

2023 STATEWIDE
LEVEE
ASSESSMENT
ANNUAL REPORT



**IOWA DEPARTMENT OF
HOMELAND SECURITY AND
EMERGENCY MANAGEMENT**

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Program Background

The Levee Improvement Program is the latest effort to address the impacts of flooding across the state of Iowa. These efforts have been ongoing for nearly 150 years, beginning with the Iowa General Assembly adopting statutes describing and defining drainage districts in the late 1800s. On June 8, 2021, Gov. Kim Reynolds signed House File 861, in which funds were appropriated to the Iowa Department of Homeland Security and Emergency Management to conduct a statewide levee districts study. This study focused primarily on the levee districts in 10 counties along the Mississippi and Missouri rivers and found that Iowa's levee districts are struggling to maintain and operate their levees. Key takeaways from the study indicate that increasing regulatory requirements, increasing costs, and declining rural populations are all contributing factors to the struggles faced by levee districts.

The levee study found that the current approach to managing and financing levee districts within the state of Iowa is unsustainable. The study recommended changes to levee management that included levee districts being encouraged to consolidate at the U.S. Army Corps of Engineers (USACE) system level, a watershed approach to levee management, the establishment of a state levee agency, and the development of a comprehensive strategic plan for flood risk reduction along Iowa's waterways. Financial recommendations included raising the minimum assessment amount, granting taxing authority to watershed management authorities, the potential implementation of a statewide levee assessment, and requiring levee districts to establish a sinking fund to pay for future maintenance, operations, and improvements.

In the spring of 2023, the Iowa General Assembly passed House File 711, which was signed into law by Gov. Reynolds and effective June 1, 2023. That legislation established the Iowa Levee Improvement Program in Iowa Code Chapter 418A. In addition to the Levee Improvement Program, House File 711 created the Levee Improvement Fund, which dedicates up to \$5 million annually for state fiscal years 2024 through 2028.

House File 711 also created the Office of Levee Safety within the Department of Homeland Security and Emergency Management to be the coordinating entity for the Levee Improvement Program. The Office of Levee Safety is specifically tasked to coordinate with both the Iowa Flood Mitigation Board and the Iowa Geological Survey to accomplish the goals established for the Levee Improvement Program. In addition, the Office of Levee Safety will work with local levee sponsors and city and county officials to coordinate information collection, consolidate issues and concerns, and share best practices across the Iowa levee community, as well as serve as a liaison between the local and federal governments to identify larger issues and find solutions that impact more than a single levee district at a time.

Levee Improvement Program

Iowa Code Chapter 418A establishes that the purpose of the Levee Improvement Program (LIP) is to reduce and manage risk associated with a hazardous event caused by a levee's inadequate design, structural performance, or operational control. The legislation outlined three key tasks to achieve the goal: the identification and geophysical survey of all levees within the state, the development of a rating system to identify the most at-risk levees, and the provision of funding to address shortfalls in order to reduce risk.

Iowa Code Chapter 418A specifically identifies four parties to execute the LIP: the Iowa Flood Mitigation Board (FMB), Iowa Department of Homeland Security and Emergency Management (HSEMD), the Office of Levee Safety (OLS), and the Iowa Geological Survey (IGS).

The FMB will administer the program, acting in cooperation with the OLS. The FMB will award funds to levee districts applying for assistance on a cost-share basis that will not exceed 50 percent of the estimated or actual cost of the project, whichever is less, and will consider the scale number assigned to the levee by the OLS.

HSEMD will provide for the publication and submission of applications for an award of cost-share moneys under the program and may enter into an Iowa Code Chapter 28E agreement in order to administer the program on behalf of the FMB. HSEMD is also responsible for preparing a statewide levee assessment report to the governor and general assembly no later than January 5 of each year. The report must include a summary of the condition of levees in each levee district, the levees having the highest level of critical need of repair or reconstruction, as well as the budget of the levee district to finance the repair or construction. The report must also include the results of efforts to repair or reconstruct levees using cost-share moneys awarded to the governing bodies of levee districts under the LIP, and a summary of future plans to administer the program. The statewide levee assessment report may include recommendations for additional funding and legislation necessary to carry out the purpose of the program.

The OLS, in administering this chapter, will cooperate with the FMB and IGS. The OLS and FMB are authorized to cooperate with other state and federal agencies to include the USACE and FEMA (administrator of the National Levee Safety Program as provided in 33 U.S.C. Ch. 46). The OLS, in cooperation with the FMB, will assist communities that benefit from a levee, including levee districts, and will evaluate methods to best carry out the purpose of the LIP.

The IGS will assist the OLS in the completion of a statewide analysis of the condition of the state's levees.

Stakeholders

In addition to the parties specifically identified in Iowa Code Chapter 418A, there are several other stakeholders at the local, state, and federal levels. The most critical stakeholders to the success or failure of the Levee Improvement Program are the governing bodies of the individual levee districts. Their cooperation and buy-in is critical to achieving the purpose of the program. The governing bodies, also known as sponsors, control access to the levees that is necessary to complete the survey, as well as providing the local match share to any repair or reconstruction projects that may be needed. The county auditor is another important local stakeholder as the financial agent for the levee districts in their county. The county emergency manager is another vital partner for the local levee sponsor. The levee sponsors rely on the emergency manager to assist during high-water events in disseminating information on the levee's condition and, if necessary, notifying residents and businesses to evacuate the area behind the levee.

The Iowa Department of Agriculture and Land Stewardship (IDALS), Iowa Department of Natural Resources (DNR), Iowa Department of Transportation (DOT), and Iowa Economic Development Authority (IEDA) are all stakeholders as well. The DNR is responsible for floodplain management and the issuance of permits to build within the floodplain, including permits for new levees or levee modifications. Most of Iowa's levees protect agricultural lands and family farms and when they fail, it has a significant impact on Iowa's agriculture industry. The impacts of failed levees to Iowa's transportation networks and economic stability can be significant, as demonstrated by the closure of multiple state and county highways, railroad lines, and I-29 during the 2019 Missouri River floods in southwest Iowa. It has been estimated that the I-29 closure resulted in \$700 million in lost economic impact to the state.

At the federal level, the USACE is the authority on levees and dams. The USACE is responsible for reviewing and approving the construction of all new levees, modifications and repairs made to existing levees, and levee certification. A certified levee is one in which the structure and operation meet the technical requirements for containing waters from a flood that has an annual 1 percent chance of exceedance, otherwise known as a 100-year flood. The USACE also administers the PL 84-99 program, which is essentially an insurance program for levee sponsors in which a levee that is properly maintained and operated qualifies for federally funded emergency repairs following a levee breach or overtopping event.

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The U.S. Army Corps of Engineers, Omaha District, completes an initial breach closure on levee L575 near Percival, Iowa, on June 20, 2019.

The other significant federal stakeholder is FEMA. Where USACE certifies a levee's structure and operations, FEMA accredits a levee's flood protection against a 100-year flood. Residents and businesses behind an accredited levee are not required to maintain costly flood insurance on their properties. The loss of a levee's accreditation can have significant economic impacts on a community. Non-federally constructed levees that have never been enrolled in the PL 84-99 program may be eligible for federal assistance through FEMA's Public Assistance Program. Federally constructed levees or levees enrolled in the PL 84-99 program are ineligible for FEMA disaster assistance funding regardless of whether the levees are currently enrolled.

Two other federal agencies that can have a significant impact on levee districts are the U.S. Environmental Protection Agency and the U.S. Fish and Wildlife Service. These agencies set policies that impact our waterways and the areas in their immediate vicinity. These policies can require costly modifications be made to levees.

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Staffing

Currently the OLS consists of two staff members. The HSEMD Disaster Grants and Administration Bureau chief serves as the head of the office and has one recovery operations officer whose primary focus is the LIP. The department is in the process of hiring another recovery operations officer who will provide additional support to the office, but whose primary duties and responsibilities fall outside of the OLS. The IGS is conducting the geophysical levee surveys using existing staff members.

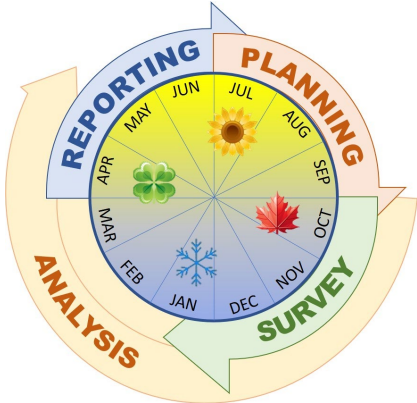
Current Year Activities

Since its establishment in June of 2023, the OLS has been working to lay the groundwork in order to meet the key tasks and objectives as outlined in Iowa Code Chapter 418A. The initial focus of the office has been establishing a strategic communication strategy, developing a survey strategy, and entering into initial agreements to execute those strategies.

The communication strategy development included identifying key stakeholders and opening lines of communication with those partners. Phase I of the strategy included reaching out to the county auditor and emergency manager for all 99 counties. The intent was to share information about the LIP and to seek feedback and input on levees within their county. Auditors were asked to complete a short survey to identify levee districts in their county that conduct an annual assessment and identify the current points of contact of those districts. HSEMD had very good participation in the survey with auditors in 78 of 99 counties responding. County emergency managers were provided with an Iowa levee map based on information from the National Levee Database and LIDAR data from the DNR and were asked to confirm if the levee information for their county was accurate based on their knowledge. Emergency manager response was disappointing with only 16 responding to the request.

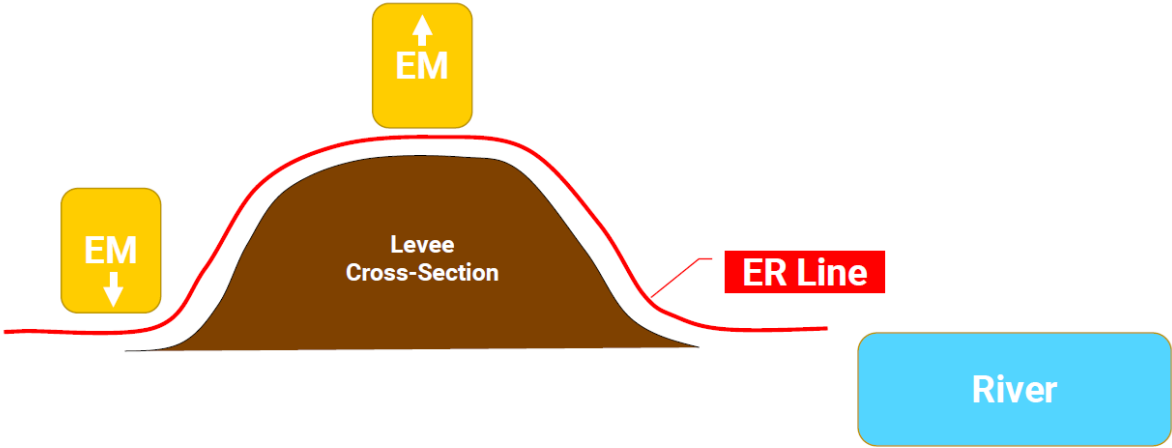
Communications with the county auditors is continuing through the Iowa State Association of County Auditors (ISACA). The ISACA leadership, along with auditors from three southwest Iowa counties, met virtually in December 2023 to discuss information already being collected by the auditors which could be shared with the OLS. The goal is to minimize any additional financial reporting requirements on the levee districts while still collecting the necessary information for the future rating system. OLS was asked to present information regarding the previous study and the new LIP at a future ISACA training event.

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Survey Cycle.

The OLS began discussions with the IGS over the summer of 2023 concerning the completion of the required survey. Discussions included survey procedures, estimates of how many miles could be surveyed in a year, and estimates of per-mile survey costs. As part of the discussions, a “survey cycle” was developed in which OLS would identify the levees to be surveyed during the summer. IGS will conduct a fall survey after crops are harvested, conduct their analysis during the winter months, and provide both the OLS and the levee district with their survey report in late spring. The first-year survey population was selected by the OLS to reflect a broad cross section of levees across the state geographically, as well as by levee age and condition. This was done with the intent of collecting a representative sample to be used to begin development of a levee rating system.



Generalized levee cross-section showing anticipated locations for geophysical data collection.

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HSEMD and the University of Iowa, on behalf of the IGS, entered into a memorandum of understanding (MOU) effective Oct. 1, 2023. In the MOU, IGS agreed to a five-year plan to complete a survey of 900 miles of levees. The agreement calls for IGS to complete 100 miles of survey in the first year at an estimated cost of \$200,000.

During the subsequent four years, IGS will complete 200 miles of survey each year at an estimated cost of \$300,000 per year. This brings the total projected survey costs to \$1.4 million.

The goal for the 2023 fall survey season included 25 levees and 12 levee sponsors split between western, central, and eastern Iowa. IGS dedicated one staff member working full time and three additional staff members working part time on the project, resulting in approximately 520 hours of work to complete the physical survey of the selected levees. Major tasks included communicating with representative levee districts, coordinating field activities, and collecting electromagnetic geophysical data. In addition, approximately \$6,000 worth of equipment use charges were included in the field efforts, including the use of the electromagnetic meter, utility task vehicle and trailer, vehicle, and GPS units.



EM geophysical unit on Gator UTV.

The LIP is financed with wagering tax receipts in the amount of up to \$5 million annually for the period of July 1, 2023, to June 30, 2028. Due to the method of disbursing these funds, the LIP is not anticipated to begin taking in receipts until January or February of 2024. These are multiyear funds that can be rolled into subsequent years if not expended in the year in which they are received. As of

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Dec. 1, 2023, the LIP has incurred \$234,897.15 of obligations to support the work of the OLS. Other expenses include payroll and travel for employees and minor miscellaneous expenses.

Activities in 2024

While the initial six months of implementing the Levee Improvement Program were busy, HSEMD has even more planned for 2024. These efforts will include continuing to expand our outreach and educational efforts with stakeholders. Plans are being made to conduct town hall meetings in six locations across the state to provide stakeholders an opportunity to meet with us in person to learn more about the LIP, learn our initial thoughts on how we will achieve the program goals, and ask participants to provide their input. Levee sponsors and local landowners are the subject matter experts on the conditions of their levees and the challenges they face in operating and maintaining them, and their input is critical in refining our plans. The OLS will continue to work with levee financial agents to obtain information from the districts' annual reports to obtain a better understanding of the districts' financial health.

The OLS and the IGS will continue to work to refine the levee survey concept and plans. In 2024, the plan is to work more collaboratively, utilizing the lessons learned from the 2023 surveys, to identify the levees for that year's survey. The approach will be similar in terms of conducting surveys across the state and not focusing on one area. The IGS anticipates it will take approximately 2,700 hours (or 1.3 FTEs) of effort for the electrical resistivity field data, processing of the electromagnetic and electrical resistivity data, and report generation.

A key task to be undertaken in 2024 is the development of the levee rating system. The initial concept for the rating system is to pull data from multiple sources. These sources include the survey data collected by IGS, USACE inspection reports, local engineering reports, district financial data, and interviews with levee sponsors. Because some levees may not be surveyed for up to four years, we will begin collecting inspection and financial data on all districts in this first full year to begin developing an understanding of the condition of all levees across the state. As survey data is added, we will add that to our understanding of each levee. Because weather can have significant and lasting physical and financial impacts on a levee, we will collect financial information for every year of the program. We will also monitor the National Levee Database for updated inspection reports to refine our understanding of the levees. Communication with levee sponsors is important as well to understand the changing conditions of their levees and to inform us of their interactions with USACE.

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Another key task to be undertaken in 2024 is the development of the project request, review, approval, and reporting processes. We anticipate that these processes will be similar to those used for the FMB projects that were awarded in 2019 and 2020. Based on lessons learned from these projects, we will refine the processes to address challenges in tracking and reporting work completed, as well as maintaining communication with applicants to receive situational updates that impact pending projects.

Data collection, storage, and analysis will be critical to the development of both the rating and project development processes. This will require a collaborative effort of all stakeholders to achieve the program goals.

As we prepare to undertake the coming year's tasks and beyond, it is becoming clear that an education component of this program should be strongly considered. This component would be focused on not only the stakeholders involved, but the general public as well. There is an opportunity to gather and share best practices from across the state and nation. The intent is to help educate levee sponsors on practices to help reduce their costs while maintaining an effective and resilient levee system. Improving the condition of Iowa's levees to an acceptable condition is going to cost hundreds of millions of dollars. It is then going to likely cost millions of dollars annually to maintain these levees in good condition. These costs are unsustainable if the general public does not understand levees and the important flood risk reduction that they provide. The general public that lives miles, if not counties, away from the closest levee do not understand how they can be impacted by a levee failure. Even an educated public living within a leveed area often questions levee costs as time passes without a levee-related failure.

Conclusion

The Levee Improvement Program is still in its developmental stage. While this year's surveys are complete, the data has yet to be analyzed and we are still in discussions with the ISACA to identify the readily available financial data. Early feedback from the National Levee Safety Program coordinators at USACE indicate that we are on the right track and they are excited to learn more about Iowa's Levee Improvement Program.