Experiences from a Disaster Champion

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A Whole Community Approach To Resilience

Working Together To Reduce The Misery Caused by Foreseeable Natural Events

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Edward A. Thomas, Esq.
CHART Workshop
May 9, 2014
Howdy!

We appear today in a *pro bono* presentation on behalf of:

**The Natural Hazard Mitigation Association**

*This is not and cannot be technical Engineering or legal advice; nor does this portion of our presentation necessarily represent the views of anyone other than each of the presentors.*

Our presentations are based on general principles of law, engineering, policy and emergency management.
First, some words from our sponsor

What is NHMA?

NHMA was created in 2008 to bring together the various individuals and organizations in the fields of hazard mitigation and climate adaptation.
The Membership of NHMA includes

- People wanting to make a difference and work towards reducing losses from a broad range of natural hazards.
- Engineers, planners, floodplain mangers, government officials, community activists, academics, practitioners, students, and more.
- People involved in building resilient organizations and communities.
- We wish membership included more of you!
Four NHMA local initiatives

- THE PATCHWORK QUILT
- RESILIENT NEIGHBORS NETWORK
- PEER TO PEER WORKSHOPS
- OUTREACH TO PARTNERS
Four NHMA local initiatives

THE PATCHWORK QUILT

stormsmart.org/uploads/patchwork-quilt/patchwork_quilt.pdf
Four NHMA local initiatives

RESILIENT NEIGHBORS NETWORK (RNN)
Four NHMA local initiatives

PEER TO PEER WORKSHOPS
Four NHMA local initiatives

OUTREACH TO NON-TRADITIONAL PARTNERS

The Brookings Institute
Center for Clean Air Policy (CCAP)
Reinsurance Companies
Climate Change Community
American Bar Association
Department of the Treasury
Harvard Graduate School of Design

www.brookings.edu/.../federal-budget-Hamilton

NHMA
Natural Hazard Mitigation Association
Fundamental thought:

What is the Best Form of Disaster Relief?
Fundamental thought:

No disasters at all!
Key themes

- We need to think in a systems analysis manner to solve our serious problems - including sea level rise and climate variability, uncertainty and climate change.

- **We must stop making things worse!**

- We need to work with many persons and groups to solve our serious disaster, water resources, and other related issues.

- Right now we have a system which rewards dangerous behavior.

- Yet, some places—like Tulsa, Metropolitan Denver, Charlotte Mecklenburg County and others—are heroically overcoming obstacles and reducing losses....
GILBERT WHITE TAUGHT US

“Floods are Acts of Nature;
But Flood Losses are largely Acts of Man.”

Dr. Gilbert Fowler White 1911-2006
Gustavson Distinguished Professor Emeritus of Geography
University of Colorado

70 Years of Leadership in the Field of Floodplain Management
Flood and wind events have increased dramatically.
Trends in flood damages

- $6 billion annually
- Four-fold increase from early 1900s
- Per capita damages increased by more than a factor of 2.5 in the previous century in real dollar terms
- And then there was Katrina, Rita, Wilma, Ike and Sandy
Flood losses increasing?

- This was not supposed to happen!
- The Flood Insurance Program was designed to reduce such losses.
- In 1976 a HUD sponsored economic analysis predicted that by the year 2000 or 2025 flood losses would begin to decline.
- I believe that the NFIP is the most cost effective program of Hazard Mitigation in the history of the Nation.
- Can the NFIP be improved?
- Is it now being improved?
- What happened?
- What can we do?
Demographic Trends: The Future

• As we move into the next generation things will be much more challenging for Floodplain and Stormwater Managers

• Dr. Arthur “Chris” Nelson, FAICP
  • Leadership in a New Era
  • “More than half of the built environment of the United States we will see in 2025 did not exist in 2000”

FLOOD RISK MANAGEMENT
Buying Down Risk

Initial Risk

Insurance
Building Codes
Zoning
Levee
Contingency/Response Plans
Outreach
Residual Risk

Risk Reduction Actions
(Cumulative)

All stakeholders contribute to reducing risk
All Stakeholders Can Also Contribute to Increased Risk!

Initial Risk

- No Warning/Evacuation Plan
- Upstream Development Increases Flows
- Lack of Awareness of Flood Hazard-Lack of Flood, Business Interruption, DIC Insurance
- Critical Facilities Not Protected From Flooding
- Increased Development

RISK Increase Factors

- Infrastructure Not Properly Designed/Maintained

Vastly Increased Residual Risk
Whole Community Approach

- Engages all levels of government, non-governmental organizations, private sector industry and individuals to leverage resources in preparing for, protecting against, responding to, recovering from and mitigating against all hazards.

- Requires understanding and meeting the actual needs of the community.

- Engages the whole community and empowers local action in order to better position stakeholders to plan for and meet the actual needs of a community and strengthen the local capacity to deal with the consequences of all threats and hazards.

- Requires finding ways to support and strengthen the institutions, assets, and networks that already work well in communities.
Thoughts on Interdependencies

- The facility is important, but so are the folks who work there.
- Like mitigation, interdependencies are woven throughout the prevention, protection, response and recovery elements in the Whole Community.
- We need to broaden the communication circles. The floodplain manager needs to talk to the planners, emergency managers, NGOs and community leaders.
UDFCD Created in 1969 in the aftermath of the 1965 South Platte River Flood
UDFCD Today

- 1,608 Square Miles
- 1,600 Miles of Major Drainageways
- 3.1 Million Population
- Elevation 5,280 Ft. (plus or minus)
- Seven Counties and 33 Incorporated Entities
- Annual Precipitation – 14.5 inches
- Flood Threat – High Intensity Rainfall from Mid-April Through Mid-Sept
Two Pronged Approach

- Early discovery that 25% of the District’s service area had developed without regard to the flood hazard.
- Those areas would require a remedial response, or structural flood control measures.
- The remaining service areas could be developed using non-structural approaches, such as floodplain preservation.
Over the 44-year history of UDFCD

Through planning, design, construction, maintenance, and floodplain management by UDFCD and its local government partners we have reduced the number of units in the defined Special Flood Hazard Area by about 5,000 units while our population has tripled.
Colorado Flood Event, 9-16 September 2013
Annual Exceedance Probabilities (AEPs) for Worst Case 48-hour Rainfall

Hydrometeorological Design Studies Center
Office of Hydrologic Development, National Weather Service
National Oceanic and Atmospheric Administration

http://www.nws.noaa.gov/ohd/hdsc/

Created 17 September 2013
Precipitation frequency estimates are from NOAA Atlas 14, Volume 8, Version 2.
Rainfall values come from 6-hour multi-sensor data.
Denver Rainfall
Why not worse?

1. Improvements over the past 40+ years
2. Floodplain management
3. Relatively low-intensity rainfall
4. Well-prepared community and first responders
5. Early warning and flood detection

40 years of mitigation, preparation and practice paid off.
Some Dams Fail/Breach
Arvada Reservoir

Show video
SAND CREEK AT METRO WWTP

PRE-FLOOD TOE OF SLOPE
Questions? Comments Please!
Thank you

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