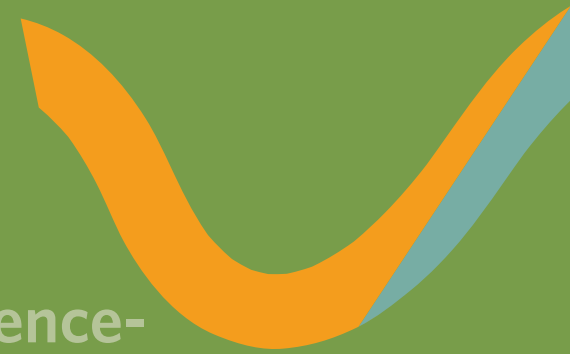
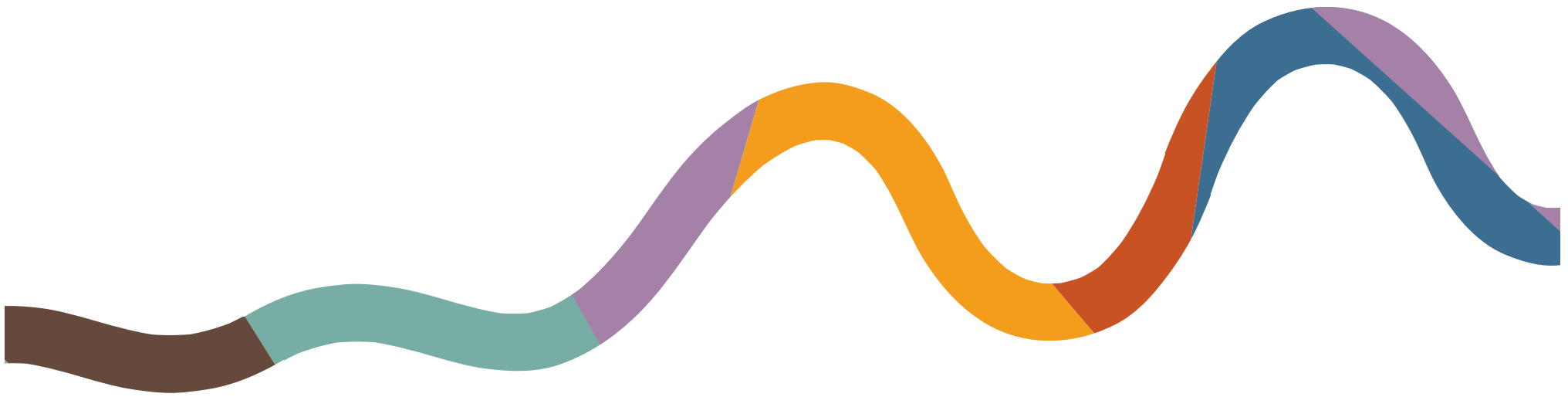


VISION: Engaged residents working across political and property boundaries to create and sustain a healthy watershed.

MISSION: Through collaboration, education and research, implement science-based policies and practices for flood mitigation, water quality improvements, natural resources protection and improved recreation while maintaining economic health.





SEVEN

Strategic Framework

ONE

Reduce flooding through improved stormwater management and soil health.

TWO

Improve water quality, with an emphasis on sediment, nitrate, phosphorus and E.coli reductions.

THREE

Enhance recreation and public health through improved water quality, habitat restoration, stream accesses, improved connectivity to parks/trails and cultural opportunities.

FOUR



Deliver enriched conservation education and programming with emphasis on water quality/quantity management, wildlife/habitat, urban and agricultural needs within the watershed.

FIVE

Support community vitality and maintain economic health through implementing multi-purpose projects producing benefits in public, natural resources and economic health that can be documented.

SIX

Develop ongoing means for collaboration and implementation of effective policies and practices, taking a consistent watershed and/or regional scale approach as much as practical.

GOALS

1. Reduce flooding.
 - a. Implement urban and rural best management practices (BMPs) to:
 - i. Mitigate increases in runoff volumes and peak rates of flow caused by man-made alterations to the landscape
 - ii. Reconnect Walnut Creek and tributaries with their adjacent flood plains
 - iii. Reduce streambank and channel erosion
 - iv. Improve physical habitat within the stream and adjacent flood plains and stream buffers
 - v. Reduce flood damage overall and protect municipal infrastructure
 - b. Promote policies and practices which lead to soil quality restoration on both urban and rural landscapes
 2. Improve water quality, with an emphasis on sediment, nitrate, phosphorus and E.coli reductions.
 - a. Improve effectiveness and consistency of enforcement of Stormwater Pollution Protection Plans
 - b. Develop and implement a monitoring program to measure results and identify additional pollutants of concern
 - c. Implement urban and rural BMPs to meet water quality standards, reduce sediment and allow water contact recreation
 3. Enhance recreation and public health.
 - a. Phase improved stream accesses to coordinate with water quality and safety improvements
 - b. Improve watershed-wide volunteer coordination/opportunities for habitat improvement projects
 - c. Incorporate purposeful community arts initiatives for improved public engagement and education, as well as enhanced aesthetics
 - d. Enhance/improve greenway development within the watershed (e.g., See upcoming Clive Greenbelt Master Plan for example)
 4. Deliver enriched conservation education and programming with emphasis on water quality/quantity management, wildlife/habitat, urban and agricultural needs within the watershed.
 - a. Implement the Education and Collaboration Plan included within this Watershed Plan (Chapter 11)
 5. Support community vitality and maintain economic health through implementing multi-purpose projects producing benefits in public, natural resources and economic health that can be documented.
 - a. Establish metrics for projects that identify appropriate scales to measure social, economic, and environmental costs and benefits for projects
 - b. Identify BMPs with multiple benefits through use of this Watershed Plan's BMP Matrix, particularly employing use of the Community Section where multi-purpose projects, citizen awareness and regional connections are emphasized
 6. Develop ongoing means for collaboration and implementation of effective policies and practices, taking a consistent watershed and/or regional scale approach as much as practical. (Also see Chapter 11: Collaboration and Education Plan, and Chapter 9: Policy Recommendations).
 - a. Priority policies for watershed-wide (and/or metro-wide) adoption include:
 - i. Unified sizing criteria as described within the Iowa Stormwater Management Manual (ISWMM)
- e. Use buffering to expand the watershed's greenways network and connectivity of waterways and trails
 - f. Implement BMPs to:
 - i. Restore wetlands/natural areas
 - ii. Expand native landscape cover and riparian areas
 - iii. Improve wildlife habitat and remove invasive species
 - iv. Promote healthy soils

Refer to the BMP Matrix to see which practices address these goals and the pollutants of concern.

- ii. Protected stream buffers, protecting the five-year flood plain in rural areas and following guidance within this plan for urban areas (see Chapter 9)
 - iii. Construction site pollution prevention improvements (see Goal 2a above) to address both erosion and sediment control practices that are currently falling short
 - iv. Ordinances to protect or restore healthy soils, referencing ISWMM for recommendations
 - v. Flood plain protection standards designed to reduce structural/property losses, maintain flood storage capacity, identify areas of active stream movement (for preservation) and provide flood “head room” (set building protection elevation three feet above regulatory 100-year flooding elevations).
- b. Advocate for expanded regional/watershed resources for planning and practice implementation at the county, state and federal level
- c. Collectively pursue resources for plan implementation, recognizing projects often have benefits beyond the jurisdiction/property boundaries in which they are implemented
- d. Recognizing upstream partner costs and downstream partner benefits, explore creative funding options (e.g., a water fund or nutrient trading, whereby downstream partners support upstream practices)
- e. Similarly, pursue incorporation of regional-scale practices with associated cost-benefits, e.g., wetland mitigation banks

Legend

- P = Primary benefit
- C = Complementary benefit

	Best Management Practices													
	Urban													
	Better Site Design / Source Reduction	Construction Site Erosion Controls	Construction Site Sediment Controls	Soil Quality Management / Restoration	Pre-treatment Practices	Parking Lot Retrofits	Bioretention	Bioswales	Constructed Wetlands	Wet Detention Pond	Extended Dry Detention Pond	Increase Flood Plain Storage	W/O Outlet Modifications	Stream Corridor Restoration
Restoration Objectives (below)														
Water Quality														
Reduce pollutants of concern														
Nitrates	P			P		P	P	P	P	P				C
Bacteria	P			P		P	P	P	P	P	C	C		P
Sediment	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Phosphorus	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Meet water quality standards	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Reduce sediment contamination	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Allow water contact recreation	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Water Quantity / Flooding														
Retain more runoff higher in the watershed	P			P		P	P	P	P	P	P			P
"Lengthen the watershed" (longer flowpath, slower velocities, etc.)	P			P		P	P	P	P	P	P	P	P	C
Reduce Directly Connected Impervious Areas (DCIAs)	P					P	P	P	P	P	P			
Increase floodplain capacity													P	P
Promote / sustain compatible land uses within the flood plain	P								P	P		P		P
Reduce flood damage	P			P		P	C	C	P	P	P	P	P	P
Biological														
Restore wetlands/natural areas	C				C				P	P		C	C	P
Expand native landscape cover							P	P	P	P	P	C		P
Enhance wildlife habitat				P	P		P	P	P	P	C	P	C	P
Remove invasive species	C								C	C		P		P
Enhance riparian areas	P			P	P				P	P	C	C		P
Promote healthy soils	P	P		P										P
Physical														
Reduce channel erosion	P	P	P	P		P	P	P	P	P	P	P	P	P
Reconnect with floodplain												P	P	P
Restore physical habitat				P	P		P	P	P	P	P	P	P	P
Protect municipal infrastructure	P			P	P	P	C	C	C	C	C	P	P	P
Social and Economic														
Eliminate trash/debris		P	P		P								P	P
Create greenways / waterfront access / open space	P								P	P	P	P		P
Revitalize neighborhoods	P			P	P	P	P	P	P	P				P
Improve aesthetics beautification	P	P	P	P	P	P	P	P	P	P	P	P		P
Increase citizen awareness	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Improve recreation	P	C	C	P	P	C	C	C	P	P	C	P	C	P
Multi-purpose projects	P			P	P	P	P	P	P	P	P	P	P	P
Regional connections	P								C	C				C

Legend

- P = Primary benefit
- C = Complementary benefit

	Best Management Practices																														
	Relationship to Goals						Rural																								
							Nutrient Management					Land Use Change					Erosion Control / Edge of Field					Stream Improvements									
1 - Reduce Flooding	2 - Improve Water Quality	3 - Enhance Recreation	4 - Conservation Education / Programming	5 - Community Vitality / Economic Health	6 - Collaboration / Implementation	Nitrogen Application Rate (N)	Cover Crops (N and P)	Living Mulches (N)	Phosphorus Source (P)	Placement of Phosphorus (P)	Tillage (P)	Energy Crops	Land Retirement (CRP) - Target Steep Slopes	Land Retirement (CRP) - Target Flood Plain	Extended Crop Rotations	Grazed Pastures	Drainage Water Management (N)	Shallow Drainage (N)	Wetlands (N)	Bioreactors (N)	Adequate Stream Buffer Widths (N and P)	Saturated Buffers (N)	Terraces (P)	Sediment Basins or Ponds (P)	Road Crossing Outlet Modifications	Grass Swale	Two-Stage Ditches	Restrict Cattle Access to Streams	Streambank Repairs		
Restoration Objectives (below)																															
Water Quality																															
Reduce pollutants of concern		P	C	C	C	C																									
Nitrates							P	P	P				P	P	P	P	P	P	P	P	P	P	P								
Bacteria													P	P	P	P	P			P		P			P	P	C	P	P	P	C
Sediment								P	P		P		P	P	P	P	P					P		P	P	C	P	P	P	P	
Phosphorus								P	C	P	P	P	P	P	P	P	P					P		P	P	C	P	P	P	P	
Meet water quality standards		P	C	C	C	C	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
Reduce sediment contamination		P	C	C	C	C							P	P	P	P	P			C		P	C	P	P	P	P	C	C	P	
Allow water contact recreation		P	C	C	C	C		P	P				P	P	P	P	P						P		P	P	C	P	P	P	
Water Quantity / Flooding																															
Retain more runoff higher in the watershed	P	P	C	C	C	P							P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	C			
"Lengthen the watershed" (longer flowpath, slower velocities, etc.)	P	P	C	C	C	C							C	C	C	C	C	P	P	P	C	C	C	C	P	P	P	P	C		
Reduce Directly Connected Impervious Areas (DCIAs)	P	P	C	C	C	C																									
Increase floodplain capacity	P	C	C	C	C	C																C		C	P	P	C	P	P		
Promote / sustain compatible land uses within the flood plain	P	C	C	C	C	C									P		P			P	C	P	P		P	P	P	P	P		
Reduce flood damage	P			C	P	P							P	P	P	P	P	P	P	P			P	P	P	P	P	P	C	P	
Biological																															
Restore wetlands/natural areas	P	P	C	C		C									P				P	P	P		P	P	C	C	P	P	C	P	
Expand native landscape cover	C	P	P	P	C	C								P	P				P	P	P	C	P	P	C	C	P	P	C	P	
Enhance wildlife habitat		C	P	P	P	C							C	P	P	C	C			P	P	P	C	P	P	C	C	C	P	C	
Remove invasive species		C	P	P	P	C								C	C	C	C			C	C	C	C	C	C			C	C	P	
Enhance riparian areas		C	P	P	P	C									P				P	P	P		P	P		P	P	C	P	P	
Promote healthy soils	P	P	C	P	C	C	P	P	P	P	P	P	P	P	P	P	P														
Physical																															
Reduce channel erosion	P	P	P	P	P	C							C	C	P	C	C	C	C	C			P	P	P	P	P	P	P	P	
Reconnect with floodplain	P	C	P	P	P	C									P								P			P	P	P	P	P	
Restore physical habitat		C	P	P	P	C	C	C			C	C	P	P	C	C	C	P	P	P			P	P	P	P	P	P	P	P	
Protect municipal infrastructure	P	C		C	C	P							C	C	C	C	C	C	C	C			C	C	C	C	P	C	P	P	
Social and Economic																															
Eliminate trash/debris		P	P	P	P	P																		C	C	C			C	P	
Create greenways / waterfront access / open space	C	C	P	P	P	P							C	C	P					P			P	C		P	P	P	P	P	
Revitalize neighborhoods	C		P	C	P	P																									
Improve aesthetics beautification		C	P	P	P	C							P	P	C	C	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
Increase citizen awareness		C	C	P	P	P						C	C	P	P	P	C	P	P	P	P	P	P	P	P	P	P	P	P	P	
Improve recreation		C	P	P	P	P	C	C	C	C	C	C	C	P	P	P	C	P	P	P	C	P	P	C	P	P	P	P	P	P	
Multi-purpose projects	P	P	P	P	P	P		P				P	P	P	P	P	C	P	P	P	P	P	P	P	P	P	P	P	C	P	
Regional connections						P							C							C		C						C		C	