Washington, DC Silver Jackets

DC Silver Jackets Team:
Working together to manage flood risk in our Nation’s Capital

2019 ANNUAL REPORT

Above Image: September 24, 2019 – Team Tour of FEMA’s National Resource Coordination Center (NRCC) following a DC Silver Jackets Meeting
(Source: USACE)

Side Image: 1985 Election Day Flood – Hains Point, Washington, DC
(Source: Library of Congress)
Flood Resilience Leadership

About Silver Jackets

The Silver Jackets program is sponsored by the U.S. Army Corps of Engineers (USACE). Silver Jackets interagency teams are established at the state level to improve the management of flood risks nationwide. No single agency has all the answers; however, multiple areas of expertise and programs can be leveraged to provide a cohesive solution to reduce flood risks. The name “Silver Jackets” is symbolic and showcases the common mission of diverse agencies during flood-disaster response, as agencies generally wear different colored jackets while responding.

More information about the Silver Jackets program can be found at http://silverjackets.nfrmp.us/.

About the Washington, D.C. Silver Jackets

The award-winning Washington, D.C. Silver Jackets’ vision is to establish and strengthen intergovernmental federal and District of Columbia partnerships and serve as a catalyst to develop and implement comprehensive, resilient, and sustainable solutions to the District’s many flood-hazard challenges. The team collaborates before, during, and after a flood to provide flood risk evaluation, assist in project implementation, and educate stakeholders and residents about flood risk.

The DC Silver Jackets website can be found at http://silverjackets.nfrmp.us/State-Teams/Washington-DC.

Current Participating Agencies

District of Columbia Agencies: Department of Energy and Environment (DOEE)*; D.C. Homeland Security and Emergency Management Agency*; D.C. Office of Planning*; Deputy Mayor for Public Safety and Justice*; Department of Public Works; Department of Consumer and Regulatory Affairs; District Department of Transportation; and Department of Insurance, Securities and Banking

Federal Agencies: U.S. Army Corps of Engineers (USACE) *; U.S. Federal Emergency Management Agency (FEMA)*; National Park Service (NPS)*; National Oceanic and Atmospheric Administration - National Weather Service (NWS)*; U.S. Geological Survey (USGS)*; U.S. Army - Military District of Washington; U.S. Navy; General Services Administration (GSA); U.S. Environmental Protection Agency (EPA); National Capital Planning Commission (NCPC)*; Smithsonian; and D.C. National Guard*

Other Regional Agencies/Organizations: District of Columbia Water and Sewer Authority*; Washington Metropolitan Area Transit Authority; Metropolitan Washington Council of Governments; University of the District of Columbia; University of Maryland; George Mason University; and Georgetown University

# Co-Leader Agency
* Signatory Agency
2019 Coordination and Collaboration

DC Silver Jackets Meetings

In 2019, DC Silver Jackets meetings were held on February 5, 2019 (hosted by DOEE), May 22, 2019 (hosted by NCPC), and September 24, 2019 (hosted by FEMA Headquarters). Attendance at each meeting was approximately 20-30 participants. The meetings included members' presentations of their programs, flood related presentations from guest speakers, progress reports from DC Silver Jackets’ Task Groups, and open discussion and announcements on ongoing and upcoming topics.

Key presentations provided during the meetings include:
- Buzzard Point Floodplain Study (DDOT)
- DC Resiliency Strategy (DC EOM)
- DC Potomac River Flood Interagency Coordination (NPS/HDR)
- Hurricane Katrina Emergency Response/Dewatering Experiences (HDR)
- DC Hydrography and Watershed Boundaries Study (USGS/DOEE)
- The Growing Threat of Urban Flooding (UMD)
- Building Resilient Infrastructure and Communities and Risk Rating 2.0 (FEMA III)
- DC High Water Mark (DOEE)

DC Silver Jackets Task Groups

The DC Silver Jackets team formed multiple Task Groups that work together throughout the year to focus on specific flood related activities. The following are accomplishments by the Task Groups in 2019:

Levee Task Group: The Levee Task Group coordinated issues related to the Anacostia Levee System constructed by USACE and operated and maintained by Joint Base Anacostia-Bolling (JBAB) and the National Park Service (NPS). USACE is conducting levee risk assessments on all of its levee systems and is sharing risks and benefits associated with each levee. USACE coordinated the results of the Anacostia Levee System risk assessment with NPS and JBAB and presented the results to the JBAB Joint Partnership Council on May 9, 2019. JBAB is working to design and implement repairs to the levee system.

NPS tests the installation of the DC Potomac Park Levee System 17th Street Closure annually and it was successfully erected on November 15, 2019. The team continues to coordinate efforts to evaluate raising the project to meet the federally authorized level.
**Outreach Task Group:** Members of the Outreach Task Group developed and submitted an interagency nonstructural flood risk management proposal to conduct a DC Flood Risk Communication Campaign in FY20. The proposal was approved by USACE and funded in October 2019. The outreach team held the project kickoff meeting in November 2019.

NPS, with input from members of the Outreach Task Group, developed a factsheet and a temporary sign to be displayed outside the Lockkeepers House while the 17th Street Levee Closure is being installed. The exhibits explain how the levee system and closure structure reduce the flood risk.

**Federal Triangle Task Group:** The Federal Triangle Task Group was established to conduct the Silver Jackets interagency Federal Triangle Interior Flooding Strategy Project. The project, which involved hosting two workshops and an agency leadership meeting, is described below in the Silver Jackets Interagency Projects Section. The Task Group was also able to obtain funds to compile Federal Triangle building data and conduct a preliminary damage and impact assessment. The Task Group conducted multiple conference calls, webinars, and in-person meetings amongst planning team members to strategize an approach for engaging with stakeholders and key Federal Triangle agencies.

**Flood Emergency Planning Task Group:** NPS owns, operates, and maintains the DC Levee System, which manages risk to the Monumental Core of the city and various national parks. In 2019, the Task Group supported NPS in developing the National Park Service Washington DC Potomac River Flood Interagency Coordination Plan. See Actions by Member Agencies below for additional details.

**Watts Branch Task Group:** The Watts Branch Task Group was established in January 2017 to coordinate partners to complete the Watts Branch Flood Risk Management Study. The study was the third DC Silver Jackets interagency project that started in FY17 and is led by USACE and DOEE. Additional details on the status of the Watts Branch Flood Risk Management Study are provided in the following section.

**Interagency Silver Jackets Projects**

Under the Silver Jackets program, state Silver Jackets teams submit one or more interagency project proposals each year to compete nationwide for funding to support the USACE task. The interagency projects provide an opportunity for each team to leverage in-kind and financial resources from other federal, state, and local agencies to reduce flood risks.

In 2018, the DC Silver Jackets successfully obtained funding through the Silver Jackets program and member agencies for three interagency projects, the Watts Branch Flood Risk Management Study (Phase II), the Federal Triangle Interior Flooding Strategy and Planning and the DC Levee System Outreach. More information on DC Silver Jackets projects can be found at: [http://silverjackets.nfrmp.us/state-teams/washington-dc](http://silverjackets.nfrmp.us/state-teams/washington-dc)
Watts Branch Flood Risk Management Study:

The neighborhoods surrounding Watts Branch, a tributary of the Anacostia River in Northeast DC, are within a high-risk and regulatory flood-hazard area (1% annual chance or 100-year floodplain). These neighborhoods consist of high-density residential and non-residential structures, critical infrastructure and vulnerable populations (including a public housing development). These high-risk flood zone areas may expand even further considering the effects of climate change. A flood in an area with vulnerable populations can result in devastating impacts to the residents and community, including the loss of life, the loss of jobs and displaced residents.

The DC Silver Jackets is conducting a two phased flood risk management study to assess flood risk vulnerability, increase flood awareness, and identify strategies for addressing flood problems in Watts Branch using a holistic approach. There are numerous project partners including federal agencies, District agencies, Georgetown University, and private companies. The study is expected to be finalized in 2020 and includes the following tasks:

- (Phase I) Assessing existing and future flood risks due to climate change (2080s) through updated 1D/2D hydraulic and hydrologic (H&H) modeling.
- (Phase I) Updating floodplain maps which will allow communities and government agencies to better understand their flood risk.
- (Phase II) Identifying individual and watershed-wide flood risk management strategies, neighborhood climate-resilience policies, and potential funding programs.
- (Phase II) Conducting initial outreach activities to raise awareness of flood risk and promoting risk-reduction actions.

Figure above: Design concept developed by Ramboll Group to demonstrate how blue/green infrastructure, or "cloudburst", measures can be implemented throughout the Watts Branch study area to reduce flood risk.

Federal Triangle Interior Flooding Strategy and Planning:

The DC Silver Jackets initiated an interagency project in FY18 to re-engage stakeholders and determine a path forward for reducing the flood risk. The Federal Triangle, which is comprised of federal and district buildings, experienced severe flooding and millions of
dollars in damages in the June 2006 flood and then flooded again in July 2019. Some flood studies have been completed, however, the recommended solutions are costly and no agencies have moved forward with a comprehensive project. The intent of this project is to bring the myriad of stakeholders together to understand the flood risk, strategize potential innovative solutions, and determine a path forward for further study and design.

Two Federal Triangle Area Flood Workshops were held at the University of the District of Columbia, on June 6 and September 5, 2018. The intent of the first workshop was to provide attendees with an overview of the flood history and risk in the Federal Triangle; discuss steps individual agencies are taking to flood proof their properties; present on types of interior flood risk management measures; and engage on key opportunities and challenges related to interior flooding in the area. The second workshop focused on potential flood risk management solutions.

In May 2019, the key stakeholder agency leaders met to discuss the results of the two workshops and to decide on a path forward. The agency leaders showed support for moving forward collectively with studying comprehensive solutions to the flooding problem. They committed to support several short-term tasks by providing data and personnel and agreed to work towards scoping and funding strategies for a longer-term feasibility study. Following the meeting, USACE was able to obtain funding to compile elevation data on the Federal Triangle buildings, host an interagency charrette to further evaluate flood risk management alternatives, and conduct a preliminary flood damage and impact assessment. This work was initiated in 2019 and will be completed in 2020.

**DC Flood Risk Communication Campaign:**

Due to the high flood risk in DC, the DC Silver Jackets developed and submitted a proposal for an interagency project to increase flood risk communication. The proposal was approved and the project was initiated in November 2019. The plan is to develop and distribute various communication materials to educate the public on the flood risk and to empower and encourage them to take actions to reduce their own flood risk. Several ideas the team is considering include: flood related display case at the Anacostia River Education Center (AREC), permanent Potomac Park levee system display at the Lockkeeper’s House, outreach activities for Watts Branch, brainstorming ideas for Flood Week 2021, pursuing a High Water Mark (HWM) on NPS property, enhancing flood related information on the DC Ready/HSEMA website, and hosting Flood 101 classes. The project will be completed in 2020.
Actions by Member Agencies
The DC Silver Jackets' accomplishments in 2019 extend beyond our meetings, phone calls, and collaborations. Member agencies continue raising flood awareness and working to reduce flood risks in the District through their programs, plans, and projects, as well as their professional networks.

C40 Connecting Delta Cities Network by DOEE
Representing the District at the Connecting Delta Cities network, DOEE continues engaging world cities in flood risk management through sharing knowledge, innovative ideas, and best practices. Through this engagement, the DC Silver Jackets have learned innovative approaches in flood risk reduction, and have enhanced member participation. In October, 2019, Nicholas Bonard, DOEE showcased the DC Silver Jackets’ work on interior flooding and shared ideas on how to communicate and further study interior flood risk at the network meeting and workshop in Copenhagen, Denmark.

DC High Water Mark Project by DOEE
In October 2018, DOEE kicked off a DC High Water Mark initiative, a pilot project to engage stakeholders and communities to design and install flood awareness and informational signs along the Potomac and Anacostia rivers and their tributaries. Under a grant commissioned by the DOEE in partnership with FEMA and in cooperation with the DC Silver Jackets, Hackreative, LLC designed and installed two sign-sculptures promoting communities’ comprehension of flood risk at two locations; one on Kingman Island and the other on the Marvin Gaye Trail. By combining historic and prospective flood data, information gathered from outreach events and a visual preference survey, the designers created structures that are meant to be simultaneously visually interesting and educational. Work during 2019 culminated in the implementation of both sculptures in February, 2020.

The statutes abstract the Morse code language into humorous pill- and donut-shaped forms, inviting curiosity to an otherwise everyday—yet serious and imminent—concern. The leaf-and stalk silhouette also pays homage to the locust tree, a ubiquitous symbol of DC’s sidewalks and alleys. The flags have a “dip-dyed” appearance, resembling buoys that measure sea elevation and underwater hazards and the center line of each flag denotes a specific flood elevation. Moreover, each flag is aligned toward various landmarks as a means of grounding and orienting the high water mark and its viewers.

Buzzard Point Floodplain Study by DDOT
In 2017, DOEE in partnership with Ramboll conducted the Buzzard Point Living Shoreline Analysis that assessed the impacts of flooding from the Potomac and Anacostia rivers, rising sea level and storm surges, and extreme rainfall in the Buzzard Point area. The study recommended higher levels of flood risk management using a mix of grey and green
infrastructure and added value projects, like an extension of an existing Riverwalk trail, additional green space, living shorelines, and increased access to the river.

In December 2018, DDOT kicked off a separate Buzzard Point Floodplain Study to identify potential measures to reduce flood risk to particular transportation systems in Buzzard Point in Southwest DC. DDOT included the Ramboll/DOEE Buzzard Point concept as one of 4 alternatives to evaluate. The DOEE/Ramboll concept and a hybrid concept of raising roads and temporary levees will be advanced towards a planning on feasibility study and NEPA analysis for transportation system enhancements.

Southwest/Buzzard Point Flood Resilience Strategy

One of the early priority implementation actions coming out of the Resilient DC Strategy in April of 2019 was the recognition that Southwest (SW) DC and Buzzard Point need a shared flood resilience strategy that reduces the flood risk in this quadrant of the District. SW DC is bisected by a flood plain and is vulnerable to riverine and storm surge flooding as well as cloudburst (i.e. extreme intensity rain events) flooding. This need was previously identified in the SW Small Area Plan of 2015 and subsequently in the Climate Ready DC Plan of 2016. However, it is was through the Resilient DC process that local funding for a study was identified and appropriated by the District.

The SW/Buzzard Point Flood Resilience Strategy will design an integrated network of Blue/Green Infrastructure (BGI) spanning the entirety of the floodplain (500-year floodplain + the Special Hazard Area; see map) that currently runs through SW and the Buzzard Point peninsula. This network of BGI infrastructure will be designed and engineered to reduce the risk to this large peninsula, its people and infrastructure from flooding due to extreme rain events. The strategy will re-design and engineer local and federal open spaces and right-of-way (i.e. streets and sidewalks) to function as a network of connected, floodable, multipurpose, infrastructure that can absorb and contain excess stormwater during extreme precipitation events. Each BGI component of the network will be designed so that it can easily return to its original/main function (i.e. transportation, recreation, parking etc.) after the excess stormwater is absorbed or conveyed away. Although the strategy is focused primarily on interior flooding (i.e. flooding due to high volumes of rain), it is expected to work in concert with and reinforce future efforts to reduce coastal flooding due to storm surge, hurricanes and sea level rise.

In 2019 the District appropriated funds for the implementation of the Resilient DC Plan setting aside funds for the creation of the SW/Buzzard Point Flood Resilience Strategy. Funds were transferred to the DC Office of Planning (OP) for scoping, contracting and executing the plan. In 2019, OP held several meetings with key District and Federal
agencies to coordinate on the scope of the Strategy. The development of the Strategy, which will take approximately 9 to 12 months, will publicly kickoff in summer 2020.

**DC Future Conditions Flood Hazard Study**

Climate Ready DC, which is the District’s plan to adapt to a changing climate, was released in draft form for public comment in summer 2015. This plan identifies the impacts that a changing climate will have on the District, the risks those impacts will have on the infrastructure, public facilities and neighborhoods, and the actions that must be taken to prepare. The impact of climate change on flooding is a critical component of Climate Ready DC, as the plan discusses how the frequency and intensity of heavy rainfall events that can cause flooding will increase by mid-century and the 2080’s.

The plan identifies numerous actions and sub-actions to adapt the District to climate change; however, many of the actions would benefit from flood hazard mapping to better understand the infrastructure and community resources impacted by more frequent rainfall in the watersheds which may cause increased flooding on rivers and streams. DOEE requested the assistance of USACE-Baltimore District to conduct hydrologic and hydraulic modeling and flood hazard mapping of climate change scenarios to assist in implementing the numerous actions in the Climate Ready DC plan. The flood hazard mapping is being completed for several flood prone areas in the District for numerous climate change scenarios. The mapping, which is being developed in a Geographic Information System (GIS) environment, can be used to determine assets (buildings, infrastructure, etc…) at risk of more frequent flooding or new flooding as a result of climate change; determine future-conditions flood elevations for flood-proofing projects; establish new guidelines for development projects to make future buildings more resilient to flooding (i.e. freeboard); and numerous other applications to support District planning efforts.

The study began in 2017 and is being completed in phases, as DOEE and USACE acquire funding. The study area for this investigation was originally all streams that have a Special Flood Hazard Area (SFHA) mapped on the effective Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMS) for the District of Columbia. The SFHA is also known as the 1-percent annual chance floodplain. The streams and/or watersheds included in this investigation are:

1. Oxon Run (including Barnaby Run) (study completed)
2. Watts Branch (study completed)
3. Rock Creek (including all tributaries) (removed from scope as it will be modeled under another project)
4. Anacostia River (riverine flooding) (study to be completed in May 2020)
5. Potomac River (riverine flooding) (removed from scope as it will be modeled under another project)
6. Anacostia Tributaries (Hickey Run, Pope Branch, Fort Dupont Creek) (study ongoing, expected completion in June 2020)
7. Western Watersheds (Tributary near Battle Kemble Park, Tributary near Dalecarlia Reservoir, East Creek A and East Creek B) (removed from scope as it will be modeled under another project)
Blue/Green Infrastructure Workshop

On March 26, 2019, DOEE hosted a workshop entitled Connecting the Drops: the Blue-green Infrastructure Approach. The purpose of the workshop was to introduce stakeholders to the concepts of integrated planning and blue-green infrastructure and to explore how the District might implement its own cloudburst management strategies. The workshop included presentations from Copenhagen and New York City, two cities that have worked actively with cloudburst masterplans. The workshop also included a charrette component where participants could share knowledge, and test the application of cloudburst tools on the District, as well as discuss how solutions would incorporate concepts of social equity, workforce development, and education. In the coming years, DOEE plans to work with sister agencies to identify opportunities to use blue-green infrastructure and cloudburst management strategies that will reduce the city’s risk of flooding from intense rainfall while also reducing urban heat islands, improving water quality, and providing new community amenities.

DOEE’s official report of the event and blue-green infrastructure concept is entitled, “Blue Green Infrastructure: Cloudburst Management Strategies for the District of Columbia,” and is available here: https://www.dropbox.com/s/bpo6fa5mdzxdqbc/BGI_Workshop_DOEE_Final.pdf?dl=0

DC Integrated Flood Model

In 2019, the District Government announced that it has set aside $5.7 million create an Integrated Flood Model (IFM) for DC over next 4 years, beginning in fiscal year 2020. With the IFM, DOEE will be able to develop maps of where flooding is expected to occur, including areas of interior flooding, now and in a future with heavier rain and sea level rise. Once these maps are created, the city will be able to do more targeted outreach to flood vulnerable residents, and propose and build infrastructure in places that we know will reduce flood risk in neighborhoods that need it the most. The idea of an IFM was first put forward by the DC Silver Jackets Interior Flooding Task Group Report in 2017. DOEE looks forward to collaborating with the DC Silver Jackets as the project unfolds.

National Park Service Washington DC Potomac River Flood Interagency Coordination Plan

In 2019, NPS coordinated with many DC agencies to develop the National Park Service Washington, D.C. Potomac River Flood Interagency Coordination Plan. The purpose of the plan is to provide a framework for NPS response during a flood emergency in the Washington, D.C. area resulting from flooding on the Potomac River. The plan is authoritative for NPS and informative for all NPS partners and other interested or impacted parties and stakeholders. Effective city-wide coordination is expected to decrease risk to: populations, infrastructure, historical artifacts, cultural icons, and operations of the federal government. While this plan is not intended to direct individual agency response, it supports a common understanding of roles and responsibilities and more effective integration of flood response activities among responding public safety agencies by describing collaborative incident management strategies. Additionally, the plan provides flood related background information and resources to enhance a common operating picture during a response.
2020 DC Silver Jackets Planned Activities

Team-Wide

- Host a Federal Triangle stakeholder charrette, compile and collect building data, conduct a preliminary damage and impact assessment, and coordinate with other key stakeholder agencies to determine how a comprehensive flood risk management solution could be funded, designed and constructed.
- Promote DC Silver Jackets’ flood risk management initiatives and raise District flood awareness by submitting one or more interagency projects for the USACE FY 2021 call for Interagency Nonstructural Flood Risk Management Proposals.
- Increase flood insurance policies by promoting awareness and hosting a flood insurance workshop.
- Implement Resilient DC actions including the launch of the SW/Buzzard Point Flood Resilience Strategy which it funded (see summary of the Strategy in previous pages).
- Support the development of DC Resilience Strategy under 100 Resilient Cities initiative and maintain the updated 2018 DC All-Hazard Mitigation Plan by enhancing the integrated flood modeling and mapping framework, developing potential flood mitigation projects, and incorporating roles and efforts of the DC Silver Jackets into those plans.
- Engage with local communities and businesses and empower them to take actions to reduce flood risks by supporting DOEE’s High Water Mark project.
- Promote the role of the DC Silver Jackets in flood risk management and build flood resilience in Washington, DC through public and private initiatives and ongoing programs.
- Continue coordinating with USACE to raise the Potomac Park levee system to the full 700,000 cubic-feet-per-second Congressionally authorized risk reduction level.
- Support JBAB to improve the Anacostia levee system by conducting regular meetings and sharing knowledge and solutions.
- Explore innovative flood risk reduction solutions by engaging and maintaining relationships with partners nationally and internationally.

Flood Emergency Planning Task Group

- Coordinate with HSEMA to provide technical support to the Emergency Operations Center during a flood emergency event.

Levee Task Group

- Support JBAB and NPS National Capital Parks East in managing the Anacostia levee risks.
- Support NPS to finalize a contingency plan to strengthen of the Potomac Park Levee system during high flood events.
Watts Branch Task Group

- Finalize the Watts Branch Flood Risk Management Study report that identifies preliminary flood risk reduction alternatives and costs (structural, non-structural, blue and green infrastructure, land use policies).
- Conduct community engagement activities, including holding a town hall meeting in Watts Branch neighborhoods in 2020.

Outreach Task Group

- Encourage DC stakeholders to understand and reduce their flood risk by completing the first phase of the flood risk outreach activities.