



INTERAGENCY TEAMING IN FLOOD RISK MANAGEMENT: SILVER JACKETS

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ABSTRACT: The Silver Jackets is an innovative, ongoing program that brings together multiple federal, state and sometimes local, tribal and non-governmental representatives to learn from one another and apply their knowledge collaboratively to reduce the risk of flooding and other natural disasters and enhance response and recovery efforts when such events do occur. No single government agency has all the answers, but often multiple programs can be leveraged to provide a sustainable solution. Silver Jackets provides a formal and consistent strategy for an interagency approach to planning and implementing measures to manage the risks associated with flooding and other natural hazards. Although each state-led team is unique, common participants include state agencies with mission areas of hazard mitigation, emergency management, floodplain management and natural resources management and conservation. Federal participation typically includes the US Army Corps of Engineers, the Federal Emergency Management Agency, and often includes the National Weather Service, National Oceanic and Atmospheric Administration, the US Geologic Survey, the Natural Resources Conservation Service, and the Environmental Protection Agency.

Silver Jackets teams are developed at the state level with support from the Corps of Engineers, the Federal Emergency Management Agency, and additional federal agencies. Teams focus on the flood or all-hazard risk management priorities of their individual states, developing a life-cycle strategy to build resiliency in the state. Through its representative on the state team, the Corps of Engineers supports team collaboration to achieve multiple goals, including: 1) leveraging resources, authorities and programs and applying them in a coordinated manner among agencies, 2) sharing data and information, 3) reducing duplication, 4) identifying gaps and barriers to implementation, and applying solutions or providing recommendations to overcome them, 5) providing multi-agency technical resources to assist state and local agencies, 6) increasing and improving flood risk communication through a unified interagency effort, and 7) establishing ongoing relationships to facilitate integrated post-disaster solutions after a disaster.

Currently, 42 states are served by active teams, and efforts to offer a team to the remaining 8 states continue. Over the last three years, Silver Jackets teams have initiated 60 pilot projects, leveraging approximately \$5.3 million in investment by the Corps of Engineers against a \$6.7 million investment by state, local, federal and other agencies. Forty-one projects in 25 states focus on either flood risk management or levee safety issues. Nineteen projects in 19 states will achieve nonstructural objectives. In tracking the benefits of these projects, teams focus on assessing risk, raising awareness, promoting action at multiple levels, and quantifying how risk was reduced or managed.

This presentation will provide an update on the progress of state-led Silver Jackets teams, from initiation through a variety of activities throughout the risk management life-cycle, to completion of collaborative projects and coordinated response and recovery actions.

Key Words: Flood Management, ICFM6, Silver Jackets, Interagency Collaboration, Leveraging

1. INTRODUCTION

Flood risk management responsibilities in the United States are shared among various Federal, state, tribal, and local governments, non-governmental organizations both public and private, and

individuals. At the federal level, a Federal Interagency Floodplain Management Task Force provides a means for improved coordination, collaboration and transparency. Its 12 federal member agencies and two advisor bodies come together to help promote the health, safety, and welfare of the public by encouraging programs and policies that reduce flood losses and protect the natural environment. At the state level, the 50 state governments maintain multi-hazard emergency operation plans, including for floods, may have statewide floodplain management regulations or regulatory programs, and play a key role in working with local governments. Local governments maintain primary control over land use, such as through comprehensive planning, zoning, and establishing building code requirements, and thus play a key role in guiding the level of exposure to flood risks. Within the context of such broadly-shared authorities, programs, and responsibilities, the Silver Jackets program provides an innovative and crucial link at the federal-state level.

2. SILVER JACKETS PROGRAM AND TEAM ESTABLISHMENT

The Silver Jackets program was established under the auspices of the U.S. Army Corps of Engineers' Flood Risk Management Program, which works across the agency to focus its policies, programs, and expertise toward reducing overall flood risk, including reducing the risk of loss of life, long-term economic damages, and improving the natural environment. The program also serves as a vehicle to convene and facilitate dialogue at all levels of government and with other key interests to develop a national vision for flood risk management.

The Silver Jackets program puts the vision of the Flood Risk Management Program into action at the state level through state-led teams. The goals of the Silver Jackets program are to facilitate collaborative solutions to state-prioritized flood risks; leverage and optimize resources and improve processes; improve and increase flood risk communication and unify interagency messages; and to strengthen relationships to facilitate integrated post-disaster recovery. The structure of the teams is inverted in comparison to more typical hierarchical structures. Participation in the Silver Jackets program is voluntary. States take the leading role, with federal members in a supporting or enabling role. At a minimum, each state team includes the state National Flood Insurance Program coordinator, the state hazard mitigation officer, a representative from the Federal Emergency Management Agency, and a representative from the U.S. Army Corps of Engineers. The state may invite additional participation that it feels would be helpful in advancing state goals in flood risk management. Additional representatives can include other federal agencies (such as the Environmental Protection Agency, the National Oceanic and Atmospheric Agency, the U.S. Geological Survey, the Natural Resource Conservation Service, and the U.S. Fish and Wildlife Service), additional state partners, tribal representatives, private industry, local representatives, or others as the state sees fit, consistent with state priorities. Although not a requirement, Silver Jackets teams often create a charter to guide their interaction. Resources to support a team's work typically come from the individual programs of each agency participating on the team, within the constraints of available budgets. The Corps of Engineers supports team collaboration and inter-team exchange. The program has grown from the establishment of an initial pilot team in 2005 to 42 active state teams as of April 30, 2014, and efforts are underway to develop a team in the remaining 8 states.

Because each state has its own particular flood risk management challenges and priorities, each state-led team is unique. Teams focus on the flood or all-hazard risk management priorities of their individual states, developing a life-cycle strategy to build resiliency in the state. Through its representative on the state team, the Corps of Engineers supports team collaboration to achieve multiple goals, including leveraging resources, authorities, and programs and applying them in a coordinated manner among agencies; sharing data and information; reducing duplication; identifying gaps and barriers to implementation, and applying solutions or providing recommendations to overcome them; providing multi-agency technical resources to assist state and local agencies; increasing and improving flood risk communication through a unified interagency effort; and establishing ongoing relationships to facilitate integrated post-disaster solutions.

3. INTERAGENCY PROJECTS INITIATED THROUGH CORPS OF ENGINEERS PROCESS: DOCUMENTING PROJECT BENEFITS

Since the summer of 2011, the Corps of Engineers has been able to provide a limited amount of funding each year to state teams for the purpose of undertaking specific interagency flood risk management projects. The funding is not grant funding; funds are allocated within the Corps of Engineers, with labor and contract services being typical uses of funding. However, the available funding provides teams with one opportunity for accomplishing state flood risk management priorities. A call for proposals is issued when funds are available, and teams may submit proposals for consideration. Proposed projects must address an expressed state need, leverage resources invested by others, and demonstrate benefits leading to reduced flood risk. Proposed projects may not transfer risk to another party or into the future. Projects to date have been selected from submitted proposals, after review and advice from an appropriately-constituted selection committee, based on available funding.

As of April 30, 2014, a total of 65 interagency projects have been funded through this mechanism. Of those 65 projects, 18 were “pilot” projects initiated through the Silver Jackets program in 2011. An additional 23 projects were initiated through the Silver Jackets program during the next two years, with 13 of those projects focused on flood risk management and 10 focused on levee safety with particular emphasis on risk communication. In 2013, the successful approach was modified and expanded; 24 interagency nonstructural flood risk management projects were selected, with interagency approaches including, but not restricted to, Silver Jackets teams. Of those 24 interagency nonstructural flood risk management projects, all but five are being conducted by Silver Jackets teams.

Funded projects are intended to illustrate the benefits of the intergovernmental/agency approaches, with selected projects demonstrating flood risk reduction and leveraging resources invested by others. Projects cover a variety of activities, address various aspects of the flood risk management life-cycle, and may entail coastal or riverine flood hazards. Nearly all projects entail significant leveraging of resources, and teams document the contributions along with the benefits of the inter-agency approaches and collaboration they reflect. Teams report semi-annually on project outcomes meeting three overarching program goals: actions prompted, future costs avoided, and flood risks managed/reduced. Not every project is expected to contribute to all three program goals, but each project is expected to contribute to at least one overarching program goal; collectively, the projects offer an indication of where the program is having its greatest impact. To the degree possible, teams are asked to quantify project contributions to these goals; where that is not feasible, qualitatively “telling the story” of achievements is seen as critical for conveying the value of the program effort, particularly to those outside the flood risk management field.

Overall, each dollar invested by the Corps of Engineers has leveraged approximately \$1.2 in project-focused partner contributions, either cash or in-kind services. Primary partners in leveraging include state and local governments (accounting for more than half the leveraged funds), and other federal agencies, including the U.S. Geological Survey, the Federal Emergency Management Agency, and the National Oceanic and Atmospheric Administration (including the National Weather Service.) Of the 65 projects, 48 are achieving at least one of the three program-level objectives (prompts action, avoids future costs, or manages/reduces flood risks), and 17 will achieve at least one program-level objective with further development. In the latter instance, project completion often positions a flood risk management partner to take further action, but short of a specific commitment to take that action and with timing subsequent to project completion.

Project results are shared through a series of semi-annual internal webinars to review projects’ progress and their contributions to meeting overarching program goals. Select interagency projects are highlighted in greater detail in webinars open to broader audiences and in quarterly Silver Jackets newsletters. By these and other means, project and program successes can be considered by other teams for use in their states, advancing the overall practice of interagency flood risk management, and can be communicated broadly beyond those undertaking the projects, building understanding and support for the program and its achievements.

3.1 Pro-Active Measures Will Reduce Flood Costs in Maine

The first inter-agency project funded through these processes and brought to completion focused on transportation needs in the state of Maine and provides an example of the focus on interagency collaboration, leveraging investments, and achieving project outcomes in support of overarching program goals. The State's Hazard Mitigation Plan stated that "the greatest amount of damage from flooding events occurs to the roadway system, both state and municipal roads, bridges, culverts and ditches." Culvert failures and subsequent road washouts have not only been expensive, but have led to serious business interruptions, as well as major inconveniences to residents. In many cases, the culverts were replaced with a larger culvert or hydraulic structure to mitigate future damage. The Maine Silver Jackets team, working with the Maine Interagency Stream Connectivity Working Group created by the state's Governor, assisted with an analysis that will provide communities with information needed to identify public works structure that will be threatened in extreme events. By increasing public awareness at the local level and encouraging preemptive mitigation efforts, the project will reduce flood risk caused by undersized structures.

The project supported a multi-agency program to complete a hydraulic structural failure analysis for approximately 500 structures, supplementing information available from the Federal Emergency Management Agency by identifying at-risk culverts, and facilitating consideration of strategic replacement of high-priority structures during ongoing maintenance rather than after failure of undersized culverts during a flood event with its potential for high velocity damage and road damage. The project included developing an automated hydrologic and hydraulic analysis tool for surveyed structures to determine capacity to handle 10-, 25-, 50-, and 100-year events. Resulting information will be integrated into the Federal Emergency Management Agency's Risk MAP as "areas of mitigation interest", and data are available to key personnel within 21 communities that will allow them to identify hydraulic structures that may be at risk from failure and at what level they are likely to fail. The \$40,000 investment by the Corps of Engineers leveraged approximately \$80,000 from Maine agencies and the U.S. Department of Fish and Wildlife Service. If providing for increased hydraulic capacity doubles culvert installation costs, and if approximately 10% of the culverts are high-risk and warrant enlarging, the project investment can be roughly estimated to mitigate approximately \$700,000 of replacement value plus the extensive costs associated with reconstructing roads damaged from the effects of stream crossing failures.

4. OTHER COLLABORATIVE PROJECTS

The Silver Jackets initiative continues to thrive as many states are now engaged in the federal/state team concept. Primarily the states are involved because they have seen results in working collaboratively on common goals. Without these positive results, the Silver Jackets program would have been short-lived and state/federal representatives could not have afforded the time spent in meetings.

It is important to highlight the successes along the way to increase participation, foster cooperation, and keep the momentum going. A national Silver Jackets team website gathers these successful flood risk management projects and best practices. A few projects from the site are summarized below. These projects demonstrate several of the Silver Jackets goals in action, such as collaboration, shared resources, data sharing, and partnership building.

4.1 Indiana Silver Jackets Team Plants the Seed for Real-Time Flood Inundation Mapping

Indiana provides a notable example of agencies using the Silver Jacket forum to provide a solution to a problem that previously had only been addressed in piecemeal fashion. The Indiana SJ team facilitated a resolution to a flood risk management problem in a relatively short time. The problem was that, although the Federal Emergency Management Agency publishes 100-year flood risk maps, the U.S. Geological Survey posts projected high water data, and the National Weather Service forecasts flood events, no product or tool aligned the data for the public or emergency manager to present real-time flood forecast mapping.

The team agreed on a single set of data and devised a real-time flood inundation model. National Weather Service projections and hydrology from the Advanced Hydrologic Prediction Service were combined with real-time gage data from the U.S. Geological Survey. Models created 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 could be calculated employing the Corps of Engineers' depth-damage curve and Federal Emergency Management Agency's Hazards United States (HAZUS) modeling. Through Indiana and Purdue Universities, a program was written to draw the individual models and programs together under an open architecture format, allowing a person to run the program automatically upon demand in real time.

The resulting flood forecast mapping provides both current inundation information and predictive information for response and mitigation actions. The project allows emergency management personnel and the public to view the current and predicted extent and depth of flooding through a web portal (<http://wim.usgs.gov/FIMI/#>). No one single agency had the funding or the personnel to complete this project alone, yet with the collaboration of skills and funding, the project was undertaken with minimal investment. 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. This concept and approach has since been used by other states across the country developing flood forecast inundation mapping.

4.2 Iowa Interagency Team Provides Non-Structural Alternative for Levee Repair

Following the Midwest floods of June 2008, an Iowa interagency flood risk management team (which now serves as the Iowa Silver Jackets team) 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 combines over 300 acres of Natural Resources Conservation Service (NRCS) floodplain easements with significantly-reduced structural repairs to protect a state highway. To implement the alternative, the cooperation of the levee's public sponsor, the county and state mitigation agencies, the Corps of Engineers, and NRCS was required. This non-structural alternative left five breaches in the lower end of the levee system open, while repairing two breaches in the upper end of the system.

This alternative reconnected nearly 3,200 acres of previously-isolated floodplain with the Iowa River and increased flood storage benefits to downstream interests. As a result of collaboration, over 1200 acres of formerly-protected area were returned to the floodway, gaining not only improved environmental habitat but increased flood storage capacity while continuing to protect an important state road. The NRCS easements were crucial in that protection of those lands no longer provided benefits used in benefit/cost calculations to support full structural repair. As implemented, the cost was less than the full structural repair.

Encouraged by this success, the Iowa team is working to implement other non-structural alternatives with levee districts.

4.3 North Dakota Silver Jackets Team Provides Path Forward for Minnewaukan

The North Dakota Silver Jackets Team engaged in discussions with and provided technical support to the North Dakota Water Commission Department of Emergency Services (DES) and the City of Minnewaukan to address the continual threat of rising water inundating the City on three sides from a closed basin lake. Although an earlier reconnaissance study provided a number of potential alternatives to mitigate the effects of the rising lake level, the City was in need of a current review of options and a decision tool to reach consensus on the best approach and best way forward. The trust and relationships developed through the Silver Jackets Team allowed the federal and state partners to quickly come together to formulate a course of action.

A Corps of Engineers Planning Assistance study supported an intensive interagency effort to evaluate alternatives for flood risk reduction for the City and provide recommendations as to which alternatives, or combination of alternatives, seem viable for a long-term solution. In developing the report, several focus

meetings were held to gather information and testimony from local and state officials for recommendations on actions to assist with the flooding problems. Several options were identified to reduce flood risks, including structural and non-structural solutions supported by multiple federal authorities. The study report (U.S. Army Corps of Engineers, 2010) served as an important decision tool to help the City understand its remaining viable options for flood risk mitigation.

The City of Minnewaukan opted for a largely non-structural flood risk approach that supports relocations, property acquisitions, and redevelopment on high ground. Funding for these projects included a combination of federal, state, and local loans and grants, resulting in a “patchwork quilt”-type solution, with some funding sources remaining to be identified. The cooperation and collaboration enabled by the trust and relationships formed through the Silver Jackets Team provided a path forward and will continue to be a source of support in the years to come. The efforts to relocate a large number of people, their vital institutions, and infrastructure serve as an important example of what can be accomplished when citizens and different levels of government come together, acknowledging collective responsibility to provide a shared vision and solutions to our nation’s flood risk problems.

5. RESULTING BEST PRACTICES

Best practices support can be drawn generally from Silver Jackets teams and their projects across the country, demonstrating increased efficiencies through the Silver Jackets program. The selected best practices included below were garnered from an 2013 informal survey of several teams and/or have been articulated in quarterly SJ newsletters (available at <http://www.nfrmp.us/state/index.cfm>).

5.1 State Hazard Mitigation Plan becomes a Living Document

Often the Silver Jackets team’s strategy is centered on the state hazard mitigation plan, which most states have developed and maintain. States welcome team participation because partners on the team are well positioned to provide valuable input into the plan, either periodically or during the three-year regulatory update. By becoming familiar with the state mitigation plan and the activities it addresses (assess risk throughout the state, identify and profile hazards, assess vulnerability and potential loss by jurisdiction, support mitigation actions, search for funding, and monitor overall progress to mitigate disasters), participating agency personnel better understand how the plan affects their agency – and vice versa.

5.2 Improved Flood Risk Communication

Silver Jackets teams understand that they can save resources, reach a larger audience, and engage multiple agencies by collaborating on common messaging and outreach. Several state teams and agencies in the Midwest used the 100th anniversary of an historic 1913 flood to raise awareness and promote sound flood risk management. Interagency brochures, fact sheets, websites, and public service announcements allowed for sharing common messages (<http://mrcc.isws.illinois.edu/1913Flood/index.shtml>).

A Nebraska flood risk management website produced by its Silver Jackets team provides a collaborative, multi-agency approach by presenting flood information and key messages from multiple sources in a clear and comprehensive format. The series of web pages (available at <http://floods.dnr.nebraska.gov/>) helps direct the general public by providing a single starting point for all types of flood-related information and organizing it in a linear manner. This allows the public to self-educate and ultimately better understand and respond to flood risk.

5.3 Preparing for a Quick Start in a Post-Disaster Environment

One important benefit of Silver Jackets team members meeting key employees from a number of different agencies is that members can place names with faces and organizations while learning about each other’s capabilities and programs. These same relationships and contacts become critical during expeditious response and recovery operations. Several states have stated that relationship-building is the

single most important activity they can do through the Silver Jackets program. Since a Silver Jackets team already has already established good working relationships, coming together to assist in a response setting is much more effective, and less time is needed to understand programs and resources. Working as a team elevates engagement and dialogue during the response and recovery period.

For example, the Arkansas Silver Jackets team and the Arkansas Natural Resources Commission is developing a statewide comprehensive flood risk, education program along with a post-flood quick guide for floodplain managers in advance of a flood event. The guide will assist communities in collecting high water marks, sandbagging, applying for grants, and other activities following a flood event.

6. CONCLUSION

Within the context of the United States' framework for flood risk management, which involves a large number of governmental and non-governmental organizations with widely-varying responsibilities, the Silver Jackets program provides an essential means of linking organizations and coordinating efforts to accomplish each state's priorities. The program's success is evident from its growth, its enthusiastic support by leading state agencies and supporting partners, and its ever-growing slate of best practices and achievements. These successes can be shared with other flood risk management practitioners to facilitate further progress and with general lay audiences to improve understanding of flood risks and prompt actions to address them.

7. REFERENCES

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