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Building Disaster Resilient Communities: Perspectives on Resilience and Risk Management

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Perspectives on Resilience and Risk Management

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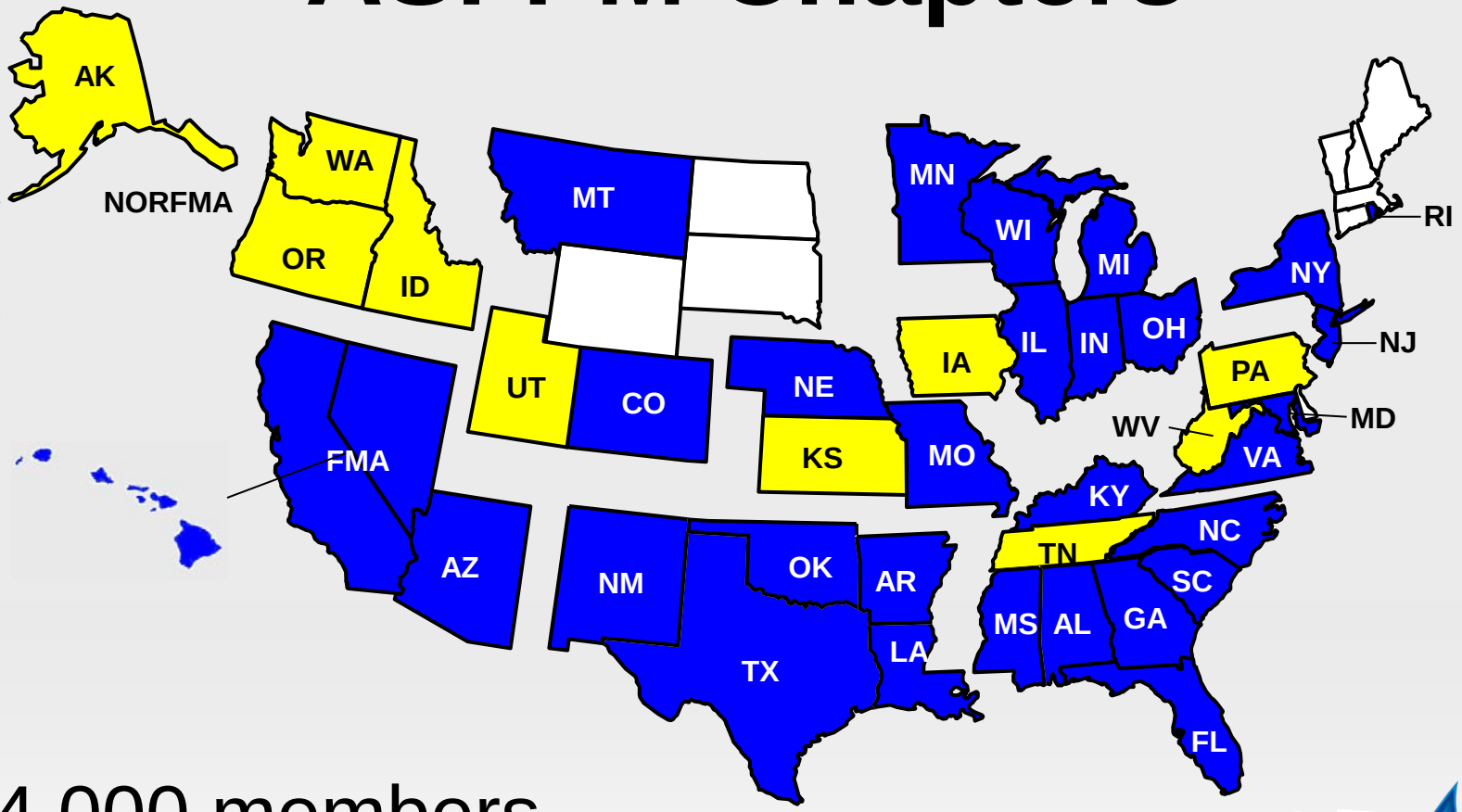
ASFPM's Mission

To promote education, policies, and activities that mitigate current and future losses, costs, and human suffering caused by flooding,

and to protect the natural and beneficial functions of floodplains – all without causing adverse impacts.

ASFPM Chapters



14,000 members

- 29 ASFPM Chapters
- State Assoc. & Pending Chapters

ASFPM

- Organization of professionals involved in all aspects of floodplain management
- Policy is developed primarily from members through Committees to the ASFPM Board for adoption
- Executive Office in Madison, Wisconsin

What does ASFPM do?

- ✓ National CFM® Certification
- ✓ State Chapter Services & Support
- ✓ Legislative Activities
- ✓ Review National Flood Programs & Policies
- ✓ Represent all members on national policy
- ✓ No Adverse Impact (NAI) tools/training
- ✓ White Papers on policy issues
- ✓ Coordination with FEMA & the NFIP
- ✓ Conferences & Events & Training
- ✓ Continuing Education Development

Perspectives on Resiliency and Risk Management

- Disclosure: These are my opinions based on working 18 years exclusively on flood risk management issues at the national, state and local level
- Principles of resiliency
- Actions you can take

Fukushima Daiichi nuclear power plant after Magnitude 9 earthquake in Japan

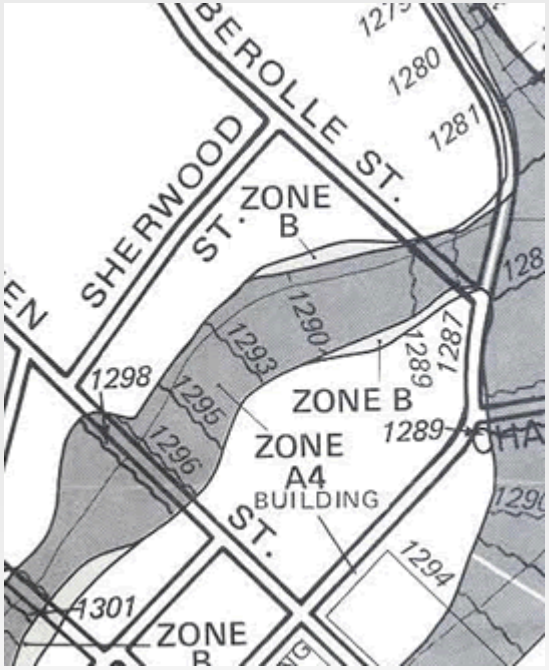
Principles of Resiliency #1

- Science of risk assessment changes and improves with time, risk changes over time.

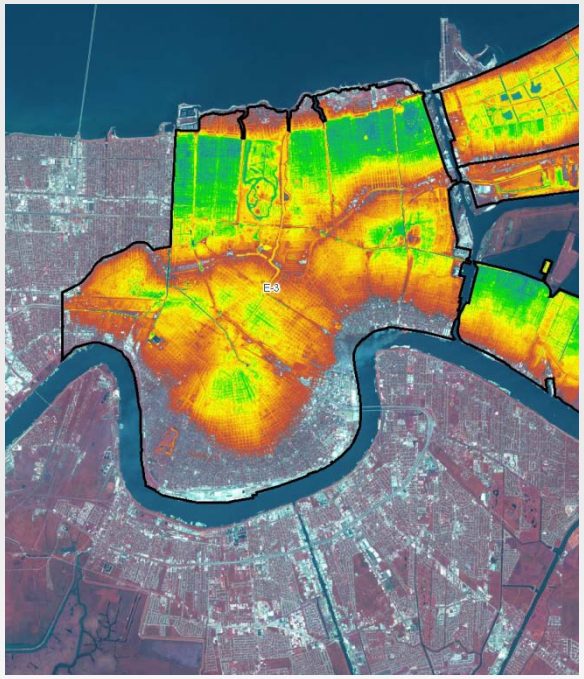
Cranston WWTP (Rhode Island)
March 2010
Damage: $10 million
Photo: Providence Examiner

Flood Risk Assessment Methods Evolving . . .

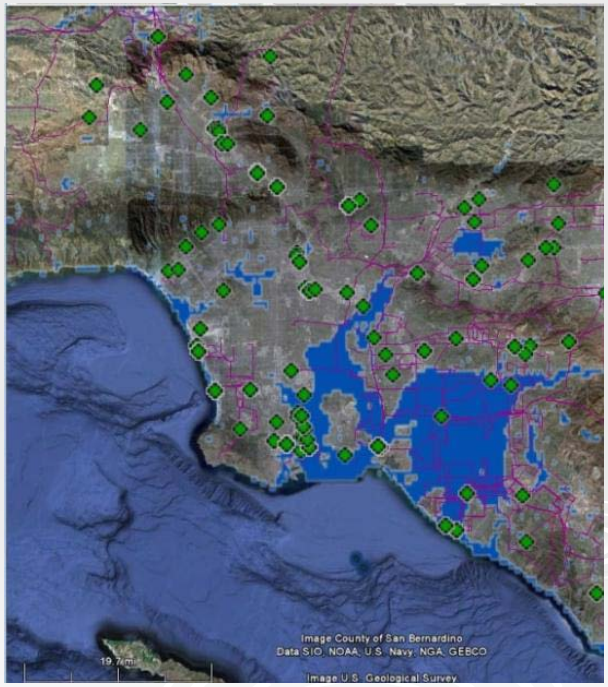
Yesterday



Today

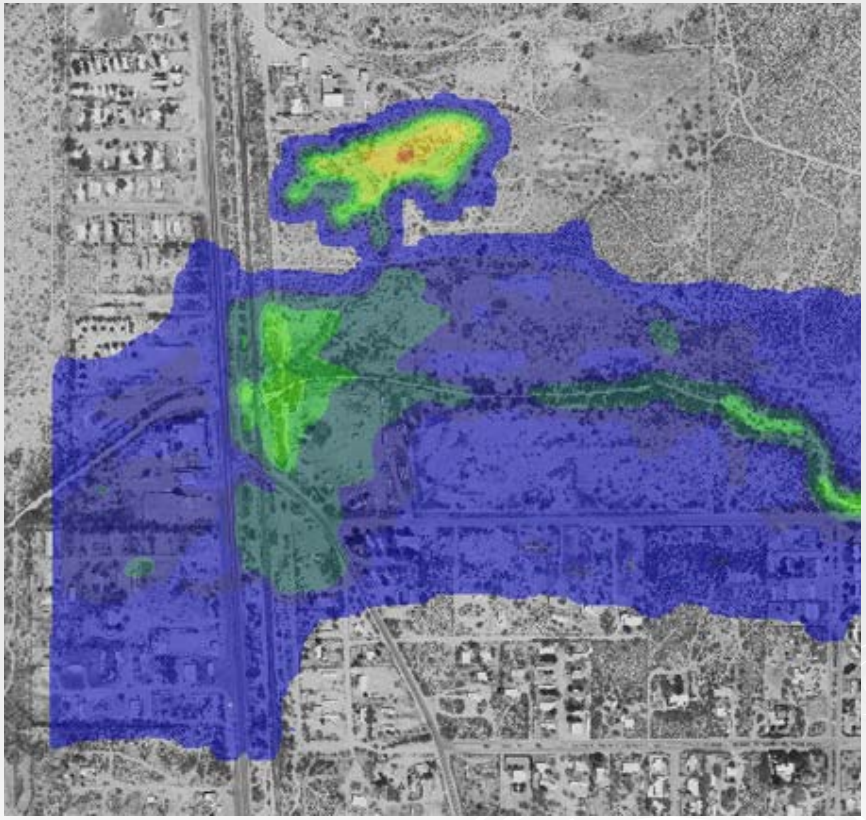


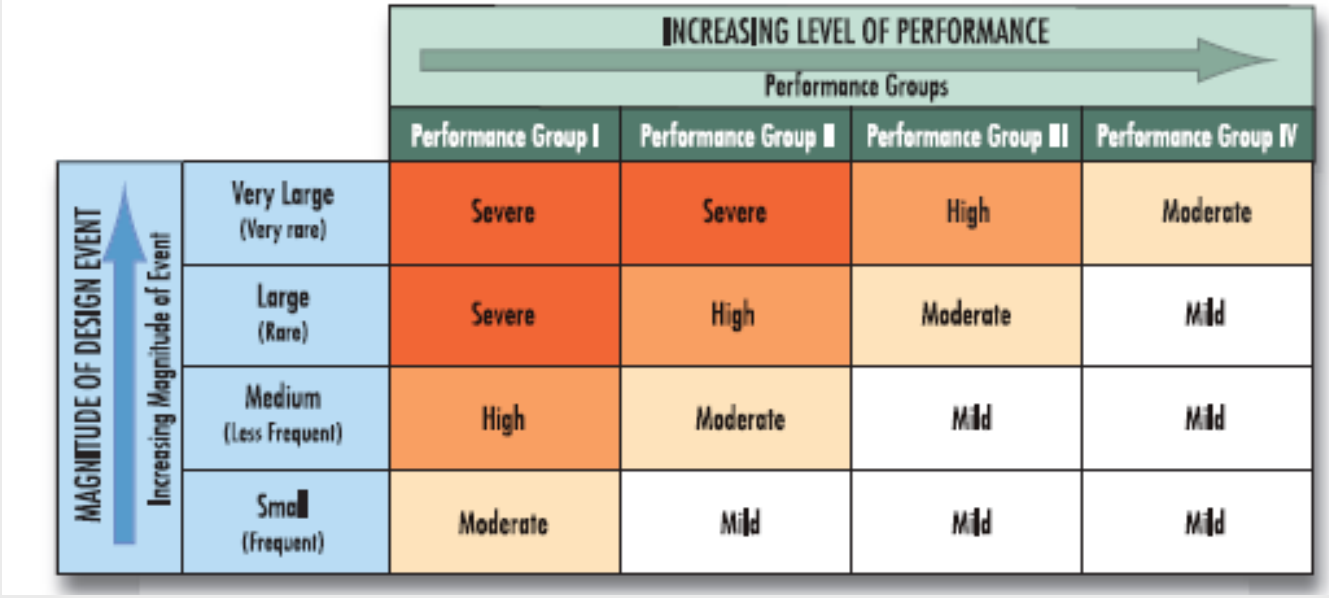
Tomorrow

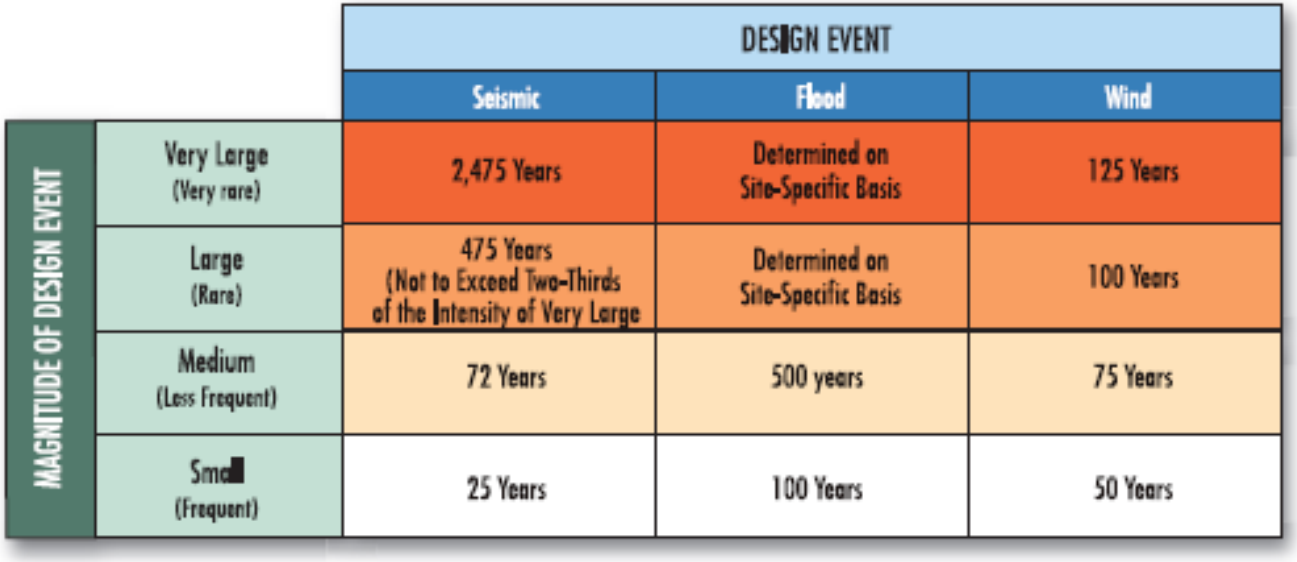


Understand Uncertainty

- Each model has uncertainty and unique methodology
- Use ensemble or collaborative approach
- Reduction of uncertainty = increase in cost of analysis, how much precision is necessary?




INCREASING LEVEL OF PERFORMANCE
Performance Groups
Performance Group I
Performance Group II
Performance Group III
Performance Group IV
MAGNITUDE OF DESIGN EVENT
Increasing Magnitude of Event
Very Large (Very rare)
Severe
Severe
High
Moderate
Large (Rare)
Severe
High
Moderate
Mild
Medium (Less Frequent)
High
Moderate
Mild
Mild
Small (Frequent)
Moderate
Mild
Mild
Mild


DESIGN EVENT
Seismic
Flood
Wind
MAGNITUDE OF DESIGN EVENT
Very Large (Very rare)
2,475 Years
Determined on Site-Specific Basis
125 Years
Large (Rare)
475 Years (Not to Exceed Two-Thirds of the Intensity of Very Large
Determined on Site-Specific Basis
100 Years
Medium (Less Frequent)
72 Years
500 years
75 Years
Small (Frequent)
25 Years
100 Years
50 Years

Principles of Resiliency #2

- For complex risk scenarios (everywhere) there is no “one approach” solution

Texas Medical Center, Houston
June 2001 (Tropical Storm Allison)
Damage: $2 billion

For the protection of the many critical institutions on the campus, multiple flood mitigation alternatives and projects must be pursued concurrently to maintain the extraordinary level of service the TMC currently provides and reduce the risk of future damage. . . No one project or initiative will solve the long-term flooding problems at the Texas Medical Center.

Texas Medical Center Solution

- Focused on four areas: Hydrology, access, utilities, management
- Focused on four scales: Watershed, area, campus, building
- Long term plan and projects
- Example projects:
  - Brays Bayou detention project
  - Roadway flooding notification system
  - Relocate utility switchgear above 500-year flood elevation

No One Approach

- Prevention
- Property Protection (including critical facilities)
- Natural Resource Protection
- Emergency Services
- Structural Mitigation
- Public Information and Outreach

  - Communities and institutions almost always need to apply multiple approaches

Principles of Resiliency #3

- Achieving full community resiliency takes considerable time. Problem wasn't created overnight, solution will not be either

Gays Mills vs. Darlington

- Population 625
- Major floods, 9 last century and 2 this century
- Pursued structural as early as 1940s, but really did nothing
- 2007, 100 year flood
- 2008, 500 year flood
- 2008 long term recovery plan

- Population 2,418
- Major floods 1990, 1993 and 1994
- Significant floods every 20 years
- 1993 began to address flood problems
  - Retrofit
  - Relocation
  - Acquisition
  - Comprehensive Planning

Darlington


Darlington, Wisconsin
Trail
Pecatonica River
New
Industrial
Park Area

Principles of Resiliency #4

- There must be leadership from within the community

Mayor Beverly Anderson and other community leaders began developing a come-back strategy. “I used to lay awake at night wondering, how in the world are we going to do this?” Anderson said.

Characteristics of Leadership in Resiliency

- Political buy-in to general principles
- Thick skin and willingness to challenge common ideas
- Willingness to collaborate and listen to ideas
- Commitment to action!
- Investment in staff and competency – learning about hazard and resiliency options
- Self initiating, self funding
- Do not wait, rely, depend on Feds and state to lead, be a partner with them

Principles of Resiliency #5

- Prepare!

Preparedness Activities Leading to Resiliency

- Exercise long term recovery plans
- Provide tools encouragement for business continuity and recovery plans
- Integration of mitigation and comprehensive planning. Lets get serious, not just meet planning cross-walks
- Increase knowledge among community leaders and citizens
- Risk assessments, community, utility, and building level

Conclusion

- Can you, pre- and post disaster answer the question “Now What?”
- Metrics for resilient communities:
  - Can you withstand the “big event” and not get a disaster declaration?
  - Can you get critical systems back online quickly and with minimum cost?
  - What else?