Iowa Department of Natural Resources
Flood Plain Management Program

Agricultural Levees

The term "**agricultural levee**" means levees or dikes constructed to provide limited flood protection to land used primarily for agricultural purposes.

This document is meant to assist you in preparing to apply for a permit and also to guide you through the application process. The first step in the permitting process should be to screen your project through the PERMT portal by selecting the project type and then locating the project location. Our system will screen your site to see if an application is in fact needed. If it is required, then proceed with collecting the information needed for applying as described below.

For more information or assistance, visit our website or contact our Floodplains Helpline at 515-725-8415 or floodplain-help@dnr.iowa.gov.

What form of documentation should I upload when applying in PERMT?
Applications must be filled out through PERMT. While completing the application, please provide documentation with enough information for an engineer to review the project and make a reasonable determination on it. During Step 4 of the application, you must upload supporting documentation as follows:

Option 1 if being completed by a landowner for small projects:

- Location of proposed levees on a recent aerial map
- Cross sections of floodplain that include stream, streambank and levee location
- Completed Summary of Engineering Data (2nd page of this document)

OR

Option 2 if being completed by an engineer for large projects:

- Engineering plans, calculations and analysis for the project that are prepared and certified by a professional engineer licensed in the State of Iowa. Submittal should include:
  - Documentation: Summary report including data inputs and references
  - Modeling: hydrologic and hydraulic models that show the effects and impacts of the proposed project. You can submit different types of models depending on the project, but the preferred models are the Iowa Bridge Backwater Program (IBH) or HEC-RAS.

What criteria does my documentation need to demonstrate I'm following?

- *Level of protection:* The permanent height of the levee shall be limited so that overtopping will occur due to discharges from 10 year flood (Q10) to 25 year flood (Q25). Where it can be clearly shown that loss of valley storage caused by construction of the levee will not increase peak flood stages and discharges, the level of protection provided by the agricultural levee may be increased beyond the Q10 to Q25 range.
- *Alignment:* The location and alignment of the levee shall be compatible with existing floodway encroachment limits.
- *Maximum effect:* The maximum increase in the flood profile resulting from the construction, operation, and maintenance of an agricultural levee shall be 1 foot. Equal and opposite conveyance shall be used in determining the maximum increase in flood profile resulting from such levees.
- *Interior drainage:* The levee shall be provided with adequate interior drainage facilities.
- *Offset:* A minimum offset equal to 100 feet or twice the width of a river or stream measured from top of bank to top of bank, whichever distance is less shall be required. (Measured from stream bank to toe of the levee.)
- *Floodway modeling:* If the proposed project is located within a floodway of a FEMA detailed study reach, it will be necessary to provide hydraulic modeling showing that the project will not cause a rise (0.00 feet) in the 100-year flood elevation.
- *No-Rise:* If the project is located within a FEMA FIRM detailed floodway, a certification of "no-rise" completed by a licensed professional engineer in the state of Iowa must be included in the supporting documentation uploaded in PERMT for the project.

Summary of Engineering Data – Agricultural Levees

This sheet is designed to provide an opportunity to detail important information needed to obtain a floodplain permit. Fill out as much as you can based on your own measurements or survey data accessible to you. If building levees on each side of the stream, fill out this sheet for each side individually. Please designate each levee as "A" or "B" on these sheets and on aerial photos.

Elevation Data

Channel Bottom: _____ (ft)

Top of Bank: _____ (ft)

Record High Water: _____ (ft)

Low Superstructure: _____ (ft)

Low Point in Approach Grade: _____ (ft)

Flood Frequency Data

Design Frequencies: _____ (yr)

Discharge: _____ (cfs)

Natural Stage: _____ (ft)

Encroachment Stage: _____ (ft)

Backwater Due to Levee: _____ (ft)

Offsets (distance from top of the bank to the edge of the levee):

Minimum Calculated: _____ (ft)

Minimum Proposed: _____ (ft)

Levee Information

Top Width: _____ (ft)

Side Slopes: _____ ft

Height: _____ ft

Length: _____ (ft)