



**Watershed Protection Ordinance (WPO):
Stakeholder Meeting
FLOODPLAIN PROTECTION**

October 21, 2011

Meeting Agenda

- 1. Introductions**
- 2. Current regulations**
- 3. What we are losing**
- 4. Where we want to go**
- 5. Small group discussion**
- 6. Full group review**

Council Resolution 20110113-038: Floodplain Protection

- **Preserve & restore floodplains and stream buffers**
 - **Provide access and connectivity with greenways and trails**
 - **Explore better ways to regulate the modification of floodplains**
 - **Simplify development regulations, minimize development impacts**
- **NOT redefining floodplain or changing No Adverse Impact**
- **Focus on Natural & Traditional Character**

Natural & Traditional Character (NTC)

- **Defined in 1974**
- **Identifying NTC is based on existing conditions using ECM 1.7.0*:**
 - **Mature Woodlands**
 - **Wetlands**
 - **Permanent Natural Pools**
- **If NTC was eliminated in the past, not considered as protected**
- **Limiting development using NTC is rare – relegated to ECM glossary**

***ECM = Environmental Criteria Manual**

Natural & Traditional Character (NTC)

1. Land Development Code

- **§ 25-7-61 [City Limits]:** To the greatest extent feasible, the proposed development preserves the natural and traditional character of the land and the waterway
- **§ 25-8-261:** Except in the Barton Springs Zone, detention basins and floodplain alterations are permitted in the critical water quality zone if the requirements of Chapter 25-7 (Drainage) and the other provisions of this subchapter are met.
- **§ 30-4-61 [ETJ]:** More detailed than 25-7-61

Natural & Traditional Character (NTC)

2. Environmental Criteria Manual

- **1.7.0 Floodplain Modification Criteria:** Used in assuring that development activities maintain the "natural and traditional character" of the land and waterways
- **Glossary – Protected Riparian Areas:** Those ecological features within a floodplain associated with a waterway segment, which contribute to the natural and traditional character of the waterway, as follows:
 1. Floodplain woodlands
 - Standards for size, canopy cover, and species composition
 2. Wetlands (other than springs)
 3. Permanent natural pools in perennial or intermittent waterways

Manning's n Roughness Coefficient

- **Mathematical coefficient used by engineers in floodplain modeling**
- **Represents the degree of resistance to flood flows in channels and floodplains caused by vegetation and other obstacles**
- **Reflects the relationship between the typical height of vegetation and the depth of flow**









Where We Are Now

- **If Natural & Traditional Character (NTC) is identified, floodplain modification is restricted to retain integrity of riparian areas**
 - **Minimizes damage to physical and biological characteristics of such areas**
- **If no Natural & Traditional Character is identified, then floodplain modification is allowed, even within the Critical Water Quality Zone (CWQZ) buffer**

What We Are Losing

- **Natural resources and functions of floodplains**
 - **Water Resources**
 - **Biological Resources**
 - **Societal Resources**



Natural Floodplain Functions

Water Resources

Natural Flood & Erosion Control

- Provide flood storage and conveyance
- Reduce peak flows
- Reduce flood velocities
- Reduce sedimentation

Water Quality Maintenance

- Filter nutrients and impurities from runoff
- Process organic wastes
- Moderate temperature fluctuations
- Groundwater Recharge
- Promote infiltration and aquifer recharge

Biological Resources

Biological Productivity

- Rich, alluvial soils promote vegetative growth
- Maintain biodiversity
- Maintain integrity of ecosystems

Fish & Wildlife Habitats

- Provide breeding and feeding grounds
- Create and enhance waterfowl habitat
- Protect habitats for rare and endangered species

Source = Unified National Program for Floodplain Management, 1994

Natural Floodplain Functions

Societal Resources

Harvest of Wild & Cultivated Products

- Enhance agricultural lands
- Provide sites for aquaculture
- Restore & enhance forest lands

Recreational Opportunities

- Provide areas for active & passive uses
- Provide open space
- Provide aesthetic pleasure

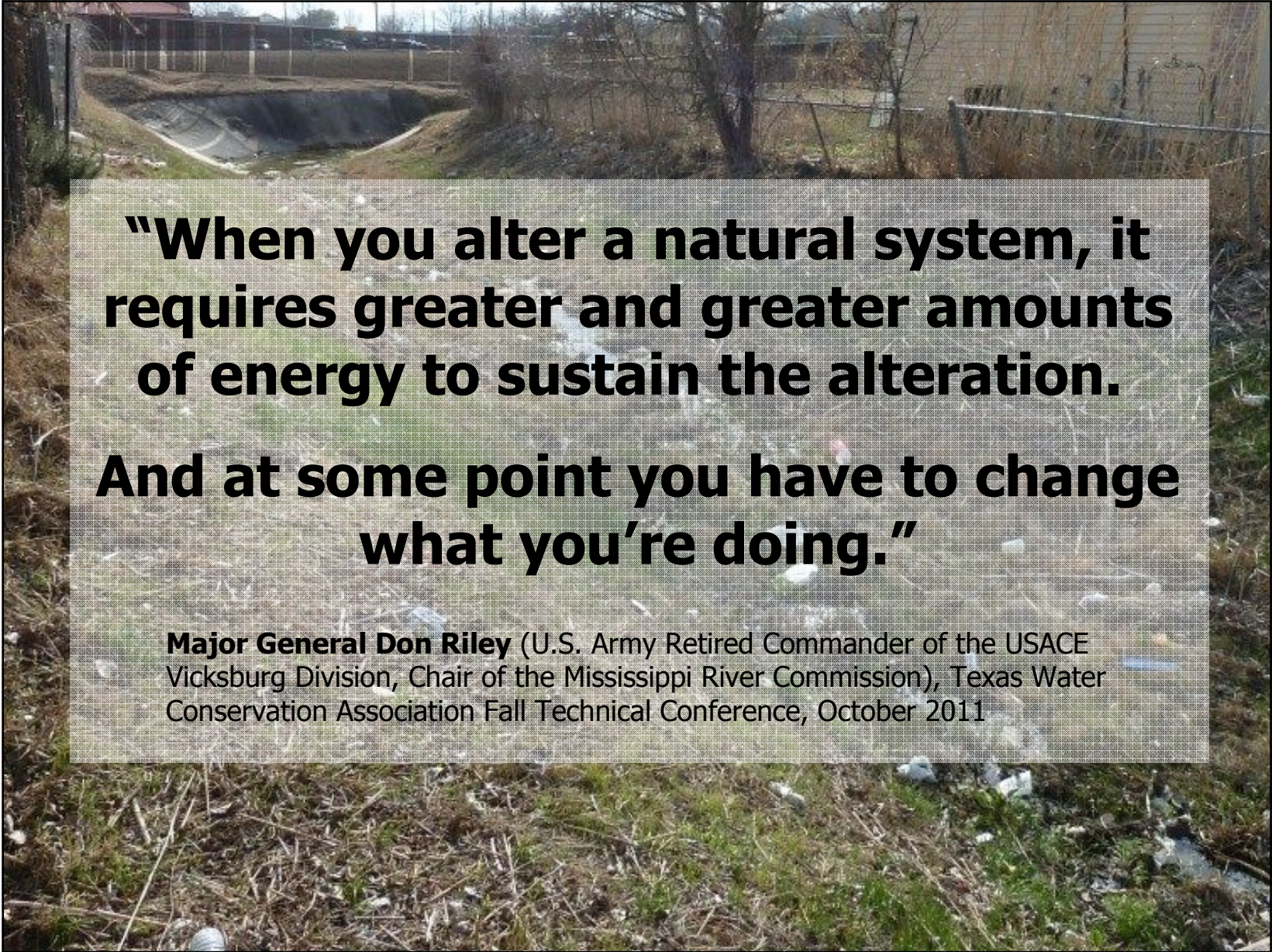
Areas for Scientific Study & Outdoor Education

- Contain cultural resources (historic & archeological sites)
- Provide opportunities for environmental and other studies

Source = Unified National Program for Floodplain Management, 1994

FEMA's Community Rating System

- **CRS recognizes communities which go beyond minimum federal standards**
- **FEMA revising regulations to encourage comprehensive approach to floodplain management**
- **Revised criteria provide credit to communities that work to preserve green space, natural floodplain functions, and connectivity within their waterways**



“When you alter a natural system, it requires greater and greater amounts of energy to sustain the alteration. And at some point you have to change what you’re doing.”

Major General Don Riley (U.S. Army Retired Commander of the USACE Vicksburg Division, Chair of the Mississippi River Commission), Texas Water Conservation Association Fall Technical Conference, October 2011

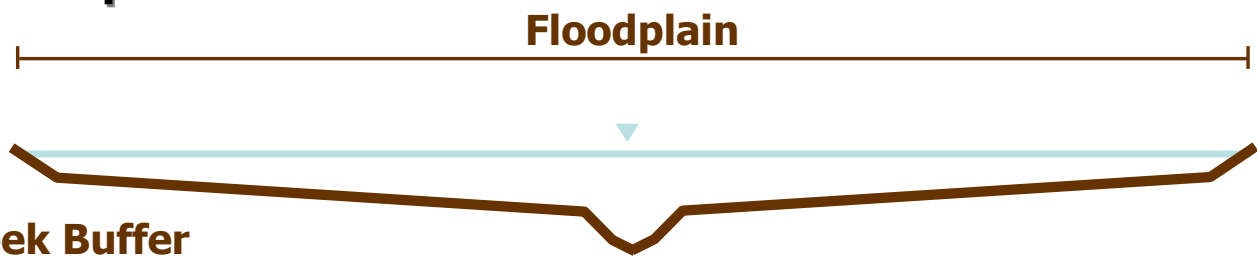
Goals for Floodplain/Buffer Zone

- 1. Contain 100-year Floodplain (Conveyance, Storage)**
- 2. Contain Erosion Hazard Zone (Stable)**
- 3. Protect Water Quality by promoting Natural & Biological Elements**
- 4. Minimize Active Maintenance**
- 5. Provide Multiple Use/Community Benefit**

Q: Other?

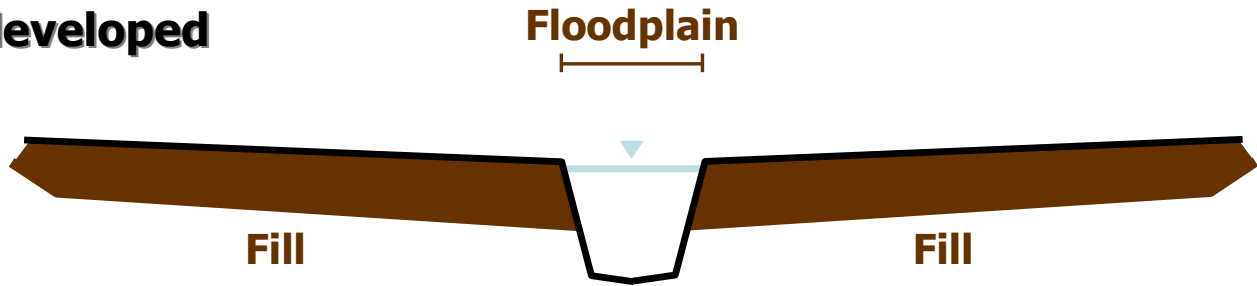
Example Creek with No NTC, No Buffer, Floodplain Modified

Pre-developed



**No Creek Buffer
No Natural & Traditional Character**

Post-developed



**No Creek Buffer
No Natural & Traditional Character**

Example Creek with No NTC, No Buffer, Floodplain Modified

- 1. Contains floodplain in easement**
- 2. Channel stable short-midterm**
- 3. No NTC, poor water quality/habitat**
 - Riparian trees/vegetation not possible**
- 4. Perpetual, active maintenance**
- 5. No community benefit**

Where We Want to Go: Protect Floodplain Functions

1. Potential Strategies:

- **Limit Modification**
- **Limit Encroachment of Natural Floodplain**
- **Preserve or Restore Vegetation**

Q: Other?

Where We Want to Go: Protect Floodplain Functions

2. Potential Tools:

- **Redefine Natural & Traditional Character**
- **Extend CWQZ Buffer to Headwaters**
- **Expand Buffer Width to Contain Part/All Floodplain**
- **Promote Active or Passive Restoration**

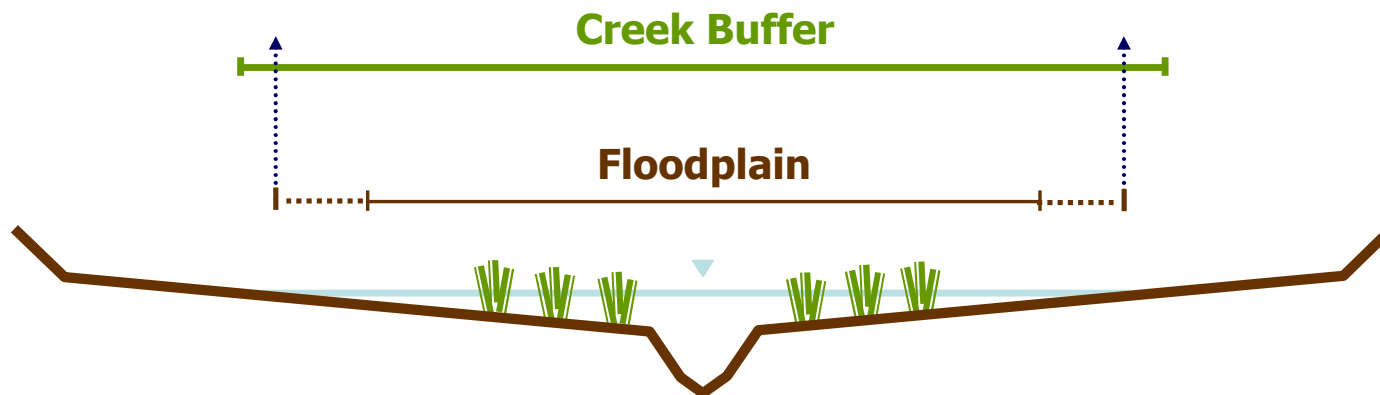
Where We Want to Go: Protect Floodplain Functions

2. Potential Tools (continued):

- **Dedicate Floodplain to City or Other**
 - Parkland Dedication, Transfers of Development Rights
- **Open Space Requirements/
Zoning/Clustering**
- **Mitigation (later session, Feb to March 2012)**

Q: Other?

Scenario 1: Floodplain Contained within Buffer



Predevelopment Floodplain within Buffer area
Restore NTC through Passive/Active Restoration of Vegetation
Floodplain may expand, but remains within Buffer

Scenario 1: Floodplain Contained within Buffer

1. Minimal pressure to modify FP

- **Performing analysis to evaluate impact**

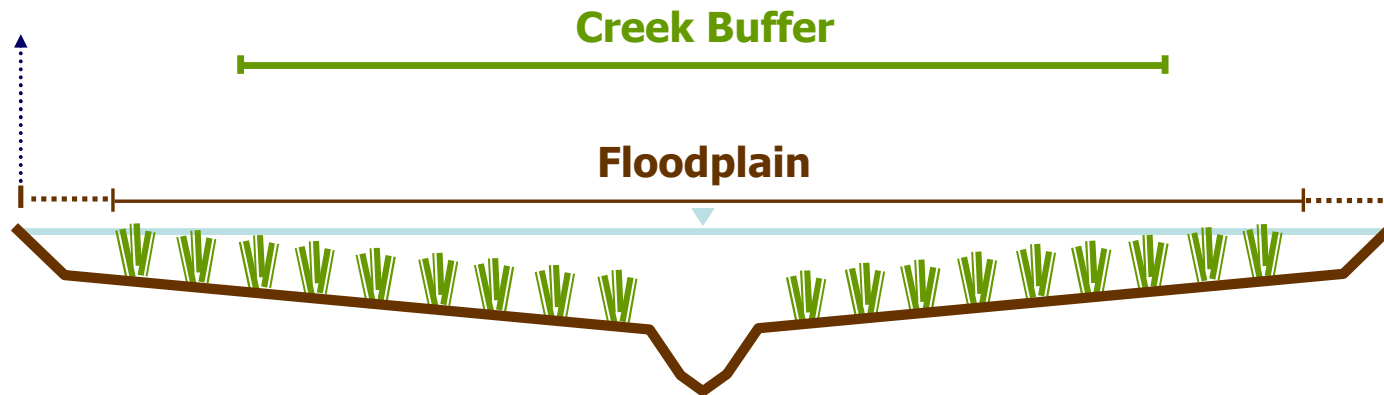
2. Accommodates mature riparian vegetation (higher Manning's n roughness coefficient)

3. Choice to actively or passively restore

Q: What are possible credits for restoration?

Ex: For small lots, 1 of 3 trees per lot in buffer zone

Scenario 2: Floodplain Extends outside Buffer

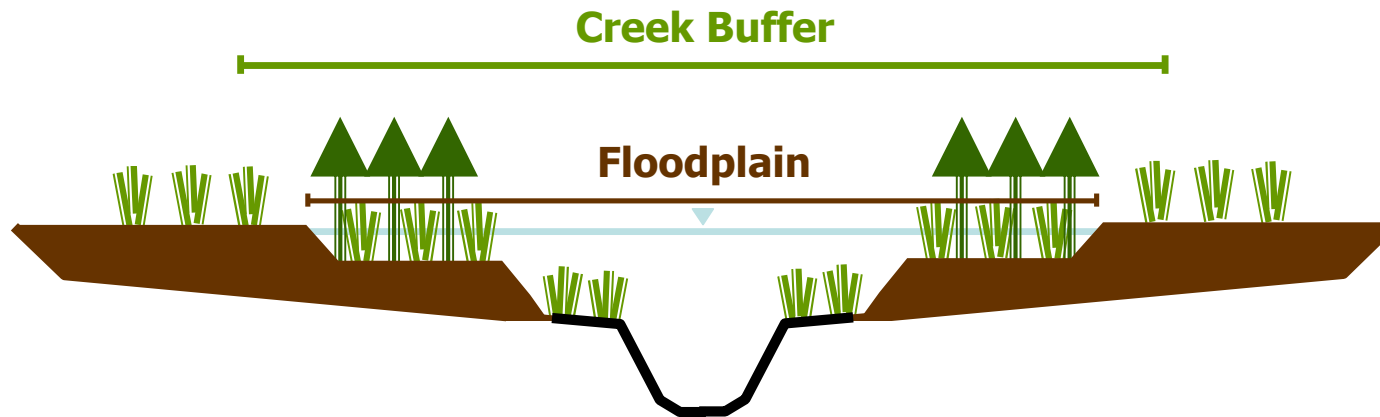


Predevelopment Floodplain extends beyond Buffer area
Restore NTC through Passive/Active Restoration of Vegetation
Floodplain extends even further outside of Buffer area

Scenario 2: Floodplain Extends outside Buffer

- 1. Increased pressure to modify FP**
 - 2. Using Manning's n for mature riparian vegetation causes further uplands encroachment**
- Q: How can we require and/or incentivize Floodplain Protection in this scenario?**

Possible Solution: Floodplain Modification to Keep FP in Buffer



Floodplain extends beyond Buffer area (with or without Restoration)
Bench and plant within Buffer area
Floodplain now reduced to within Buffer area

Possible Solution: Floodplain Modification to Keep FP in Buffer

- 1. Maintains upland development footprint**
- 2. May enable mature riparian vegetation to be restored**
- 3. Poor approach for sites with existing NTC**
- 4. Disturbance within buffer: Risk of damage to sensitive area/environmental features**

Q: How to redefine NTC to capture additional functions?

Q: How to ensure proper floodplain & creek protection?

Q: To what degree can mitigation offset impact? Only in Comp. Plan Activity Centers/Growth Nodes?

Small Group Discussion

- 1. Evaluate scenarios**
- 2. Discuss the following concepts:**
 - A. Establish Floodplain/Buffer Zone goals**
 - B. How to provide natural floodplain functions**
 - C. How to encourage/incentivize restoration**
 - D. What role can mitigation play?**
- 3. Present to full group**
 - A. Where did you find common ground?**
 - B. Where did you find diverting opinions?**

Adoption Schedule

Stakeholder Meetings

Sep 2011 – April 2012

(Meetings approx. every two weeks)

- | | |
|---|----------------------|
| 1. Creek Protection: | Sep 9, 23, Oct 7 |
| 2. Floodplain Protection: | Oct 21, Nov 4 |
| 3. Development Patterns & Greenways: | Nov 18 – Dec 2 |
| 4. Improved Stormwater Controls: | Dec 16 – Jan 6 or 13 |
| 5. Simplify & Clarify Regs/Maintain Opportunity: | Jan - Feb |
| 6. Mitigation Options (Desired Development Zone): | Feb - Mar |
| 7. Draft Ordinance: | Apr |

Boards & Commissions

May – June 2012

City Council

August 2012

Travis County Commissioner's Court

Fall 2012

Contact Information

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**[www.austintexas.gov/watershed/
ordinances2.htm](http://www.austintexas.gov/watershed/ordinances2.htm)**