CITY OF AUSTIN LOWER ONION CREEK FLOOD MITIGATION BUYOUT PROJECT

creating successful partnerships
TOPICS

- Flooding in Austin
- Project History & Implementation
- Impact of Recent Floods
- Existing & Future Project Partnerships
- Lessons Learned
FLASH FLOOD ALLEY

- Rainfall: Some of the highest recorded rainfall intensities
- Soils: Rocks and clay – poor infiltration
- Terrain:
  - Slopes on west
  - Flatter on east
  - Urban Core: steep slopes in upper portions of watersheds, flatter terrain in lower portions, leading to flashy watersheds
- Development:
  - Heavily urbanized
  - Lots of development along creeks
  - Mostly built out prior to current floodplain regulations
NOTABLE FLOOD EVENTS

- **April 1915**
  - 35 fatalities
  - 10” in 24 hours

- **September 1921 (Thrall)**
  - 32” in 12 hours
  - 38.2” in 24 hours

- **October 1960**
  - 11 fatalities, 200 evacuees
  - $2.5M in damages
  - 10” in 24 hours

- **May 1981**
  - 13 fatalities
  - >$35M in damages
  - 10” in 6 hours

- **October 1998**
  - 7” in < 24 hours
  - 25 fatalities
  - > 450 damaged homes

- **November 2001**
  - 10” in less than 24 hours
  - > $500k in damages

- **January 2007**
  - 5” in 5 hours
  - 23 swift water rescues

- **September 2010**
  - 12” in 24 hours
  - 1 fatality; 194 tons of debris removed from lake and trail areas
NOTABLE FLOOD EVENTS

- October 2013
  - 12.6” in 12 hours
  - 6 swift water rescues

- October 2013
  - flood of record
  - >12” in 24 hours
  - 6 fatalities

- May 2015
  - >300 flooded structures & roadways
  - 8 days of rain, >8”

- October 2015
  - 13” in 24 hours
  - >400 damaged homes

- June 2016
  - 5” in 12 hours
  - > 40 flooded structures & roadways
City:
- Population: ~915,000
- ~ 280 square miles

Floodplain:
- ~ 30 square miles
- ~ 5,200 structures in 100-year floodplain
- ~ 2,100 structures at risk of interior inundation
- ~ 640 roadway crossings at risk of flooding
FLOOD MITIGATION STRATEGIES

- Development/Floodplain Regulations
- Flood Early Warning System
- Structural Drainage Improvement Projects
  - Detention ponds
  - Bridge/culvert upgrades
  - Channel modifications
  - Stormdrain improvements
- Nonstructural Projects - Floodplain Buyouts
FLOODPLAIN BUYOUT PROJECTS

- **OBJECTIVE:** Improve life safety conditions and reduce flood hazard related property damage
- Buyouts pursued in areas where structural mitigation not cost effective
- >1000 properties acquired to date
- Buyout areas converted to open space
- Future development restricted
FUNDING

- City Sources:
  - Drainage Utility Fee
  - Bonds
  - Regional Stormwater Management Program

- Partnerships with other agencies:
  - FEMA (i.e., Hazard Mitigation Grant Program)
  - Army Corps of Engineers
LOWER ONION CREEK PROJECT AREA
823 properties at risk of flooding, limited access

1998 – request to U.S. Army Corps of Engineers to conduct flood control study

Austin voters approved $2.4 million in bonds to buy flood-prone homes near Onion Creek in 1998, buyouts began in 1999

Corps study evaluated structural & non-structural solutions

Structural solutions evaluated:
  - Detention
  - Channel modifications
  - Diversions
  - Levees/Floodwalls
2006 - Feasibility study recommendation:

- Acquisition of 483 properties at highest risk in 25-year floodplain
- Recreational amenities
- Ecosystem restoration

$73.2M cost estimate, shared

No project authorization or funding
BUYOUT IMPLEMENTATION

- Prior to 2006: 109 acquisitions, City funded
- 2006 – 2008: 114 acquisitions, FEMA grant
- 2008 – 2013: 100 acquisitions, City funded

Cost:
- $36.5M, including $7.8M from FEMA grant
- (No federal funding from Army Corps yet)

323 properties acquired as of end of October 2013
STATUS ON 10/30/2013
OVERNIGHT 10/30/2013

Halloween Flood 2013
Rainfall Totals

National Weather Service
Austin – San Antonio TX

Precip (in.)
- < 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 5 - 6
- 6 - 7
- 7 - 8
- 8 - 9
- 9 - 10
- 10 - 11
- 11 +
OVERNIGHT 10/30/2013

Halloween Flood 2013 Rainfall Totals
National Weather Service
Austin – San Antonio TX

Lower Onion Creek Project Area
2013 HALLOWEEN FLOOD
2013 HALLOWEEN FLOOD
2013 HALLOWEEN FLOOD
2013 HALLOWEEN FLOOD
November 2013 - Recovery Buyout Program

- $19.6M to expedite purchase of most of remaining homes in the Corps buyout area
- Funds identified through project savings and postponements

December 2014 - first federal appropriations for project

26 properties remaining as of end of October 2015
RAPID(ER) BUYOUT IMPLEMENTATION

25-Year Buyout Area

- 137 properties
- $35.5M approved by City Council in June 2014
- Buyout process began in August 2014
- 117 properties acquired as of end of October 2015
MORE RAPID(ER) BUYOUT IMPLEMENTATION

100-Year Buyout Area

- 203 properties
- $60M approved by City Council in September 2014
- $1.5M HMGP grant awarded
- Buyouts process began in June 2015
- Phased approach, ~15-20 buyouts initiated per month
- 11 properties acquired as of end of October 2015
STATUS ON 10/30/2015
MORNING OF 10/30/2015

Lower Onion Creek Project Area
2015 HALLOWEEN FLOOD
2015 HALLOWEEN FLOOD
2015 HALLOWEEN FLOOD
2015 HALLOWEEN FLOOD
MORE RAPID(ER) IMPLEMENTATION, AGAIN

- Buyout process initiated for ~100 properties in 2 months
- All interested owners received offers before end of 2016
- Continued reimbursement requests to Army Corps
- Collaboration with Army Corps recreation design
- Collaboration with other stakeholders for long-term plans
POST PROJECT POSSIBILITIES

- Open space conversion
- Riparian restoration
- Recreational uses
- Community gardens
- Wildflower meadows
- Outdoor classrooms
- Collaboration with neighborhood groups

Must be compatible with floodplain and within limitations of development restrictions
COMMUNITY GARDENS
LESSONS LEARNED/CHALLENGES

- Partnerships & Project Planning
- Partnerships & Project Implementation
- Partnerships & Post-Project Management
PARTNERSHIPS & PROJECT PLANNING

- Prioritization
- Identification of feasible solutions
- Community engagement
- City Council buy-in
- Funding & resource needs

Partnership opportunities:
- Funding constraints
- Timing implications
- Agency interests & requirements
PARTNERSHIPS & PROJECT IMPLEMENTATION

- Continuous community engagement
- 1:1 consultations with property owners & tenants
- Phasing
- Avoiding “checkerboarding”
- Security, theft, vandalism
- Interim maintenance

- Partnerships:
  - Funding availability
  - Records & reporting
  - Additional partner requirements
PARTNERSHIPS & POST-PROJECT MANAGEMENT

- Development restrictions
- Neighborhood engagement
- Continuous monitoring, maintenance
- Signage, bollards/barricades
- Clearly defined uses

Partnerships:
- Limitations on future uses
- Local organizations