applicability. The inspection template and accompanying instructions are to be used for all concrete chute spillways, both controlled and uncontrolled. Districts may also apply these documents to other spillway types, as appropriate, to promote consistency and ensure thorough documentation.

4. Pre-Inspection Checklist.

a. Collect available information, including as-built plans, specifications, previous inspection records, video of underwater or camera inspections, historical reports, recent reports, and records or observations from on-site personnel.

b. Review key project information, including, but not limited to:

(1) As-built plans from original construction and constructed modifications. Review overall layout, naming conventions, and stationing. The inspection documentation should be consistent with the existing plans with respect to naming conventions and project survey control information (i.e., stationing, joint numbering, control points, etc.).

(a) Identify drain system and locations of drains and drain outlets.

(b) Review joint details for the spillway slabs and walls.

(c) Identify and review geologic plans and sections.

(2) Previous inspection reports and photos. Note past deficiencies, including deficiencies noted over the course of multiple inspections. Note the progression of the deficiencies, and remediation measures, if any. Note recommendations for monitoring, investigations, or repairs and identify outstanding recommendations.

(3) Documentation of repairs or maintenance since previous inspection.

c. Pre-fill inspection checklist prior to field observations where possible and as indicated in inspection template (inspection points highlighted in red should be completed in advance of the scheduled inspection). This must include Section 1f of the checklist, which is identification of means to safely enter and exit the spillway to allow for close inspection.

d. Identify special equipment or Personal Protective Equipment (PPE) required during the inspection.

5. Recommendations during the inspection.

a. Bring the following tool kit and equipment on the inspection:

(1) This checklist (one form per spillway),

(2) Clean plan or sketch for recording observations and mapping features,

(3) Notepad or tablet,

(4) Camera,

(5) Tape measure,

(6) Graduated cylinder or bucket for flow measurements,

(7) Hammer,

(8) Level,

(9) Flashlight,

(10) Binoculars,

(11) Pen/pencil

(12) Crack comparator

(13) Marking paint

(14) Documents, including relevant plans, risk evaluation reports that identify potential failure modes, and past inspection reports,

(15) PPE and personal items.

b. Inspection photos. Include an aerial image of the spillway and surrounding areas and identify the vantage points corresponding to the other photographs. Where possible, take photos from the same vantage point as the previous inspection to document potential changes over time. Photos should include the following features, at a minimum:

(1) Overview of key features, such as spillway approach, control structure, chute, stilling basin, outlet channel, and reservoir. Photos should be taken from multiple angles. Photo log should identify key items in the photo (structure, direction of view such as upstream/downstream, stationing if known).

(2) Close-up views of deficiencies, particularly when a follow-up action is recommended. Consider including a scale or tape measure and take one photo from far enough away to identify the area and another close enough to identify the defect. Note key items in photo(s).

c. Identify recommended actions in the inspection template as follows:

(1) None – No actions are recommended.

(2) Monitor – Recommend monitoring of potential deficiencies that are non-actionable or do not require a maintenance activity at the time of inspection but that may progress into a larger issue.

(3) Investigate – Recommend investigation if there is insufficient information to identify whether repair or other maintenance activity is required. Investigations may include recommendations for a data review of existing documentation, more detailed site investigation, analyses, or risk assessments. Recommendations for repairs may result from the investigations.

(4) Repair – Recommend repairs where remediation of spillway deficiencies is required. This should include Operation and Maintenance (O&M) items, concrete repairs, and/or Interim Risk Reduction Measures (IRRMs).

6. Checklist. The spillway inspection checklist serves as the primary documentation during the spillway inspection. Rows may be added to include observations that are not otherwise presented in the checklist. If there are multiple spillways at the dam, a separate checklist must be completed for each spillway. The Spillway Inspection Checklist Template is included in Attachment 1.

a. Pre-Inspection – The Pre-inspection Information section and information noted in red text in the Inspection Template should be filled in prior to the inspection, then edited during the inspection as needed.

Fill in information requested, or state items that are unknown. The National Inventory of Dams Identification (NID ID) can be found at https://nid.sec.usace.army.mil/#/.

b. Section 1 – General Information to be filled in prior to the inspection in the Remarks column.

(1) 1a – Indicate if the spillway has operated since original construction and, if so, how many times. Remarks should include available information noted during spillway operation, which may include type of discharge (flood operation, normal operation, or testing gates), frequency of discharge, spillway performance during discharge, etc.

(2) 1b – Indicate the date of the most recent spillway discharge.

(3) 1c – Indicate the peak flow (cfs) of the most recent spillway discharge noted in Section 1b. Peak flow should be limited to spillway flow for the spillway identified. Peak flow should not include flow through other spillways (if any), outlet works, or other releases.

(4) 1d to 1e – If the largest peak discharge is different than the most recent spillway discharge, indicate the date and peak flow of the largest spillway discharge.

(5) 1f – Prepare plans for personnel safely entering and exiting the spillway. This must be completed prior to the inspection to ensure that necessary equipment is available during the inspection. Inspection of all features should be performed at a close distance where possible. Where site constraints limit close inspection, indicate the inspection location in the remarks. This may need to be edited during the inspection based on site conditions. For example, "The spillway chute slabs and inside face of walls were inspected from outside the left sidewall due to flow in the spillway."

(6) 1g to 1l – Indicate whether information is available. Include references to applicable documents.

(7) Additional rows may be added to include relevant background information.

c. Section 2 – Approach Channel. This is the area located upstream of the control structure. Sections 2a-2c to be filled in prior to the inspection, then edited during the inspection as needed.

(1) 2a – Identify if the spillway approach channel is lined with concrete. Remarks should indicate known information, such as concrete thickness and reinforcing, joint type and spacing, slope of the channel. If the spillway is not lined with concrete, identify the surface type, condition, and geometry. Remarks should also include referenced drawings and sheet numbers.

(2) 2b – Identify if concrete approach channel walls are present. Remarks should indicate known information, such as concrete thickness and reinforcing and joint type and spacing. If there are no concrete walls, identify the surface type, condition, and geometry.

(3) 2c – Comment on the erodibility of the approach channel foundation. Reference applicable reports or drawings from the data review. Identify site features (i.e. outcrops) that inform the erodibility assessment of the foundation.

(4) 2d – Indicate water level in and whether approach channel is inundated.

(5) 2e – Identify whether debris or obstacles are present in the approach channel. Include observations related to potential for debris, such as downed trees along the reservoir rim, debris booms, etc.

(6) 2f – Include observations on vegetation in the approach channel. If the channel is vegetated, observations should include overgrown vegetation or brush.

(7) 2g – Record observations of scour and/or erosion within the approach channel or adjacent to the concrete-lined surfaces.

(8) 2h – Identify locations of animal burrows, if present.

(9) 2i – Observations should include the condition of the approach channel surface. If the surface is concrete lined, identify cracks and/or concrete degradation. If the surface is vegetated, comment on the size, quality, and sparsity of the vegetative cover.

(10) 2j – If the approach channel has sloped sides, indicate if erosion or sloughing is observed on the side slopes.

(11) 2k – Comment on unusual conditions that are not otherwise addressed. This may include seepage, springs, irregular surfaces, etc. Note if unusual conditions are new observations or if they were identified in previous inspections.

d. Section 3 – Control Structure. This is the structure that controls outflows from the reservoir. The control structure may consist of a sill, weir, orifice, or pipe. An ungated control structure has a fixed discharge based on the reservoir elevation. A gated crest structure has a variable release and contains gates that are used to control outflow. Sections 3a-3n to be filled in prior to the inspection, then edited during the inspection as needed.

(1) 3a – Indicate whether the control structure is gated. Include references to specific drawing sheets if appropriate.

(2) 3b and 3c – If the control structure is gated, indicate the type and number of gates and the size of the gates.

(3) 3d and 3e – Indicate the date of last gate operation (for each gate if not operated at the same time) and Hydraulic Steel Structures (HSS) inspection, respectively. Include references to appropriate documentation and any significant findings. Indicate known or observed deficiencies during spillway operation. Identify if the deficiency was observed during the current inspection or identify the source of information.

(4) 3f – List any seepage control features, which are features that would lengthen the seepage path beneath the control structure, such as a cutoff, key, or structural connection to an upstream concrete apron. Describe the geometry of seepage control features.

(5) 3g – Indicate if the control structure is anchored to the foundation. Include anchor information (size, spacing, and depth). Indicate if the anchors are passive or post-tensioned. Indicate corrosion protection, particularly if anchors penetrate through drain fill.

(6) 3h – Indicate if there is adequate separation of the drainage system from the reservoir head. If there is not adequate separation, the drainage system may have a connection to high pressures from the reservoir head.

(7) 3i – Indicate the type and extent of the underdrain system. This should include drain fill (if any), drainpipes, and outlet locations.

(8) 3j – Report the date of the most recent camera inspection of underdrain system. Remarks should include the referenced documentation and key findings from the inspection if appropriate.

(9) 3k – Indicate if the drainpipe is vitrified clay pipe (VCP) or another material. If it is another material, document the pipe material.

(10) 3l – Comment on the erodibility of the foundation beneath the control structure. Reference applicable reports or drawings from the data review. Identify site features (i.e. outcrops) that inform the erodibility assessment of the foundation. Classify the erodibility of the foundation as high (sand, gravel, non-plastic silt), moderate (plastic silts and clays), or low (non-erodible rock).

(11) 3m – If waterstops are shown in drawings, indicate drawing references and size and type of waterstop.

(12) 3n – Indicate if reinforcing steel or dowels extend through the joints and spacing. Include drawing references.

(13) 3o – Observe and document discharge from the underdrain system. Documentation should include visual or measured flow, clarity of discharge, soil or drain fill deposits at the outlets, blockage, and condition of visible portion of the drainpipe outlets. If videoed camera inspections are available, include condition of interior drains with referenced documentation noted.

(14) 3p – Include visual observations of the condition of the joints. Indicate deterioration of concrete and joint sealant, if applicable.

(15) 3q – Indicate if there is vegetation present in the joints or other areas at the control structure. Include a description of the vegetation (i.e. moss, grassy, woody) and the location.

(16) 3r – Include the location, size, and description of damage to the concrete at the control structure. This should include cracks, spalls, popouts, efflorescence, delamination, etc. Also indicate visible signs of seepage through joints or cracks. Identify any exposed reinforcing steel. Popouts, delamination, and spalls should be outlined with marking paint to compare in subsequent inspections.

(17) 3s – Indicate visible settlement, joint offsets, cracking, or other signs of movement at the control structure.

(18) 3t – Indicate low areas along the control section that differ from the design intent shown in the as-built drawings. Low areas may result from differential settlement or concrete deterioration at the crest of the control structure.

(19) 3u – Indicate evidence of debris accumulation at the control structure. This may include debris buildup at the time of the inspection, reports from on-site personnel, or indications of damage caused by debris.

e. Section 4 – Chute Slabs. These are the structural slabs downstream of the control structure. Sections 4a-4j to be filled in prior to the inspection, then edited during the inspection as needed.

(1) 4a- 4d – Indicate the slab geometry, reinforcing, joint type and spacing, waterstops, and anchorage. Include reinforcing and anchor information (size, spacing, and depth). Indicate if the anchors are passive or post-tensioned. Indicate corrosion protection of anchors, particularly if anchors penetrate through drain fill. Include references to specific drawing sheets if appropriate.

(2) 4e-4o – Instructions are similar to Sections 3i-3s, except items refer to the chute slab.

f. Section 5 – Chute Walls. These are the structural walls along the chute downstream of the control structure. Sections 5a-5m to be filled in prior to the inspection, then edited during the inspection as needed.

(1) 5a-5d – If the chute has vertical walls, use these sections to indicate the wall geometry including foundation configuration, reinforcing, and anchorage. Include reinforcing and anchor information (size, spacing, and depth) and if waterstops are present. Indicate if the anchors are passive or post-tensioned. Indicate corrosion protection of anchors, particularly if anchors penetrate through drain fill. Include references to specific drawing sheets if appropriate. If the chute has a sloped concrete lining, see Sections 5e-5g.

(2) 5e-5g – If the chute is comprised of a sloped concrete lining, indicate if there is armoring along the chute or above the concrete lining. Indicate the type of armoring (RCC, ACBs, gabions, riprap, etc.) and the geometry. Include reinforcing and anchor information (size, spacing, and depth). Indicate corrosion protection of anchors, particularly if anchors penetrate through drain fill.

(3) 5h-5r – Instructions are similar to Sections 3i-3s, except items refer to the chute walls. Section 5k (erodibility) refers to soils behind chute walls or beneath chute side slopes.

g. Section 6 – Energy Dissipator. This is the energy dissipation structure downstream of the chute. Sections 6a-6o to be filled in prior to the inspection, then edited during the inspection as needed.

(1) 6a-6e – Indicate the type (flip bucket, hydraulic jump basin, plunge pool, etc.) and overall geometry of the energy dissipator. Include reinforcing and anchor information (size, spacing, and depth). Indicate if the anchors are passive or post-tensioned. Indicate corrosion protection of anchors, particularly if anchors penetrate through drain fill. Include references to specific drawing sheets if appropriate.

(2) 6f and 6g – Indicate whether the energy dissipator was dry during inspection. If water remained in the energy dissipator, indicate the date of the last dry inspection. Also indicate the depth of water and the features that were visible during inspection.

(3) 6h – Indicate measures to prevent scour downstream of energy dissipator, such as a cutoff and/or riprap. Describe the geometry and material of the scour control feature.

(4) 6i-6j – Instructions are similar to Sections 3i-3j.

(5) 6k – Identify the horizontal and vertical location of the drain outlets. Comment on whether drains outlet upstream or downstream of the baffle blocks.

(6) 6l-6o – Instructions are similar to Sections 3k-3n.

(7) 6p – Indicate water level and whether energy dissipator is inundated.

(8) 6q-6v – Instructions similar to Sections 3o-3s, except concrete damage is listed twice for different features.

h. Section 7 – Outlet Channel. This is the channel downstream of the energy dissipator. The extent of observations should be at the discretion of the inspector. Observations should generally include the area directly downstream of the energy dissipator; however, the inspector should note if there are recent changes to the downstream channel that may restrict flow. Sections 7a and 7b to be filled in prior to the inspection, then edited during the inspection as needed.

(1) 7a – If the outlet channel is incapable of passing the maximum spillway discharge, indicate the bank full capacity of the outlet channel. Indicate the water surface elevation at the outlet channel for the maximum spillway capacity.

(2) 7b – Comment on the direction of anticipated flow during large flood events. Indicate if flow is directed downstream of the dam, toward the toe of the dam, or if there's a potential for eddies to form near the downstream toe of the dam.

(3) 7c – Indicate water level and whether outlet channel is inundated.

(4) 7d – Describe vegetation or debris in the outlet channel. Include a description of the vegetation (i.e., moss, grassy, woody) and the location of vegetation.

(5) 7e – Describe the overall geometry of the downstream channel. Include a description of downstream areas that may constrict channel flow (i.e., culverts or bridges), as visible from the energy dissipator.

(6) 7f – If there is visible scour downstream of the energy dissipator, indicate the location, geometry, scoured material, and stability of the scour hole.

(7) 7g – Identify if there are irregular flow patterns (whirlpools, swirling flow, wave action, etc.) downstream of the energy dissipation structure.

(8) 7h – Identify changes (new roads, culverts, bridges, buildings, etc.) to downstream area. Include visible changes since previous inspection, reported changes from on-site personnel, and planned changes.

i. Section 8 – Reservoir Pool Area. The reservoir pool should be observed from the dam and does not include the full reservoir rim inspection.

(1) 8a – Describe visible or reported slope failures into the reservoir. Include the location and approximate size of the failure. Include known information, such as the cause or date of the failure.

(2) 8b – Describe the approximate size, volume, and location (on inside face of dam) of major vegetation or debris within the reservoir. Also indicate if there is potential for significant debris during a large flood event. For example, note if there are downed trees, docks, picnic tables, etc. within the flood pool.

(3) 8c – Indicate evidence of sedimentation in the reservoir. Indications could include shallow water depths or silty deposits visible in the reservoir.

(4) 8d – Identify changes (new roads, buildings, etc.) to upstream area that are below top of dam. Include visible changes since previous inspection, reported changes from on-site personnel, and planned changes.

j. Other Items – Include additional information related to the spillway. This information could include ongoing or planned work, or observations that are not identified in Sections 1-8.

k. Actions Taken – Include actions taken since the previous dam inspection and include completion dates. This should include maintenance items, O&M repairs, rehabilitations, modification, analyses, recent reports, etc.

l. Actions Needed – Include all recommended actions that have not been completed. This should include a summary of recommendations to monitor, investigate, or repair items in Sections 1-8 of this checklist. If monitoring is required, consider including monitoring frequency. It should also include outstanding items from recommendations made in previous inspection reports.

7. Lead Inspector – Identify the lead inspector for this inspection. The lead inspector must be a registered and licensed engineer in the United States for a minimum of 5 years. Experience must include dam safety evaluation for the type of structure under review. If necessary, the engineer should assemble an advisory team to address disciplines outside the engineer's area of expertise.

8. Photo log guidance. Photographs must be attached to document the visual inspection. If there are multiple spillways at the dam, separate photo logs must be completed to clearly indicate the spillway location for the log. The Spillway Inspection Photo Log Template is included in Attachment 2.

a. Refer to Section 5b of this guidance for suggested photographs.

b. The photo log is formatted as a table in a Word document. Add rows and copy cell contents as needed to include full photographic documentation of the inspection.

c. To automatically update photo numbers, type CTRL+A, then F9.

d. The caption for each photo should be detailed and should match project nomenclature defined in the as-built drawings.

(1) After the photo number, write a brief description of the feature (i.e., Photo 1: Left Chute, Wall Panel 3).

(2) The vantage point should describe the direction of the photo (i.e., Vantage Point: Photo taken from inside the spillway chute, looking downstream and left.)

(3) Comments should include observations shown in the photo (i.e., Comments: Concrete spall observed at the upstream joint of wall panel. Spall dimensions are…).

9. Additional Attachments. The inspector may include additional attachments to document field notes, annotated spillway plans, etc.

10. Post Inspection.

a. Review the checklist and recommendations made during the inspection.

b. Prepare the attached inspection checklist, photo log, and other attachments as needed.

c. Lead inspector or DSPM must email a pdf of the documents to TDL-CEIWR-RMC-W-SW-INSP@usace.onmicrosoft.com. Provide the checklist in Excel format as well.

11. Point of Contact. HQUSACE point of contact for this ECB is Travis Tutka, CECW-EC, 202-761-5731, travis.c.tutka@usace.army.mil.

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Encl.
Attachment 1 – Spillway Inspection Checklist Template
Attachment 2 – Spillway Inspection Photo Log Template