City of Fort Collins
REGULATORY CHANGES AFTER A NATURAL DISASTER
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CASFM 2005
The Event

The Fort Collins flood was the biggest natural disaster to ever affect the city (in 130 years of record).

Largest 24-hour rainfall ever to fall on a Colorado urban area. (Total rainfall: 14.5” in 31 hours)

$250m in total damage.

Flow on Spring Creek exceeded the 500-year event.
The Day After

**Wednesday**

**Fort Collins Coloradoan**

City death toll at 5; damage in millions

July 30th 1997

**Storm Toll**

Deaths - 5 confirmed
Injuries - 40
Missing - 16
Rescued - 160

Damages - Tens of millions of dollars at Colorado State University. $1.5 million to $2 million to city roads and bridges; $1 million to city parks and trails; no estimate for private property.

Source: Emergency Officials

All information as of 1 a.m. today.
120 Mobile Homes Destroyed
$4.5\text{ million in Automobile Damage}
2000 Homes and Businesses Suffered Damage
Ft. Collins Floodplain Facts: Before the Flood

- Approximately 3,280 acres of floodplain and 1,828 structures located in the 100-year floodplain.

- Four FEMA designated floodplains and three locally designated floodplains.

- Regulated to a higher standard than FEMA.

- Rated as a Class 6 by CRS.

- Capital Project program to fund drainage projects.

EXISTING HIGH CALIBER PROGRAM
WE WERE STILL CRITICIZED

- Citizens asked:
  - Why did you let us (or them) build there?
  - Why didn’t you tell us we were at risk?
  - Why didn’t the irrigation canals capture all the water?
  - How could you let this happen to us?
  - Why didn’t you plan for bigger storms? We’re in a “preferred storm track”.

REGULATION CHANGES WERE DRIVEN BY CITIZENS
Regulatory Changes
Two Major Initiatives

1. Rainfall
   - Higher 100-year rainfall adopted in 1999 (less than 2 years from flood)

2. Floodplain Regulations
   - Poudre River – adopted in 2000 (three years from flood)
   - Remainder of City – adopted in 2005 (almost 8 years from the flood, 3 years of outreach!)
Rainfall

- Task Force guided the study.
- Could not wait until NOAA’s revised study to be completed in 3-5 years, (still not completed.)
- City embarked on own study.
Variety of Opinions

Regulatory agencies:
- Federal Emergency Mgmt. Agency
- Colorado Water Conservation Board
- Larimer County
- City of Fort Collins Utilities
- Colorado State University Facilities
- Fort Collins Water Board

Technical Experts:
- Colorado State University:
  - Atmospheric Science Department
  - Engineering Department
  - Statistics Department
- Local Consultant

Interested Citizens:
- Planning and Zoning Board member
- Citizen flooded in 1997
FINAL RECOMMENDATION

- Increased 100-year design storm by 27%.
- Minority group within the Task Force still wanted higher rainfall.
- Had regional effect: Wellington, Larimer County, Windsor.
- Placed added responsibility on the City to update all floodplains except the Poudre River.
Floodplain Regulation Revisions: Round One

- Poudre River was first.
  - Discharge wouldn’t change because of new rainfall values
  - Perceived as greatest flood threat to the community
  - Potential for “lost opportunities”
  - Strong push by environmentalists to reevaluate regulations
Task Force Members

- City Advisory Boards
- Business Interests
- Environmental and Recreation Interests
- Technical Experts
- Real Estate Interests
- Floodplain Property Owner
- Emergency Response
Complex Issues

1. Floodway Width
2. Floodway Modification
3. Flood Protection Projects
4. Property Purchase
5. Notification
6. Fill
7. Removal from Floodplain
8. New Development
9. Mobile Home Parks
10. Residential/ Commercial Development
11. Remodels
12. Additions
13. Redevelopment
14. Critical Facilities
15. Riparian Areas
16. Dry Land Access
17. Floatable Materials
18. Variances
19. Lowest Floor Elevation

DIFFICULT TO CONVEY COMPLEX TECHNICAL ISSUES TO LAY PEOPLE
Result: More Restrictive Regulations

- Product Corridor (500 year Depth x Velocity ≥ 6)
- One-tenth foot floodway
- Higher Freeboard – 2 feet
- More restrictions on uses in floodway and Product Corridor
- Dryland access required
- Floatable materials restricted
Floodplain Regulations: Round 2

- Started in 2002, after new floodplains mapped.
- Now had 3600 acres of floodplain with 3300 structures at risk.
- No Task Force.
- Recommended changes generated by City staff.
Staff’s Approach to Floodplain Regulations

- Balance risk with regulation
  - Map a floodway where practical
  - More restrictive regulations in the floodway area, less restrictive in the flood fringe
  - More restrictive for new development, less restrictive for existing development

- More restrictive for residential, less restrictive for nonresidential
Result: Some Regulations Are More Restrictive

- More Restrictive
  - No new residential in floodway.
  - No new mobile home parks in floodplain.
  - Non-residential: no new basements in floodway.
Result: Most Changes Less Restrictive

Less Restrictive

- Changed No-Rise floodplains to FW/FF.
- Reduced freeboard to 6” for remodel/additions to existing structures.
- Critical facilities allowed in 100-year Moderate Risk.
- General Manager can waive regulations in city floodplains if a capital project is underway.
- Substantial Improvement:
  - No longer cumulative over lifetime of structure, tracked for 1 year.
  - Improvements above flood level not counted (less than FEMA minimum): city floodplains only.
Impact on Community Rating System Classification

- Currently a Class 4 (scale of 1 to 10 with 1 the best).
- 30% discount on flood insurance.
- New regulations will move Fort Collins to Class 5 because of pre-requisite requirements.
- 25% discount on flood insurance.
Conclusions

- Process takes a long time.
- Take advantage of community’s awareness to effect change.
- Excellent opportunity to verify with community the validity of regulations.
- Excellent opportunity to modify code for easier use.
# Floodplain Statistics

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<thead>
<tr>
<th></th>
<th>Floodway</th>
<th>Flood Fringe</th>
<th>Moderate Risk</th>
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</thead>
<tbody>
<tr>
<td><strong>Area (acres)</strong></td>
<td>1,900</td>
<td>1,300</td>
<td>400</td>
</tr>
<tr>
<td><strong>Number of Structures</strong></td>
<td>700</td>
<td>1,700</td>
<td>900</td>
</tr>
</tbody>
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