WALNUT CREEK WATERSHED ASSESSMENT

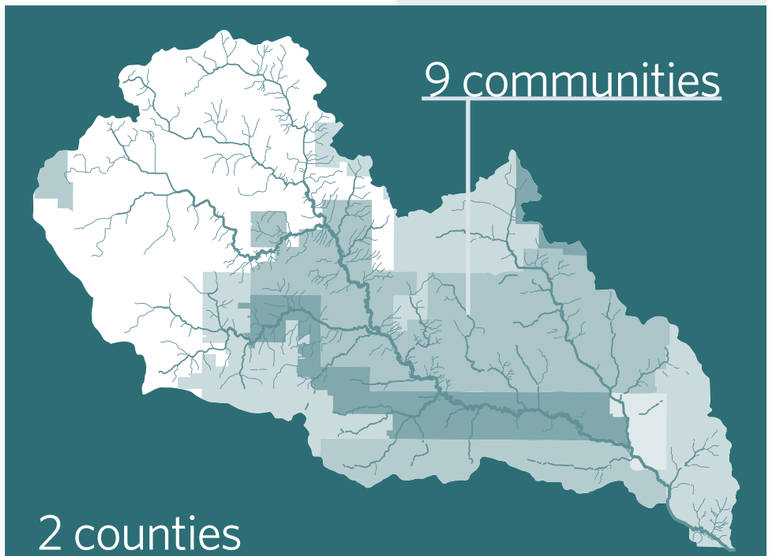
ISSUED JUNE 2016

For more information, view the complete master plan at www.walnutcreekwatershed.org

About the Watershed

53,000 acres
(83 square miles)

43% urban



430 acres/yr converting from urban to rural

Restoring healthy soils within open spaces after development could reduce runoff by **50%** or more during small storms (where applied)

Vision

Engaged residents working across political/property boundaries to create and sustain a healthy watershed.

Mission

Through collaboration, education and research, implement science-based policies and practices for:

1) Flood mitigation
2) Water quality improvements
3) Natural resources protection and
4) Improved recreation

while maintaining economic health.

Storms less than 2.5" make up 98% of Central Iowa's precipitation

During a 1-year storm (2.67" of rain), runoff rates in small urban streams may exceed levels caused by a 100-year storm (7.12" of rain) under natural conditions (prairie)

Case Studies

Rural

6.5 square miles

80% row crop farmland

Recommend reduction of: Nitrates by 41%, Phosphorus by 29%

Urban

4.5 square miles

Average *e.coli* bacteria monitored at levels **13x - 39x** the state of Iowa's water quality standard

0.1% of the watershed consists of construction sites contributing as much as **25%** of the sediment load

Challenges

Unstable Streams Dominate Watershed:

37% streamflow increase (since 1982)

57% of all field assessed streams have moderate or severe erosion

Upstream (Rural)
Higher Nitrogen and Phosphorus

Downstream (Urban)
Higher Bacteria and Construction Site Sediment

Landscape Change:

- Fast-moving Water
- Flood Zones Expanding
- Eroding Streams

ONLY **1%** of urban streams are "stable"

Lack of Topsoil Re-spread Increases:

80% small storm run-off

30% large storm run-off

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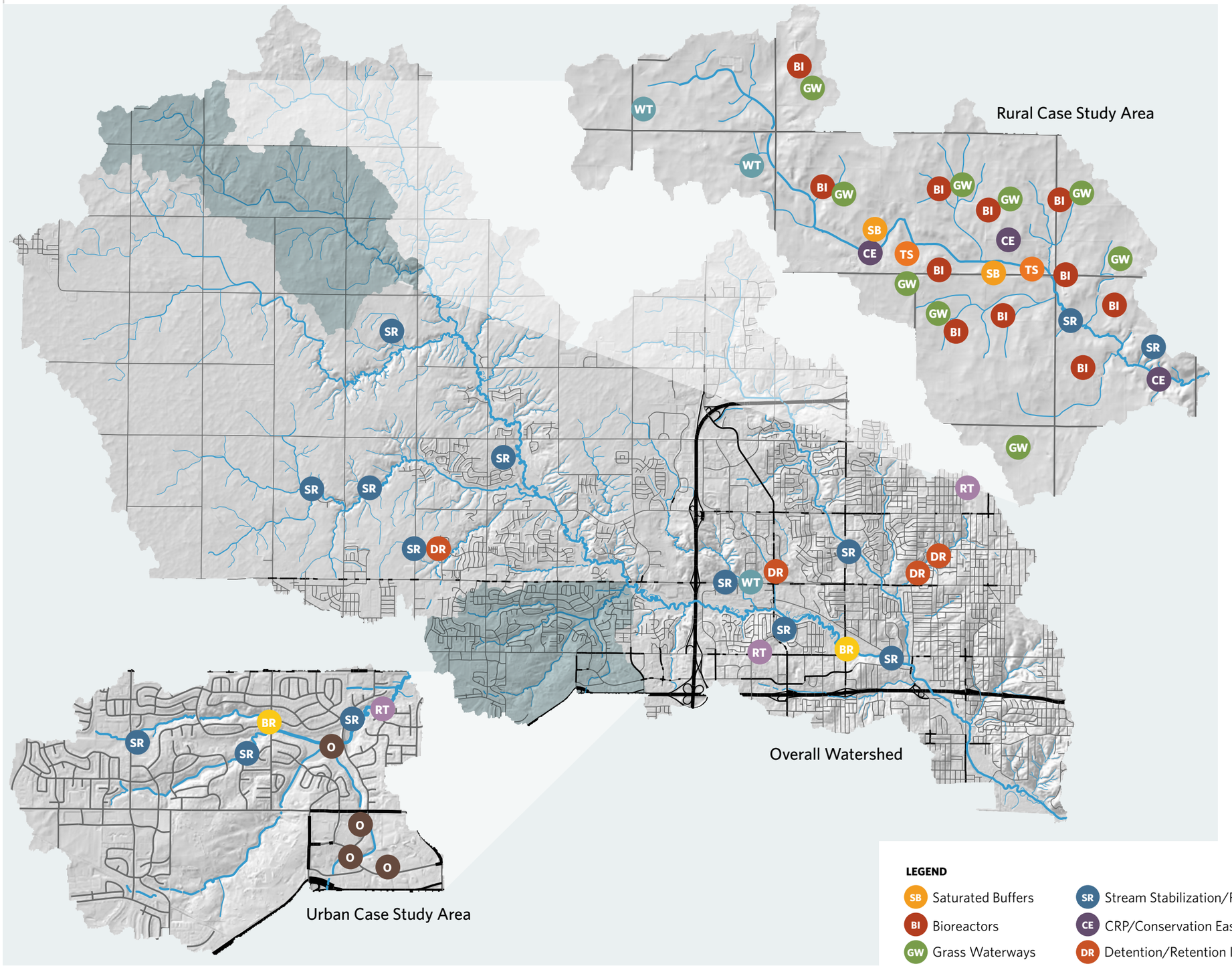
ACTIONS



Rural Top Tier Recommendations

- Use Best Management Practices (BMPs) in the Nutrient Reduction Strategy
- Target use of those BMPs for best impact
- Use precision business planning to identify farmland that is not profitable
- Grow funding and technical assistance
- Protect the five-year flood plain with buffers
- Link rural partners to research and demonstration
- Expand access to information and field monitoring
- Increase transparency of monitoring, practices and funding

Urban Top Tier Recommendations

- Use criteria in the Iowa Stormwater Management Manual to reduce the impacts of storms
- Buffer streams
- Improve implementation and enforcement of Stormwater Pollution Prevention Plans
- Use local ordinances to restore healthy soils
- Protect 100-year flood plain:
  - No new structures in developing areas
  - Maintain flood storage capacity
  - Reserve open space where flooding or stream movement is expected
  - Set new structures 3-feet above the 100-year flood plain high water elevations

LEGEND

- SB Saturated Buffers
- BI Bioreactors
- GW Grass Waterways
- SR Stream Stabilization/Restoration
- CE CRP/Conservation Easements
- DR Detention/Retention Improvements
- WT Wetlands
- TS Two-Stage Ditch
- RT Site Retrofits
- BR Bioretention Features
- O Outlet Modifications