Upper Turkey Creek Floodplain Management Plan

For the community of Merriam, Kansas

UPPER TURKEY CREEK FLOODPLAIN COMMITTEE (OR WATERSHED AUTHORITY)

August 14, 2013

Originally authored by: Brian Rast, PE, CFM

Table of Contents

List of Tables

List of Figures

Upper Turkey Creek
Floodplain Management Plan

For the community of Merriam, Kansas

Introduction

A floodplain management plan (FMP) serves to communicate many important decisions about the use of a floodplain. The FMP includes important historical details, considerations, and finally an action plan about the activities and features that help to manage flood risks. This work, the *Floodplain Management Plan for Upper Turkey Creek*, was originally sponsored by the U.S. Army Corps of Engineers (Corps), the City of Merriam, Kansas, and the Unified Government of Wyandotte County and City of Kansas City, Kansas. These pages become a living document for the local communities to use to manage flood hazards along Upper Turkey Creek. Managing these flood risks is a shared responsibility of the local communities, the two states, and federal agencies.

Description of the Area

The areas susceptible to flooding under this plan are described here.

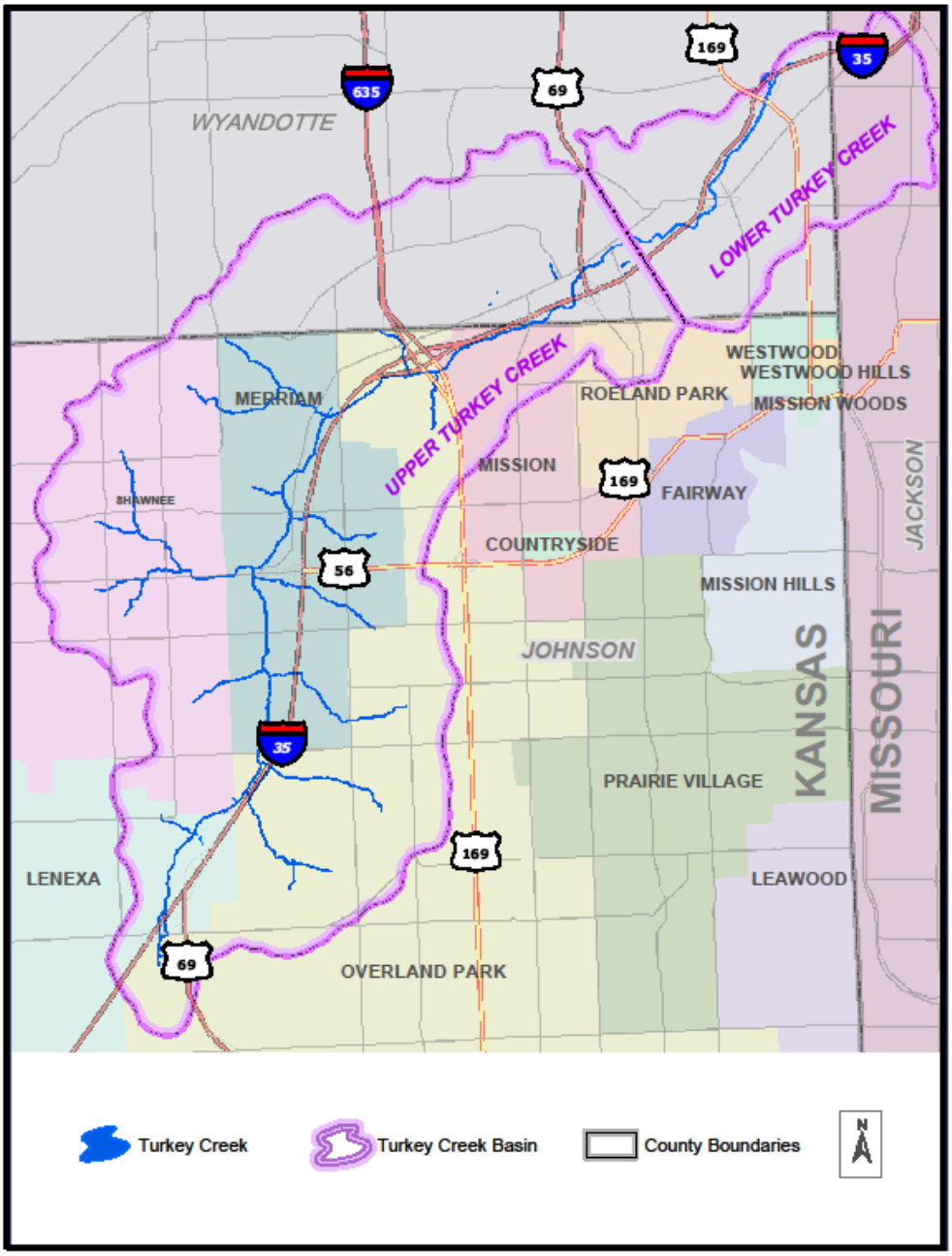

FIGURE 1. UPPER TURKEY CREEK MAP.

Purpose of the Floodplain Management Plan

The FMP purpose is to attempt to lessen the damaging effects of floods, maintain and enhance natural floodplain values, and make effective use of water and related land resources within the flood plain. A community or a coalition of communities with a FMP in place will be sustainable in many viewpoints, regarding its floodplain. Sustainable, in terms of addressing the cumulative

effects of development within the floodplain and upstream of locations in the floodplain. Sustainable also meaning the community is resilient to the natural occurrence of floods, because the community is able to avoid the impacts of flooding to their economy and lives of those living there. An effective FMP should result in continuing consideration of the flood hazard in the use of land and water resources in the flood plain and provide benefits to all government levels and the public, including

1. Reducing loss of life, injury and hardship due to floods;
2. Reducing flood damages;
3. Reducing public expenditures for construction of additional flood damage reduction measures, emergency response actions, and post-disaster assistance; and,
4. Preserving and enhancing natural flood plain values for fish and wildlife habitat along with their attendant benefits of groundwater recharge, moderation of floods, water quality improvement, and reduced erosion and sedimentation.

A FMP attempts to balance benefits obtainable from use of the flood plain with potential losses arising from such use. The comprehensive nature of such a plan stresses consideration of the full range of structural and non-structural measures potentially useful in achieving its objectives. The concepts contained in this guidance were developed to closely follow the 1994 Unified National Program for Floodplain Management and to ensure compatibility with the National Flood Insurance Program's Community Rating System.

Effective management of both floodplains with solid processes and floodwaters using appropriate physical features allows the government to break the cycle of damage and rebuild and get to a sustainable flood risk management cycle (see Figure 2).

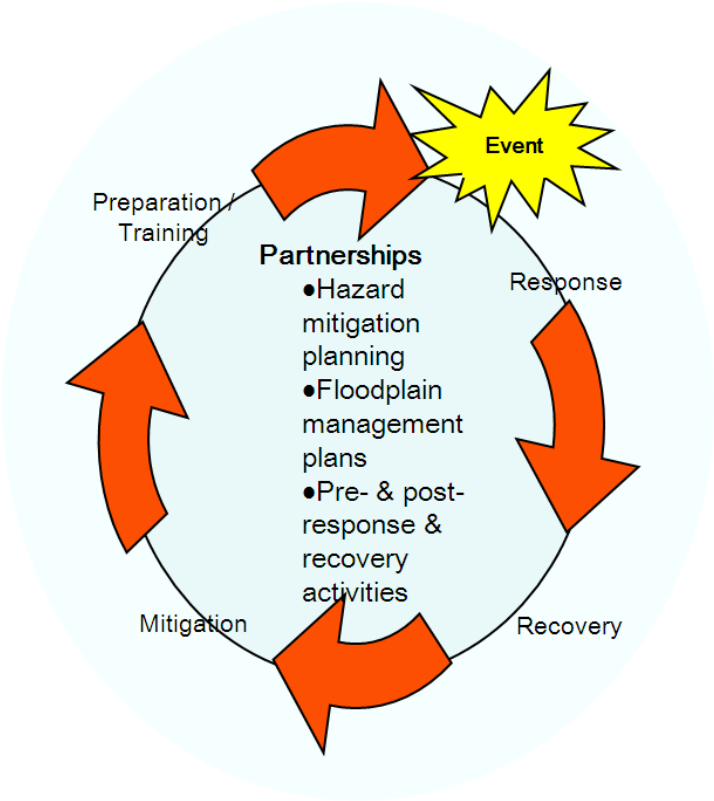

FIGURE 2. FLOOD RISK MANAGEMENT CYCLE.

The local, state, and federal planners have prepared this FMP in accordance with Federal standards. These standards originated with the Executive Order 11988, which began unified floodplain management in 1977. The standards are consistent with Public Law 104-303 of the Water Resources Development Act (WRDA) of 1996, which amends Section 402 of the WRDA of 1986 (also see 33 U.S.C. 701b-12; 100 Stat. 4133). Figure 3, below, is an excerpt from the Federal requirement.

*SECTION 202(c) OF **WRDA 1996***
FLOOD PLAIN MANAGEMENT PLANS
c) Floodplain Management Plans.
(1) In general. --Section 402 of such Act (33 U.S.C. 701b-12; 100 Stat. 4133) is amended to read as follows:
SEC. 402. FLOODPLAIN MANAGEMENT REQUIREMENTS.
a) Compliance With Floodplain Management and Insurance Programs. –Before construction of any project for local flood protection, or any project for hurricane or storm damage reduction, that involves Federal assistance from the Secretary, the non-Federal interest shall agree to participate in and comply with applicable Federal floodplain management and flood insurance programs.
b) Flood Plain Management Plans. --Within 1 year after the date of signing a project cooperation agreement for construction of a project to which subsection a) applies, the non- Federal interest shall prepare a flood plain management plan designed to reduce the impacts of future flood events in the project area. Such plan shall be implemented by the non-Federal interest not later than 1 year after completion of construction of the project.
c) Guidelines. --
(1) In general. --Within 6 months after the date of the enactment of this subsection, the Secretary shall develop guidelines for preparation of floodplain management plans by non-Federal interests under subsection b). Such guidelines shall address potential measures, practices, and policies to reduce loss of life, injuries, damages to property and facilities, public expenditures, and other adverse impacts associated with flooding and to preserve and enhance natural floodplain values.
(2) Limitation on statutory construction. --Nothing on this subsection shall be construed to confer any regulatory authority upon the Secretary or the Director of the Federal Emergency Management Agency.
d) Technical Support. --The Secretary may provide technical support to a non-Federal interest for a project to which subsection a) applies for the development and implementation of plans prepared under subsection b).
(2) Applicability. --The amendment made by paragraph (1) shall apply to any project or separable element thereof with respect to which the Secretary and the non-Federal interest have not entered into a project cooperation agreement on or before the date of the enactment of this Act.

FIGURE 3. FEDERAL REQUIREMENT FOR FLOODPLAIN MANAGEMENT PLANS FROM THE 1996 WATER RESOURCES DEVELOPMENT ACT (WRDA) (AMENDING THE 1986 WRDA).

At a minimum, the FMP has components that comply with the U. S. Army Corps of Engineers (USACE) planning guidance for floodplain management plans (USACE 2), as required when a cost share construction project has been started using the USACE funding for a project with flood risk management as a project purpose. In this case, the project is the <INSERT PROJECT SITE(S) NAME(S) Upper Turkey Reach> project site. More importantly, this FMP meets the minimum standards for the Federal Emergency Management Agency's (FEMA) Community Rating System (CRS), Section 510 as described in the CRS coordinator's manual (FEMA 1).

Development Process of the Floodplain Management Plan

The documentation of the process used to develop the FMP is in this section. This includes a complete assessment of flood hazards, whether for loss of life or property damage. The process of developing the plan also includes records of meetings and public involvement activities, which appears below in this FMP.

Floodplain Hazard Assessment

Numerous reports and studies exist that describe the problems associated with flooding along the creek. The References section near the end of this report presents a bibliography of these resources. The following sub-sections describe the flood hazards for different reaches along the Upper Turkey Creek.

Location / Reach 1 Flood Hazards

1. Identification of the Area. Text
2. Source of the Problem. Text
3. Flood Data. Text
4. Recent Flood History. Text
5. Building Data. Text
6. Development Trends. Text
7. Development Constraints. Text
8. Critical Facilities. Text (reference Executive Order 11988)

Location / Reach 2 Flood Hazards

1. Identification of the Area. Text
2. Source of the Problem. Text
3. Flood Data. Text
4. Recent Flood History. Text
5. Building Data. Text
6. Development Trends. Text
7. Development Constraints. Text
8. Critical Facilities. Text (reference Executive Order 11988)

Location / Reach 3 Flood Hazards

1. Identification of the Area. Text
2. Source of the Problem. Text
3. Flood Data. Text
4. Recent Flood History. Text
5. Building Data. Text
6. Development Trends. Text
7. Development Constraints. Text
8. Critical Facilities. Text (reference Executive Order 11988)

Public Involvement Process

At a minimum, two public meetings have been held regarding how to manage flood risks along the creek.

TABLE 1. RECORD OF PUBLIC MEETINGS.

Meeting Name	Location	Date
Public Meeting I		
Public Meeting II		April 2011

The latest public meetings addressed

1. Causes and extent of flooding
2. What is being done about flooding
3. What to do during a flood
4. How people can protect their homes
5. Flood insurance
6. Taking care of drainage ways
7. Status of implementing this FMP

Public outreach will be a continual process, where annual awareness campaigns will be done by the individual cities. The authority will use tools such as the *CRS Credit for Outreach Projects* (FEMA).

Upper Turkey Creek Floodplain Committee (or Watershed Authority / Drainage District)

A non-Federal planner, or a planning committee established by the non-Federal interest, responsible for overall accomplishment of the FMP. State-level authorities exist for drainage districts. Because of this, Merriam Drainage District is a partner in the development of this floodplain management plan.

Charter

Text (see appendix for more).

Floodplain Management Communication Plan

The authority (see appendix for more). This communication plan is an important tool in establishing the roles and responsibilities under the FMP.

Goals and Objectives Shared by the Communities

This section contains a listing of the goals and objectives. These goals are a result of an analysis of how these communities intend to share the responsibility of managing the flood risks.

Goals and Objectives

This section presents the outcome of inter-city planning meetings. Below details the consensus on how to manage the shared flood risks along <INSERT NAME> Creek.

Location / Reach 1 Goals and Objectives

For this reach, the Floodplain Committee shares the following goals and objectives.

1. Goal:
    a. Objective:
2. Example Goal: Protect homes.
    a. Objective: Protect from the <INSERT FREQUENCY> recurrence event, as defined by <INSERT STANDARD> by relocating <INSERT NUMBER OR ADDRESSES OF> homes.
    b. Objective: Protect to the <INSERT FREQUENCY> recurrence event, as defined by <INSERT STANDARD> using <INSERT NONSTRUCTURAL ACTIVITY OR STRUCTURAL FEATURE>.
    c. Objective: Acquire Repetitive Loss Properties at <INSERT ADDRESSES>.
    d. Etc
3. Example Goal: Provide flood warning information.
    a. Objective: Provide accurate water level readings with gages at <INSERT LOCATION>
    b. Objective:
4. Example Goal: Reduce costs of maintaining drainage infrastructure.
    a. Objective: Establish a stormwater utility at an assessment fee of <INSERT STANDARD> for <INSERT STANDARD>-percent of impervious area of property.
    b. Objective: Establish a shared maintenance program between the cities for cleaning open channel systems.

Location / Reach 2 Goals and Objectives

1. Goal:
    a. Objective:
2. Goal:
    a. Objective:

Location / Reach 3 Goals and Objectives

1. Goal:
    a. Objective:
2. Goal:
    a. Objective:

Location / Reach 4 Goals and Objectives

1. Goal:
    a. Objective:
2. Goal:
    a. Objective:

Strategies and Tools

The authority considered a long list of strategies and tools and has the following reasons for inclusion or rejection of those strategies and tools.

A menu of common strategies and tools for doing flood risk management are available, and these the Federal Interagency Floodplain Management Task Force helped establish these. A USACE study seeks to narrow the list to those most acceptable (to the extent the project budget allows). Communities will likely view each tool differently, and consensus will need to be established over time.

The community leading the establishment of a floodplain management plan should (at the least) check-off on each and every one of the possible tools with one of the following terms:

- Not Recommended,
- Further Evaluation Needed,
- Effective, or Highly Effective and
- Recommended.

These specific terms help stakeholders to better understand the decision history for flood risk management along any creek, river, or coastline. The specific terms also help improve public involvement. The terms are intended to be applied by specific reaches of a creek, river or segment of coastline. Since the public needs to be involved with defining their individual tolerable level of risk, these terms facilitate buy-in and get the community focused on the actual action items identified later in this plan. These action items eventually lead to more effective hazard mitigation by the city, the county and even state and federal agencies, whom are all partners sharing the responsibility of reducing the risks from natural hazards like flooding.

This approach allows an FMP to be started and established. Communities can work on annual revisions to the FMP and update evaluations on the tools. Over a period of several years, consensus will be established and a collaborative approach to building projects can be done, effectively leveraging the infrastructure dollars in each community to do shared, heavy lifting needed to implement various tools in the menu.

Strategy: Modifying Human Susceptibility to Flood Hazards

Text

Tool: Land Use Regulations

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

Text

Tool: Public Redevelopment Policies

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

Text

Tool: Flood Warning Systems

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

Text

Tool: Flood Proofing of Structures in the Floodplain

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

Text

Tool: Process for Relocation of Structures

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

Text

Strategy: Modifying the Impact of Flooding

Text

Tool: Information and Education

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

A primary purpose of the FMP is communicating flood risks and getting public understanding of those flood hazards. A variety of risk communication techniques are ideal for these communities:

1. Inundation Maps
    a. FEMA FIRMs. Characterizing flood risks should not be limited to the 1% annual excedance event (100-year return period) or base flood. Each resident or business should determine their own level of acceptable risk, whether in relation to life or property damage. Floodplains are not defined by one event.
    b. Studies, map products from past studies
2. Websites (JOCO's, FEMA's, NWS?, etc)
3. Annual flood hazard awareness. Besides a local initiative using fliers or other info techniques, see NWS too. Periodic summit (every four to six years) involving political leaders and re-evaluating the FMP's effectiveness.

Getting Public Understanding of Flood Risks

FIGURE 4. EXAMPLE STEPS FOR REDUCING FLOOD RISK TO ACCEPTABLE LEVELS.

Tool: Flood Insurance

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

Text

The communities have accepted and are active in the National Flood Insurance Program by the Federal Emergency Management Agency (FEMA). Flood insurance is available and in some cases required, when a Federal backed home loan is made. The constituents in the communities are able to get a reduction in the cost of the annual flood insurance premium once the FMP is implemented. This is possible through FEMA's Community Rating System (CRS). To get the reduced premiums, a variety of proactive steps can be done, including the FMP and other activities, such as public outreach work by cities and counties. Several manuals on this are listed in the References section of this FMP, including the manual, *Example Plans* and *Coordinator's Manual* (FEMA).

Tool: Tax Adjustments

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

Text

Tool: Emergency Relief

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

The authority will provide action plan (see below) updates to the States, revised on the frequency necessary to acquire State and Federal funding. The action plan will be a sub-part of the States' hazard mitigation plan.

Tool: Post-Flood Recovery Processes

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

Text

Strategy: Preserving and Restoring Floodplains' Environmental Quality

Text

Tool: Wetlands Protection and Restoration

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

Text

Tool: Erosion and Sediment Control

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

The authority has adopted the practices described in the American Public Works Association standards. Section 5600 of the local Kansas City Chapter of APWA describes the relevant erosion and sediment control practices that contribute to the strategy of improving environmental quality.

Tool: Water Quality Enhancement

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

The authority recognizes many ways to improve water quality. See land use above. See beneficial functions (planting tall grass for geese etc)

Tool: Enhancement of Recreation and Educational Opportunities

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

Text

Tool: Preservation of Cultural Resources

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

Text

Strategy: Modifying Floodwaters

The authority considered structural features to bring acceptable solutions for the flood hazards. Since several communities are involved, a diverse list of these resulted depending on locations and conditions unique to each of the locations.

Tool: Stormwater Detention Basins

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

The history of APWA 5600 and watershed development affects this.

Using a systems approach, the consideration of stormwater detention basins was considered. A process in the future will define sizing (outflow per various frequencies, location dependent sizing rules, etc).

Tool: Levees, Floodwalls, and Landforms

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

Text

Tool: Channel Alterations, Diversions, and Bypasses

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

Text

Tool: Pump Stations

Not Recommended, **Further Evaluation Needed**, **Effective** (or **Highly Effective**), **Recommended.**

Text

Action Plan

The authority developed the following detailed action plan for implementation of the activities selected for addressing flood hazards. The action plan is a blueprint for implementation of the FMP. This is based on the recommendation found throughout the FMP process, as presented in the earlier sections of this FMP.

Adoption – City Resolutions

Statutory requirements. The action plan will be accomplished by the authority, also known as the planning committee. The name of this committee is the <INSERT NAME, suggestion: Floodplain Committee>. This will be composed of existing city staff with a stable and on-going role for that city, because this ensures knowledge transfer over multiple years of time. While

having leadership involved is helpful, roles such as mayors or elected officials will ultimately turnover. Turnover can eventually defeat this living document, the FMP.

The following cities and counties have adopted the recommendations and will implement the FMP:

1. Counties
    a. Johnson County Public Works Department, <INSERT DATE>
    b. Unified Government of Wyandotte County and Kansas City, Kansas <INSERT DATE>
2. Cities
    a. Merriam, Kansas, <INSERT DATE>
    b. Shawnee, Kansas, <INSERT DATE>
    c. Overland Park, Kansas, <INSERT DATE>
    d. Lenexa, Kansas, <INSERT DATE>

Action Items

The FMP action items for each City A, City B, etc are presented in Table 2, below. Table is divided into Table 2a, Table 2b, etc.

TABLE 2. ACTION ITEMS, GOALS, AND RECOMMENDATIONS.

	Goal 1, <INSERT TEXT>	Goal 2, <INSERT TEXT>	Goal 3, <INSERT TEXT>	Goal 4, <INSERT TEXT>	Chapter - Recommendation	Deadline
Program Action Items						
Floodplain committee	X	X				INSERT DATE
Charter (citys' resolutions authorizing, identification of funding mechanism for committee, ordinance establishing committee's work)						
Program reviews						INSERT DATE
Floodplain regulations						INSERT DATE
Mitigation rebates						INSERT DATE
Urban forestry						INSERT DATE

Flood response plan (life safety, debris cleanup)						INSERT DATE
Critical facilities response plans						INSERT DATE
Levee evaluations						INSERT DATE
Drainage system maintenance						INSERT DATE
Public Involvement and Education						
Flood insurance rate maps						INSERT DATE
Outreach projects						INSERT DATE
Special public information projects						INSERT DATE

On-Going Awareness Campaign for Flood Hazards

The authority will maintain and provide public access to the most current flood hazard maps and related information.

Risk Management Plan

The various areas at risk for flooding are identified in this section, and the results of the discussion of the Strategies and Tools in earlier sections are inventoried here. The Action Items for the FMP are presented here.

Communications Management Plan

The Floodplain Committee will follow the processes and protocols below.

Change Management Plan

The Floodplain Committee will update the FMP on an annual basis. The primary changes will be the contact information for those identified with Roles and Responsibilities. Changes in the previously accepted management Strategies and Tools may be revised based on the process identified in this section.

Annual Flood Hazard Education Activities

On an annual basis, the authority will provide information to owners and residents of flood prone property within its jurisdiction concerning the residual flood risk and availability of flood insurance.

Updates to the Floodplain Management Plan

On an annual basis, the Floodplain Committee will make revisions to the FMP, as necessary.

FEMA NFIP Community Rating System

The local communities must comply with the Federal Emergency Management Agency's National Flood Insurance Program (NFIP). In addition, the communities must have designated a local representative for each city. This floodplain coordinator will be the one who pursues flood insurance premium reductions for community actions that are eligible and creditable per the NFIP's Community Rating System (CRS).

US Army Corps of Engineers, Inspection of Completed Works

Under the USACE Inspection of Completed Works (ICW), the communities functioning under the authority of the Floodplain Committed can expect periodic inspections from the representatives at the local USACE district whom are responsible for the ICW program. These individuals will at check in at least on a two-year period. The communities will need to provide evidence of having

1. Conducted annual public outreach on awareness of the flood hazards.
2. Maintained the FMP with periodic updates, which would supplement the State's hazard mitigation plan updates.
3. Done action items related to the operation and maintenance of any construction project implemented with USACE funding.
4. Complied with FEMA's requirements in the NFIP.

References

Many thanks to those that have contributed, in the sources shown below, to the communities' shared mission of managing the creek's flood risks.

A Process For Community Flood Plain Management, U.S. Department of the Interior, April 1980.

A Unified National Program for Floodplain Management, Federal Interagency Floodplain Management Task Force, 1994.

Addressing Your Community's Flood Problems, A Guide for Elected Officials, Association of State Floodplain Managers, 1997.

Coordinator's Manual, National Flood Insurance Program Community Rating System (CRS), Federal Emergency Management Agency, 2007.

CRS Credit for Outreach Projects, National Flood Insurance Program Community Rating System (CRS), Federal Emergency Management Agency, 2006.

Example Plans, National Flood Insurance Program Community Rating System (CRS), Federal Emergency Management Agency, September 2007.

Flood Plain Management Handbook, United States Water Resources Council, September 1981 (U.S. Government Printing Office).

Measures to Reduce Flood Damage, U.S. Army Corps of Engineers Hydrologic Engineering Center, March 1990.

Protecting Floodplain Resources - A Guidebook for Communities, Federal Interagency Floodplain Management Task Force, September 1995.

Wetlands, Oceans, & Watersheds. Environmental Protection Agency. 2007. http://www.epa.gov/owow/watershed/regulations.html

Urban Waters Initiative. U.S. Environmental Protection Agency. 2010. http://www.epa.gov/

U.S. Army Corps of Engineers. *Policy Guidance Letter No. 52, Flood Plain Management Plans,* 8 Dec 1997.

Using Multi-Objective Management to Reduce Flood Losses in Your Watershed, Association of State Floodplain Managers, 1996.

Definitions

The following words help to unify the communities and provide consistency in conducting the work associated with this living document.

Alternative- a collection of measures that are associated by project site to address a mission; synonymous with plan

Best Management Practices (BMPs)- measures intended to provide an on–the-ground, practical solution to diffuse pollution problems from all sources and sectors. They are technology and education based requirements in federal stormwater regulations that call for the implementation of controls to reduce the discharge of pollutants to the maximum extent practicable in municipal stormwater systems.

Comprehensive Plan- a plan including recommendations for new and operating projects, primarily for Corps implementation, but in coordination with other agency efforts, and focusing on one or more Corps mission areas in Civil Works.

Dynamic Modeling- a framework, consisting of a language and a set of key concepts. These are embedded in a process for representing, understanding, explaining, and improving, specifically how dynamic systems are put together and how they perform over time.

Geographic Information Systems (GIS)- a database of points, lines, shapes, and a set of attributes that are geospatially referenced and enable quality communication of the interrelationships of the data via visual aids, such as maps.

Ecosystem Restoration- the practice of restoring degraded significant ecosystem structure function and dynamic processes to a less degraded more natural condition; to improve or re-establish structural components and functions of natural areas; to mimic as closely as possible conditions which would occur in the area in the absence of human changes to landscape and hydrology. Considered one of several mission areas of Civil Works planning.

Feasibility Study- for the Corps of Engineers, this is a study lasting less than three years, when adequately funded, that uses specific six step planning process to form projects composed of alternatives that are acceptable to the locals and the federal government to solve a problem. Also synonymous with Feasibility Planning Study.

Flood Risk Management- the shared practice among local communities, state and federal agencies of flood damage reduction that includes and extends beyond structural measures to include the proper management of all parts of watersheds to address flooding, to address opportunities for wider, shared, programmatic approaches and multi-purpose flood damage reduction projects, and to better clarify the level of risk associated with flood damage reduction measures.

Induced Damages- consequences in other parts of a creek, river, or watershed that result due to the implementation of flood risk management measures elsewhere in a watershed (also known as “Cumulative Effects” and “No Adverse Impact”).

Low-Impact Development (LID)- a site design strategy with the goal of maintaining or replicating or minimizing the change in the pre-development stormwater runoff conditions to create a functionally equivalent hydrologic landscape.

Measures- features (structural measures) or activities (non-structural measures) that can be implemented at a specific site to address one or more objective or goal;

Model- a method, often including a set of computer program code, that allows the user to simulate a system.

Multipurpose- the ability to use several purposes or Corps mission areas to strengthen benefits that are used to justify a project; taking advantage of opportunities to include several functions as part of the goal of one project and improve efficiency in spending construction funds and meeting goals of a systems approach; the combination two or more of the following: flood risk management, ecosystem restoration, and recreation mission areas.

Non-Structural Measures- measures that do not include physical or constructed components but rely sole on policies, maintenance practices, or management activities.

Risk Communication- integrating effective communication of risk and reliability concepts, alternatives levels of risk, and the associated consequences to the public and other stakeholders.

Shared Vision Planning- a process that incorporates collaboration among stakeholders, sound technical analysis, and planning principles into a practical forum in which resource management decisions are made. Integrates a planning process, public participation, and a technical systems model.

Sponsor- an entity that participates in funding a project.

Stakeholders- those that have a stake in the outcome of a project; those that can provide vital input on issues that affect data, possible alternatives, and efforts of the project delivery team (PDT); stakeholders includes sponsors, constituents, residents, businesses, groups, agencies, cities, not-for-profit organizations, etc. and will all be respected even though external to the PDT; may become part of the PDT when the PDT agrees to accept them to be involved with a level of effort identified in a project's project management plan.

Structural Measures- measures that include physical alterations or constructed components as part of an alternative or plan.

System- a whole compounded of several parts, where an understanding of the complexities of the entirety presents benefits to those that are part of the system.

Systems Approach- a method for framing a problem considering space, time, and function.

Systems Problems- problems with the characteristics of being dynamic, changing over time; including multiple players and/or diverse interests; having interdependencies across borders and/or disciplines; and being difficult to communicate.

Water Quality- a measure of the suitability of water for specific uses based on chemical, biological and physical characteristics. These characteristics are compared to standards and guidelines to determine if the water meets designated uses. Water quality is affected by both natural process as well as human activities, and a healthy environment supports a diverse community of organisms and protects public health.

Watershed- the area that drains rainfall to a common point along a stream or river. Synonymous with basin.

Watershed Management Plan- a document that presents a watershed's vision and goals, beyond the focus of quantity of stormwater to both quantity and quality; also presenting the actions and policies, and the order or timing for the actions that result from a watershed planning effort. The plan details who will do what over a definite or indefinite time frame.

Watershed Master Plan- a document that presents to a community the results of study that may or may not have truly included the entire watershed. The document typically includes a list of prioritized projects, where prioritization and project formulation often did not include a systems approach or a watershed approach and is usually limited to the confines a political boundary.

Watershed Study- a study to plan a better way to manage water resources in a watershed and includes a comprehensive watershed assessment, which has a significant amount of data; data often used in management process developed in a watershed management plan.

Appendices

The following appendices accompany the floodplain management plan.

Appendix 1 – Example Floodplain Committee Charter

The example begins on the next page. This is an example charter for use when multiple communities live in close proximity and can affect each other when making choices on managing their shared floodplain. In this example, two states are also involved, as well. Since the potential for a levee district or a drainage district is possible, they are added, too. This results in a signatory page setup for those multiple stakeholders. Since all situations are unique, some of these may be deleted, as appropriate.

.

Floodplain Committee / Watershed Authority / Drainage District /

Charter

This charter establishes and formalizes the expectations for implementation of the Floodplain Committee. This charter may be revised at any time per the consent of the core communities.

Vision Statement

To enhance the intergovernmental partnerships which will result in comprehensive and sustainable solutions to flood hazards.

Mission Statement

Through an intergovernmental team (primarily local governments, with supporting state and federal agency), a collaborative process will

- facilitate strategic, integrated life-cycle mitigation actions to reduce the threat, vulnerability and consequences of flooding in these communities;
- create or supplement a mechanism to collaboratively solve flood risk issues and recommend mitigation measures;
- foster leveraging of available agency resources and information;
- increase and improve flood risk communication and outreach;
- develop more comprehensive regional flood risk management strategies; and
- integrate mitigation measures with an action plan.

Goals

- Establish an interagency administrative mechanism to ensure continuous pre- and post-disaster collaboration among charter members and that allows for involvement of entities that are not charter members.
- Establish regularly scheduled forums to renew awareness of flood risks and the previously accepted flood risk management measures.
- Develop a change management process for future ideas on addressing flood hazards.
- Develop and maintain a common information matrix on State and Federal programs which identifies funding and resources limitations and opportunities, especially the FEMA NFIP Community Rating System for lowering flood insurance premiums for property owners.
- Provide a unified set of recommendations on agency programs that could be combined or amended to create integrated, comprehensive and sustainable solutions.
- Periodically present actions this community's (ies') identified actions for reference in the State's hazard mitigation plan.
- Jointly develop and deliver a unified flood risk awareness outreach message to better communicate and advise counties, communities and the general public.
- Jointly provide specific input to charter member cities on barriers that their existing ordinances, resolutions, programs, policies or processes present to effectively manage flood risk.

- Meet on a schedule determined by the members to prioritize needs, coordinate responses, identify gaps, and minimize duplication of effort and reduce costs of managing the shared flood hazards, as well as the shared water resources.
- Catalog and share information on past and future projects and initiatives within updates to the floodplain management plan (FMP).

Roles and Responsibilities

The Floodplain Committee will involve intergovernmental and interagency cooperation. Membership will vary based on available resources and team project focus, although the local communities will have permanent membership and will always have point of contact. Other representatives may be from the regional and State levels of the organizations. All participating agencies will contribute experience and information to team efforts as necessary and appropriate. Special subcommittees can be established the Floodplain Committee to address particular problem areas.

The Floodplain Committee will also be cognizant of the needs and desires of Native American Tribes located within the jurisdictional boundaries of the state, and will commit themselves to contributing information and available resources towards mitigation activities, which will reduce the threat, vulnerability and consequences of flooding to at-risk Tribes.

As this team evolves, other communities may choose to participate in this long-time endeavor, however; the core cities that will provide guidance and coordination will include:

- City1
- City2
- State agencies
- Federal agencies

Meetings

Meetings will be conducted on a schedule agreed to by the Floodplain Committee. Draft meeting minutes shall be distributed for review prior to the next meeting and presented for formal approval at the following meeting. The Floodplain Committee will maintain final minutes. A website will be used for sharing minutes and public outreach work for flood hazard awareness.

Decisions

Decisions related to the implementation of solutions to flood risk hazards would remain the independent prerogative of each of the Floodplain Committee members with strong input from stakeholders as collected in public meetings. Those decisions will be a matter for discussion by the Floodplain Committee so as to coordinate actions and avoid duplications or conflicts.

All commitments and participation by each city, as well as the Federal or State agency or organization, in the actions and activities covered by this Charter is contingent upon individual City Councils' acceptance of this charter, whether by ordinance or resolution. The commitments and / or participation by Federal or State agency or organization is contingent upon the availability of appropriated funds and budget priorities. Nothing in this Charter, in and of itself, or any decisions made by the team, obligates the state or federal agencies to expend

appropriations or to enter into any contract, assistance agreement, interagency agreement or other financial obligation. The cities will will not commit regular funding as part of the job descriptions of those city employees that have full time, career positions with that city, and who will be able to carry on the knowledge established for managing the flood risks.

Signatory Page

City of <INSERT NAME>

<INSERT NAME>, <INSERT TITLE> Date

City of <INSERT NAME>

<INSERT NAME>, <INSERT TITLE> Date

Drainage / Levee District <INSERT NAME>

<INSERT NAME>, <INSERT TITLE> Date

State National Flood Insurance Program, <INSERT NAME>

<INSERT NAME>, Floodplain Coordinator Date

State Emergency Management Agency, <INSERT NAME>

<INSERT NAME>, State Hazard Mitigation Officer Date

State National Flood Insurance Program, <INSERT NAME>

<INSERT NAME>, Floodplain Coordinator Date

State Emergency Management Agency, <INSERT NAME>

<INSERT NAME>, State Hazard Mitigation Officer Date

US Army Corps of Engineers, <INSERT NAME of> **District**

<INSERT NAME>, <INSERT TITLE> Date

Federal Emergency Management Agency, Region <INSERT ROMAN NUMERAL>

<INSERT NAME>, <INSERT TITLE> Date

Appendix 2 – City Resolution Formally Adopting the Floodplain Management Plan

The following city resolution(s) are provided below as reference to the adoption and enforcement of the FMP.

Example Resolution

RESOLUTION NO. XXX-XX

A RESOLUTION ADOPTINT THE FLOODPLANIN MANAGEMENT PLAN DATED <INSERT DATE> FOR THE CITY OF <INSERT CITY NAME>.

WHEREAS, the City of <INSERT CITY NAME> is a participant in the National Flood Insurance Program, and enrolled in that program's Community Rating System; and

WHEREAS, the City of <INSERT CITY NAME> is classified as a Class <INSERT LETTER> repetitive loss category by the Federal Emergency Management Agency, meaning there have been at least ten repetitive loss properties in the city limits; and

WHEREAS, to obtain the flood insurance premium discount available to the citizens of <INSERT CITY NAME> through the Community Rating System, a Floodplain Management Plan must be adopted by the governing body; and

WHEREAS, to obtain a federal cost share from the US Army Corps of Engineers for the construction of <PROJECT SITE NAME>, a Floodplain Management Plan must be adopted by the governing body, as detailed in the Water Resources Development Act of 1986 (33 U.S.C. 701b-12), as amended, and Public Law 104-303.

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of <INSERT CITY NAME>, <INSERT STATE NAME>, that:

SECTION 1. The Floodplain Management Plan <INSERT DATE> is hereby adopted as an official plan of the <INSERT CITY NAME>, <INSERT STATE NAME>.

SECTION 2. The City's National Flood Insurance Program Floodplain Manager shall review the Floodplain Management Plan annually to report to the Federal Emergency Management Agency and the US Army Corps of Engineers on the progress and implementation of the plan.

PASSED and APPROVED by the Mayor and Council of <INSERT CITY NAME> this <INSERT DAY> day of <INSERT MONTH>, <INSERT YEAR>.

_____

<INSERT NAME>, MAYOR

ATTEST:

_____

<INSERT NAME>, CITY CLERK

APPROVED as to form and legality this <INSERT DAY> day of <INSERT MONTH>, <INSERT YEAR>.

_____

<INSERT NAME>, CITY ATTORNEY

Appendix 3 – City Ordinances Associated with Implementation of the Floodplain Management Plan

The following city ordinance(s) are provided below as reference to the implementation of the FMP.

Appendix 4 – Economic Assistance for Floodplain Management

Below are several state and federal programs prepared to remind the Floodplain Committee of ways they can get help implementing the floodplain management plan and some of the eligible action items.

FEMA Hazard Mitigation Grants

Provided by the Federal Emergency Management Agency. Useful for mitigating all hazards, including flooding.

USACE Planning Assistance to States

Provided by the US Army Corps of Engineers. Useful for conducting any planning work. Not eligible for funding construction.

USACE FloodPlain Management Services

Provided by the US Army Corps of Engineers. Useful for assessing flood risks, revising flood maps, conducting revisions to floodplain management plans, and many other floodplain management activity.

Others

Provided by the <INSERT AGENCY>. Useful for <INSERT MEASURE (ACTIVITY OR CONSTRUCTION)>.

Others

Provided by the <INSERT AGENCY>. Useful for <INSERT MEASURE (ACTIVITY OR CONSTRUCTION)>.

Others

Provided by the <INSERT AGENCY>. Useful for <INSERT MEASURE (ACTIVITY OR CONSTRUCTION)>.