Climate Change & The Facilities Management Organization

Risks & Responsibilities

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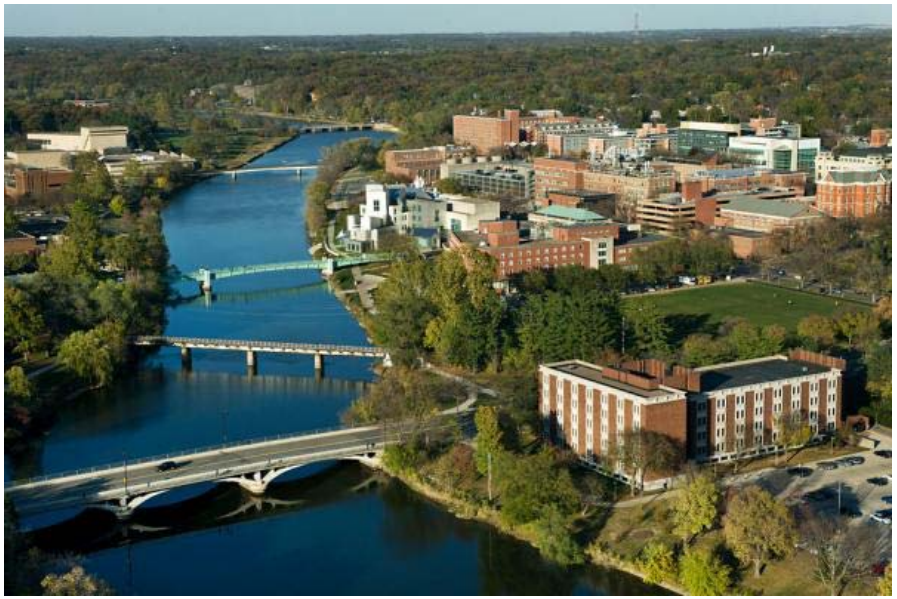
The University of Iowa

THE UNIVERSITY OF IOWA


Optimal Space Utilization and Configuration
High Value Project Investments
Energy Efficient Operation
Total Cost of Ownership
Optimal Building Operation
Managed Risks and Regulations
Asset Life Extension (Renewal)

April 22, 2008



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Including the creation of the Office of Sustainability

The Office of Sustainability

- Facilities Management was tasked with creating the Office of Sustainability
- Charged with all matters related to sustainability
- Chartered as a no-growth organization
- Identified three key positions

But 40 days later and

before the first person could be hired…

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Flood of 2008

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    1. *Hurricane Katrina, LA*
    2. *Earthquake, Northridge, CA*
    3. *Hurricane Katrina, MS*
    4. *Hurricane Ike, TX*
    5. *Floods & Tornadoes, IA*

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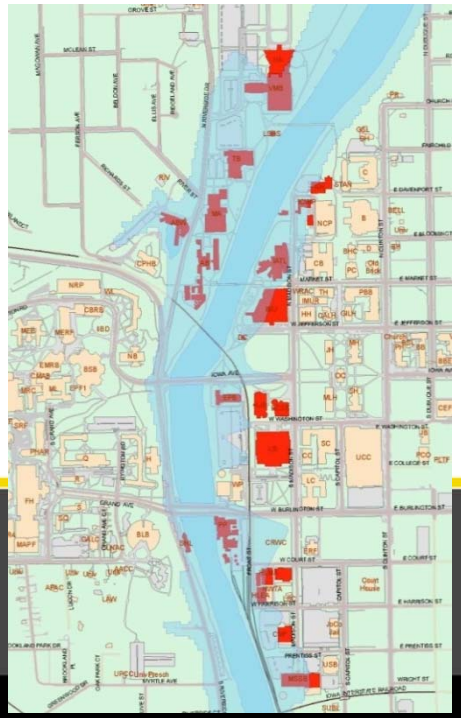

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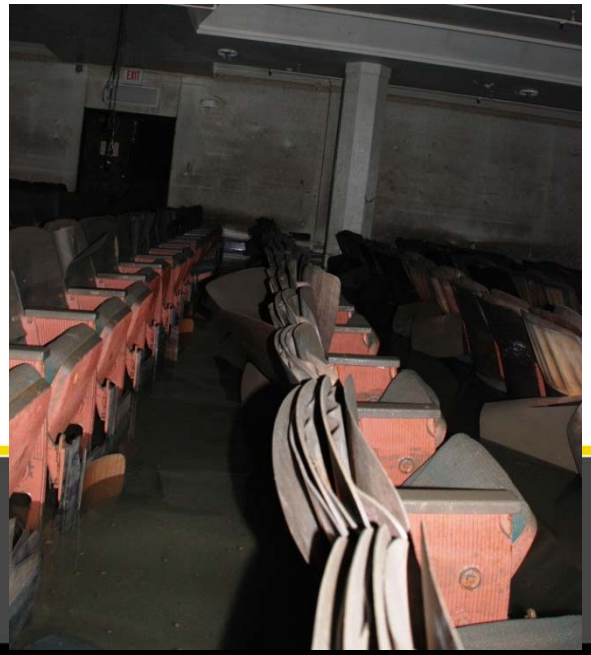

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- *UI's estimated impact close to $1 billion*

Why Did It Happen?

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The Perfect Storm

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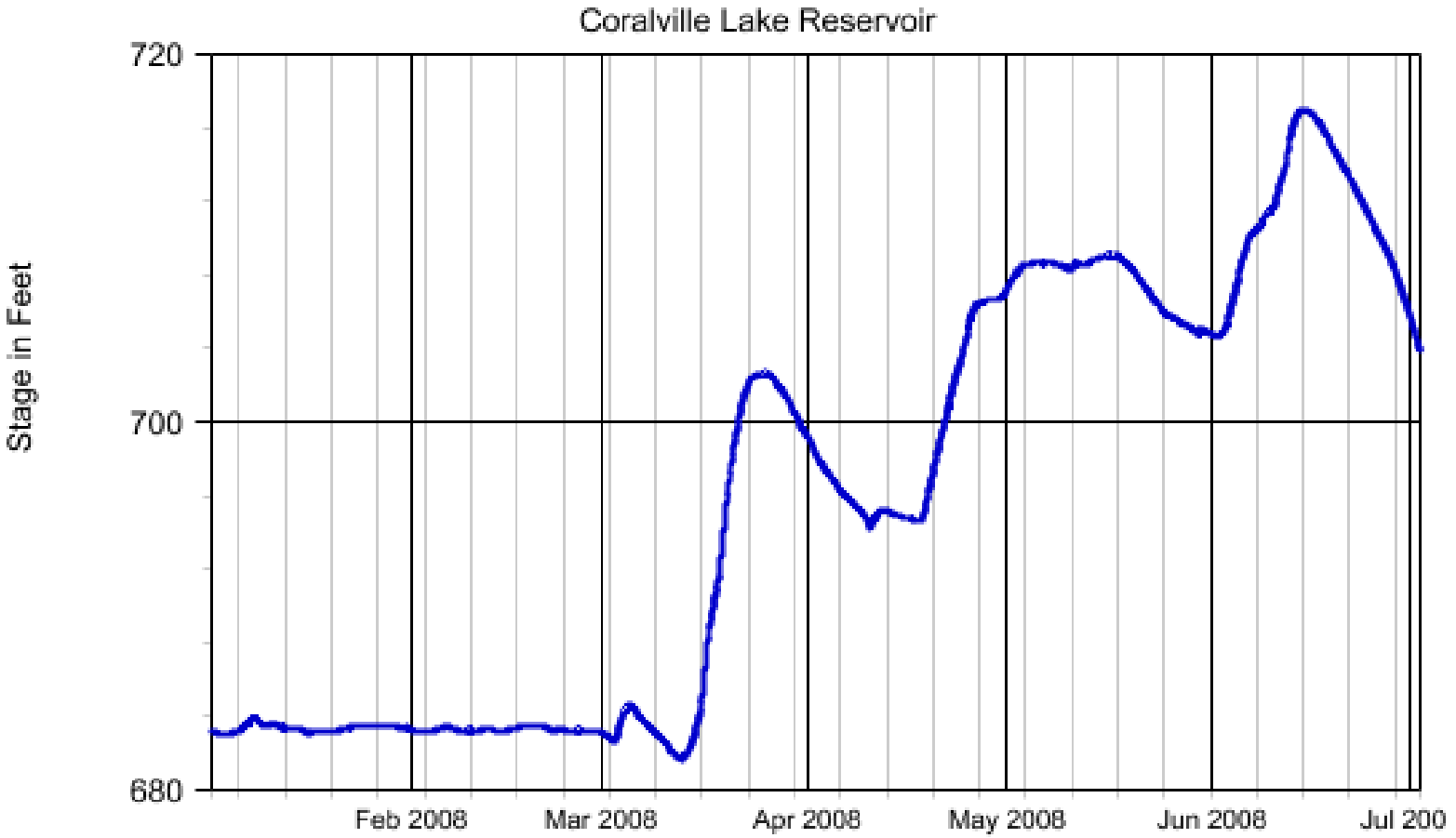
The Perfect Storm

The Final Storm

The Perfect Storm

The Coralville Reservoir



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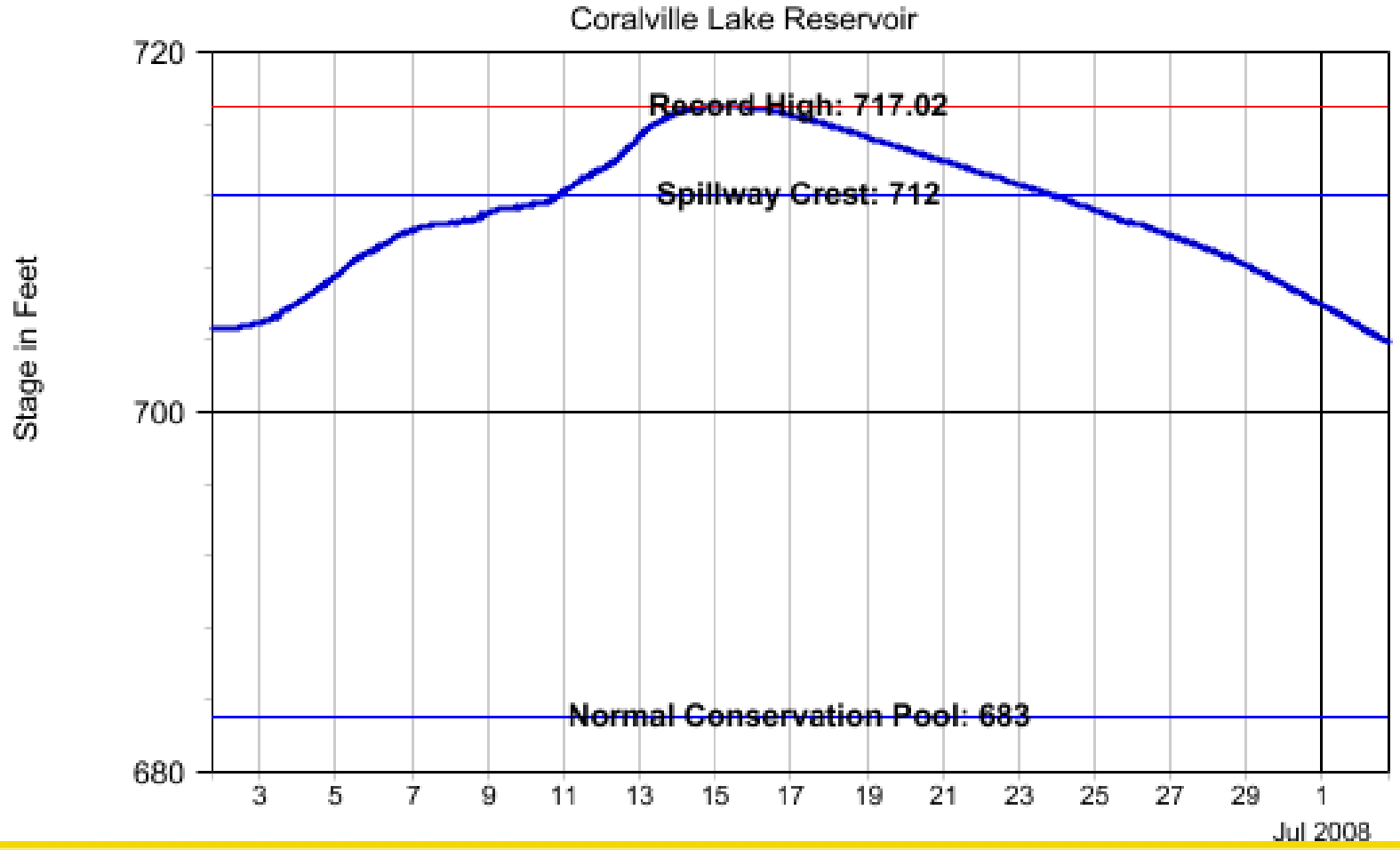
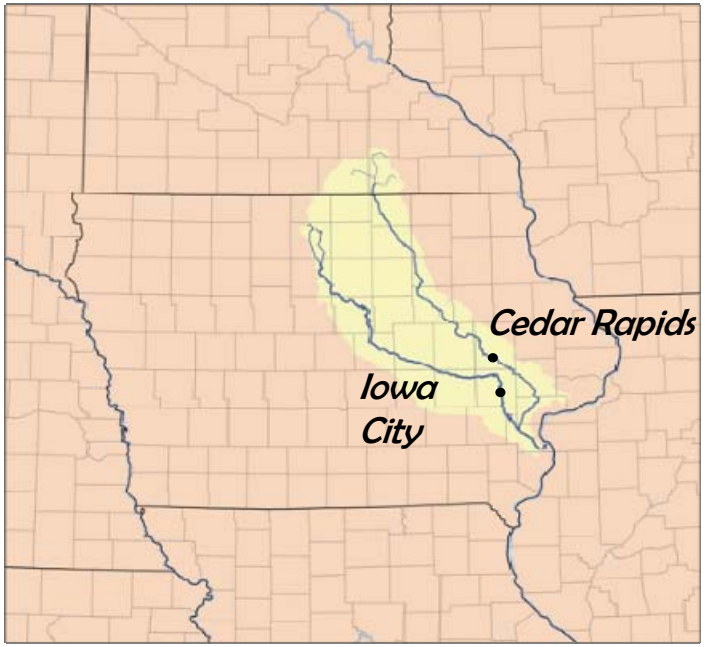


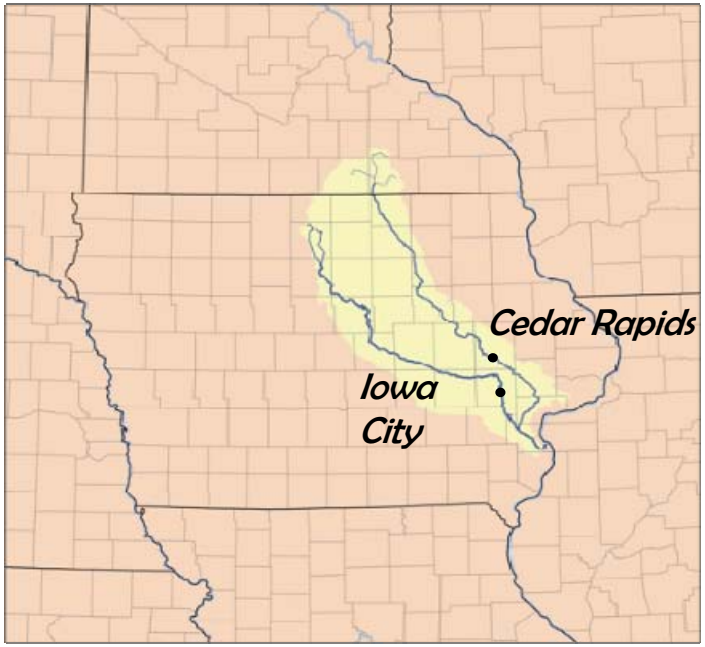
Overflowing of the dam and the flooding of the Iowa River was dramatically impactful, but only part of the story…

A Tale of Two Cities & Two Rivers



A Tale of Two Cities & Two Rivers

Unlike previous floods, this one was affecting surrounding communities and thus impacting the University's efforts



Lesson Learned #1

Broaden the context for emergency planning

Lesson Learned #1

Natural disasters affect communities and greater regions, not just campuses.

Tornados *Derechos* *Hurricanes*
Earthquakes *Fires* *Pandemic Flu*

Outside The Planning Parameters

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How Prepared Were We?

Flood of '93

What is a 100-year Flood

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- Coralville Dam (1958) lowered the 100-year elevation
- Virtually all statistical flood elevations are outdated

The Water is Rising with Time

According to the Iowa Flood Center:

- 500 year = 80 year, 100 year = 25 year, 10 year = 2 year
- Changes are related, over time, to the built environment and climate changes
- A 120-year plot of peak flooding has been steadily climbing over time
- Last ten years a noticeable increase in rain severity for April, May, June, September and October and a decrease for July and August

Out-scaled Previous Disasters

The 500-year Flood of 2008 was of a magnitude not seen with any of the several 100-year floods experienced in the University of Iowa's165 year history.

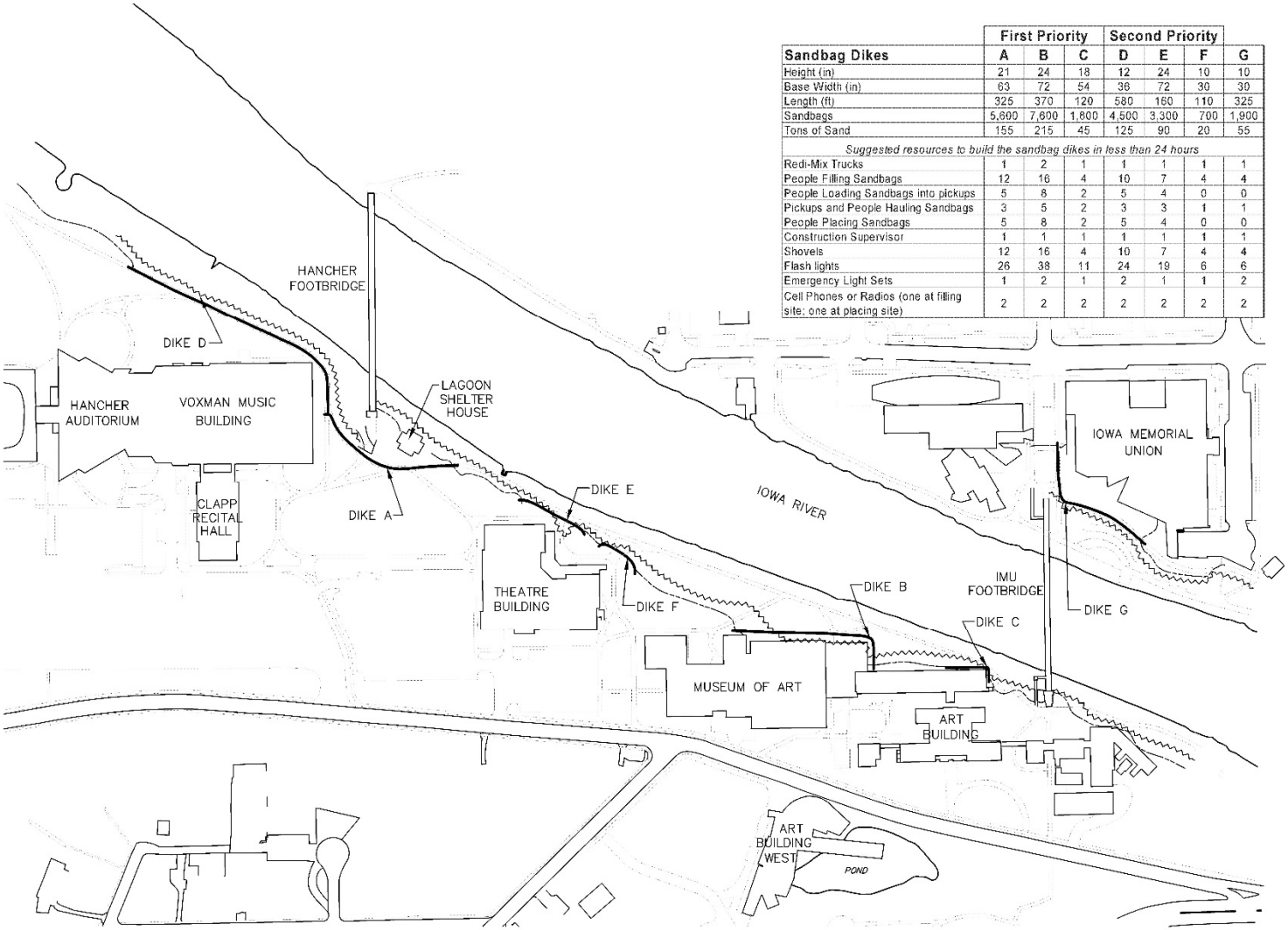
Lesson Learned #2

Plan for your next disaster, not your last one

Flood Emergency Response Plan

The 2006 UI Flood Emergency Response Plan:

- Developed in response to our 1993 flood
- Put in place a structure for responding to a disaster
- Was too narrow in scope and vision
- But served us well throughout the event even when it grew beyond the planning parameters



Sandbag Dikes	First Priority			Second Priority			
	A	B	C	D	E	F	G
Height (in)	21	24	18	12	24	10	10
Base Width (in)	63	72	54	36	72	30	30
Length (ft)	325	370	120	580	160	110	325
Sandbags	5,600	7,600	1,800	4,500	3,300	700	1,900
Tons of Sand	155	215	45	125	90	20	55
Suggested resources to build the sandbag dikes in less than 24 hours							
Redi-Mix Trucks	1	2	1	1	1	1	1
People Filling Sandbags	12	16	4	10	7	4	4
People Loading Sandbags into pickups	5	8	2	5	4	0	0
Pickups and People Hauling Sandbags	3	5	2	3	3	1	1
People Placing Sandbags	5	8	2	5	4	0	0
Construction Supervisor	1	1	1	1	1	1	1
Shovels	12	16	4	10	7	4	4
Flash lights	26	38	11	24	19	6	6
Emergency Light Sets	1	2	1	2	1	1	2
Cell Phones or Radios (one at filling site; one at placing site)	2	2	2	2	2	2	2

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CEDAR RAPIDS, IOWA 52404
(319) 841-5188

12-22-06

NORTH

LEGEND

- APPROXIMATE 100 YEAR FLOOD BOUNDARY
- GROUND APPROXIMATELY 1 FOOT ABOVE 100 YEAR FLOOD BOUNDARY
- SITES TO SANDBAG

SCALE: 1"=200'

FIGURE VIII-8.
ARTS CAMPUS
& IOWA MEMORIAL
UNION
SANDBAGGING

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Mission Accomplished?

The Flood Emergency Response Plan was a resounding success in protecting the University against another 1993 type 100-year flood

Mission Accomplished?

Mission Accomplished?

Ever Increasing Threats

Lesson Learned #3

Mother nature always wins

The Final Storm

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Mus um of Art

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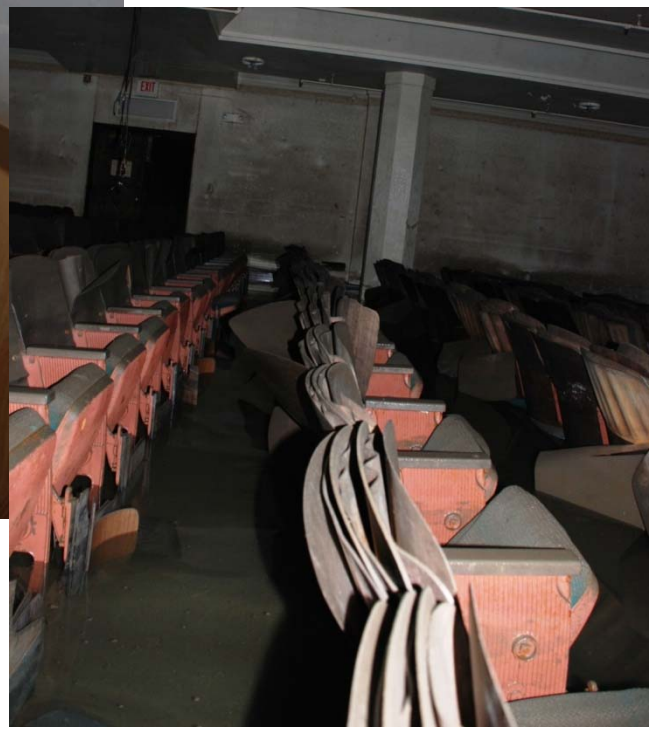
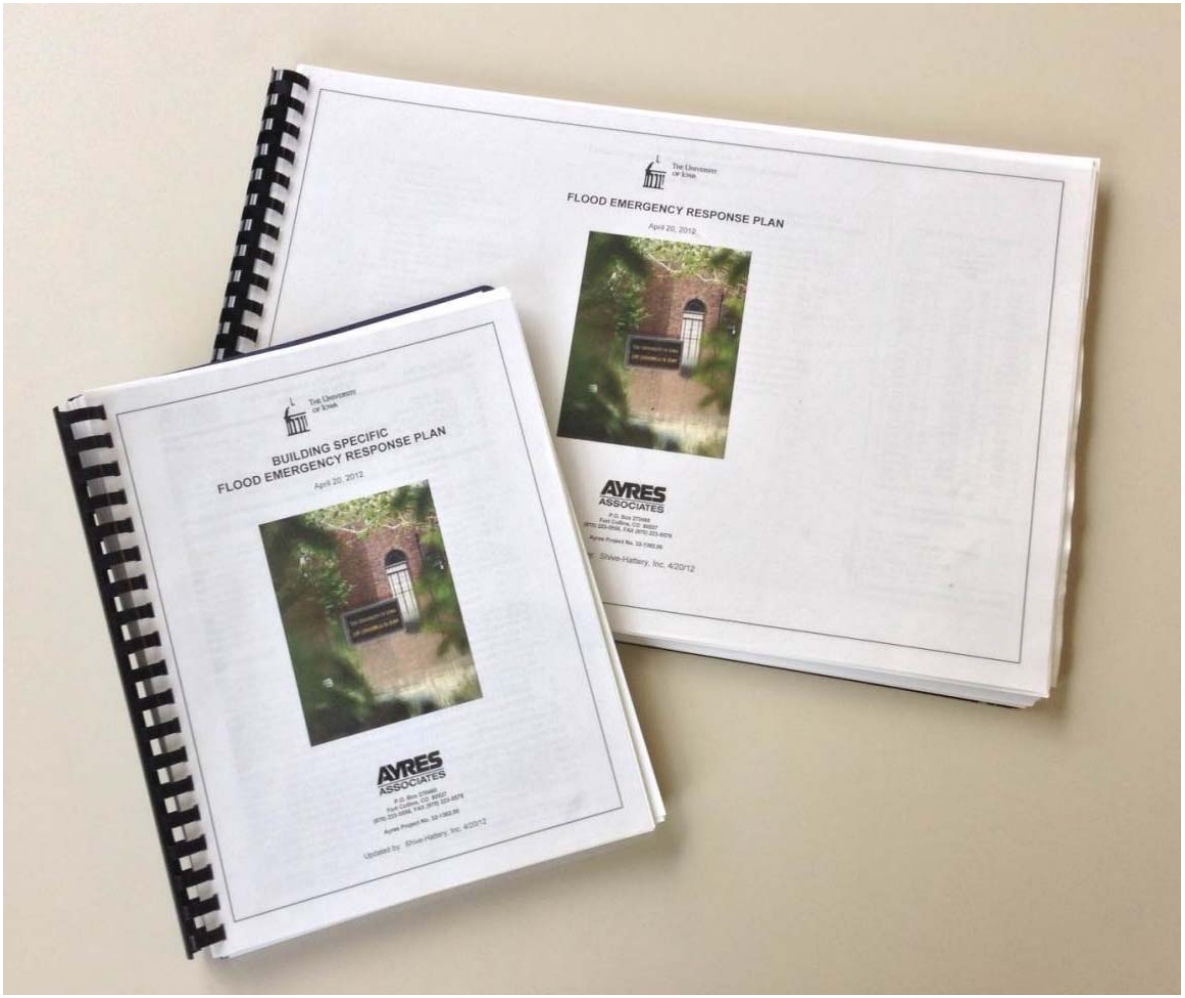


The Final Storm

Lesson Learned #4

Be prepared



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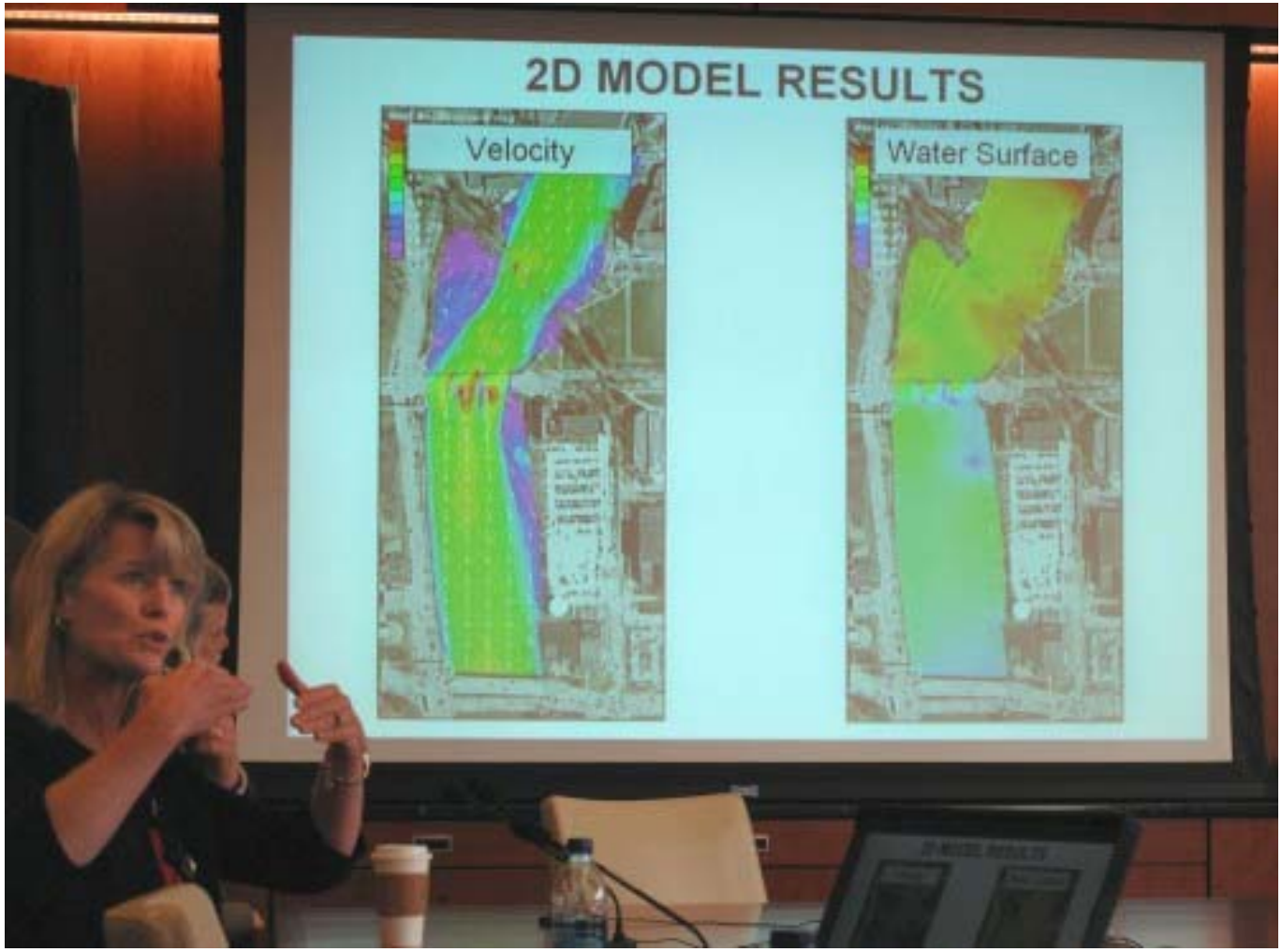
2D MODEL RESULTS
Velocity
Water Surface


Emergency


PARKING
AREA
CLOSED


CAT

NIMS

National Incident Management System

NIMS

Consistent nationwide approach to work effectively and efficiently together to prepare for, respond to, and recover from domestic incidents, regardless of the cause, size, or complexity.

A component of NIMS is the Incident Command System (ICS).

Incident Command System

- *Organizes field-level operations*
- *Manages resources during incidents*
- *Applicable to small, large and complex incidents*
- *Defines an organization structure and key roles*

ICS Key Roles

- *Incident Commander*
- *Planning Section Chief*
- *Operations Section Chief*
- *Financial Section Chief*
- *Safety Officer*
- *Liaison Officer*
- *Information Officer*

Lesson Learned #5

Contribute to the Solution

SIGNATORY OF
AMERICAN COLLEGE & UNIVERSITY
PRESIDENTS' CLIMATE COMMITMENT

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2020 Vision for Sustainability

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2020 Vision for Sustainability

1. Achieve Net-negative Energy Growth
2. Green Our Energy Portfolio up to 40%
3. Reduce the Carbon Impact of Transportation by 10%
4. Decrease Our Production of Waste by 60%
5. Increase Student Opportunities to Learn and Practice Principles of Sustainability
6. Support and Grow Interdisciplinary Research in Sustainability-focused and Related Areas
7. Develop Partnerships to Advance Collaborative Initiatives, both Academic and Operational

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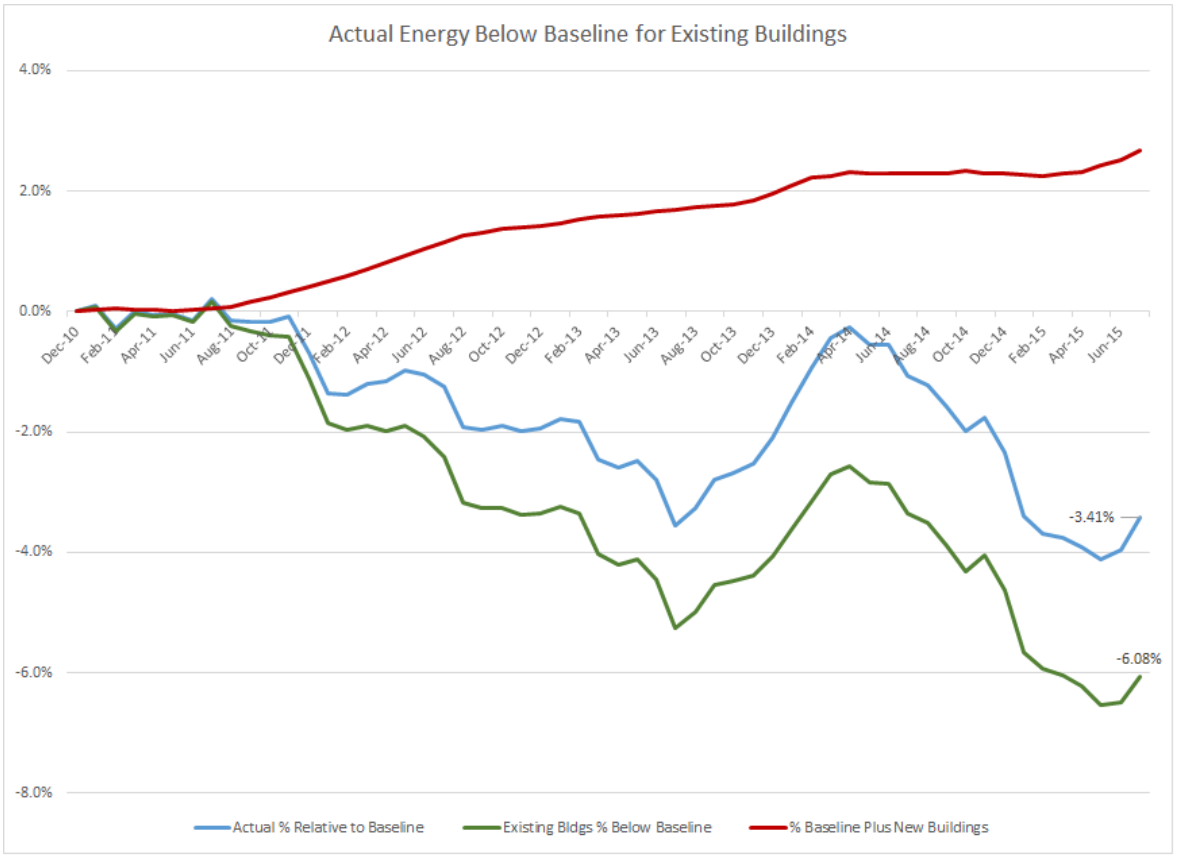
Net Negative Energy Growth

The 2007 Energy Conservation Plan Provided Strategy for:

- Sustainable Design & Total Cost of Ownership Framework
- Commissioning & Recommissioning
- Energy Conservation Projects
- Energy Conservation Funding
- Reinvestment of Savings and Utilities Rebates
- Creation of the Energy Control Center
- Organizational Capacity
- Outreach & Education

Net Negative Energy Growth



Renewable Energy

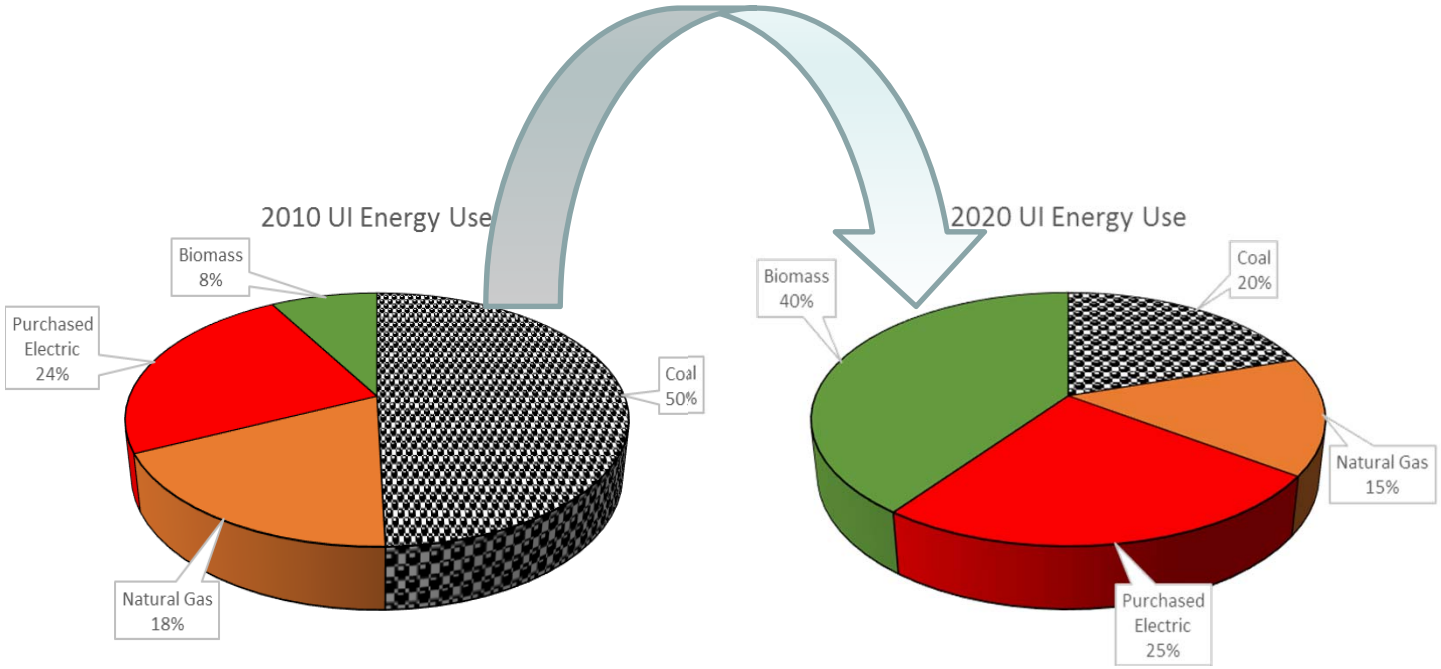
Reduce our Carbon Footprint

Manage Costs and Avoid Future Price Increases

Stay ahead of Coal Market Developments

Diversify our Fuel Portfolio

Renewable Energy



Biomass Fuel Portfolio

Industrial byproducts:

Current: oat hulls

Future: cardboard recycling sludge, scrap from furniture making

Wood chips:

Current: pallet remanufacture

Future: opportunity wood, short rotation woody crops

Energy grasses:

Current: Miscanthus

Future: prairie and switchgrass

Oat Hulls

- UI has been burning oat hulls for energy since 2003
- Sourced from Quaker Oats in Cedar Rapids, IA
- Expected to contribute 10%

Wood Chips

- Co-Fired with coal in solid fuel boilers
- Expected to contribute 10%
- Increasing supply projected

Miscanthus

- Creating an energy crop
- Targeted as 10% energy source
- Partnership with Iowa State University
- Garnering increasing farmer interest
- *Planting 350 acres in 2015*
- *2500 total acres over next three years*

Risk & Responsibilities

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- Plan for your next disaster, not your last one
- Mother Nature always wins
- Be prepared
- Contribute to the solution

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