Rainscaping Iowa
Landscapes for clean water

IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP

Funding Urban Conservation

IDALS Urban Conservation Program



IDALS's Urban Conservationists

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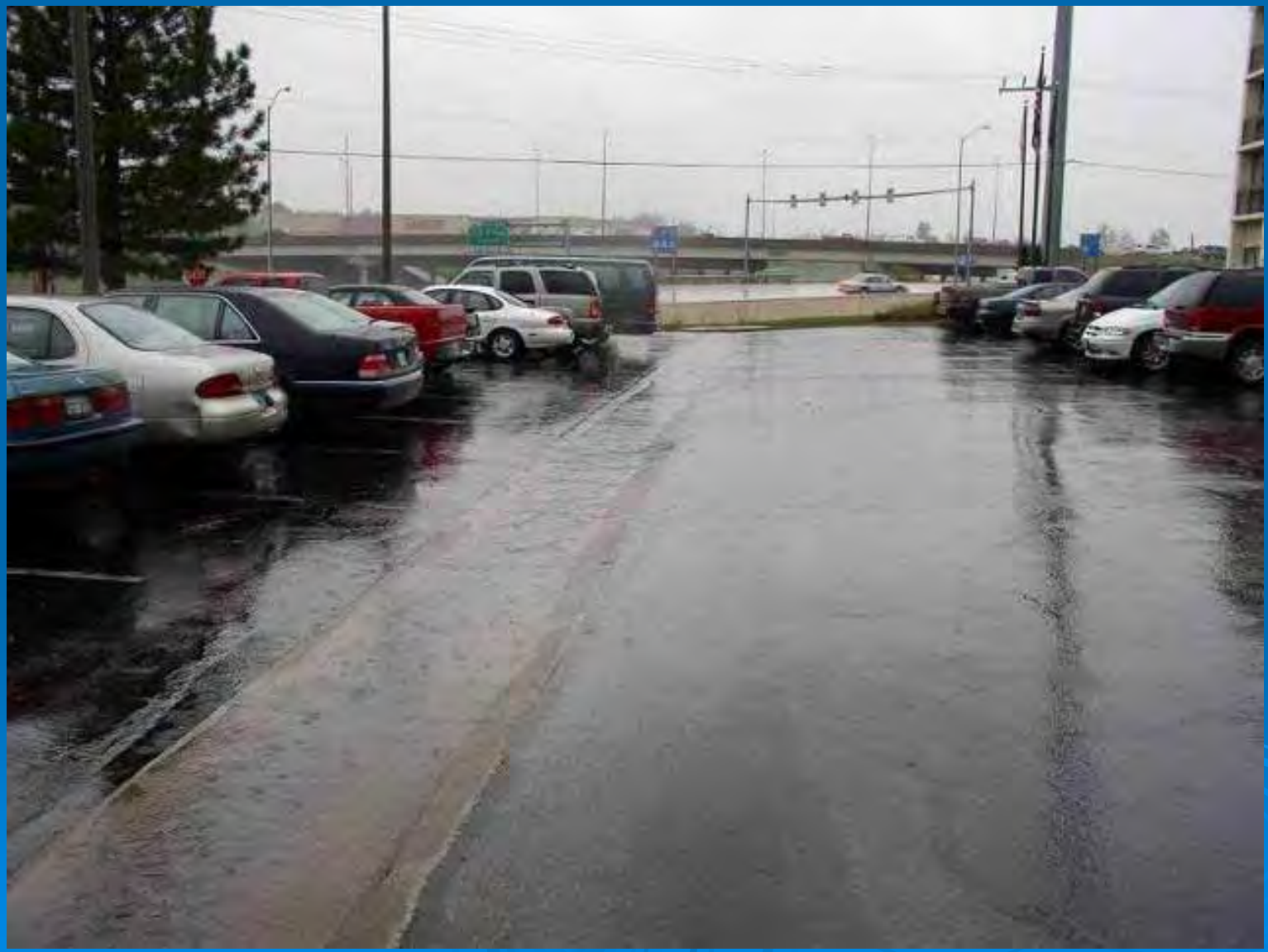
Water as a nuisance / waste product




Collect
Concentrate
Convey


To Storm Drain


Storm Drain
Gunk*
Piped directly to stream or lake
* Gunk= sediment, nutrients, bacteria, organic matter, oil, heavy metals, etc.

Storm drain systems collect runoff

Storm water flows untreated into streams, rivers, lakes

Visible pollutant plume

Photos by David Thorson

Contaminants in Stormwater Runoff

- Sediment from construction sites
- Pesticides & nutrients from lawns, etc
- Bacteria from pet wastes
- Oil & grease from car leaks, gas stations, and industrial areas
- Sand and salt from snow and ice control
- Trash such as cigarette butts, paper wrappers, bottles

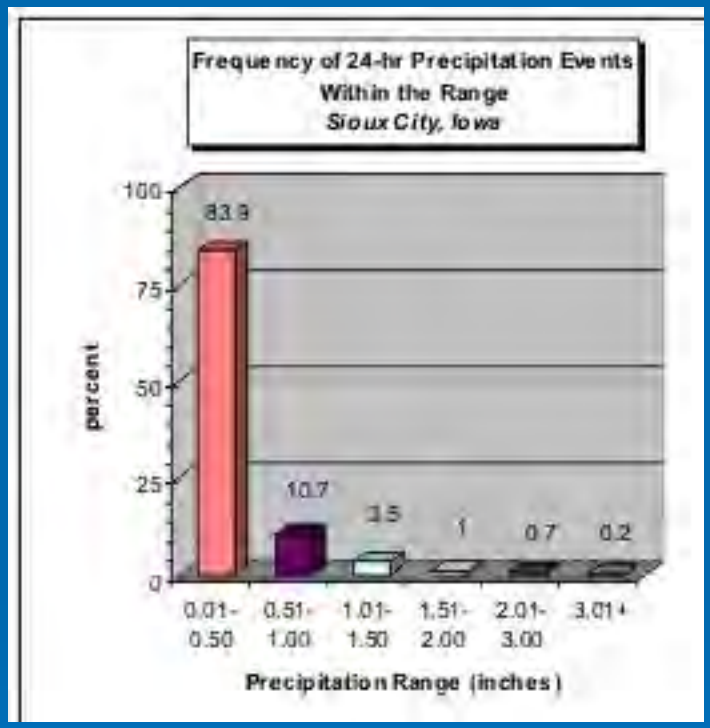
INTENSITY OF LAND USE

POTENTIAL WATER QUANTITY & QUALITY PROBLEMS

AMOUNT OF IMPERVIOUS SURFACE

Rainfall Patterns and Water Quality

- The ‘first flush’ of rainfall moves pollutant loads to surface waters
- Use practices that retain water from the small storms water on-site
- Strategies include:
  - soil quality enhancement
  - reducing soil compaction
  - bioretention cells



84% of storms <0.5 inch

94% of storms < 1 inch

Rainscaping Practices

- Rain gardens
- Bioretention Cells
- Bioswales
- Soil Quality Restoration
- Native Landscaping
- Native Turf
- Roadside Native Plantings
- Green Roofs
- Permeable Pavement Systems
- Rainwater Harvesting
- Stream Corridor Stabilization
- Vegetated Filter Boxes

How are these being funded in Iowa?

State Revolving Fund

SRF is Iowa's primary source of financing for water quality and water supply projects

SRF STATE REVOLVING FUND

INVESTING IN IOWA'S WATER
www.iowasrf.com

Urban Water Quality Initiative

- 36 applications received
- $3.1 million in funding requests
- 10 selected to prepare full proposal
- 9 of 10 applications selected were from priority watersheds
- Urban water quality demonstrations to be built throughout Iowa

REAP Funds

- Every SWCD has access to REAP funds
- Initial allocation approx $10,000
- Urban conservation is eligible for use
  - practice by practice basis
- Intended for private landowners
- Units of government not eligible
- Best suited for smaller scale projects


STOP
CAT


CAT

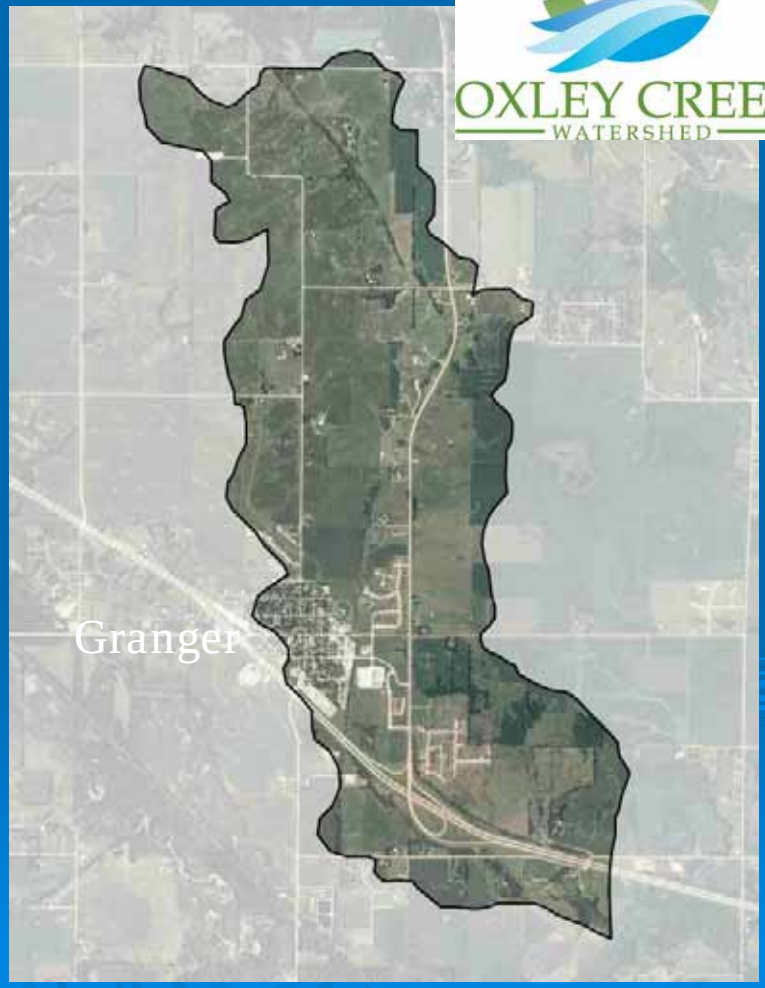

STOP

Watershed Planning Grants

- Small grants from IDALS used for WS assessment and development of an implementation project
  - WS assessment usually involves:
    - Determining land uses
    - Stream corridor assessment
    - Critical area evaluation
    - Monitoring to establish baseline data
    - Outreach activities
    - Determine solutions to address water quality problems
- Develop and submit a grant applications to fund implementation of a watershed protection projects

Oxley Creek Planning and Development Project

- Watershed Description:
  - 2,773 acres
  - 1.5 miles wide
  - 4 miles long
  - Empties into Beaver Creek
  - Mix of Ag and Urban
- Impairments/Concerns
  - Flashy stream flows
  - Indicator bacteria
  - Erosion
  - Rapid growth
- Outcome
  - WPF/WSPF Proposal written
  - SRF Sponsored Project $
  - WQI submitted



Oxley Creek Watershed Improvements

Permeable pavers

Aerial photo of project site

Bioswale

Rain garden

Newly constructed bioswale

Stream buffer with trail

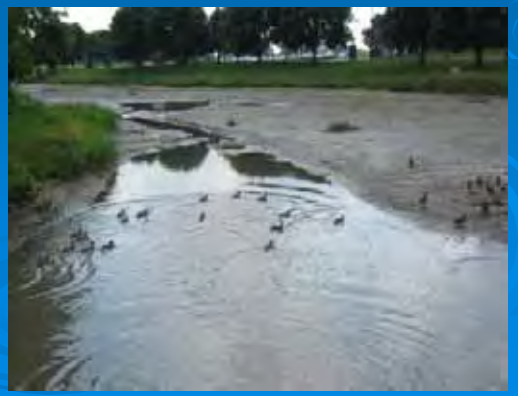
Stream with floodplain and natives

Native landscaping

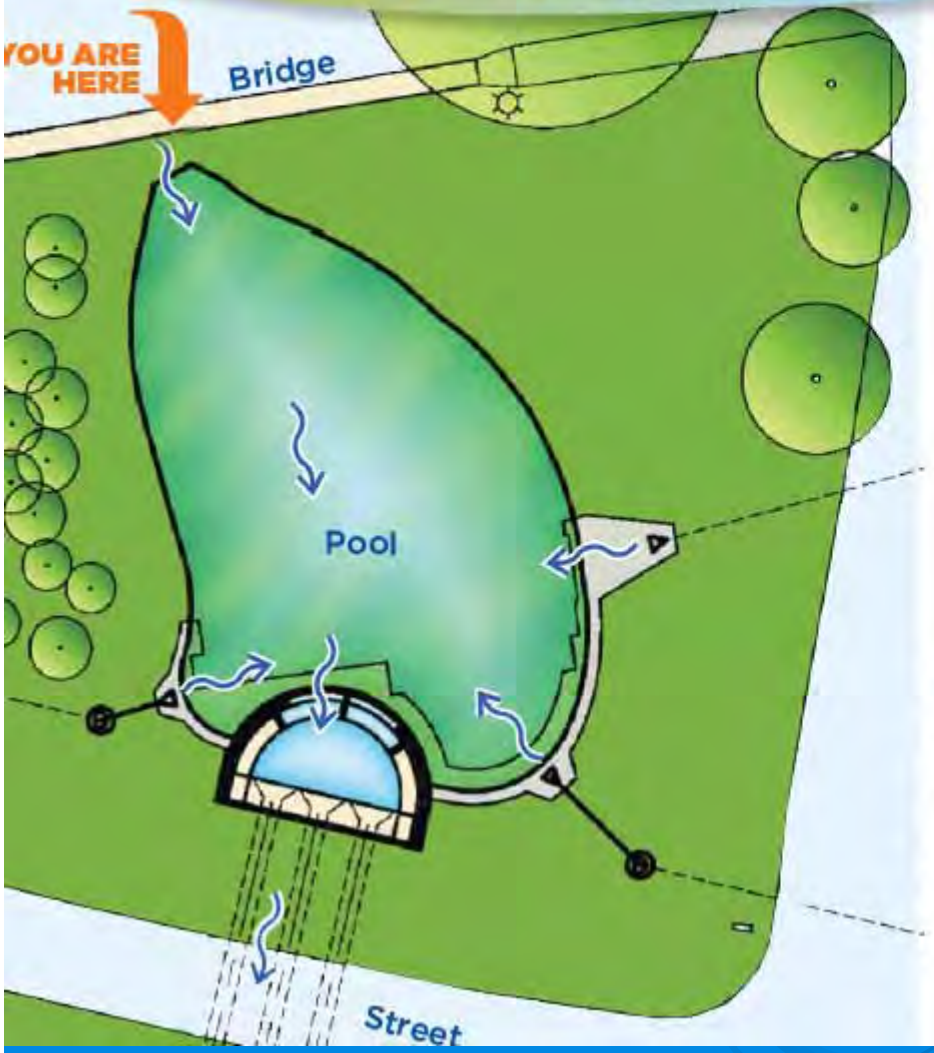

Bioswale with Native Vegetation
for School Learning Site
LINDEN ST
ELM ST
STATE ST
PARK AVE
VISTA VIEW DR

Ankeny DMACC Watershed Project – WIRB funded

- Retrofitted campus to protect water quality in DMACC lake
- $1.7 million stormwater improvements
- Dredging-- $500,000

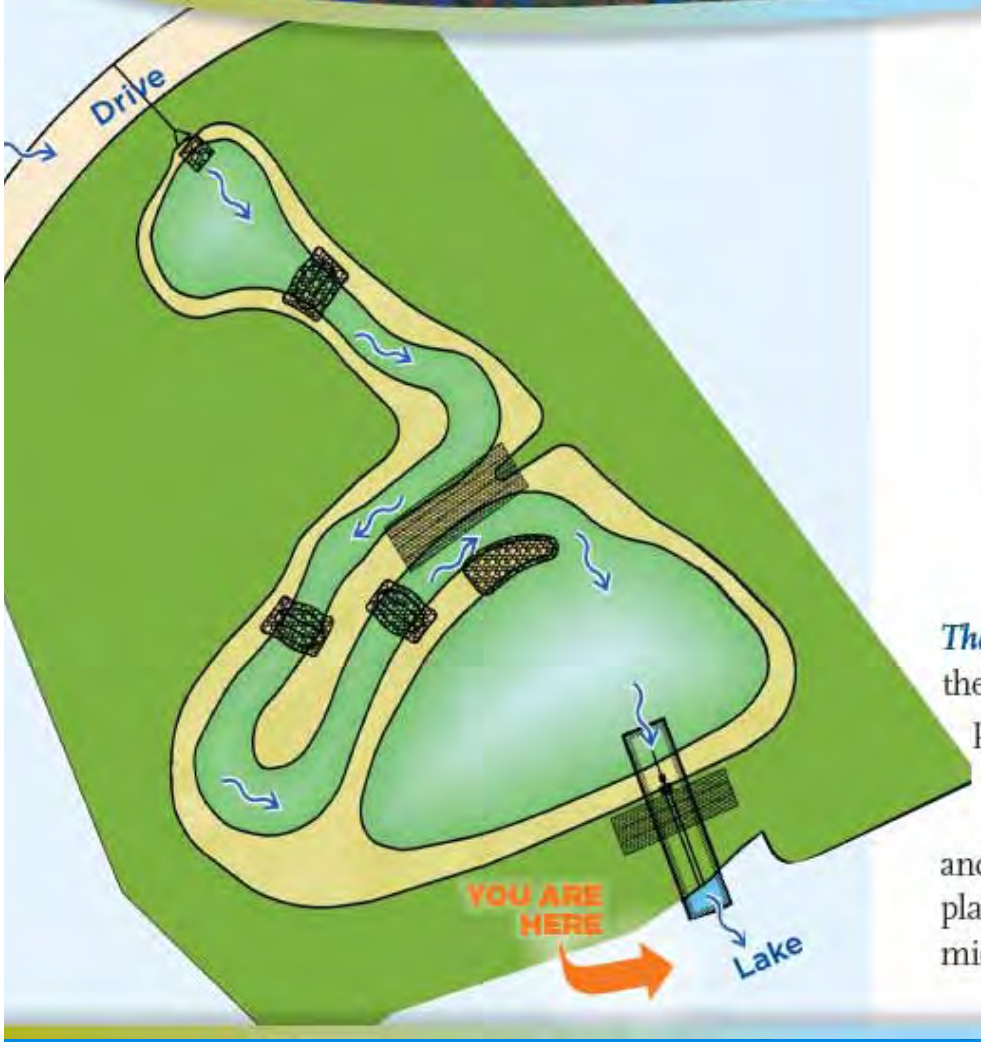


Forebay



The forebay was constructed to provide a place for sediment to dro water coming from the stream. The concrete wall slows the flowi and gives some sediment time to settle to the bottom. When soils sediment accumulate in the forebay, they can be periodically rem concrete mat lines the pool area, making it easier to clean the fore excavating equipment. Capturing these sediments in an area that cleaned out protects the lake depths and water quality.

Wetlands



The wetlands intercept surface water runoff from parking areas to the north. The runoff water can contain sand, soil and automobile pollutants picked up from the parking lot. These contaminants can diminish the water quality of the lake and downstream waters.

The swale, meandering through the wetlands, slows runoff water and allows sediments and pollutants to settle out. Native Iowa wetland plants trap and use the nutrients brought into the wetlands while microorganisims in the soil break down many pollutants.

Creek Improvement

Creek improvements were installed to stabilize slopes and reduce e that was causing sedimentation in DMACC lake. These improver include sloped grading, armoring, riffle dams and native planting Previously, stormwater runoff from upstream areas scoured the b the creek and washed soil into the water. A more stable stream ch was created by reducing both the grade of the creek and slope of t Native plants help hold soil on the banks while concrete and ston the toe of the slope.


ARNOLDS PARK
THE LEGEND RETURNS!
ARNOLDS PARK
ARNOLDS PARK


STOP

Easter Lake Watershed Project

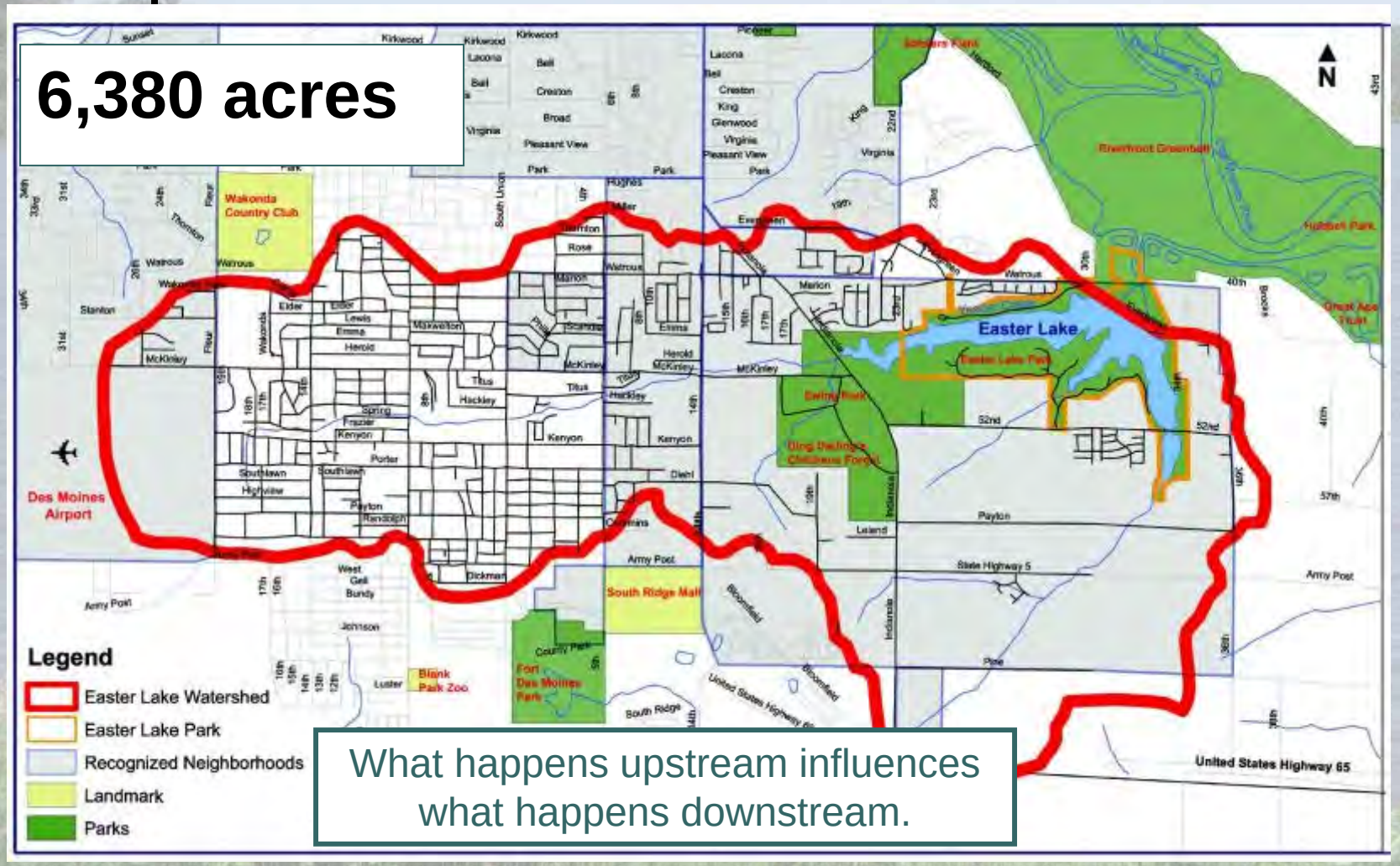
Project Partners:

City of Des Moines
Iowa Department of Agriculture and Land Stewardship
Iowa Department of Natural Resources
Iowa State University
Local Stakeholders
Natural Resources Conservation Service
Polk County Conservation
Polk Soil & Water Conservation District

Resource History

- Easter Lake was the site of the last operating coal mine in Polk County, closed in 1959
- Area was considered for use as a landfill site
- Opposing the creation of a landfill neighborhood volunteers joined together to form the South Town Lake & Development Society
- Lobbied for area to be turned into a park
- Lake built in 1967, park opened in 1969

Easter Lake Watershed



Problem

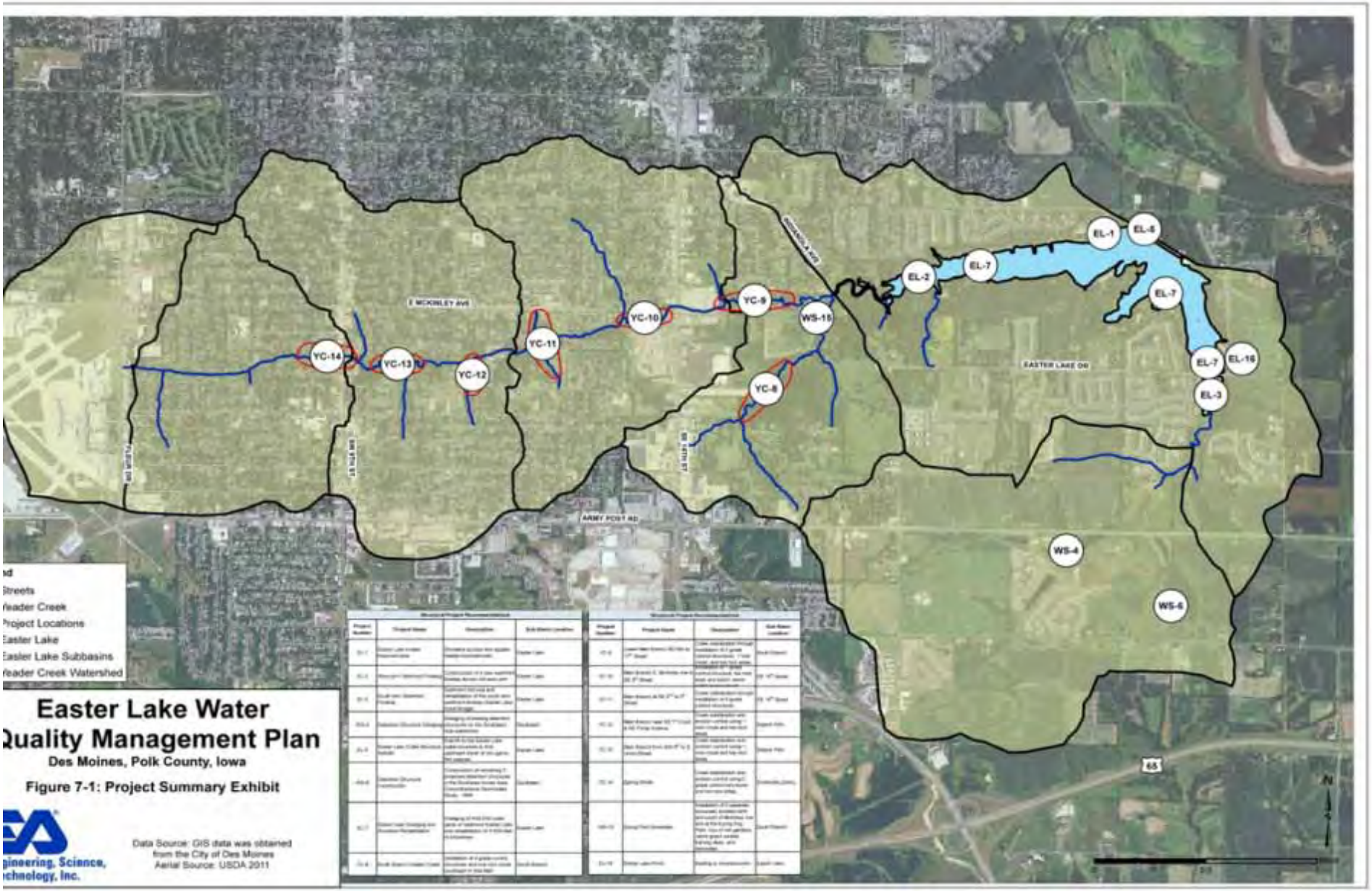
- Water quality is poor
  - Significant sedimentation
  - High phosphorous levels
  - Undesirable fish species (carp, shad)
  - High bacteria levels
  - High TSS from stormwater runoff

ISU Diagnostic & Feasibility Study 2011

Funding Sources

- **Polk SWCD**
  - Project Coordinators, Urban Conservationist, Commissioner involvement
- **DNR 319**
  - Salary, education/outreach, supplies, training, cost share, in-lake & in-stream
- **Polk County Conservation**
  - Cost share, In-lake work, trail, woodland restoration
- **City of Des Moines**
  - Cost share, in-stream structures, woodland restoration, bioswales
- **IDALS (WSPF & WPF)**
  - Cost share, travel/training, supplies, secretarial
- **DNR Lakes Restoration**
  - In-lake work, salary (at the beginning of the project)
- **NRCS**
  - Yeader Creek assessment, vehicles, computer, office space
- **Iowa State University**
  - Watershed assessment, and Diagnostic Feasibility Study

Structural Improvements




Easter Lake Invasive Management Zones
19
Priority Areas
0
1
2
3
4
Feet

Easter Lake Trail

- 6 mile trail around Easter Lake that will connect to existing trail system
- 12ft wide
- 3 Phase Implementation Plan
- Phase 2 complete spring 2015
- Better connect visitors to the lake

Rainscaping Practices (up to 75% cost share)


Soil Quality Restoration


Tyvek
Tyvek
Tyvek
Tyvek
Tyvek
Tyvek
Tyvek
Tyvek
Tyvek


43,443 gallons per year of stormwater will be treated on this lawn


One Year Later

Rain Gardens

- Capture Roof water and infiltrates into grounds
- Can help keep water out of wet spots in yards
- Can keep water out of basements if built at a proper distance from foundations

Permeable Paving


CAT
259B


Jackson

Rain Barrel Rebate Program

Couple things to think about

- Check with local Cities to see if there are any cost share programs.
- Be sure to regularly check with your IDALS – DSC Field Rep for funds
- Cost share dollars used for urban practices are also taxable.

Easter Lake Watershed Project

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www.easterlake.org

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Rainscaping
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