Learning from the Floods of 2008: Practical Strategies for Resilience

LESSONS

◆ Recent history is inadequate to assess risk ◆ We need more infiltration from our landscapes; perennials and high organic matter soils WORK ◆ Existing conservation stewardship, at its best, was insufficient in some cases ◆Control at the source (targeting point of initial water/soil contact) is the cheapest and most effective action ◆ Systems planning is needed (right practice at right place at right time, and a suite of practices) ◆ Keep development out of flood plains

ACTIONS

◆ Work across political boundaries and within watersheds ◆ Restore the natural functions of soil to hold and infiltrate water ◆ Respect flood plain boundaries ◆ Minimize the amount of bare soil and hard-surfaced ground ◆ Take advantage of existing mitigation programs ◆ Use long-term leases, conservation easements to ensure adoption and maintenance of practices

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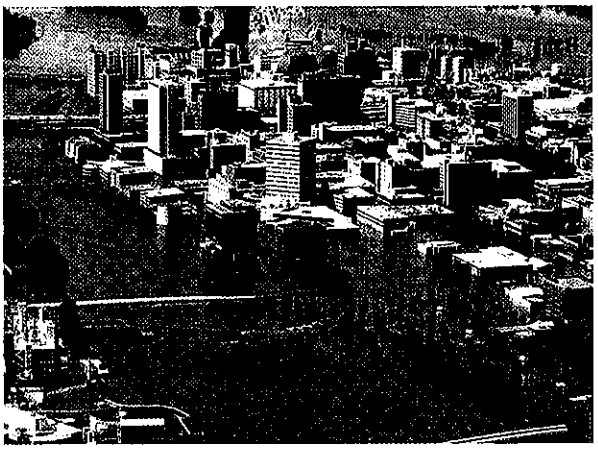
Workshop web site:
www.flood.leopold.iastate.edu



Other strategies discussed at the December 2008 workshop, *Learning from the Floods of 2008*

- Explore new roles for organizing watershed actions: drainage districts revival, watershed authorities, tax millage authority, state hydrologist.

- Educate: take advantage of non-profit partners' expertise and knowledge to facilitate conservation education and easement implementation. Improve communications and education about flood issues, water and soil quality, land use relationships to water flow, watersheds, and safety and health.

- Create a dedicated funding source to implement recommendations of the Rebuild Iowa Advisory Commission (details available on request).

- Reward comprehensive on-farm conservation planning (suite of practices; systems approach). Provide incentives, mid-contract and long-term management support (to buffer multi-year profitability risk and bridge ownership changes) for all conservation practices and structures.

- Invest in research:
  - on cover crops, living mulch, perennial biofuels, grazing systems;
  - for new floodway mapping and to anticipate and predict results of climate and hydrological events;
  - to adapt models that move us away from planning around political boundaries; and
  - to develop 'systems measures' of effectiveness, such as hydrologic footprints and/or soil quality.

- Prioritize existing practices that work to reduce raindrop impact, increase infiltration and improve soil quality, such as permeable paving, grassed waterways, well-managed grazing, and permanent perennial easements.

- Implement and evaluate regional watershed planning models, and encourage the crossing of jurisdictional and political boundaries to improve planning and increase interagency cooperation – work outside 'mission areas' to think systematically about a more secure future.

- Encourage 'proactive' not 'reactive' actions in planning and investments.

Proactive planning strategies

- Engage existing reliable consulting engineering firms and take advantage of winSLAMM and other robust stormwater and low-impact development planning tools to rethink our 'built world' designs (incorporating impact of upstream best management practices on downstream, especially in urban areas; and linking upstream/downsteam in planning and decision making).
- Exploit useful elements in many existing federal programs to assist in future prioritizing for funds and locations; for example, AmeriCorps, PL566, and 1993 Emergency Watershed Protection applications.
- Identify stream-anchored 'conservation areas' (that will accommodate stream meanders, infiltration, and reduced flow rates) by using the science of history, flow and soil characteristics.
- Shorten turnaround times for testing of water quality and sedimentation and prepare guidelines for future preparedness.
- Buyout floodway structures, educate or require training about building for flood proofing, require elevation changes for existing buildings, renew focus on small business protection and insurance rates.

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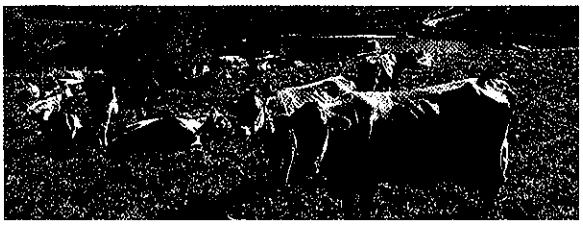
The Leopold Center supports on-the-ground research in land use and water management, working with all Iowans to protect our most valuable resources.

Land – current projects

Bear Creek riparian buffers
"Quantifying the Effect of Perennial Vegetation on Soil and Water Quality"

Cover crops
"Screening Winter Triticale Cultivars and Breeding Lines for Forage and Biomass Production"
"Enhancing Winter Cover with Alternate Cropping Systems in Iowa"
"Optimizing Legume Establishment in Winter Small Grains"
Midwest Cover Crops Working Group

Perennial strips in crop fields
"Variations in Water & Nutrient Cycling and Soil Properties during Agricultural Landscape Restoration"



Managed grazing
"Grazing Prairie: Improving Species Diversity while Maintaining Cattle and Goat Productivity and Resting Home Pastures"
"The Landowners' Decision: Grazing and Fire as a Management Tool on Iowa Grasslands"
"Site Specific Implementation of Practices that Alter the Spatial/temporal Distribution of Grazing Cattle to Improve Water Quality of Pasture Streams in the Rathbun Lake Watershed"

Alternative biomass systems
"Agronomic, Environmental and Economic Performance of Alternative Biomass Cropping Systems"

People – current projects

Grass-Based Livestock Working Group

This Leopold Center-ISU Extension collaborative effort will strengthen Iowa's grass-based livestock industry from pasture to plate.

"Greenhorn Grazing: A Modular Pasture and Animal Management Curriculum for Beginning and Transitioning Graziers"

Custom grazing contracts

"Custom Grazing Contracts: Successful Models to Grow Profit, Avoid Pitfalls"

Conservation messages for absentee landowners

"Iowa Recreational Property Ownership: Identification, Contact and Social Dynamics of Multiple Use Perennial Landcover"

Iowa Learning Farm

The Leopold Center, Conservation Districts of Iowa, Iowa Department of Agriculture and Land Stewardship, Iowa State University Extension, Iowa Department of Natural Resources and the USDA's Natural Resources Conservation Service are supporting this five-year conservation education and research project to improve Iowa's water quality through increased use of conservation systems among Iowans who operate midsize to large farms.

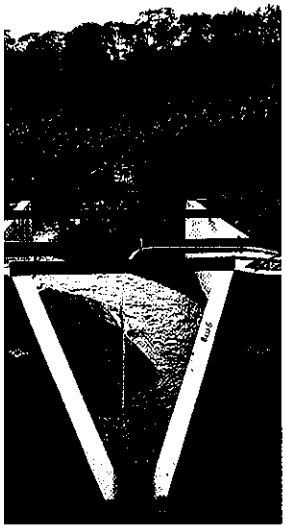
Water – current projects

Water use by perennial plants

"Soil Moisture Dynamics and Plant Transpiration under Contrasting Annual-Perennial Cover Types"

Urban rain gardens

"Reduced Stormwater Runoff via Increased Use of Rain Gardens"



On-farm grassed waterway demonstration

"Improving Water Quality through the Management of Grassed Waterways"

Boone River Watershed monitoring

This subwatershed water quality monitoring study uses a paired micro-watershed design" [the Leopold Center is a partner with the Iowa Soybean Association in "A Cooperative Conservation Framework for Improving Watershed Health"]

Tile drainage water quality

"Drainage Water Quality Impacts of Agricultural Management Practices"
"Bioreactors for N-management: Evaluating Denitrifying Bioreactors for Edge-of-Field Nitrogen Management in Iowa's Tile-Drained Landscapes"

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