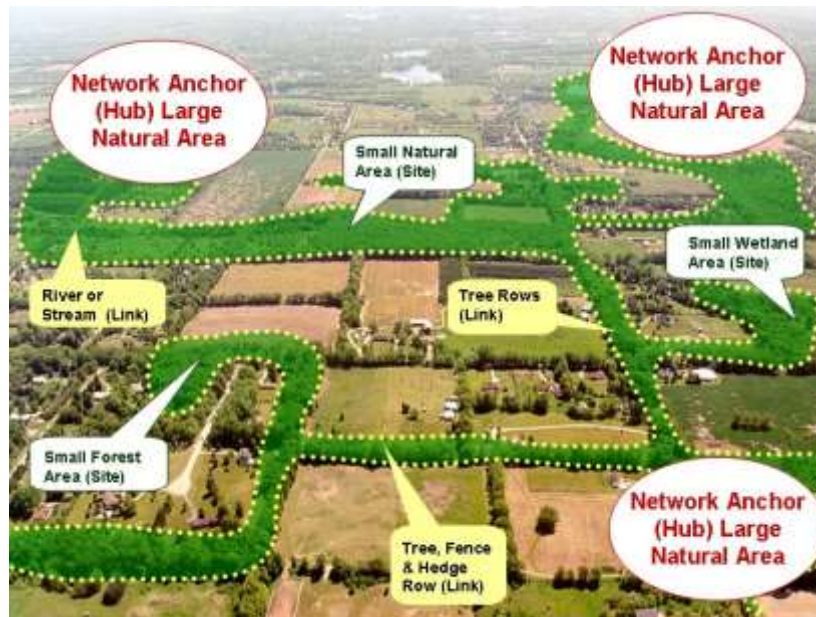


# Northfield Township Green Infrastructure Session

May 20, 2015



- Introduction
- Background Resource Maps
- Process for Hands-on Assessment
- Draft Design Session Green Infrastructure Map
- Next Steps – Community Planning for Green Infrastructure
- References





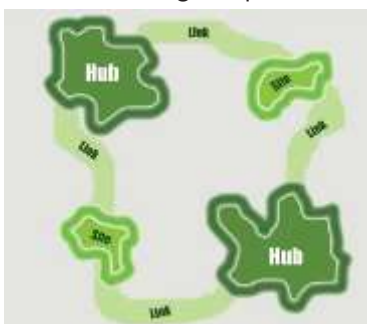
# INTRODUCTION

## Project Description

The Huron River Watershed Council (HRWC) and Northfield Township have partnered to create this document as part of the township's Master Plan update process.

Green infrastructure networks consist of the following components:

**Hubs:** Hubs anchor the network and provide an origin or destination for wildlife. Hubs range in size from large conservation areas to smaller parks and preserves. Hubs provide habitat for native wildlife and help maintain natural ecological processes.



**Sites:** Smaller ecological landscape features that can serve as a point of origin or destination or incorporate less extensive ecological important areas.

**Links:** The connections that hold the network together and enable it to function. Links facilitate movement from one hub to another.

## What is Green Infrastructure?

Green infrastructure is the interconnected network of large natural areas, wildlife habitats, riparian corridors and areas that reflect key elements of our biological diversity. This network supports native species, maintains natural ecological processes, sustains air and water resources, and contributes to our health and quality of life. The Green Infrastructure outlined in this document is a proposed network to link the Huron River watershed's remaining ecologically valuable lands. The goal is to maximize the effectiveness of public and private land conservation efforts, and to ensure land development occurs in concert with Green Infrastructure.

## What are the benefits of Green Infrastructure?

Green infrastructure provides a mechanism to identify and blend environmental and economic factors creating a multitude of social, economic, cultural and environmental benefits.

- Provides a sense of place and a unique identity
- Decreases cost of public infrastructure (e.g. stormwater management & water treatment systems)
- provides active and passive recreational opportunities
- Increases property values
- Helps preserve our unique quality of life
- Maintains naturally functioning ecosystems
- Helps to attract new businesses and well-qualified workers

### **What is in this document?**

This document is a result of a workshop at the May 20, 2015 Northfield Township Planning Commission meeting. At the breakout session, township officials, residents, and other stakeholders studied the maps shown on pages 7 - 12 and then created Hubs, Sites, and Links, drawing onto transparent mylar sheets laid over those maps (pages 13 – 15). HRWC took those sheets and created the Green Infrastructure Map (page 16).

### **Next steps**

Page 17 lists next steps Northfield Township and its partners can undertake to ensure that the township's Green Infrastructure continues to provide habitat, recreation, water quality, clean air, and other benefits.



# Northfield Township's Green Infrastructure

Mostly undeveloped

31% intact natural areas ("bioreserve" sites)

Only 5% of natural area is publicly owned

Low impervious surface (about 5%) (creeks and wetlands begin to become degraded in areas where impervious surfaces make up more than 10% of their watersheds)

25 species of threatened, endangered or special concern animals and plants and 1 ecosystem (oak barrens).



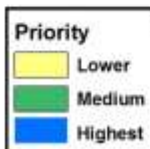
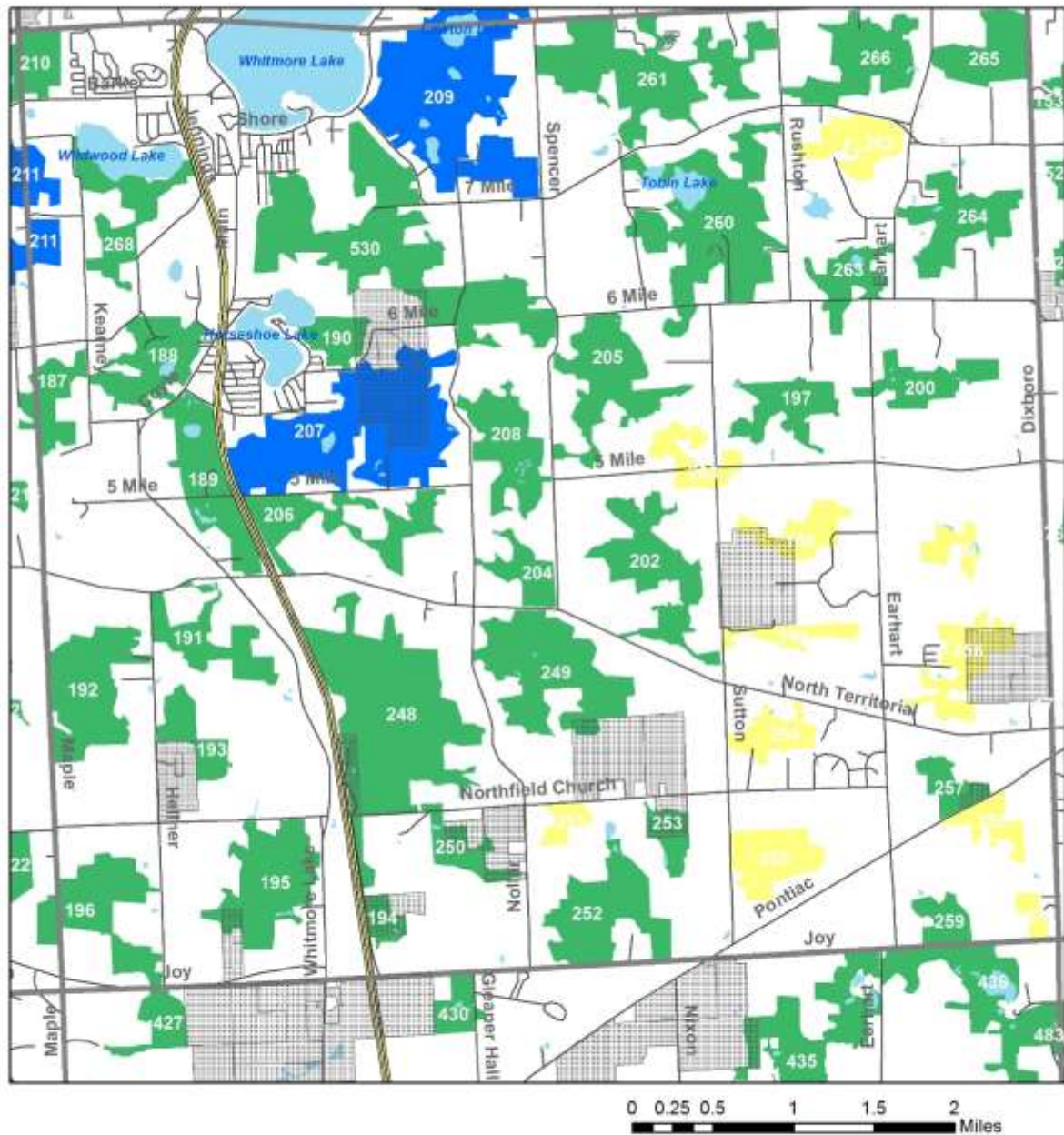



# Background Resource Maps

- HRWC Bioreserve Map
- Environmentally Sensitive Areas
- 2000 Land Use
- Topography
- Green Infrastructure Planning Map



## Northfield Township's Remaining Natural Areas



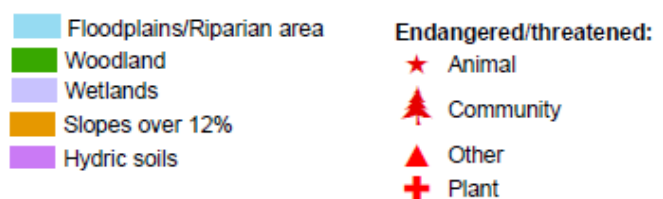
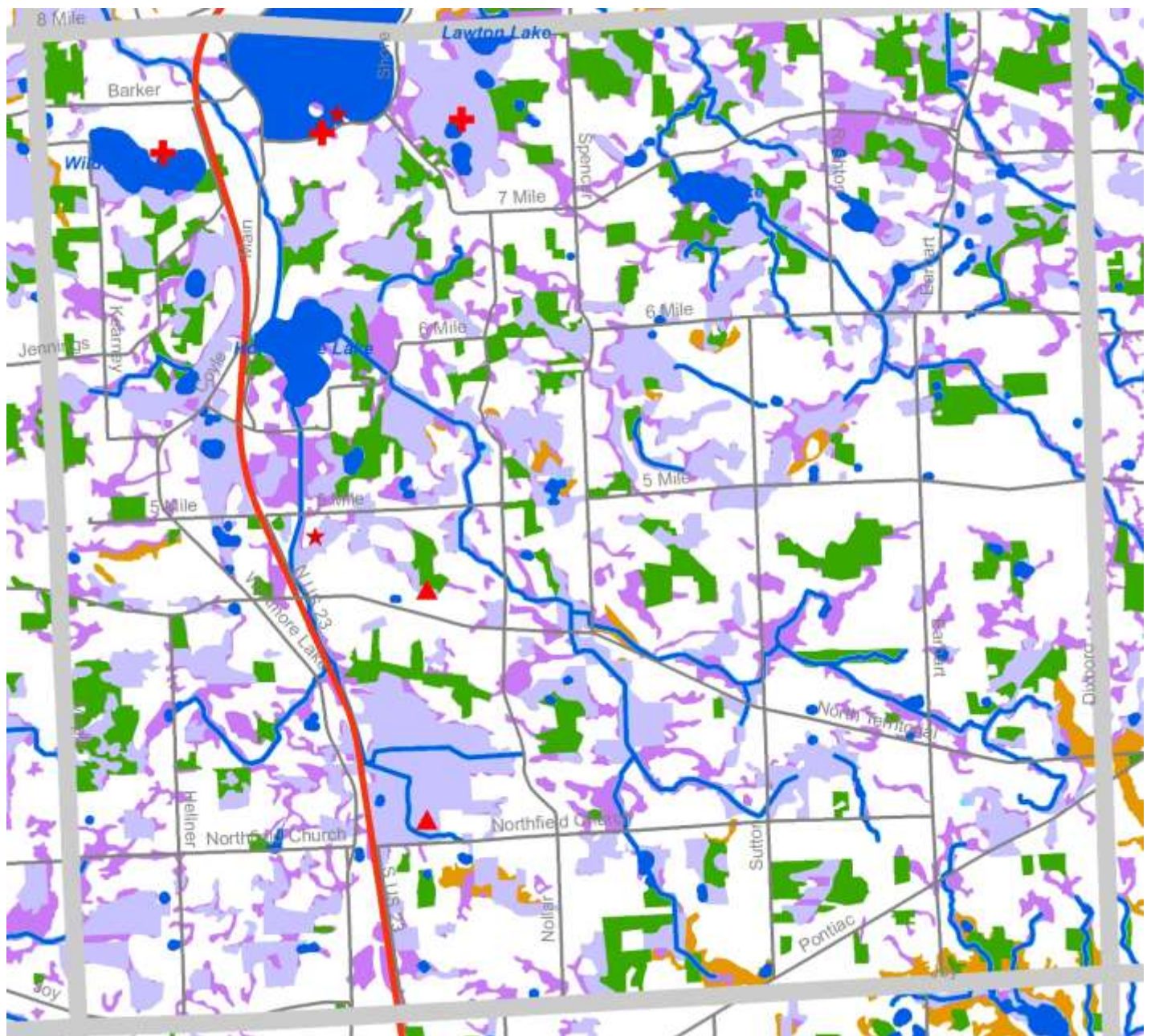
 Conservation and Recreation Lands

Sites delineated from digital orthophotos circa 2000, ranked based on 15 ecological factors, including: size, presence of water, presence of wetlands, groundwater recharge potential, potential for rare remnant plant community, topographical diversity, glacial diversity, connectivity to other natural areas, restorability potential, and quality of vegetation.

For more information, contact Kris Olsson, Huron River Watershed Council  
734-769-5123, [kolsson@hrwc.org](mailto:kolsson@hrwc.org)

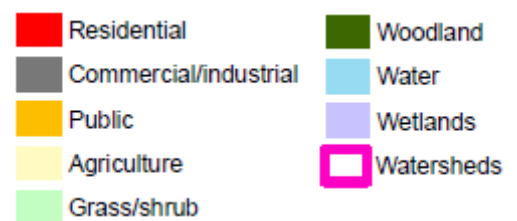
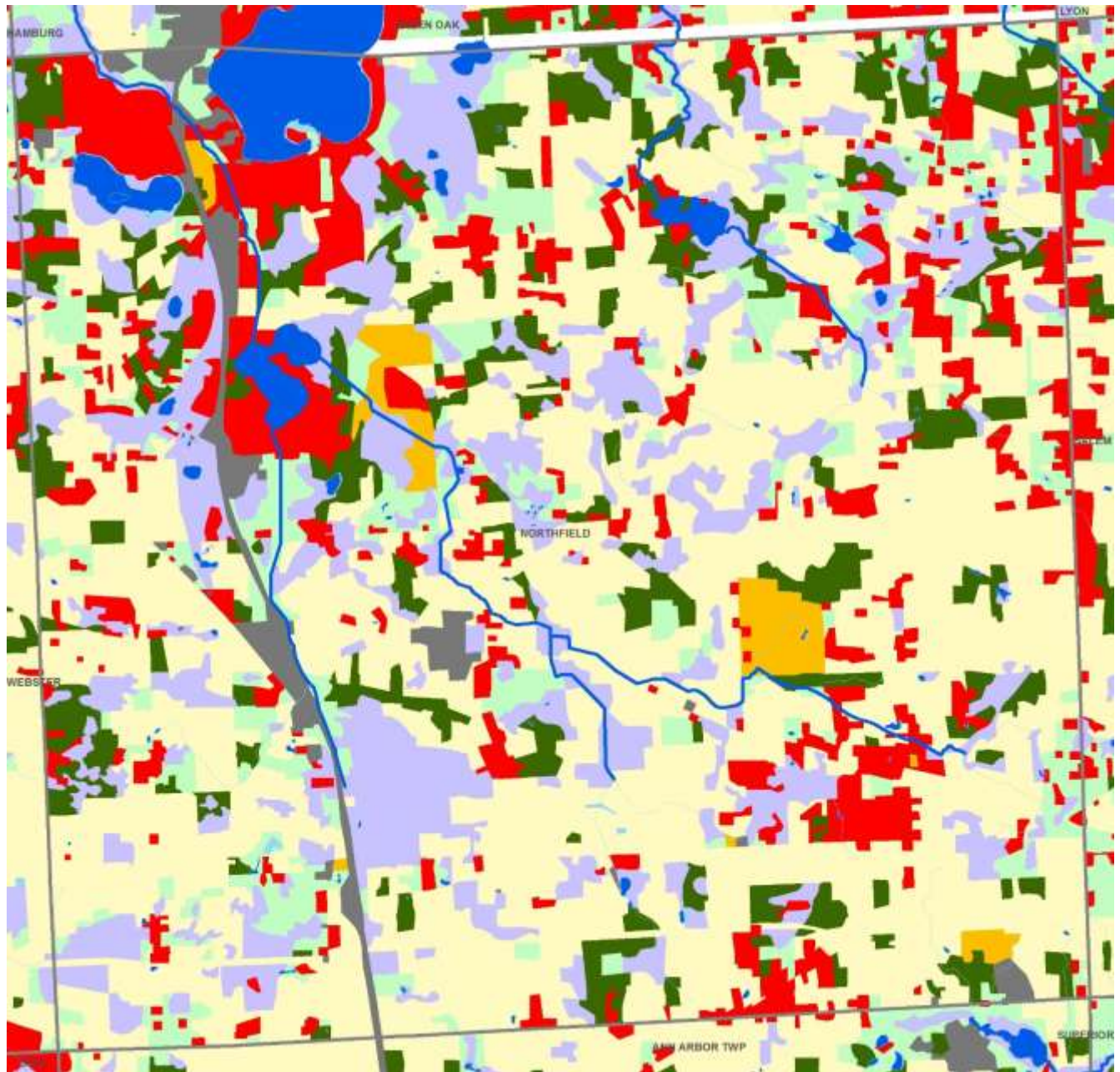


## Environmentally Sensitive Areas





## 2000 Land Cover





# U.S.G.S. Topography





## Topography: Lines (10 ft)







# Green Infrastructure Planning Map



 Parks & Preserves


 Conservation Easements


 Ann Arbor Greenbelt Properties


 Legacy Protected Properties


 Huron Creeksheds

## Bioreserve Sites

 Lower priority

 Higher priority

 Highest priority

 Conservation and Recreation Lands



# Process for Hands On Assessment

1. Examine Maps
2. Determine habitat hubs, and outline on map with red ink.

## Hint

Hubs anchor the network and provide an origin or designation for wildlife. The Bioreserve Map provides a good place to start

Outline your hubs with



3. Identify smaller ecological landscape features (sites) that can serve as a point of origin or detination or incorporate less extensive ecologically important areas.

## ~Hint~

Look for lower ranked Natural Areas (Priority Two or Priority Three) along with smaller woodlots and wetlands.

Outline your sites with



4. Create the best possible connections between hubs using the smaller ecological landscape features (sites) as stepping stones. Use riparian linkages whenever possible.

**~Hint~**

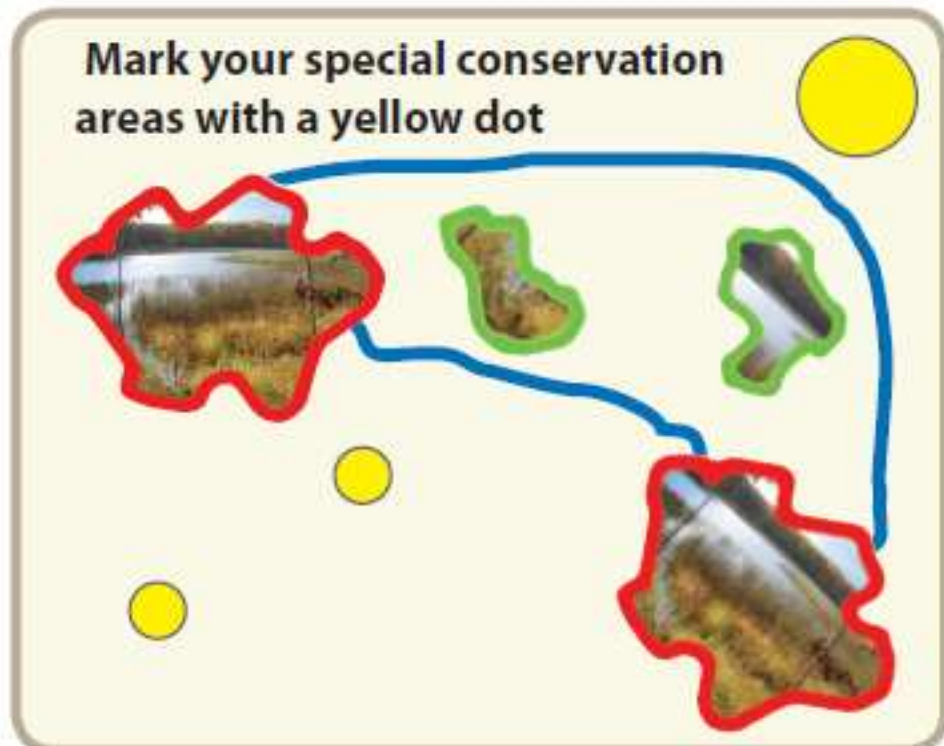
In general, the wider the corridor the better and the longer the corridor the wider it should be.



5. Identify Special Features that fall outside the system or have unique connection or importance within the community.

**~Hint~**

Appropriate areas may be a wetland, pond, woodlot stream or wildflower patch known only to local residents.

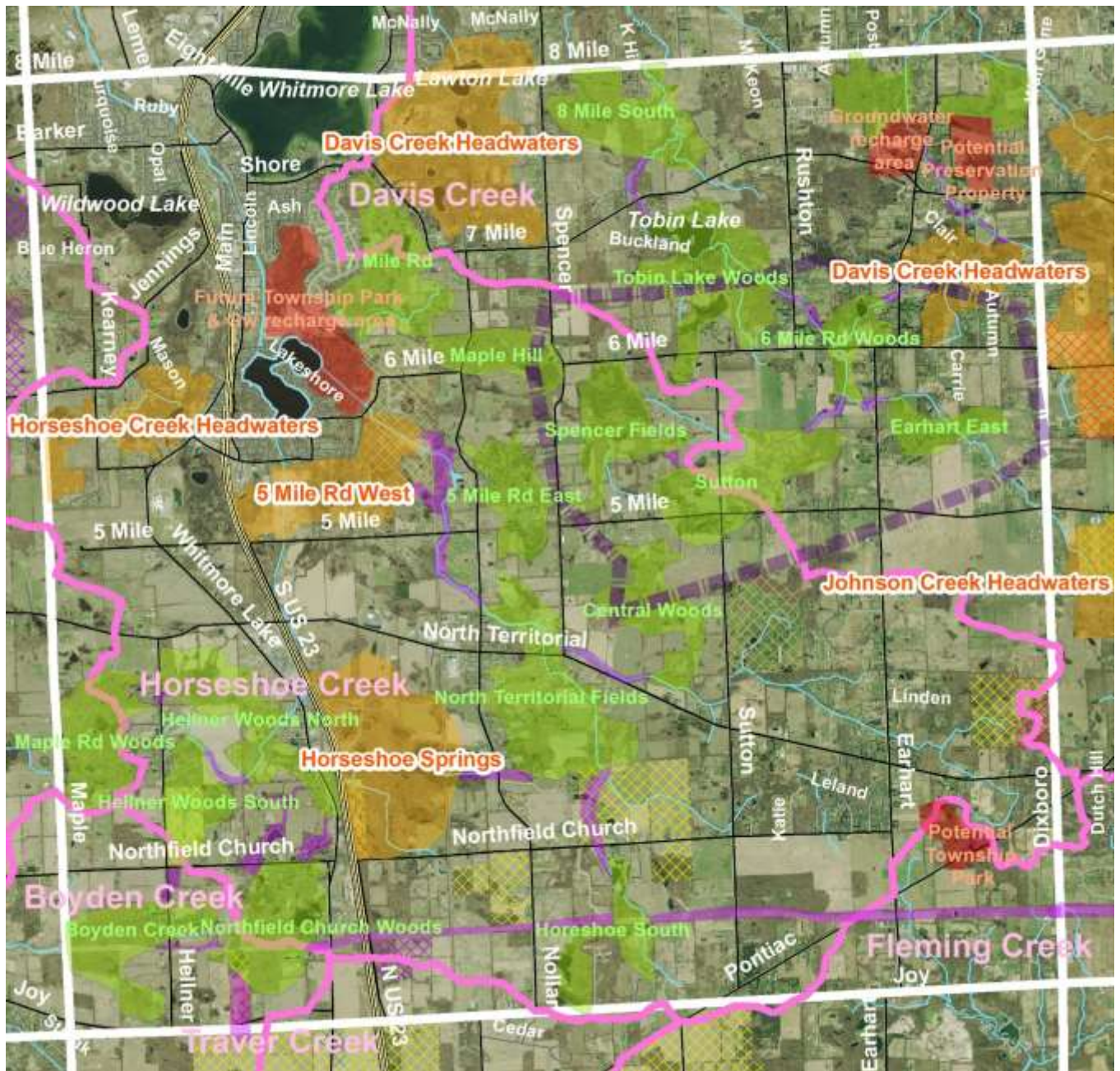




6. Label your system (hubs and links) and add names that help identify the site locally.



# Draft Green Infrastructure Map







## Next Steps – Community Planning for Green Infrastructure

- Verify the draft Green Infrastructure Vision Map
- Determine best land management tools
- Review master plans, ordinances, and related planning documents
- Establish conservation goals, funding options, and tracking mechanisms
- Amend Master Plans to favor preservation of green infrastructure, and encourage green development proposals and better site design
- Adopt Local Ordinances for Resource Protection woodland, wetland, riparian, stream, and floodplain ordinances
- Revisit community Regulations & Development Standards for lot sizes, setbacks, parking and street standards, drainage regulations
- Offer Incentives to developers to integrate green development design density compensation, buffer averaging, stormwater credits, transferable development rights, etc.
- Adopt regulations and policies that guide development within a framework of ecological structure and function.
- Educate home buyers & community residents about the open space conservation concept

# References

The Conservation Fund. Green Infrastructure: A Strategic Approach to Green Space Planning and Conservation Train-the-Trainer. 2002.

Livingston County Department of Planning. Livingston County's High-Quality Natural Areas. 2003.

The Conservation Fund website. [www.greeninfrastructure.net](http://www.greeninfrastructure.net)

Oakland County Planning & Economic Development Services. 2002 Oakland County Potential Conservation/Natural Areas Report. Jul. 2002

Oakland County's Environmental Stewardship Program. [www.oakgov.com/es](http://www.oakgov.com/es)

SEMCOG. Best Practices for Sustainable Development. Mar. 1999.

SEMCOG. Land Use Tools and Techniques A Handbook for Local Communities. Mar. 2003.

SEMCOG. Opportunities for Water Resources Protection in Local Plans, Ordinances, and Programs. Aug. 2002.



# Northfield Township Green Infrastructure Planning Map

Hubs are large natural areas that anchor the Green Infrastructure Network and provide origin and destination for wildlife.

Sites are smaller areas that provide habitat and ecosystem services.

Links connect hubs and sites.

HRWC created the map with the help of Northfield Township community members who drew hubs, sites, links and special areas onto a draft green infrastructure map.

July, 2015

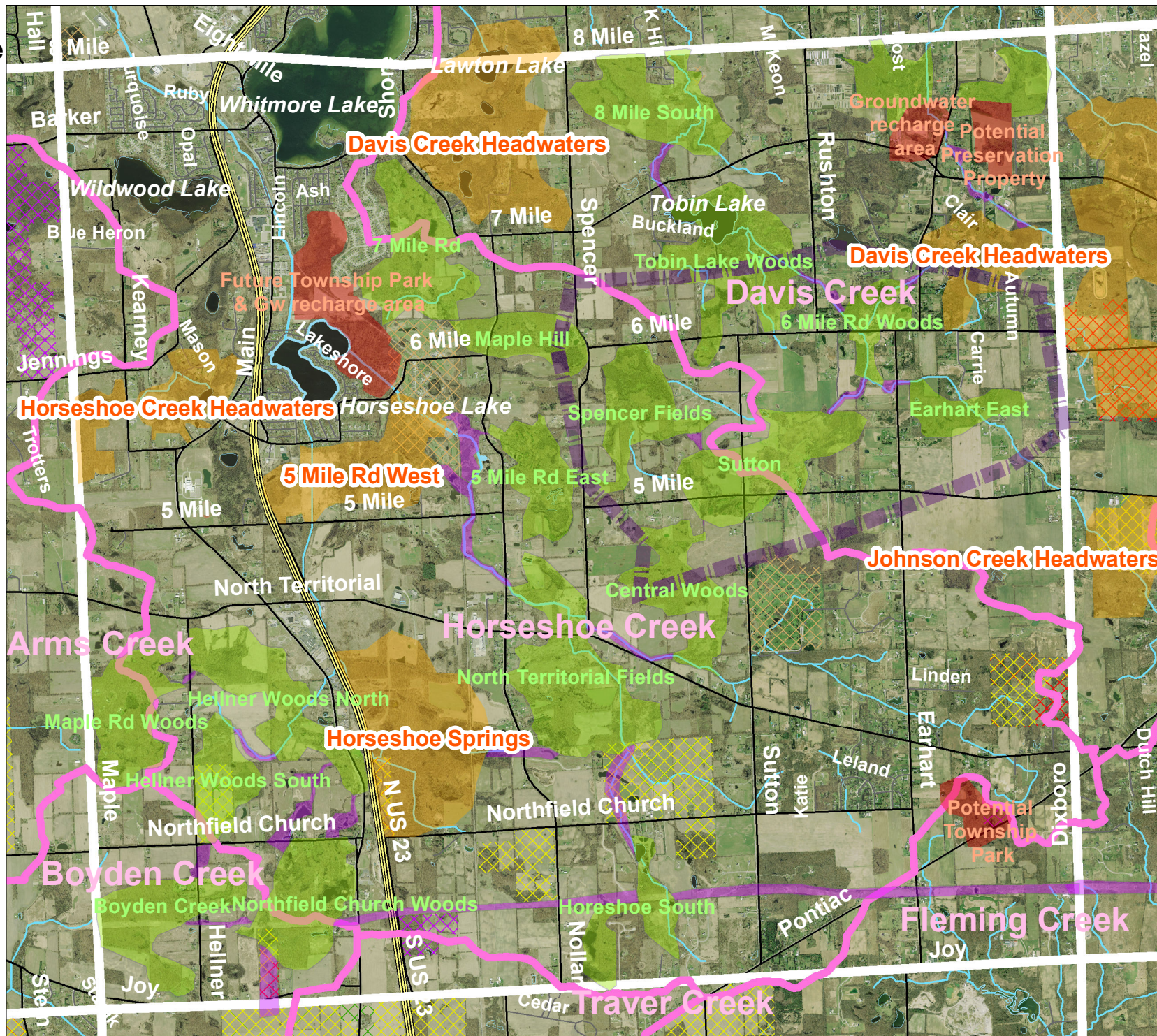
-  Hub
-  Site
-  Link
-  Special Feature
-  Horseback riding areas
-  Parks & Preserves
-  Conservation Easements
-  Ann Arbor Greenbelt Properties
-  Legacy Protected Properties

 Other Conservation and Recreation Lands



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0 0.275 0.55 1.1 Miles



April 13, 2015





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## HRWC Recommended Master Plan Elements

Element:	Description:
Conditions section:	
Natural areas and green infrastructure	Include language discussing the municipality's Green Infrastructure (natural areas and natural corridors that provide ecological services necessary for quality of life). Include text and a map, if available.
Natural features listed and mapped	Describe the presence and importance of the following natural features: waterways, wetlands, forests, steep slopes, groundwater recharge areas, endangered and threatened species.
Impervious capacities/watersheds	Include language discussing current and future impervious surfaces in the municipality, giving figures for each creekshed in the municipality. Include maps if available
Current conditions of agriculture	(For rural governments). Include language about the current state of agriculture in the municipality.
Non-Motorized Transportation	Describe nonmotorized transportation opportunities.
Goals/ Objectives sections:	
Land Use patterns	Include a statement supporting the municipality's desired pattern of growth: HRWC recommends promoting land use patterns that provide compact development in areas with infrastructure, with natural area and agricultural uses in surrounding rural areas.
Statement of support for agricultural preservation	(In rural communities) Include a statement supporting agricultural preservation.
Statement of support for natural features preservation	
Statement of support for open space/natural areas	Include statements supporting preservation of natural areas and open space.
Statement of support to preserve watershed conditions	Include statements supporting preservation of watershed conditions.
Smart Growth principles	Adopt the 10 Smart Growth Principles: <ol style="list-style-type: none"> <li>1. Mix land uses</li> <li>2. Take advantage of compact building design</li> <li>3. Create a range of housing opportunities and choices</li> <li>4. Create walkable neighborhoods</li> <li>5. Foster distinctive, attractive communities with a strong sense of place</li> <li>6. Preserve open space, farmland, natural beauty, and critical environmental areas</li> </ol>



	<p>7. Strengthen and direct development towards existing communities</p> <p>8. Provide a variety of transportation choices</p> <p>9. Make development decisions predictable, fair, and cost effective</p> <p>10. Encourage community and stakeholder collaboration in development decisions</p>
<b>Policies sections:</b>	
Natural features policies	Include policies the government intends to enact to preserve natural features.
Stream corridor policies	Include policies the government intends to enact to preserve stream buffers
Open space/natural areas policies	Include policies the government intends to enact to preserve natural features.
Watershed policies	Include policies the government intends to enact to preserve watershed quality.
Urban Services District	Include policies the government intends to enact to create or maintain an urban service district.
Stormwater policies	Include policies the government intends to enact to properly manage stormwater runoff
Agriculture preservation policies	Include policies the government intends to enact to preserve agriculture.
Purchase/Transfer of Development Rights and other innovative land use planning policies	Include policies the government intends to explore to encourage compact patterns of development
Rural zoning outside of urban areas	Consider down zoning to lower densities in Agriculture and Rural Residential areas



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## HRWC Recommended Zoning Ordinance Elements

Element
Land Use Pattern
Policies encouraging infill
Policies limiting development to where infrastructure exists (eg urban service area)
Mixed use/transit oriented development planned
CIP for urban areas
Development standards tailored for infill areas to remove hurdles
Accessory dwelling units allowed (even if increased density)
TDR program
Site Plan review requirements:
Site Plan requires description of all existing natural features and endangered and threatened species
Requires review by other agencies where applicable
Site plan requires stormwater management plan
Site plan requires soil erosion and sedimentation control plan (or coordination with county program)
Open space/land conservation provisions:
Land preservation program in place
Key natural areas for protection identified (eg parks or open space plan, or Green Infrastructure plan)
Incentives for open space or cluster designs; open space design review is as easy to meet as conventional design
Allowable uses in open space restricted to agriculture or low impact uses
Open space protection through easements
Purchase of Development Rights program in place
Zoning for large blocks of very low density (80 acres)
Natural features requirements:
Setbacks from waterways required ( $\geq 100'$ or edge of floodplain)
Vegetated buffers from waterways required ( $\geq 25'$ )
Wetland protection ordinance in place
Setbacks from wetlands required ( $\geq 25'$ )
Groundwater recharge areas protected
Prohibition of direct and indirect discharge of hazardous substance to groundwater
Steep slope protection
Woodland and landscape trees protection
Resource protection/Natural Environmental Areas Overlay in place
Impervious surface reductions:
Flexible lot coverage standards to allow creative approaches that limit impervious surfaces
Flexible yard setbacks to reduce impervious surface: front $< 20$ ; side $< 8$ ; rear $< 25$ ; frontage $< 80$
Allow bioretention, rain gardens, filter strips in setback and common areas
Flexible parking standards to reduce impervious surface



Recommended parking standards:

- bioretention allowed in parking lots;
- landscaping required in parking lots;
- ratio for:
  - professional office <3 per 1000 sq. ft.;
  - single family homes <2;
  - shopping centers <4.5 per 1000 sq. ft.;
- shared parking promoted;
- parking reduced if mass transit nearby;
- stall width <9';
- stall length <18';
- compact car area;
- pervious pavement encouraged;
- structures promoted;
- flexibility for shared and off-site parking

Flexible standards to reduce impervious surface:

Recommended street standards:

- shared driveways, reduced driveway width, 2-track driveways; rear garages, etc., encouraged;
- right-of-way widths < 45';
- utilities can be under pavement;
- cul-de-sacs <45', landscaping required;
- if curb and gutter required, perforated curbs required/encouraged;
- road widths btw 18 – 22'

Stormwater:

In Washtenaw County: Required review by county drain or water resources commissioner OR

Township stormwater ordinance:

Recommended stormwater requirements:

- Preservation of natural vegetation encouraged
- Site designs that limit impervious surfaces
- Infiltration of first flush (inch) of rainfall
- Effective design criteria for BMPs in place for 100 year storm, maintaining  $\leq .15$  cfs discharge
- Stormwater management facilities must be designed to prevent flooding and protect surface and groundwater;
- Green Infrastructure Stormwater BMPs encouraged (infiltration basins/beds, bioretention areas, rain gardens, pervious pavement, infiltration trenches, etc.)
- Rooftop runoff disconnection encouraged
- Pre-treatment required before stormwater discharges to wetlands
- Stormwater runoff must be controlled to a non-erosive velocity;
- Regular evaluation and maintenance required
- Off-site stormwater facilities allowed
- Stormwater requirement reduced for project that decrease total imperviousness on redeveloped sites;

Other:

Soil Erosion and Sediment Control (SESC) program: coordinated with county OR

SESC permit required for developments within 500' of a waterway
Septic system >100' from a wetland or waterways
Point of sale septic inspection

Documents consulted:

Better Site Design: A Handbook for Changing Development Rules in Your Community. Center for Watershed Protection. The "COW" 1998

Charlevoix County Local Ordinance Gaps Analysis. Tip of the Mitt Watershed Council. 2011.

(Resources\LUPPY\ordinances&policies\xx Other non-Huron ordinances\

Antrim\_gaps\_analysis\_final\_web.pdf and ...../charlevoix gaps analysis-web.pdf)

From Policy to Reality: Model Ordinances for Sustainable Development. Minnesota Planning. September 2000

Opportunities for Water Resource Protection in Local Plans, Ordinances, and Programs. SEMCOG 2002

Citizen's Guide to Land Use Planning. HRWC 2001

Smart Growth Guideline for Sustainable Design and Development. US EPA 2009





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## HRWC Recommended Master Plan Elements

### For Webster Township

Element:	In Webster's plan:	Recommended change:
Conditions section:		
Impervious capacities/watersheds		Consider language discussing Arms Creek current and future impervious surface (see sample language from Ann Arbor Township) ( <b>maybe not necessary in rural township?</b> )
Natural areas and green infrastructure	Some	Consider including webster Green Infrastructure map & language (see sample language from Ann Arbor Township)
Natural features listed and mapped (lakes, streams, wetlands, forests, wetlands, slopes)	In natural features policies section	Could consider shifting to "conditions for planning"
Current conditions of agriculture	Statements that Agriculture is declining	Update. Could use some of AAT's language. Ask Land preservation board to look at it. (see sample language from Ann Arbor Township)
Non Motorized Transportation	No mention	Could mention nonmotorized transportation policies ( <b>maybe not necessary in rural township?</b> )
Goals/ Objectives sections:		
Land Use patterns		Consider statement supporting desired pattern of growth: mostly rural and agriculture, providing compact patterns in service areas (see sample language from Ann Arbor Township)
Statement of support for agricultural preservation	Yes	
Statement of support for natural features preservation	Yes	
Statement of support for open	Some in natural features	Consider adding language from

space/natural areas	statement (4.04)	GI plan (see sample language from Ann Arbor Township)
Statement of support to preserve watershed conditions	No	May want to add language (see sample language from Ann Arbor Township)
Smart Growth principles	No, but does mention sprawl type development should be discouraged	Adopt 10 smart growth principles? <sup>1</sup>
Policies sections:		
<u>Easier:</u>		
Stream corridor policies, buffers	Mentions buffers, natural river zone, nonalteration	None
agriculture preservation policy	Yes	none
Natural features policies	Statements on importance of natural features	none
TDR and PDR	Yes	none
Supporting maps	Roads, public facilities, lakes and streams and watersheds, wetlands, gw recharge, forests, steep slopes, natural features	Could consolidate streams, watersheds, wetlands, groundwater recharge, forests, steep slopes into natural features, and another map for GI (natural areas plus conservation lands)
<u>Requiring some writing:</u>		
Open space/natural areas policies		Consider adding language from GI plan
Land Use pattern policies	No, but some mention in strategies of keeping urban uses in certain areas and not extending sewer....	See sample language from Ann Arbor Township
Watershed policies	Requires following Washtenaw County WRC rules; erosion controls; consideration of impervious surface and gravel road capacity	Consider adding more specific policies re: impervious surface ala AAT; consider adding more specific policies re: gravel road capacities
Urban Services District	Mentions that Loch Alpine and Dexter serve as urban areas for the township	Township does not have a central village or urban area and so could coordinate location of USD with Scio and Dexter
<u>Requiring discussion and writing:</u>		
Impervious surface policies	11.03 F talks about impervious surface and gravel road capacity.	Consider adding more specific policies (see sample language from Ann Arbor Township)
Stormwater policies	Stormwater management required	Could add more details about this – (see sample language from Ann Arbor Township)



Multigenerational planning	Mentions aging of population in planning conditions	Consider adding policies ala Spring Lake Township
Rural zoning outside of urban areas	2-acre lot zoning, with land designated as rural residential and agriculture. Language encouraging clustering	Consider down zoning to lower densities in Agriculture and Rural Residential, possibly using gravel road study as a guide

## 1. Smart Growth Principles

1. Mix land uses
2. Take advantage of compact building design
3. Create a range of housing opportunities and choices
4. Create walkable neighborhoods
5. Foster distinctive, attractive communities with a strong sense of place
6. Preserve open space, farmland, natural beauty, and critical environmental areas
7. Strengthen and direct development towards existing communities
8. Provide a variety of transportation choices
9. Make development decisions predictable, fair, and cost effective
10. Encourage community and stakeholder collaboration in development decisions



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## HRWC Recommended Zoning Ordinance Elements

### For Webster Township

Element	Recommendation
Land Use Pattern	
Policies encouraging infill	Webster Township is rural and there is not much opportunity for "infill"
Policies limiting development to where infrastructure exists (eg urban service area)	Consider "robust" PUD provisions that encourage increased density on certain parcels in exchange for purchasing development rights on parcels in the agricultural district
Mixed use/transit oriented development planned	Rural township is currently automobile oriented. May consider working with surrounding municipalities as they develop transit plans
CIP for urban areas	No urban areas
Development standards tailored for infill areas to remove hurdles	See above
Accessory dwelling units allowed (even if increased density)	Consider exploring allowing accessory dwelling units.
TDR program	<b>Consider "robust" PUD provisions</b>
Site Plan review requirements:	
Site Plan requires description of all existing natural features and endangered and threatened species	yes
Requires review by other agencies where applicable	Change MDNR to MDEQ, and include wetlands
Site plan requires stormwater management plan	yes
Site plan requires soil erosion and sedimentation control plan (or coordination with county program)	Soil erosion control plan required in SPR, administered by county
Open space/land conservation provisions:	
Land preservation program	Township has land preservation board, but not codified in zoning ordinance
Key natural areas for protection identified (eg parks or open space plan, or GI plan)	Township has Green Infrastructure plan/map
Incentives for open space or	Density bonus in PUD

cluster designs; open space design review is as easy to meet as conventional design	
Allowable uses in open space restricted to agriculture or low impact uses	
Open space protection through easements	In PUD
PDR program	yes
Zoning for large blocks of very low density (80 acres)	May consider increasing allowable lot sizes in agricultural area
Natural features requirements:	
Natural Rivers provisions	<b>Consider adopting natural rivers district setbacks and buffer requirements both in the natural river district and on all tributaries.</b>
Waterways setbacks (>=100' or floodplain)	Township requires 100 foot setback
Waterway vegetated buffers (>=25')	Township requires 25 foot vegetated buffer
Wetland protection ordinance	Township regulates wetlands 5 acres or larger. Consider broadening regulation to all sizes.
Wetland setback required (>=25')	Township requires 25 foot vegetated buffer
Groundwater recharge areas protected	No auto related uses are allowed in groundwater recharge areas
Prohibition of direct and indirect discharge of hazardous substance to groundwater	Consider adding environmental permits checklist, and requiring secondary containment – follow county standards
Steep slope protection	Steep slopes are defined as a natural feature. Consider adding language regulating steep slope protection
Woodland and landscape trees protection	<b>Consider woodland protection ordinance</b>
Resource protection/Natural Environmental Areas Overlay	Consider language protecting natural areas. See Macomb County, Brighton Township sample language
Impervious surface reductions:	
Flexible lot coverage standards to allow creative approaches that limit impervious surfaces	<b>Not in PUD (setbacks remain the same). Consider allowing flexible lot coverage, yard setbacks, and parking standards to reduce impervious surface.</b>
Yard setbacks <sup>1</sup>	See table below for recommended yard setbacks. Consider reducing yard setbacks to reduce impervious surface
Allow bioretention, rain gardens, filter strips in setback and common areas	Consider allowing these features in parking lot and commercial landscaping areas. Stormwater ordinance already encourages these features.
Flexible parking standards to reduce impervious surface <sup>2</sup>	HRWC can share recommended spaces for each of the township's allowable land use if desired
Private road ordinance?	yes
If yes, flexible standards to	Consider reducing right-of-way widths. See standards below.



reduce impervious surface <sup>3</sup>	
Stormwater:	
Required review by county drain or water resources commissioner	yes
Township stormwater ordinance <sup>4</sup>	Very good stormwater provisions
Other:	
Soil Erosion and Sediment Control program: coordinated with county	Yes
SESC: permit required for developments within 500' of a waterway	?
Septic system >100' from a wetland or waterways	Consider this requirement
Point of sale septic inspection	Consider this requirement

1. Recommended yard setbacks: front < 20; side <8; rear < 25; frontage < 80
2. Recommended parking standards: bioretention allowed in parking lots; landscaping required in parking lots; ratio for professional office <3 per 1000 sq. ft.; single family homes <2; shopping centers <4.5 per 1000 sq. ft.; shared parking promoted; parking reduced if mass transit nearby; stall width <9'; stall length <18'; compact car area; pervious pavement encouraged; structures promoted; flexibility for shared and off-site parking
3. Recommended street standards: shared driveways, reduced driveway width, 2-track driveways; rear garages, etc., encouraged; ROW widths < 45'; utilities can be under pavement; Cul-de-sacs <45', landscaping required; if curb and gutter required, perforated curbs required/encouraged; road widths btw 18 – 22'
4. Recommended stormwater requirements:
  - Preservation of natural vegetation encouraged
  - Site designs that limit impervious surfaces
  - Infiltration of first flush (inch) of rainfall
  - Effective design criteria for BMPs in place for 100 year storm, maintaining <=.15 cfs discharge
  - Stormwater management facilities must be designed to prevent flooding and protect surface and groundwater;
  - Green Infrastructure Stormwater BMPs encouraged (infiltration basins/beds, bioretention areas, rain gardens, pervious pavement, infiltration trenches, etc.)
  - Rooftop runoff disconnection encouraged
  - Pre-treatment required before stormwater discharges to wetlands
  - Stormwater runoff must be controlled to a non-erosive velocity;
  - Regular evaluation and maintenance required
  - Off-site stormwater facilities allowed

- Stormwater requirement reduced for project that decrease total imperviousness on redeveloped sites;

#### Documents consulted:

Better Site Design: A Handbook for Changing Development Rules in Your Community. Center for Watershed Protection. The "COW" 1998

Charlevoix County Local Ordinance Gaps Analysis. Tip of the Mitt Watershed Council. 2011.

(Resources\LUPPY\ordinances&policies\xx Other non-Huron ordinances\

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Opportunities for Water Resource Protection in Local Plans, Ordinances, and Programs. SEMCOG 2002

Citizen's Guide to Land Use Planning. HRWC 2001

Smart Growth Guideline for Sustainable Design and Development. US EPA 2009

#### Webster Townships Lot Standards

District	lot area	lot width	front setback	rear setback	side setback
Ag, AB	2 acres	120ft	Road: 60 Major rd: 110	Road: 60 Major rd: 110 Yard: 50	Road: 60 Major rd: 110 Yard: 30
R-1	1 acre	150	Road: 35 Major rd: 110	Road: 35 Major rd: 110 Yard: 35	Road: 35 Major rd: 110 Yard: 20
R-2	15,000 sq. ft.	100' if sewer 150 if septic	Road: 35 Major rd: 110	Road: 35 Major rd: 110 Yard: 20	Road: 35 Major rd: 110 Yard: 10
BLLR	10,000 sq. ft	50'	average	Rear = lakeside	
R-3	4 DU/acre	100'	Road: 35 Major rd: 110	Road: 35 Major rd: 110 Yard: 20	Road: 35 Major rd: 110 Yard: 10



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## HRWC Recommended Master Plan Elements

### For Salem Township

Element:	Description:	Salem's Master Plan
Conditions section:		<i>4.Existing Conditions and Trends, and 5.Physiographic Features sections</i>
Natural areas and green infrastructure	Include language discussing the municipality's Green Infrastructure (natural areas and natural corridors that provide ecological services necessary for quality of life). Include text and a map, if available.	See recommended language to include in Section 5
Natural features listed and mapped	Describe the presence and importance of the following natural features: waterways, wetlands, forests, steep slopes, groundwater recharge areas, endangered and threatened species.	Yes, in Section 5. HRWC can provide updated maps, if desired.
Impervious capacities/watersheds	Include language discussing current and future impervious surfaces in the municipality, giving figures for each creekshed in the municipality. Include maps if available	See recommended language to include in Section 5
Current conditions of agriculture	(For rural governments). Include language about the current state of agriculture in the municipality.	Yes, included.
Non-Motorized Transportation	Describe nonmotorized transportation opportunities.	Not included
Goals/ Objectives sections:		Sections 5 - 13
Land Use patterns	Include a statement supporting the municipality's desired pattern of growth: HRWC recommends promoting land use patterns	There is language addressing land use pattern in introduction (p3); part 3 (p13)



	that provide compact development in areas with infrastructure, with natural area and agricultural uses in surrounding rural areas.	
Statement of support for agricultural preservation	(In rural communities) Include a statement supporting agricultural preservation.	Yes, present
Statement of support for natural features preservation		Yes, P 14 and Section 5
Statement of support for open space/natural areas	Include statements supporting preservation of natural areas and open space.	P 14 and Section 5. Could include language from Green Infrastructure plan. See recommended language.
Statement of support to preserve watershed conditions	Include statements supporting preservation of watershed conditions.	See recommended language
Smart Growth principles	<p>Adopt the 10 Smart Growth Principles:</p> <ol style="list-style-type: none"> <li>1. Mix land uses</li> <li>2. Take advantage of compact building design</li> <li>3. Create a range of housing opportunities and choices</li> <li>4. Create walkable neighborhoods</li> <li>5. Foster distinctive, attractive communities with a strong sense of place</li> <li>6. Preserve open space, farmland, natural beauty, and critical environmental areas</li> <li>7. Strengthen and direct development towards existing communities</li> <li>8. Provide a variety of transportation choices</li> <li>9. Make development decisions predictable, fair, and cost effective</li> <li>10. Encourage community and stakeholder</li> </ol>	<ol style="list-style-type: none"> <li>1. Provides mix but much large-lot</li> <li>2. USD “grouped concentration of uses”. Consider “form based zoning” for hamlet and USD</li> <li>3. does create a mix</li> <li>4. does address in hamlet; could provide more for USD</li> <li>5. Yes</li> <li>6. yes</li> <li>7. Yes</li> <li>8. Auto dependent area</li> </ol>

	collaboration in development decisions	
Policies sections:		Sections 5 - 13
Natural features policies	Include policies the government intends to enact to preserve natural features.	P 14, Section 5. May want to move steep slopes section (part of USD) here.
Stream corridor policies	Include policies the government intends to enact to preserve stream buffers	Section 5.
Open space/natural areas policies	Include policies the government intends to enact to preserve natural features.	Section 5.
Watershed policies	Include policies the government intends to enact to preserve watershed quality.	Section 5.
Urban Services District	Include policies the government intends to enact to create or maintain an urban service district.	Part 3 (p14), language describes USD, clearly splitting land uses to occur within and without USD
Stormwater policies	Include policies the government intends to enact to properly manage stormwater runoff	yes
Agriculture preservation policies	Include policies the government intends to enact to preserve agriculture.	yes
Purchase/Transfer of Development Rights and other innovative land use planning policies	Include policies the government intends to explore to encourage compact patterns of development	See recommended additional language
Rural zoning outside of urban areas	Consider down zoning to lower densities in Agriculture and Rural Residential areas	To truly preserve agricultural uses, lower densities would be more conducive.



*Protecting the river since 1965*

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**Sample Master Plan language referenced in  
“HRWC Recommended Master Plan Elements for Salem  
Township”**

**Language describing township’s natural areas:**

These natural features have also been identified by a number of studies, including the 2007 bioreserve project conducted by the Huron River Watershed Council. The Bioreserve Map (Map x) uses a computer model to rank each natural area based on fifteen different measurements of its ecological value. These include the size of the area, whether wetlands, streams, or lakes are on the site, the diversity of the landscape on the site, the potential for the site to be a groundwater recharge area, the potential for the site to be connected to other natural areas, and how much native vegetation the site potentially still harbors. The resulting map shows over 1,700 sites, totaling about 237,000 acres of natural lands.

In 2014, the Huron River Watershed Council conducted another valuable exercise with the Township that resulted in the Green Infrastructure Map (Map x). The exercise identified the Township’s important natural areas and how they are connected. Large natural areas (hubs) and smaller natural areas (sites) are linked by linear features, such as tree rows or rivers and streams. The resulting network of hubs, sites, and links provide wildlife with access to various food sources, and nesting and rearing sites. By preserving the links as well as the hubs and sites, the Township will minimize the habitat fragmentation present in developed landscapes, and preserve the variety of habitats that local wildlife use to fulfill their life-cycle.

- D. It is the intent of this plan to preserve the continuity of natural features in order to protect the integrity of ecological systems. To further this goal, the Township has created a Green Infrastructure map and plan that will guide preservation of connected open space corridors and wildlife habitats. The Township will also participate in multi-jurisdictional planning efforts such as the Ann Arbor Greenbelt and the Washtenaw County Natural Areas Preservation programs, to preserve open space and wildlife corridors.

**Language describing Watersheds:**

Watersheds and Watercourses.

Webster Township lies within the Huron River Watershed. The river itself flows through Webster, as well as the headwaters of Boyden Creek and the entirety of the Arms Creek watershed (both Huron River tributaries). The Huron River and Arms Creek, between its confluence with the Huron River and the confluence of its southern and eastern tributaries, have been designated as "Country Scenic Rivers" under the Natural Rivers Act. Recognizing these watershed units is useful for planning purposes and for monitoring the cumulative impact of development within each watershed.



### 11.03 Watersheds

Not more than 15% of a watershed's land area should be impervious surfaces.

The Township will strive to mitigate the impacts of increased impervious surface in the Arms Creek, Boyden headwaters, and Huron River watersheds. In order to prevent further degradation of these subwatersheds, Webster Township will require stormwater management and impervious surface limits to reduce the frequency of post-development bankfull and subbankfull flooding, maintain or improve channel stability, and provide maximum removal of designated pollutants of concern.

In order to reduce the impacts of impervious surface and stormwater runoff the Township will require stormwater management and site design that reduces impervious surfaces, and the protection of natural features such as stream buffers, wetlands, and steep slopes.

#### **Language describing impervious surface capacities**

Impervious Surface.

The percent of impervious surfaces within a stream's watershed is a commonly used indicator of its quality and health. Research indicates that at levels of imperviousness of 8 to 10 percent, stream quality begins to deteriorate (Huron River Watershed Council, 2003). This level is reached at about 1 dwelling unit per 2.5 acres. Between 10 and 25 percent impervious surface, stream quality enters a level known as "impacted." Once a stream's watershed passes the 25 percent impervious threshold, research indicates it will no longer be able to support most kinds of aquatic life. A study of the watersheds in Webster Township shows that the current (as of 2010) impervious surfaces (see Map x) in Arms, Boyden, and the Huron River watershed are considered able to support "sensitive" species of aquatic life, as impervious surfaces in those subwatershed are all under 10%

A buildout analysis conducted by the Huron River Watershed Council based on the xxxx Master Plan shows that Arms Creek and areas flowing directly to the Huron River will increase in impervious surface to between 11 and 15%, which will push them into an impacted category of stream health. Impervious surfaces in the Boyden Creek headwaters that are within the Township will reach 10%, just at the cusp of the impacted category.

According to the Huron River Watershed Council, as development becomes more spread out, impervious surfaces increase in order to accommodate the longer and wider roads, driveways, parking areas, and additional commercial uses that must also be built to provide for everyday needs and services. The net result is an actual increase in imperviousness to accommodate less dense households on a regional or watershed scale. In fact, research from the Huron River Watershed Council shows that subdivisions designed in a typical pattern, where one single

family residence is located on its own lot, increase imperviousness by 10 - 50 percent compared to developments that group the same number of households onto smaller areas.

**Language describing township's intent to explore a TDR program:**

- 5.07 It is the desire of Webster Township to encourage land owners to preserve farmland via voluntary agricultural preservation programs such as Purchase of Development Rights (PDR) and Transfer of Development Rights (TDR).
- 5.08 The Township will study and consider a TDR program which may include working with adjacent Townships to designate sending and receiving zones for development rights. A TDR program which takes advantage of real estate market forces and does not use public funds for land or development rights acquisition serves the dual purpose of preserving farmland and open space while providing for increased densities in areas identified for higher density in the Master Plan.