Flood Mitigation for Redevelopment

Green Infrastructure Working Group, 4.28.17

CodeNEXT Process: Implementing Imagine Austin

- Workforce & Education
- Household Affordability
- Sustainable Water
- Green Infrastructure
- Compact & Connected
- Healthy Austin
- Creative Economy

CODENEXT
SHAPING THE AUSTIN WE IMAGINE

- Green Infrastructure Working Group
- CodeNEXT Citizen Advisory Group
- Consultant Team
- Public Input
- City of Austin Staff
- Boards, Commissions, Task Forces
- City Council

Goals of CodeNEXT

The goal of CodeNEXT is to revise our land use standards and regulations to:

- ✓ Preserve and enhance the best qualities of our communities
- ✓ Be fair, predictable, and easy to use
- ✓ Align with Imagine Austin's vision, policies, growth concept map, and priority programs.

Green Infrastructure Working Group

Council Direction (November 20, 2014)

- Asked that the CodeNEXT focus include green infrastructure & sustainable water management

Purpose of Green Infrastructure Working Group

- How we can achieve the Imagine Austin goals of integrating nature into the city, sustainably managing our water resources, and creating complete communities through revisions to the Land Development Code?

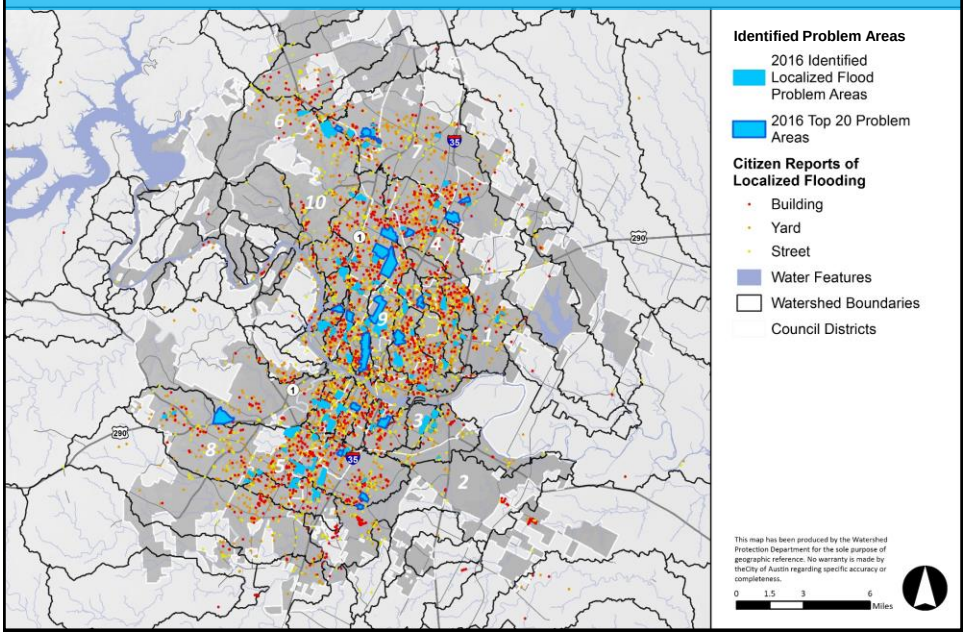
Green Infrastructure Working Group

- Over 300 stakeholders on email distribution list
- Six meetings between January and July 2015
- One of the four major topics discussed was stormwater options for redevelopment and infill

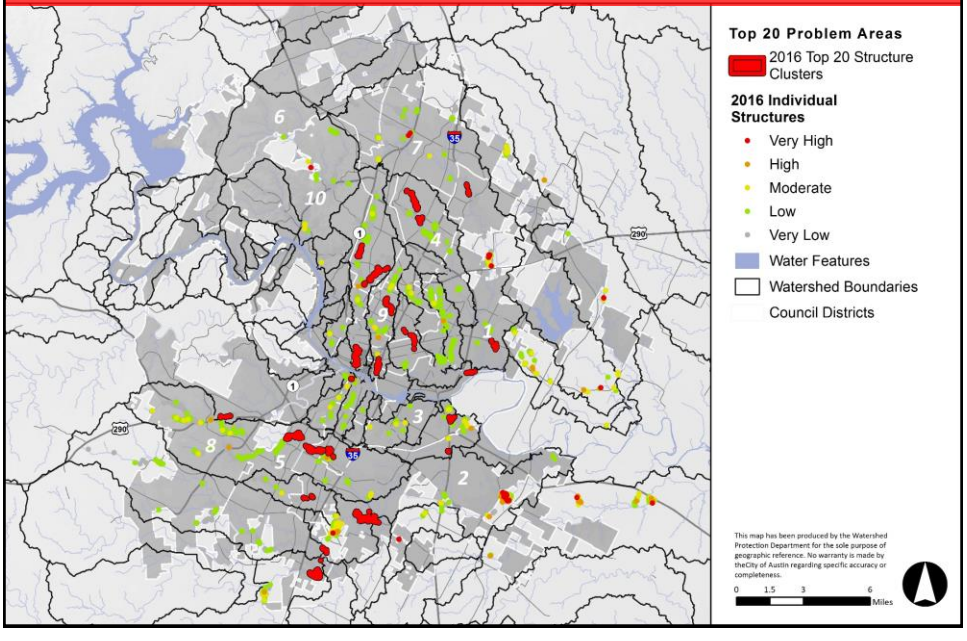
Existing Challenges: Flood Mitigation

- Older sites built before drainage regulations were introduced in 1974 lack detention facilities and are often highly impervious
- Runoff from these sites can contribute to downstream flooding and erosion
- Redevelopment in Austin's central core has put even greater pressure on existing infrastructure, which is often aging and undersized

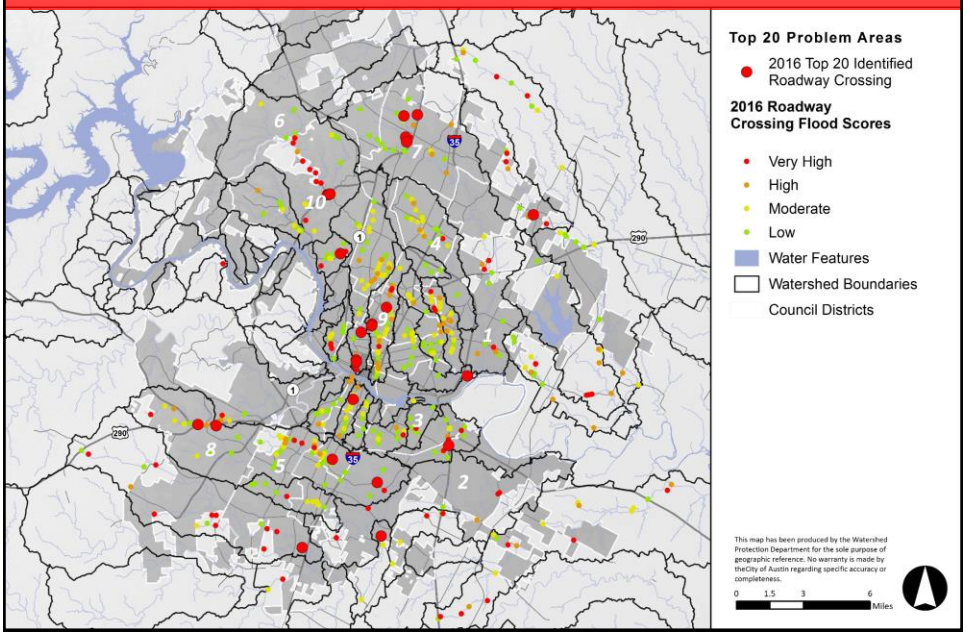
Localized Flood – Complaints & Problem Areas



Creek Flood – Flooded Structure Problem Scores



Creek Flood – Roadway Crossing Problem Scores



Existing Challenges: Flood Mitigation

- Current code requires projects to demonstrate they will not result in <u>additional</u> adverse flooding
- Redevelopment projects that are not increasing impervious cover or changing drainage patterns are generally not required to provide flood mitigation
- As Austin grows and redevelops, key opportunities for improvement are being missed in areas that already experience flooding

CodeNEXT Proposal: Flood Mitigation

- Redevelopment projects contribute fair share to address downstream flooding
  - Recommended by Green Infrastructure Working Group and Flood Mitigation Task Force
  - Redevelopment projects already required to provide water quality for the entire site
- 23-10E-3010 Critical for Approval of Development Applications
  - "the proposed development…reduces the post-development peak flow rate of discharge to match the peak flow rate of discharge for undeveloped conditions as prescribed in the Drainage Criteria Manual"

CodeNEXT Proposal: Flood Mitigation

- Tools for mitigating flood impacts & reducing peak flows include:
  - Detention
  - Conveyance
  - Regional Stormwater Management Program (RSMP)

Types of Solutions: Detention

- Detention facilities temporarily store and then slowly release floodwaters
- Offsets increases in peak runoff to protect downstream properties
- Sites can construct detention facilities on-site or offsite within the same contributing drainage area

Types of Solutions: Detention


Surface Detention


Multi-Use (e.g., recreation)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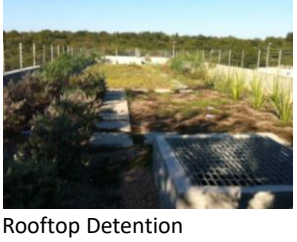

Rooftop Detention


Parking Lot Detention


Underground Detention

Types of Solutions: Conveyance

- Off-site stormwater conveyance improvements install or upgrade stormwater conveyance infrastructure downstream from the site being developed
- Improvements may include storm drain upgrades, channel improvements, or culvert upgrades

Types of Solutions: Regional

- Regional Stormwater Management Program (RSMP) provides developers an alternative way to comply with on-site detention
- CodeNEXT proposes to expand the RSMP option to all watersheds
- Select most appropriate engineering solution (site-specific):
  - Drainage conveyance improvements
  - Innovative alternative to detention on-site
  - Off-site compensatory detention
  - Drainage easements or land for regional improvements
  - RSMP payment-in-lieu
- Project must demonstrate no adverse impact and adequate downstream flood conveyance capacity

Types of Solutions: Regional

Storm Drain Improvements

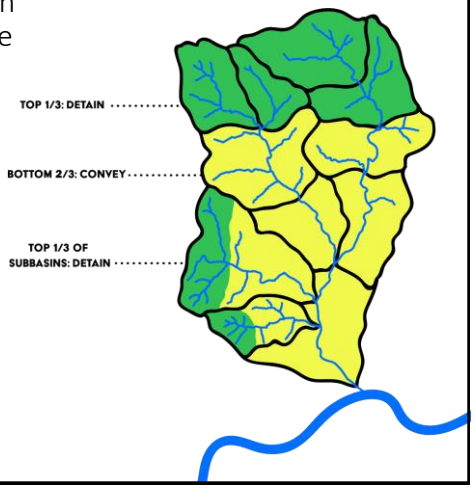
Regional Detention Pond

Low Water Crossing Upgrade

Channel Improvements

Location of Solutions

- Type of solution employed will be dependent on the location in the watershed and the available capacity of the downstream conveyance system
  - "Upper 1/3": on-site detention
  - "Middle 1/3": conveyance improvements, situational detention
  - "Lower 1/3": conveyance, contribute to regional solutions



Frequently Asked Questions

- How much does this cost?
  - Based on Envision Tomorrow, stormwater management facilities (water quality + flood detention) typically ranged from 1 to 3% of total project costs
    - Cost for flood mitigation is a subset of this overall estimate
    - Also includes existing requirements for water quality and new requirements for beneficial use of stormwater
  - The cost of certain technologies (e.g., green roofs, subsurface detention) could raise the portion of project costs dedicated to stormwater management to as much as 5% of total project costs
  - This estimated percentage of total project cost is likely to be even smaller for larger, very urban building types

Frequently Asked Questions

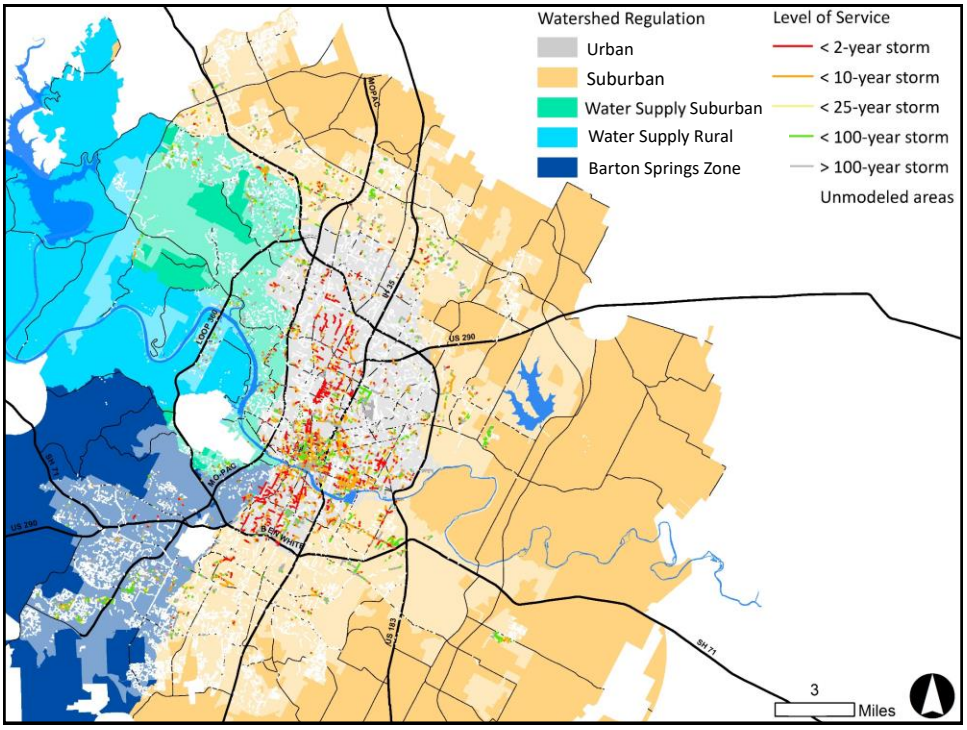
- How much space is this going to take up on the site?
  - Above-ground detention ponds typically take up about 4% of the site
  - Options such as vaults and parking lot detention allow for on-site solutions to be incorporated without sacrificing usable space
  - Detention can be integrated with other site requirements, such as landscape and open space
  - On-site detention is not always the preferred management strategy, depending on the location within the watershed

Frequently Asked Questions

- Will this change apply to building permits?
  - The new requirement will apply to site plans and subdivisions
  - Drainage is not currently reviewed for building permits
  - City staff are in discussion about potential process improvements related to drainage review for building permits
  - Need to balance considerations of review time and potential affordability impacts

Frequently Asked Questions

- Can existing drainage infrastructure handle increased density?
  - If project is not providing on-site detention, must demonstrate adequate downstream capacity
  - Varies by location – most of the older infrastructure was designed to different, outdated standards and may not be able to handle additional flow without improvements to the system

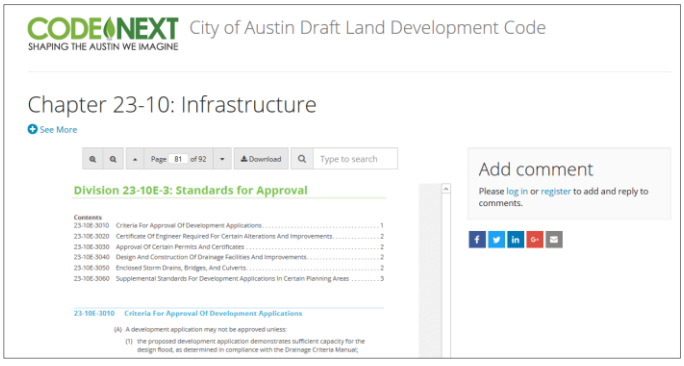


Frequently Asked Questions

- How much will this proposed change address existing flooding?
  - There may not be a noticeable improvement to existing flooding with each individual site, but there will be a cumulative benefit over time as more redevelopment occurs
  - New tool to complement the City of Austin's existing regulations and capital improvement program

How to Comment

- Code Comment Tool: codenext.civicomment.org
- New requirement found on Page 81 of Chapter 23-10



CodeNEXT Schedule

- January 30: Draft code released for public review
- March 29: Environment Code Talk
- April 18: Draft Zoning Map
- April - May: Green Infrastructure Working Group
- June 7: Initial Deadline for Code Comments
- July 7: Initial Deadline for Map Comments
- September - October: Planning/Zoning & Platting Commission
- December - April 2018: City Council
- Mid-2018: Anticipated Adoption

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