

REGION VI:

Joint Engagement in Tulsa, Oklahoma



LESSONS LEARNED AND BEST PRACTICES:

- Strong partnerships and extensive coordination and collaboration between federal, state, and local partners are incredibly important to the success of a levee rehabilitation and mapping project.
- The use of the U.S. Army Corps of Engineers' (USACE) simulation tools can be incredibly effective, specifically by showing the community the impacts of flooding from different failure scenarios in a highly visual way.
- Collaboration and honest communication are key to raising awareness about an issue, which can in turn encourage the relevant stakeholders to move forward on a rehabilitation and mapping project.
- Don't ignore levee maintenance! Keeping up routine work can prevent unexpected repairs and save money in the future.

Note: This Success Story focuses on stakeholder engagement to move both the rehabilitation and mapping of a levee system forward. In this case study, the first part refers to the "rehabilitation project" to bring the levee system up to USACE standards. The second section refers to the "mapping project" to depict the flood hazards on the Flood Insurance Rate Map (FIRM).

THE CHALLENGE

The Tulsa and West Tulsa levee systems, originally constructed by the USACE, have a total length of approximately 20 miles, with 11.8 miles located on the left and right downstream facing banks of the Arkansas River (Levees A and B) and 7.9 miles located on the right bank (Levee C) (see Image 1). When the project was completed in 1945, responsibility for continuous operation, maintenance, repair, rehabilitation, and replacement actions were given to Tulsa County Drainage District No. 12.

The three individual levee segments are in the following areas: Sand Springs (Levee A); Newblock (Levee B) and refineries (Levee C). These are in the heart of West Tulsa surrounded by neighborhoods, refineries, and businesses. Nearly 10,000 people live near these levee systems and there is an estimated \$2 billion worth of infrastructure in the Sand Springs, West Tulsa, and Tulsa County areas.

Since 2012, the levee systems have been, and currently are, mapped as accredited by FEMA. Under the current USACE Levee Safety Program, USACE evaluates levees to help communities who operate and maintain them identify critical risks and prioritize actions. The Tulsa-West Tulsa Levees A, B, and C are considered high-risk because of aging infrastructure and design limitations in meeting the new federal safety standards USACE established after 2008.



The Oklahoma Silver Jackets Team plan for the Tulsa pilot project, SOURCE: THE BUZZ, SILVER JACKETS

Without major improvements to the levee systems and to more accurately characterize the flood risk, FEMA may need to initiate a Risk Mapping, Assessment, and Planning project using the levee analysis and mapping approach for non-accredited levee systems. The end result could be remapping the system as non-accredited, which would change the flood hazard zones of the surrounding neighborhoods, businesses, and facilities. Most importantly, without additional improvements, the community could be at heightened risk of the levee overtopping or failing, which could result in devastating flooding. By using the levee analysis and mapping procedures, the community would be able to better understand that flood risk, but would also need to take steps to proactively mitigate that risk, beyond just purchasing flood insurance.



Map showing the levee systems, SOURCE: TULSA DISTRICT

The goal of the levee rehabilitation project is to keep the levee systems accredited by taking steps to improve the levee. However, given the cost, the number of stakeholders involved, and the work that needs to be done, it will not be an easy task. This, coupled with human nature and some peoples’ belief that “flooding will never happen to me,” makes it difficult to rally groups to come together to repair the levee systems.

THE SOLUTION

In 2010, the Silver Jackets team, a collaborative team including federal, state, regional and local communities and organizations focused on state flood risk priorities, began to identify the potentially impacted areas and start outreach in those areas. The Silver Jackets partnered with the Indian Nations Council of Governments, the City of Tulsa, and Tulsa County to sponsor booths at various festivals to provide information and raise awareness of the levee system and its purpose. In addition, the teams distributed questionnaires to better understand the populations at risk and their level of knowledge related to the levee system.

In another effort, the USACE Tulsa District began community outreach in 2013, after it became evident that the levees had structural issues. During this outreach, a group of stakeholders, including the City of Tulsa, Tulsa County, the City of Sand Springs, FEMA, and other community leaders helped Tulsa County Drainage District No. 12 facilitate community meetings and examine the existing levee systems’ issues.

“In my experience the keys to success are multiple agencies at all levels of government supporting investment in the levees and the community, and a local levee sponsor willing to champion the cause.”

– CHRIS BAKER, USACE

Beginning in 2014, a series of public meetings were held to determine that additional funding was needed to accomplish accreditation. USACE used simulation tools to evaluate and show the economic damages, loss of life, and the impacts to critical infrastructure from flooding events. Based on the early engagement of community and political stakeholders, communication efforts around flood risk, and the visual depiction of risk through USACE’s tools, as the local levee sponsor, the Tulsa County Drainage District No.12 developed a long-term rehabilitation plan to repair critical levee deficiencies.

In December 2016, a System-Wide Improvement Framework (SWIF) was initiated. A SWIF plan is developed by the levee sponsor(s) and accepted by USACE to implement system-wide improvements to a levee system. It allows levee sponsors to make risk prioritized repairs over a period of time and retain conditional eligibility for federal assistance if the project is damaged in a flood.

In January 2017, another meeting was held in Tulsa that included the USACE Tulsa District Emergency Manager, the SWIF planning team, the county commissioner, residents from the City of Tulsa, Sand Springs, and Tulsa County. The City of Tulsa, Sand Springs, and Tulsa County agreed to commit resources to implement the critical portions of the SWIF plan to help repair and restore the levee system to full operational adequacy. FEMA also increased its involvement, creating a detailed schedule with definitive deadlines to move the rehabilitation and mapping project forward. Throughout the process, communicating and working towards a shared goal were essential.

One of the keys to the SWIF planning team's success was a focus on collaboration and team building. The SWIF planning team met for breakfast at various locations to include all members and stakeholders. This made people feel included and emphasized that transparency would be key to determining how to accomplish their common goal while also allowing room to develop solutions. Another important piece to the team's success was an intergovernmental agreement between Tulsa County, Sand Springs, the City of Tulsa, and the Levee District. Once each representative from these agencies understood their role and expectations, it helped with determination of specific funding and resources that are needed.

RISK AND MITIGATION COMMUNICATION

The SWIF planning team recognized that risk is best communicated in the context of its impact to homes, businesses, social, and political systems that are or could be exposed to the flooding. This guided the planning team's efforts during the process to ensure there was a focus on mitigation, response, and preparedness in the whole community.

“But what got us going on this is that we were honest about the condition of the levee and our assessment of the project. That started driving a new reality about what we needed to do better to reduce the risk.” – BILL SMILEY, USACE

As a member of the SWIF planning team, FEMA helped communicate information related to flood insurance, flood hazard mapping, and flood risk identification. By working together, the team identified the areas of greatest risk during a flood event and the people who may be impacted. This information was communicated in many ways, including:

- Attending local neighborhood events and sharing information with potentially impacted residents, businesses, community members, and elected officials;
- Conducting 12 tabletop exercises with response agencies and political partners which began in March 2009;
- Distributing flyers around specific flood anniversaries to highlight the impacts of the devastating flood events such as the one in 1986;
- Communicating with emergency support teams that would act in the case of an emergency; and
- Involving agencies and departments who are responsible for flood planning and response.

SHOWING RISK

One of the ways the SWIF team was able to show the risk of potential flooding was through the USACE's SimSuite and LifeSim Tools. USACE uploaded the area's topography, buildings, roads, and traffic statistics to create different flooding scenarios. This not only helped show the risk to the community and get the stakeholders more involved, but also helped in creating emergency plans.

THE OUTCOME

Because of the team's active partnership, FEMA was made aware of the ongoing collaborative efforts by local governments and the USACE's technical support. FEMA will continue to work with the SWIF to monitor the progress and its impact on FEMA remapping efforts. Additionally, through the team's communication and active engagement, the rehabilitation of the levee is moving forward to ultimately update and restore its accreditation status.

“Success is the ability to work and coordinate all of these different agencies and get them behind the project and moving forward to success.”

— BILL ROBISON, City of Tulsa

The team has begun to identify funding sources as the City of Tulsa, the City of Sand Springs, and Tulsa County have agreed to commit resources, and the budget to cover a reasonable share of the construction, and the budget lead at USACE has continued to work with legislators to raise additional funds. Additionally, the approved SWIF plan developed a risk reduction and corrective action strategy. As the team moves ahead, a lot of good work continues and SWIF milestones are being completed.

“Almost 10 years ago this project was rated as “unacceptable” with no path forward to improve the levee system. We were an early adapter of SWIF and, in fact, one of the first in the nation to apply for a SWIF. As a result of collaboration, the Silver Jackets were able to identify and prioritize critical deficiencies in order to push the risk assessment process forward, which later evolved in the SWIF and our long-term solution plan.”

— JAMIE WATTS, USACE

“This is a great example of interagency collaboration and an important step for the overall safety of the residents in the Drainage District.”

— TODD KILPATRICK, Levee Commissioner for Tulsa County Drainage District No.12

SWIF PLANNING TEAM MEMBERS AND THEIR ROLES:

Tulsa Levee District No.12
Lead. Repairs, Triggers, EOP.

Tulsa Area Emergency Management
Emergency Response Integration.

City of Sand Springs
Impacted city. Repairs and EOP.

City of Tulsa
Impacted city. Repairs and EOP.

Tulsa County Commissioner
Political Stakeholder Lead

Local Emergency Planning Committee
HAZMATS and TIMs

Tulsa County Engineering Department
Analysis and Engineering

United States Army Corps of Engineers
SWIF Development/EOP Assistance

FEMA Region 6
Mitigation and NFIP Process

Tulsa County Sheriff
Evacuation Planning and Assistance

Tulsa Stormwater Board
Hydrology and Storm Drain Impacts

Indian Nations Council of Governments
Planning and Socio Economic

River Parks Authority
Impacts to Current Development

National Weather Service
Triggers and Decision Support

Oklahoma Emergency Management Agency
Hazard Mitigation and Response



SWIF planning team members in January 2017, SOURCE: Tulsa District