



Many Agencies ...

Common Solutions ...

Managing Risk

The Silver Jackets Program

“Silver Jackets allows the State and Federal partners to work seamlessly...and anticipate needs during disaster events. The Silver Jackets program maximizes the funding available... and allows the team members to work together in a synergistic manner, tapping into one another's needs and capabilities, thus creating... services that otherwise would not be available. The program allows the partner agencies to look ahead and identify potential challenges and identify solutions to address those challenges before they happen.”

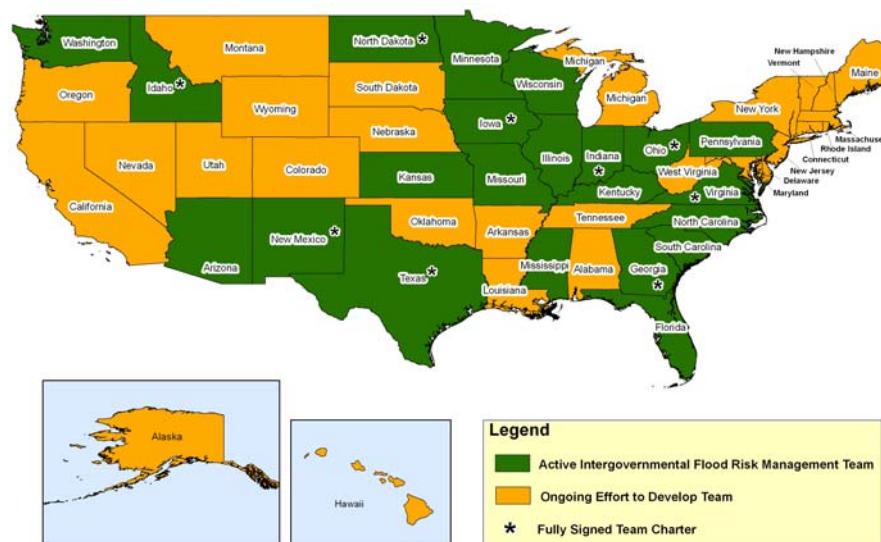
Manuela Johnson, Indiana Dept of Homeland Security

Silver Jackets teams are collaborative state-led interagency teams, continuously working together to reduce flood risk at the state level. Through the Silver Jackets program, the U.S. Army Corps of Engineers, the Federal Emergency Management Agency, additional federal, state and sometimes local and Tribal agencies provide a unified approach to addressing a state's priorities. Often, no single agency has the complete solution, but each may have one or more pieces to contribute. The Silver Jackets team is the forum where all relevant agencies come together with the state to collaboratively plan and implement that interagency solution. Through partnerships, Silver Jackets optimizes the multi-agency utilization of federal resources by leveraging state/local/Tribal resources, including data/information, talent and funding, and preventing duplication among agencies.

The primary goals of the Silver Jackets program are to:

- Facilitate strategic **life-cycle** flood risk reduction,
- Create or supplement a **continuous** mechanism to **collaboratively** solve state-prioritized issues and implement or recommend those solutions,
- **Improve processes**, identifying and resolving gaps and counteractive programs,
- Leverage and **optimize resources**,
- Improve and increase **flood risk communication** and present a unified interagency message, and
- Establish close relationships to facilitate **integrated post-disaster recovery** solutions.

Currently there are twenty-two states with an active intergovernmental flood risk management team. Efforts to offer a team the remaining 28 states are ongoing, with the ultimate goal of supporting an interagency team in every state. Team focal areas vary, as state priorities vary. The intent is not to duplicate existing teams, but to supplement and strengthen current efforts, and establish relationships where they do not yet exist.



Collaboration engendered from these partnerships facilitates interim risk reduction and results in products that reduce flood damages and loss of life, including non-structural measures and risk communication. The following case studies illustrate successes of individual state Silver Jackets teams.

Case Study 1: Louisa County, Iowa, #11 Levee District

Example of Non-Structural and Natural Storage

Recurring significant flood events and resultant physical damages to levees throughout the Midwest region have increased interest in implementing non-structural alternatives to levee repairs. Public Law 84-99 (P.L. 84-99) provides USACE with the authority and responsibility to either repair flood-damaged levees enrolled in its levee program or to implement non-structural alternatives to those structural repairs. Following the Midwest floods of June 2008, the Iowa Interagency Levee Work Group (now Iowa Flood Risk Management Team [Iowa Silver Jackets]) identified and coordinated a precedent-setting non-structural alternative to full repair of the Louisa County, Iowa, #11 Levee District's levee system. The alternative is a combination of over 300 acres of NRCS flood plain easements with significantly reduced structural repairs to protect a state highway. The alternative required the cooperation of the levee's public sponsor, the county and state mitigation agencies, USACE and NRCS to implement. This non-structural alternative consisted of leaving five breaches in the lower end of the levee system open while repairing two breaches in the upper end of the system. The remaining increment of repaired levee will continue to provide flood deflection benefits for a major county road and approximately 400 acres of agricultural lands within the levee district. This alternative provides reconnection of nearly 3,200 acres of previously isolated floodplain with the Iowa River as well as increased flood storage benefits to downstream interests; construction is complete. As a result of collaboration, over 1200 acres of formerly protected area was returned to the floodway, gaining not only improved environmental habit but increase flood storage capacity while continuing to protect an important state road. The NRCS (EWP) easements were crucial in the sense that protection of those lands no longer provided benefits to support full structural repair. As implemented, the cost to PL 84-99 was estimated to be \$187,000 less than the full structural repair.

The Iowa team was encouraged by this success and is currently working to implement another non-structural alternative with the Green Island Levee and Drainage District at the confluence of the Maquoketa and Mississippi Rivers (downstream of the [former] Lake Delhi Dam). USACE is providing assistance to NRCS in the development of a WREP project proposal request to acquire easements on nearly 1,400 acres of cropland previously protected by the Green Island levee.

Case Study 2: Real Time Flood Inundation Model, Indiana and Mississippi

Example of Outreach (Risk Communication) and Building a Tool to Facilitate Mitigation (Land Use and Non-Structural)

Resolution of seemingly small issues can lead to greater collaboration. Team members were aware of differences between USACE and Indiana Department of Natural Resources (IDNR) data; differing boundaries used in the models produced elevation differences of up to two feet. The Silver Jackets team facilitated resolution, and within a short time, the data were aligned. Without Silver Jackets, neither agency would have pursued resolution. The state sees this as a valuable service; when all agencies can agree on a single set of data, the state mitigation program benefits.

Success in resolving these differences led to a discussion of current needs, and the team devised a real-time flood inundation model. The National Weather Service projections and hydrology from the Advanced Hydrologic Prediction Service are combined with real-time gauge data from the USGS. Models create a real-time view of the location and depth of flooding. When overlaid with tax assessment data, construction data, and structural value information for residential and commercial structures, an accurate prediction of potential damage can be calculated, employing the USACE

depth-damage curve and HAZUS modeling. Each database/model was written with a different digital structure. Through Indiana and Purdue University, a bridge program was written to draw the individual models and programs together under an open architecture format and allow a person to run the program automatically upon demand in real time.

The program, when river levels reach a set trigger point, will run automatically and provide both current inundation information and predictive information for response and mitigation actions. The project allows emergency management personnel and the public to view current and predicted extent and depth of flooding through a Web portal. The near real-time and forecast flood inundation mapping, in addition to being viewable through a Web portal, will be downloadable in the form of GIS files that can be imported into GIS applications such as the Federal Emergency Management Agency's HAZUS-MH hazard mitigation and loss estimation program. The overall cost for the pilot project was \$750,000. No one single agency had the funding or the personnel to complete this project alone, yet with the collaboration of skills and funding, the pilot project was created using a minimal investment. The state of Indiana is now planning to utilize recently awarded CDBG funds to apply the tool state-wide. The opportunity for major cost savings from damages avoided is tremendous. The effort provides a better predictive capacity, which will assist in zoning and planning, as well as targeting areas for mitigation such as acquisition or elevation.

After talking with the Indiana Silver Jackets team, the Mississippi "Camo" Jackets team has begun a similar effort. While no technical assistance funding is provided by USACE, the project was initiated due to Silver Jackets team collaboration. From a recent press release: The Forrest County Board of Supervisors recently entered into a joint funding agreement with the U.S. Geological Survey (USGS) to initiate a cooperative program for flood inundation mapping with the Cities of Hattiesburg and Petal and the Forrest County Emergency Management District. Flood Inundation Maps show the extent of flooding that is expected over a given area. Through assistance of the National Weather Service, this data is provided online and can indicate which community structures are likely to be impacted by floodwaters. Inundation maps also provide local officials additional information needed to better mitigate the impacts of flooding and build more resilient communities. The first phase of a multi-year flood inundation mapping project will include the USGS evaluation of existing flood models on the Leaf River and the initial construction and instrumentation of a new flood-monitoring site on the Bouie River at Glendale Avenue. \$26,000.00 cost will be shared equally by the USGS and Forrest County, with support from the cities of Hattiesburg and Petal. Hazard Mitigation Grant Program funds will be applied to assist with a portion of the local share. Upon completion of the project, both the Leaf and Bouie Rivers will provide real-time river stage data via the internet during flood hazard events, and local residents and emergency managers will have valuable information for hazard mitigation. Future agreements will fund the annual operation and maintenance of the flood-monitoring sites and the completion of the flood inundation maps. "Forrest County is appreciative for the local communities' partnership to work with state and federal agencies to provide a tool that will help protect the public during flooding disasters," said David Hogan, President of the Forrest County Board of Supervisors.

Case Study 3: North Branch Elkhart River Project, Indiana

Example of Outreach and Watershed Approach to Mitigation Planning

This project evolved as the many participating agencies discussed a particular community's recurring efforts to resolve their flood risk management challenges. The community had sought studies and assistance from a number of individual state and federal agencies over many years, but none were coordinated, and little action followed. The Indiana Silver Jackets team brought together the Indiana Dept of Natural Resources, the Indiana Dept of Environmental Management, the Indiana Dept of Homeland Security, USGS, USDA-NRCS and the US Army Corps of Engineers. Individually the agencies had invested several hundred thousand dollars in studies, stream clearing, snagging efforts, and other work in the area. Each agency reviewed available studies and information regarding the

area of interest, and the interagency team compiled a single summary document that explained, in layman's terms, the geological and hydrologic conditions, the flood history of the area, and possible approaches to resolve the effects of flooding in the area. The report presented alternatives as well as warnings regarding actions that could exacerbate the situation. The findings were presented to the local steering committee and the community as a whole; public meetings were held to both inform the community and to foster acceptance of the findings. The community has since reported that they are following the first recommendation, the formation of a basin-wide planning team to examine the options not from a neighborhood perspective as had been done in the past, but from a watershed perspective considering all communities as a part of a solution. Although there were no direct expenses to funding programs, the agencies invested staff time to research and write the report. Differences in the community were set aside, as the community implements a watershed approach to develop a basin-wide strategy based on common interests. Long-term, requests for funding will now focus on a holistic solution rather than individual patches.

Case Study 4: Leveraging programs: Orange County, Indiana and State-Wide LiDAR mapping

Example of Non-Structural (Flood Warning) and Interagency Approach to Mitigation Planning

In Orange County, Indiana, the Lost River flows through a Karst environment, often under the surface. Flooding occurs without warning. The Indiana Silver Jackets team has implemented an interagency approach and found a way to create a flood warning system. By linking a number of newly placed USGS stream gages with a USACE Planning Assistance to States Hydrology and Hydraulics study of the underlying Karst features below the communities, the community will receive automatic triggers when the water reaches levels corresponding to previously observed flooding. With the help of HUD's Community Development Block Grant, the community will provide \$75,000 for their cost-share and will conduct LiDAR flyovers. CDBG is by its nature a federal grant that loses its federal identity when granted to the state and its sub-grantees. The CDBG has received special supplemental funding to assist communities that were damaged by the Midwestern flood disasters of 2008. Thus the community will receive the work with minimal investment and the documentation provided will not only benefit this specific project for the community, but also will benefit for future mitigation projects and warning the community of impending floods thus saving thousands of dollars in damages. Through Silver Jackets, the state will be able to acquire LiDAR mapping for all 92 counties, leveraging interagency funds to map 12 counties and \$13 million in CDBG funds to map 80 counties.

For further information, please view the individual state team pages and national Silver Jackets website at www.nfrmp.us/state. Questions and comments may be directed to Jennifer Dunn, the national Program Manager at Jennifer.K.Dunn@usace.army.mil or to state contacts listed on the state team pages.