

# Floodplain Management Plans: *Not-So-New Requirement for Federally Funded Projects*

Arcadia, WI, case study

**Bill Chang, Arcadia City Administrator**

**Dan Cook, P.E., CFM, Davy Engineering**

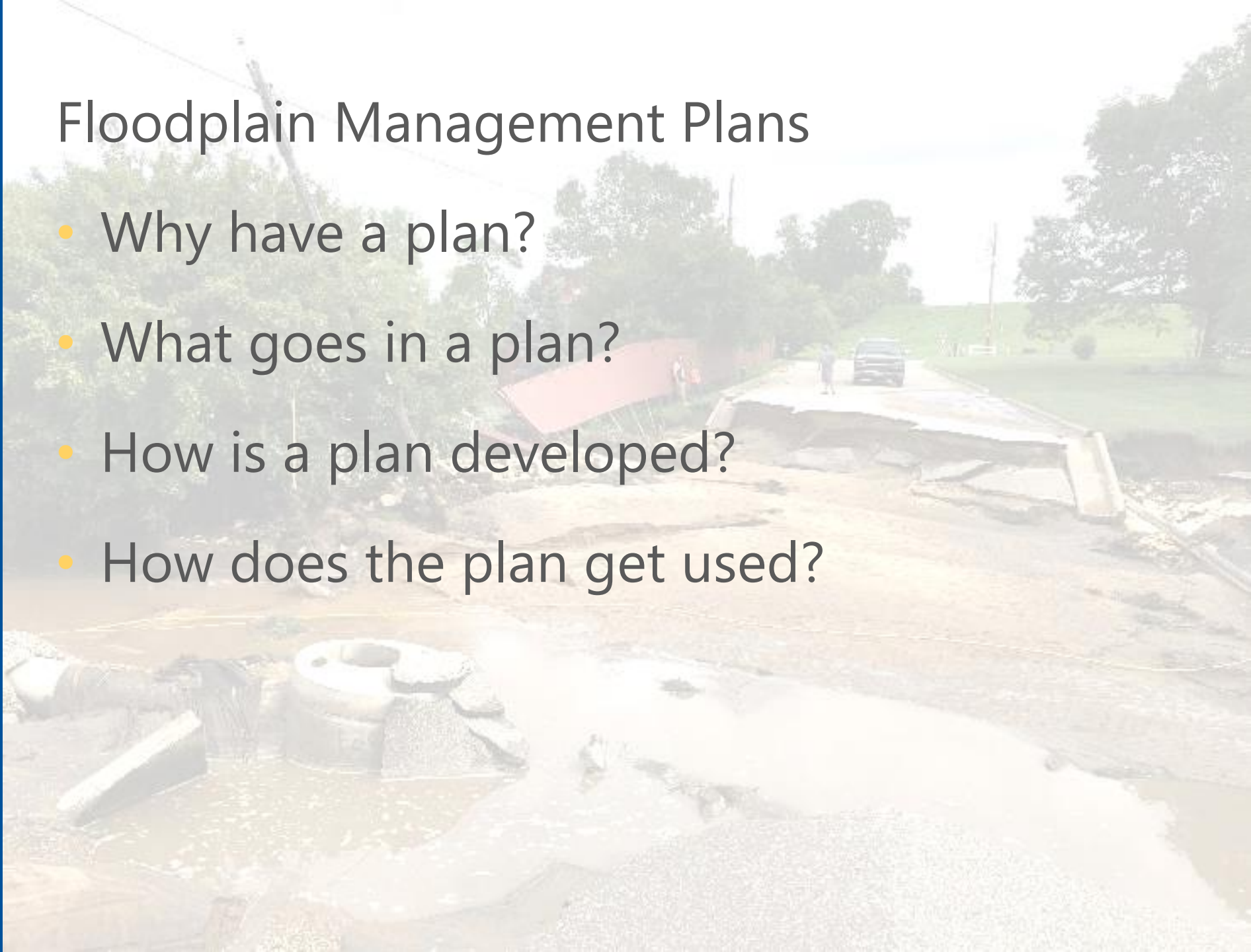
**Joe Waln, P.E., CFM, Barr Engineering Co.**



# presentation overview

## Floodplain Management Plans

- Why have a plan?
- What goes in a plan?
- How is a plan developed?
- How does the plan get used?



# Why have a floodplain management plan?



**KEEP  
CALM  
BECAUSE  
WE HAVE  
A PLAN**

You might need a floodplain management plan if:

- you have frequent flooding problems
- there is not an easy fix for reducing your communities flood risk
- you are eligible for a federally funded flood risk reduction project

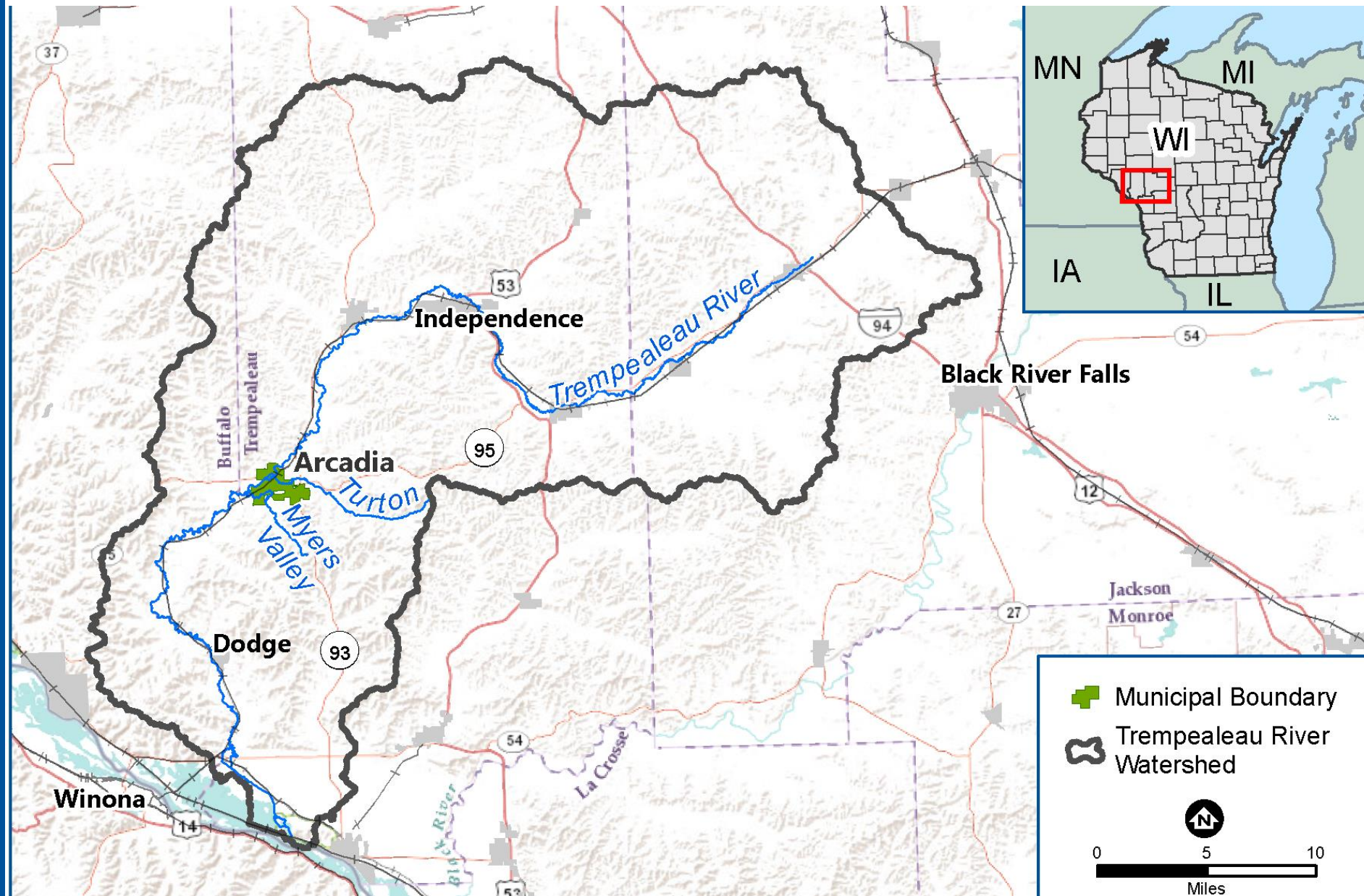


# What goes in a floodplain management plan?



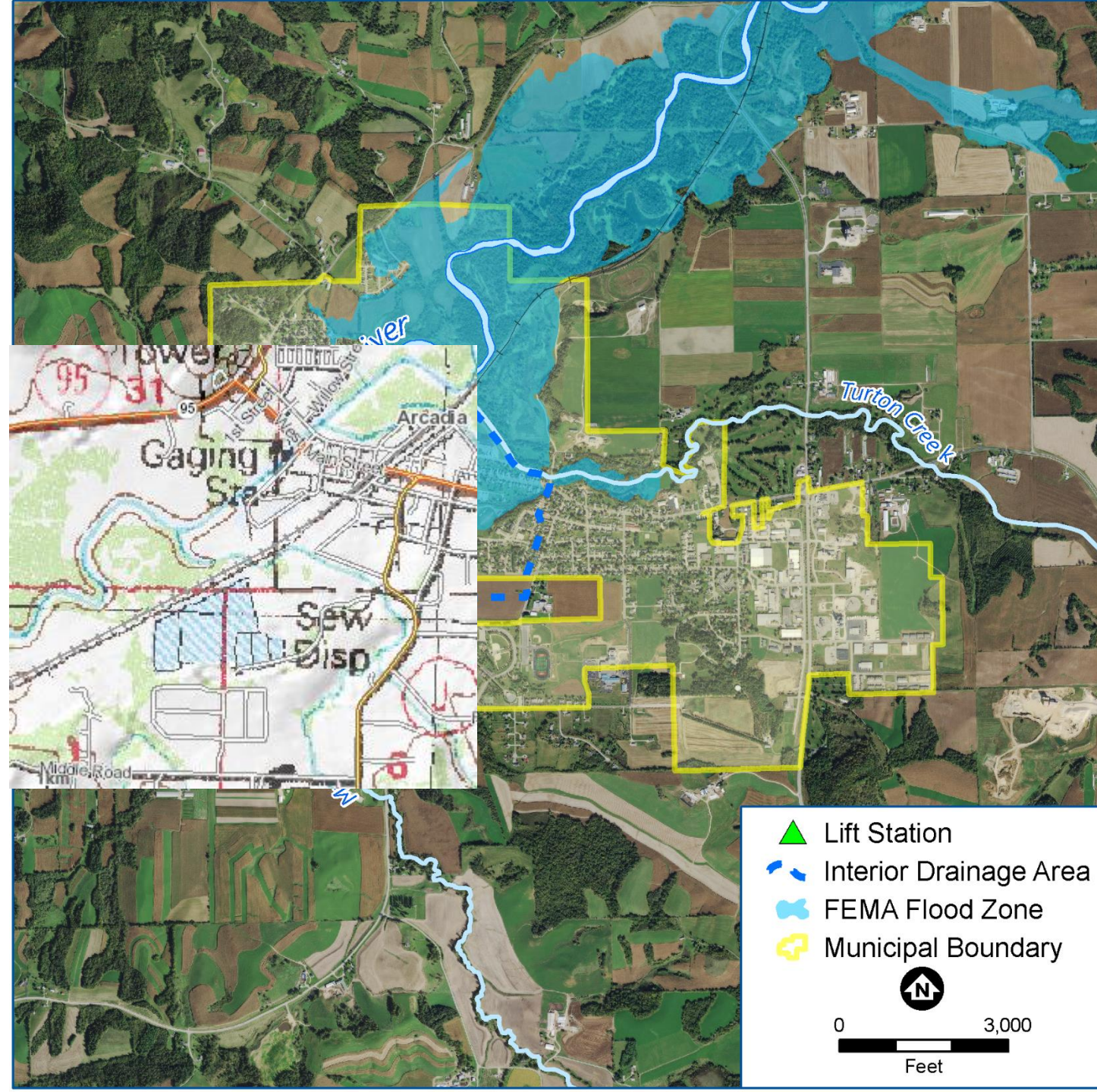


# City of Arcadia, Wisconsin





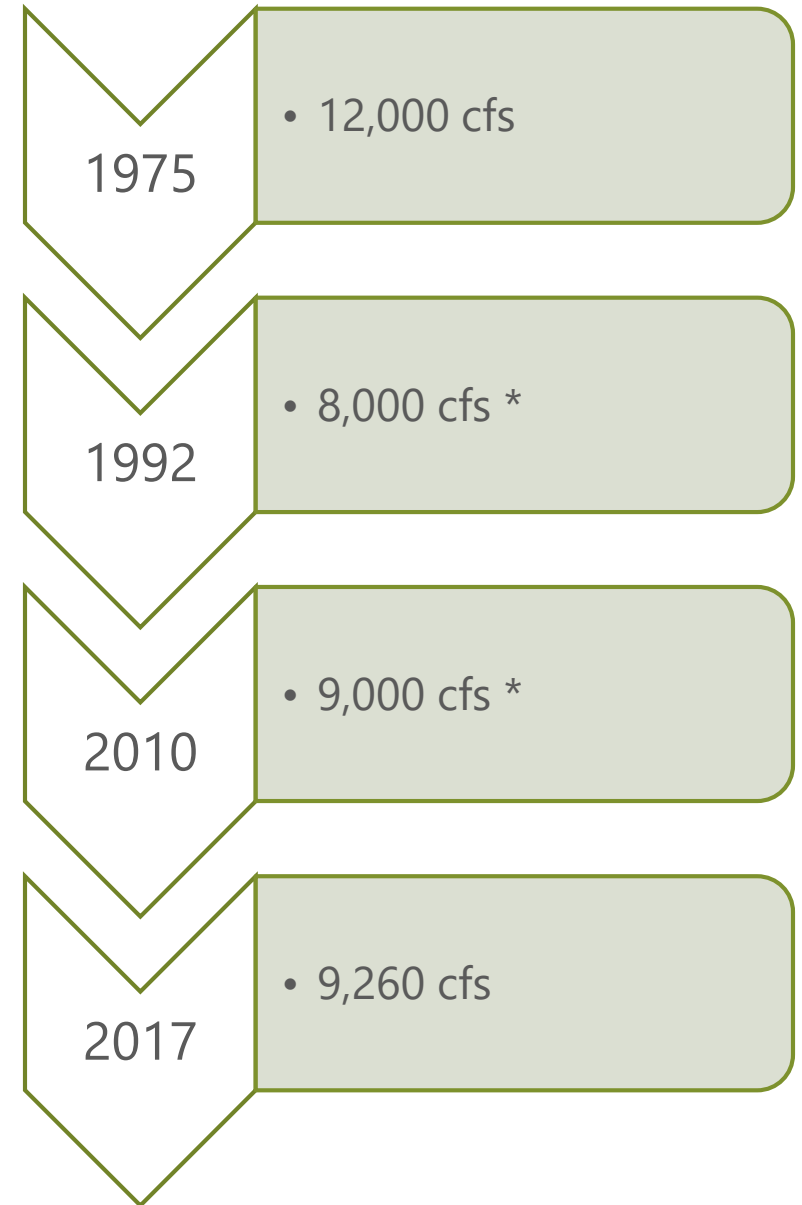
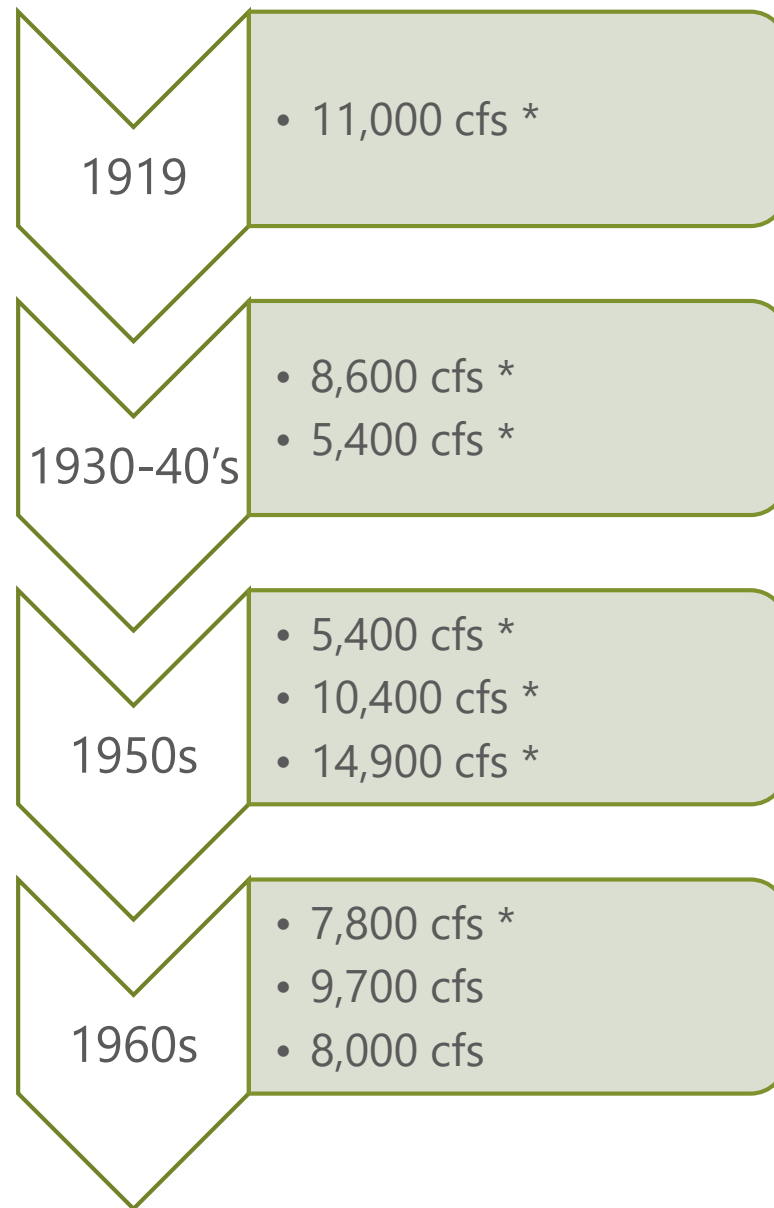
downtown  
area is in the  
floodplain



# flooding history

## Discharge Frequency FIS

10%	8,000 cfs
2%	12,000 cfs
1%	14,000 cfs
0.2%	18,000 cfs



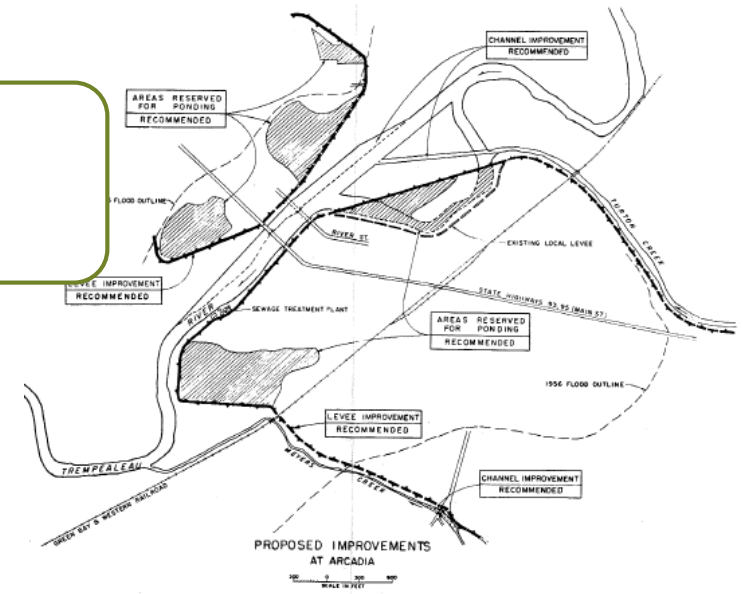
\* Flow measured at the Dodge stream gage downstream of Arcadia



# U.S. Army Corps of Engineers Section 205 Small Flood Risk Management Projects

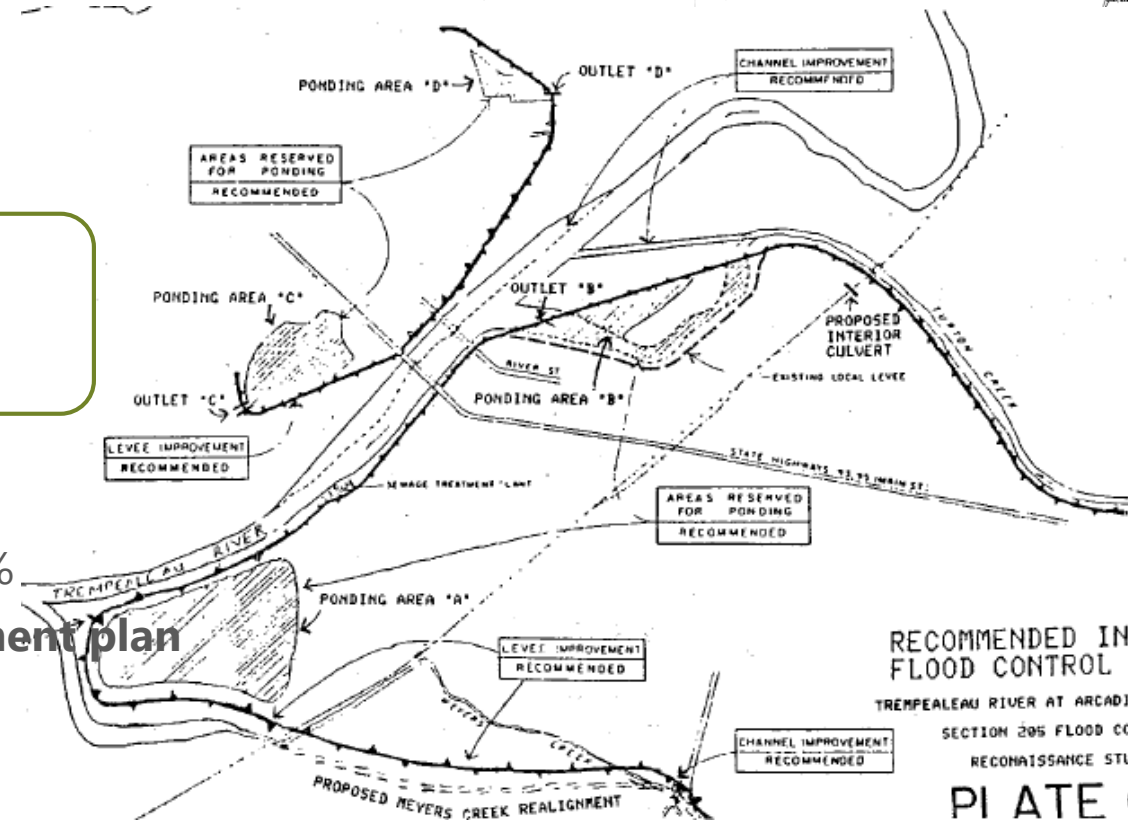
## USACE has studied flood risk reduction options for Arcadia in the past

- 1956 O&M for Levee Repair and 1957 Preliminary Report
- 1960 Study (Draft) B/C 3.5
- 1965 Study
- 1988 Study (Draft)



## Current USACE Feasibility Study

- Section 205 projects
- up to \$10M federal cost limit
- minimum local cost share of 35%
- requires a **floodplain management plan**





What goes in a  
**floodplain  
management  
plan?**



# goals & objectives



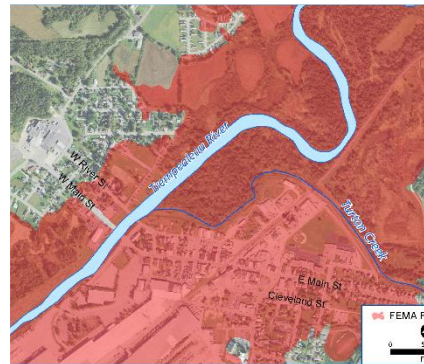
Develop a collaborative multi-jurisdictional approach to floodplain management.



Reduce flood risk and mitigate the impact of flooding to community.



Improve public understanding of flood risks.



Balance development goals with ecological and hydrologic functions of the rivers and streams



Protect and preserve the natural environment and provide compatible recreation opportunities

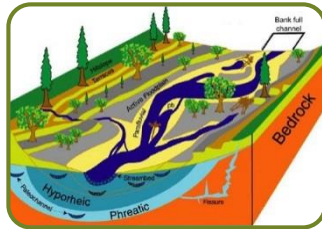
# strategies



Modify human susceptibility to flood hazards



Modify the impact of flooding



Preserve and restoring the environmental quality of the floodplains



Modify floodwaters (structural)



tools

# Which tools are best suited for your community?

## **STRATEGY 4: Modify Floodwaters**

- Dams and Reservoirs
- Stormwater Detention Basins
- Levees and Floodwalls
- Landforms
- Bridge Modifications
- Channel Alterations, Diversions, and Bypasses
- Pump Stations

## **STRATEGY 1: Modify Human Susceptibility**

- Development Policies and Land Use Regulations
- Flood Warning Systems
- Emergency Operation Plans
- Elevation of Buildings
- Relocation of Buildings
- Wet Floodproofing
- Dry Floodproofing
- Berms and Floodwalls for Buildings
- Fill or Conversion of a Basement for Buildings
- Acquisition of Buildings

## **STRATEGY 3: Preserve Environment**

- Wetland Protection and Restoration
- Erosion and Sediment Control
- Water Quality Enhancement
- Enhancement of Recreation and Educational Opportunities
- Preservation of Cultural Resources

## **STRATEGY 2: Modify Impacts**

- Information and Education
- Flood Insurance
- Community Rating System
- Tax Adjustments and Rebates or Grants
- Emergency Relief
- Post-Flood Recovery Processes

# Action Plan brings all the pieces together



# action plan categories

## emergency operations

- update emergency operation plans
- develop early warning system
- flood risk mapping

## mitigation

- USACE feasibility study
- evaluate repetitive loss structures

## policy

- adopt the floodplain management plan
- join the community rating system
- update zoning ordinance
- Create downtown business and resident registry



# action plan

## goals and

## timeline

### Mitigation Actions

Actions	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Timeline Complete by
1. Interior drainage improvements	X	X		X		June 2019
2. Evaluation of repetitive loss structures		X	X			Sept 2020
3. Complete USACE feasibility study	X	X	X	X	X	Nov 2019
4. Evaluation impact of dam removal south of Orion Lane	X	X	X			July 2018
5. Transformer by the main waste water lift station	X	X		X		Nov 2019

### Goals

1. Collaborative multi-jurisdictional approach
2. Reduce flood risk and mitigate impacts
3. Public education –Improve Understanding of Flood Risk
4. Balance development goals with floodplain ecology
5. Protect and preserve the natural floodplain

How is a  
**floodplain  
management  
plan**  
developed?

Community  
Workshop

- identify problems
- brainstorm potential solutions

Planning  
Committee

- flood history
- goals & objectives
- strategies and tools
- action plan

Community  
Adoption

- understand the risk
- recognize the tools
- affirm shared goals
- commit to action

# USACE Policy Guidance Letter 52, Flood Plain Management Plans

## Section 510 of the CRS

### What is it?

- 1997 memorandum

### Why was it written?

- WRDA 1996

### What's inside?

- local sponsor develops plan
- implementation of plan should reduce community's flood risk and protect federal investment
- guidance for plan development process and contents

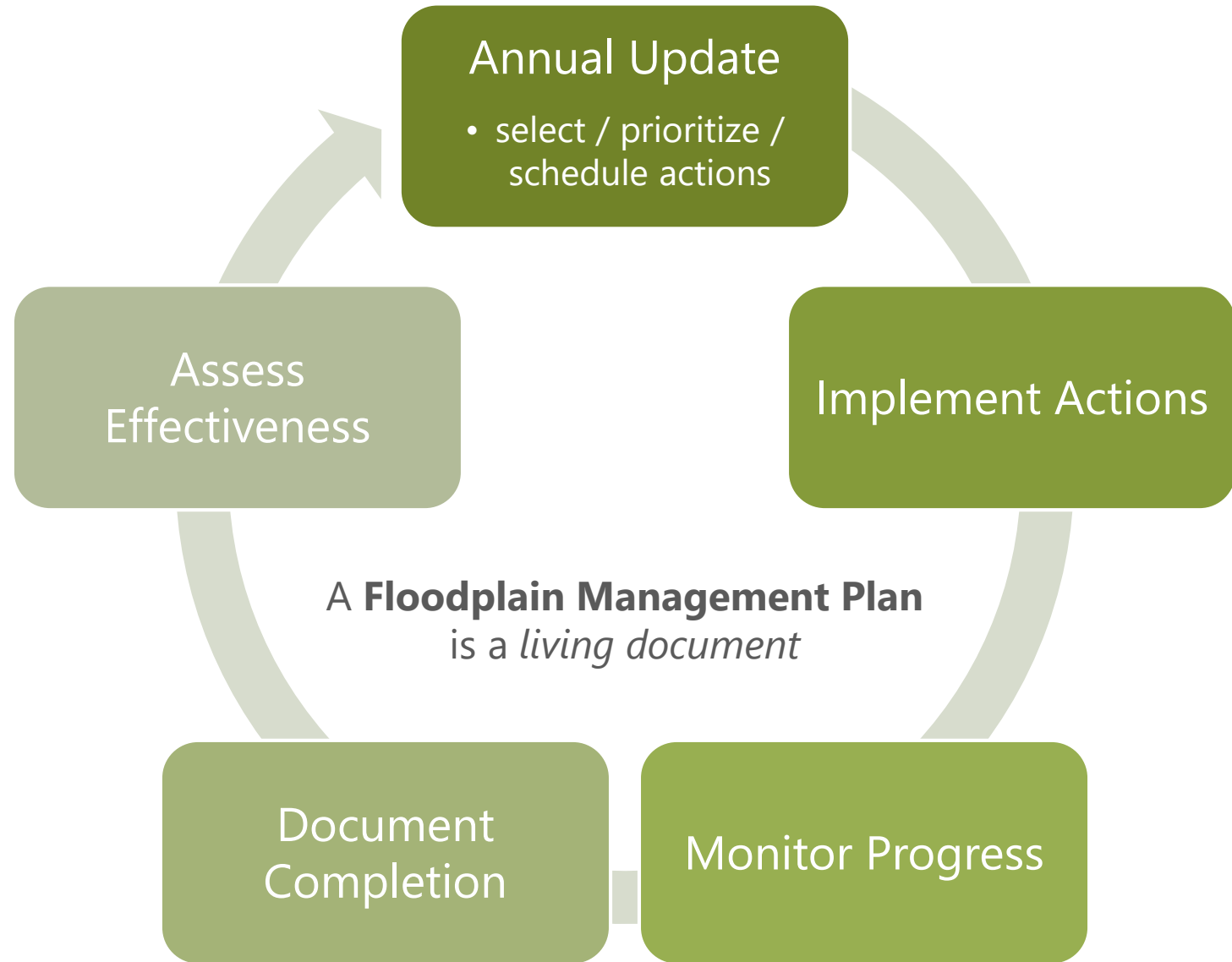


# 510 FLOODPLAIN MANAGEMENT PLANNING

## 512 Elements

- a. **Floodplain management planning (FMP)**: 382 points for a community-wide floodplain management plan that follows a 10-step planning process:
  - Step 1. Organize
  - Step 2. Involve the public
  - Step 3. Coordinate
  - Step 4. Assess the hazard
  - Step 5. Assess the problem
  - Step 6. Set goals
  - Step 7. Review possible activities
  - Step 8. Draft an action plan
  - Step 9. Adopt the plan
  - Step 10. Implement, evaluate, revise.
- b. **Repetitive loss area analysis (RLAA)**: 140 points for a detailed mitigation plan for a repetitive loss area.
- c. **Natural floodplain functions plan (NFP)**: 100 points for adopting plans that protect one or more natural functions within the community's Special Flood Hazard Area.

How does a  
**floodplain  
management  
plan**  
get used?



# references

- Big Blue and Kansas River Floodplain Management Plan  
<https://cityofmhk.com/2798/Big-Blue-River-Floodplain-Management-Pla>
- USACE. Policy Guidance Letter No. 52, Floodplain Management Plans, 8 Dec 1997.
- USACE, Saint Paul District. Information Paper. Section 205 Feasibility Study Trempealeau River at Arcadia <http://bit.ly/2foteYv>.
- Small Flood Control Projects (Sec. 205) Fact Sheet  
<http://www.mvp.usace.army.mil/Portals/57/docs/Public%20Affairs/Fact%20Sheets/2015/FS-09.SmallFloodControlProjects.pdf?ver=2015-03-23-125724-063>
- USACE, Saint Paul District, Small Flood Risk Management Projects (Section 205). <http://www.mvp.usace.army.mil/Missions/Civil-Works/Programs-Project-Management/District-Programs/Small-Flood-Control-Projects/>
- Coordinator's Manual, NFIP Community Rating System (CRS), FEMA  
<http://crsresources.org/manual/>
- Trempealeau County, Wisconsin, FIS, FEMA, April 2011

questions

