

Community Workshop Report

Perrysburg, Ohio

August 2018



Prepared by



ACKNOWLEDGEMENTS

This report is the product of collaboration over several years between universities, researchers, and extension professionals, local partners—both public and private. Illinois-Indiana Sea Grant and Ohio Sea Grant would like to thank the City of Perrysburg and its residents for their collaboration in this effort, as well as Reveille Planning and Economic Development Consultants and the members of the steering committee for their assistance and input in this process.

Research and Facilitation Team Members

Brian Miller, Illinois-Indiana Sea Grant

Kara Salazar, Illinois-Indiana Sea Grant & Purdue University Extension

Dan Walker, Illinois-Indiana Sea Grant & Purdue University Extension

Lydia Utley, Illinois-Indiana Sea Grant

Ben Wegleitner, Illinois-Indiana Sea Grant

Hongyan Zhang, Cooperative Institute for Great Lakes Research

Ed Rutherford, Great Lakes Environmental Research Laboratory

Anthony Kendall, Michigan State University

Quercus Hamlin, Michigan State University

Bryan Pijanowski, Purdue University

Jingqiu Chen, Purdue University

Leadership Team Members

Joe Lucente, Ohio Sea Grant and Ohio State University Extension

Glenn Grisdale, Reveille LTD

Brody Walters, City of Perrysburg



TABLE OF CONTENTS

INTRODUCTION	6
Program Overview	6
Community Visioning Session with PESTLE and Appreciative Inquiry.....	7
Technical Maps, Data, and Breakout Session.....	8
Action Planning Session	8
COMMUNITY CHARACTERISTICS	9
Live Polling Results.....	9
Community Demographics.....	9
COMMUNITY VISIONING SESSION	12
Land Use Planning and Open Space.....	12
Land Use Planning and Open Space Assets.....	12
Land Use Planning and Open Space Opportunities	14
Green Infrastructure and Stormwater	15
Green Infrastructure and Stormwater Assets	15
Green Infrastructure and Stormwater Opportunities.....	16
Nutrients and Food Web.....	17
Nutrients and Food Web Assets.....	17
Nutrients and Food Web Opportunities	18
TECHNICAL MAPS AND DATA SESSION	19
Historic Land Use.....	19
Projected Future Land Use	20
Historic Stream Health	22
Future Stream Health	23
Percent Impervious Surface	24
Historic SPARROW Nutrients 2010.....	26
Future SPARROW Nutrients 2040.....	27
Spatially Explicit Nutrient Sources Map (SENS): Total Phosphorus	28
Spatially Explicit Nutrient Sources Map (SENS): Nitrate-Nitrogen	29
Western Lake Erie Food Web Models at Current and GLWQA Phosphorus Loading Levels	31
Existing NPDES Sites	32
Open Space Map.....	33

TECHNICAL BREAKOUT SESSION QUESTIONS.....	34
Land Use Planning and Open Space.....	34
Green Infrastructure and Stormwater	36
Nutrients and Food Web	37
ACTION PLANNING SESSION.....	38
Land Use Planning and Open Space.....	38
Strategies to Address Land Use Planning and Open Space Goals.....	38
Strategy Notes, Action Items, Schedules, and Responsible Parties.....	39
Green Infrastructure and Stormwater	53
Strategies to Address Green Infrastructure and Stormwater Goals.....	53
Strategy Notes, Action Items, Schedules, and Responsible Parties.....	53
Nutrients and Food Web	62
Strategies to Address Nutrients and Food Web Goals	62
Strategy Notes, Action Items, Schedules, and Responsible Parties.....	63
FINDINGS AND CONCLUSIONS.....	74
REFERENCES	76

INTRODUCTION

Program Overview

The City of Perrysburg drains into three watersheds at the Hydrologic Unit Code (HUC) 12 scale—Grass Creek Diversion (HUC 04000090901), Grassy Creek (HUC 04000090902), and Crooked Creek (HUC 0409000090903)—which feed into the Maumee River and, subsequently, western Lake Erie. This area was identified by Ohio Sea Grant and Illinois-Indiana Sea Grant as an ideal location to hold a Tipping Points Planner (TPP) workshop. Through collaboration with Reveille, a local planning consultancy, Perrysburg Ohio was identified as a potential community partner because the city was in the initial stages of preparing a comprehensive plan update. In total, over 55 people participated in the workshop sessions. Ohio Sea Grant, Reveille, and the City of Perrysburg led the development of a steering committee which included key stakeholders from city departments, elected officials, and the public, as well as representatives from the City of Toledo and Wood County. The steering committee held an initial meeting on August 13, 2018 in Perrysburg, Ohio to discuss goals for the workshop series, and to identify additional planning considerations that may fall outside of the purview of the Tipping Point Planner. The steering committee also identified three key focus areas for the workshop: **Land Use Planning and Open Space, Green Infrastructure and Stormwater, and Nutrients and Food Webs.**

The Tipping Point Planner workshop was held to support Perrysburg’s comprehensive plan update by investigating water quality issues tied to topics listed above. A public visioning session, technical tipping points data and breakout session, and an action planning workshop were held from August 13th to August 15th, 2018 at Perrysburg’s City Administration Building and Way Public Library. All meetings were open the public but required registration in advance.



Researchers present and explain their models to the steering committee

During the visioning session, participants were asked a series of questions to identify community characteristics and to understand how the public values natural resources in the Perrysburg area. Participants also discussed assets and opportunities related to the three key topics described above.

During the second meeting, participants received in-depth presentations on nutrient loading, green infrastructure, and land use issues in the region. Researchers from Michigan State University, University of Michigan, and Purdue University who developed the models forming the foundation of TPP presented, discussed the data, interpretations, and took questions from those in attendance.

The final meeting was an action planning session held on August 15th in which participants reviewed best management practices for watershed management using TPP. Through a facilitated discussion, action steps were identified that combined ideas developed during the previous visioning session with locally generated goals and TPP best management practices. The results within this document comprise the final outcome of the workshop, an account of public input on land use and water quality, and a set of community based actions that incorporate best practices for addressing community water quality and quantity challenges through a comprehensive plan.

Community Visioning Session with PESTLE and Appreciative Inquiry

The community visioning session was facilitated by Illinois-Indiana Sea Grant and Ohio Sea Grant facilitators. The team employed a framework called PESTLE, which is used to consider a wide range of topics from business decisions to natural resource management initiatives. The strength of this approach is that participants are encouraged to think from six perspectives: Political, Economic, Social, Technological, Legal, and Environmental. In this session, the PESTLE framework was coupled with the SOAR method of appreciative inquiry. By focusing on strengths, assets, and opportunities, within the key topic areas of Land Use Planning and Open space, Green Infrastructure and Stormwater, and Nutrients and Food Webs, program participants were able to identify what strengths exist in the community as well as what opportunities may be possible based on their existing assets. As the workshop progressed, participants rotated between table topics and were able to provide input on all of the workshop's three key topic areas.



PESTLE/SOAR sticky wall set up during the visioning workshop



Political



Economic



Social



Technological



Legal



Environmental

PESTLE framework and icons

Technical Maps, Data, and Breakout Session

In the second meeting, the steering committee and interested individuals from the earlier community visioning session were able to choose one of the three key workshop topics to investigate using the Tipping Point Planner (TPP) Decision Support System. In a facilitated session, participants were guided through a series of maps within the TPP, and were able to manipulate various parameters within the watershed related to nutrient loads, time, and land use. This provided an opportunity for participants to visualize how changes in their watershed related to land use and nutrient loading would affect not only water quality in their local streams and rivers, but also the Lake Erie food web. A structured discussion was facilitated based on questions developed for each of the program's three key topic areas. The discussion for each key topic area was recorded and is presented in this report.



Breakout group discusses low-impact development possibilities for the city

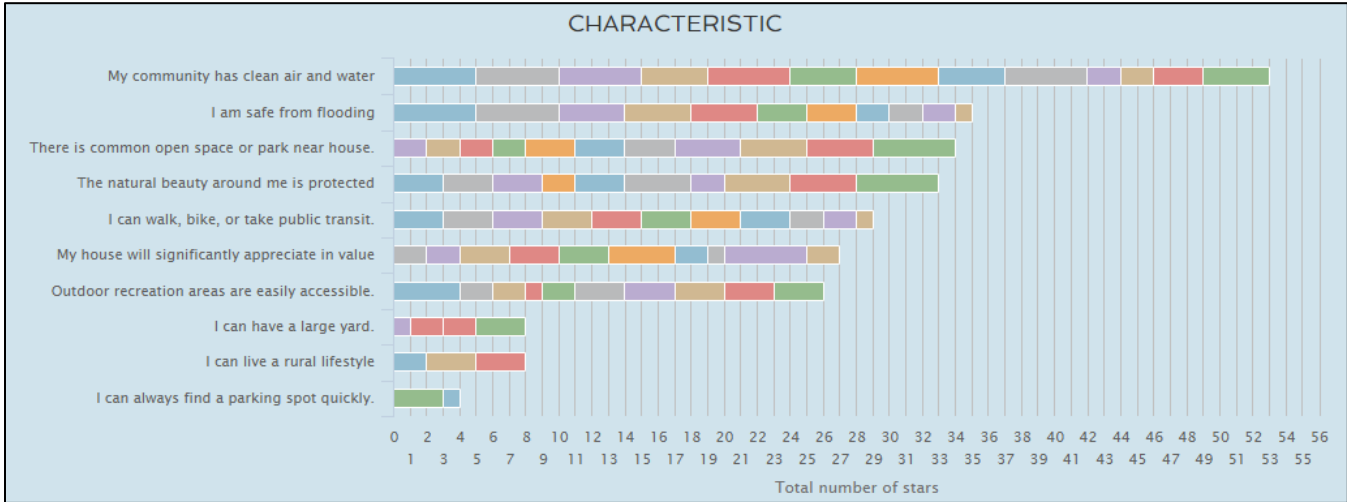
Action Planning Session

Program participants engaged in a final facilitated discussion centered on identifying action strategies for each topic area. Each group was asked to identify or generate three to five goals using the community input received from the previous community vision session as well as the data and maps provided within the TPP system. Participants were facilitated through a series of questions that assisted in identifying appropriate goals and action strategies in the TPP system. Each goal was accompanied by Best Management Practices including sample ordinances, plans, community practices, incentives, and education options that were chosen by the group, and which are included in the Appendix of this report. Responsible parties, timelines, action items were also developed. Although most groups did not have time to fully develop each of these, they provide an opportunity for the group to continue to meet and focus on completing their action plan.

COMMUNITY CHARACTERISTICS

Live Polling Results

The community visioning session incorporated live response technology to generate a sense of how workshop participants valued different aspects of their community and natural resources. Participants were asked to allocate 20 stars according to how important a given statement was to them. A “most important” statement was given 5 stars, while a “least important” statement was given no stars. In the chart below, the statements are listed on the Y axis, while the number of stars allocated by workshop participants is shown in the colored bars extending along the X axis. Each color’s length reflects the number of stars allocated by an individual participant. For example, the statement “My community has clean air and water” was of highest importance to many participants, and is thus shown as a series of wider bars. The statement “I can have a large yard” was valued lower and by fewer participants, and appears as a shorter bar with many short segments. There were between 12 and 13 responses for each of these questions.



Community Demographics

A broad overview of local demographics was presented to the community visioning session participants. Demographic characteristics included: Population, Housing, Income, Employment, and Education. The following tables summarize demographic characteristics for Perrysburg, Toledo, and Wood County (Ohio).

Table 1. Comparison of population of Perrysburg, Toledo, and Wood County (OH).

Year/Source	City of Perrysburg	Wood County, OH	Toledo, OH
2016 (ACS 5-Year Estimates 2012-2016)	21,367	129,418	280,854
2010 (Census SF-1 100%)	20,623	125,448	287,208
2000 (Census SF-1 100%)	16,945	121,065	313,619
% Change 2000-2016	26.1%	6.9%	-10.4%

Table 2. Comparison of housing units in Perrysburg, Toledo, and Wood County (OH).

Year/Source	City of Perrysburg	Wood County, OH	Toledo, OH
2016 (ACS 5-Year Estimates 2012-2016)	8,739	53,406	138,573
2010 (Census SF-1 100%)	8,845	53,376	138,039
2000 (Census SF-1 100%)	6,964	47,468	139,871
% Change 2000-2016	25.5%	12.5%	-1%

Table 3. Median family income (previous 12 months) in Perrysburg, Toledo, and Wood County (OH).

Year/Source	City of Perrysburg	Wood County, OH	Toledo, OH
2016 (ACS 5-Year Estimates 2012-2016)	\$104,516	\$74,065	\$45,201
2010 (Census SF-1 100%)	\$99,348	\$69,768	\$43,755
2000 (Census SF-1 100%)	\$62,237	\$56,468	\$41,175
% Change 2000-2016	67.9%	31.2%	9.8%

Table 4. Workforce, unemployment, and top 5 Industries by employment (2012-2016 5-year estimates).

Description	City of Perrysburg	Wood County, OH	Toledo, OH
Total Workforce*	11,361	66,479	120,871
Unemployment	4.8%	4.2%	12%
Educational services, and health care and social assistance	30.3%	26.2%	24.9%
Manufacturing	13.1%	16.6%	15.4%
Professional, scientific, management, administrative, and waste management services	9.9%	7.6%	8.7%
Retail trade	9.4%	11%	11.9%
Arts, entertainment, and recreation, and accommodation and food services	8.4%	11.5%	12.5%
Combined share of Total Employment	71.1%	72.9%	73%

*Workforce = Population 16+ years of age

Table 5. Highest educational attainment of residents 25 years of older from 2012-2016 (5-year estimates).

Description	City of Perrysburg	Wood County, OH	Toledo, OH
Population 25+ Years Old	14,236	79,630	183,800
Less than High School	2.8%	5.9%	14.4%
High School	15.4%	31.4%	32.9%
Some College, No Degree	19.1%	20.7%	25.1%
Associate's Degree	11.6%	10.3%	9.6%
Bachelor's Degree	30.1%	18.2%	11.7%
Graduate Degree	20.9%	13.5%	6.4%

COMMUNITY VISIONING SESSION

The Community Education and Visioning session took place on August 13, 2018 at the Way Public Library in Perrysburg, OH. Facilitators from Illinois-Indiana Sea Grant employed the PESTLE/SOAR techniques (described previously in this report) to help participants consider assets and opportunities within their watershed to assist with the process of watershed planning. Participants were broken up into three topic-based tables: 1) Land Use Planning and Open Space, 2) Green Infrastructure and Stormwater, and 3) Nutrients and Food Webs.

Land Use Planning and Open Space

Land Use Planning and Open Space Assets

Participants were asked to consider the following questions related to strengths that the partners *already* have and to think about them using the PESTLE framework:

1. What are we doing well?
2. What are our assets?

The notes that follow are the ideas generated during this session.



Political

- Intergovernmental cooperation between city and county
- City council is engaged and desirous of land use planning



Economic

- Professional planning staff
- Attractive for development
- Focus is on clean industry
- Engaged business community
- Available land resources for development
- Agriculture part of economy
- Historic downtown linked to neighborhoods
- Well connected transportation network
- Planned unit developments and business parks
- City is flexible on code for annexed areas



Social

- Preservation oriented community
- Pedestrian connectivity is important and desirous
- Excellent schools
- Year-round recreational facilities
- Children's recreational facilities (sports)



Technological

- City has its own GIS department
- City-wide fiber network



Legal

- Existing codes and ordinances meet needs
- PUD exists for both economic and environmental uses



Environmental

- Well-spaced network of parks
- Riverfront is underdeveloped

Land Use Planning and Open Space Opportunities

For this session, participants were asked to consider the following questions related to aspirations and opportunities that are being underutilized for watershed planning:

1. What are we passionate about?
2. How can we make a difference?

The notes that follow are the ideas generated during this session.



Political

- Improved discussion for regional collaboration
- Educate decision makers on land use planning tools



Economic

- Bicycle-pedestrian network
- Riverfronts/pedestrian connectivity elements
- Tactical densification to identify areas to increase density
- Housing affordability
- Public transit
- Educate developers on PUD for conservation
- US 25 corridor developed as professional commercial



Social

- Increase linkages with social and civic groups
- Work with riverfront land owners - buy in on green infrastructure
- Understanding of local, regional, and national impacts of land use decisions
- Strategies/government policies communicated to residents



Technological

- Expansion of data sharing resources



Legal

- More refining of planning/zoning tools



Environmental

- Woodlot preservation
- Recreational connectivity corridors to greenspace

Green Infrastructure and Stormwater

Green Infrastructure and Stormwater Assets

Participants were asked to consider the following questions related to strengths that the partners *already* have and to think about them using the PESTLE framework:

1. What are we doing well?
2. What are our assets?

The notes that follow are the ideas generated during this session.



Political

- Supportive administration (mostly supportive consensus)



Economic

- Wet ponds are seen as a residential luxury
- GI can improve water quality that in turn improves recreation and drinking water



Social

- Increased awareness
- Population values green space and open space
- Rain garden initiative is a resource that Lauren and Cheryl provide
- Shared information with community (programs, information, and classes)
- Facebook and website posts
- Clear Choices Clean Water campaign
- Dog waste bag dispensers at parks



Technological

- Stormwater technologist on staff
- Faircloth Skimmers
- ODNR Rain water and land management manual



Legal

- Ordinances require development to comply with Quality and Quantity requirement
- OEPA SQP3 General Permit
- Zoning Landscape requirement
- Maintenance agreements for any GI implementation



Environmental

- Lauren Rush listed current 11 GI practices (poster printed)
- Current urban canopy is significant asset
- A few sample projects already installed
- Many homeowners already own rain barrels
- Only use N fertilizer on city property
- Parks department is working with USDA to build wetland

Green Infrastructure and Stormwater Opportunities

For this session, participants were asked to consider the following questions related to aspirations and opportunities that are being underutilized for watershed planning:

1. What are we passionate about?
2. How can we make a difference?

The notes that follow are the ideas generated during this session.



Political

- Educate decision makers council for budgeting



Economic

- Stormwater utilities (project funding initiatives)
- Cost/benefit analysis of green infrastructure
- Finding new resources for maintenance plan for green infrastructure - easy to get grants for GI, but costly to maintain after grant



Social

- Dog waste pick up signage about clean water, not because it is the law
- Education program on a subdivision scale - Grassy Creek residents
- Downspout disconnect program
- Lawn soil sampling before treatment
- School involvement and outreach



Technological

- Graywater utilization
- On-site water treatment
- Pilot projects to demonstrate technologies



Legal

- Regional transportation planning - could be ENV, but more needs to be a policy effort
- Integrate zoning landscaping requirement with stormwater requirement
- Open space requirements
- Develop standard specifics and DWGS (CAD files)



Environmental

- Canopy goal for urban trees
- Neighborhood block scale stormwater projects
- South of Grassy Creek drainage - neighbors are flooding each other's yards to try and remove water from their own land
- Underground parking
- Wetlands/constructed wetlands - in partnership with parks department
- Old septic tank in older par of sewer and might not be running to sanitary sewer (i.e. might not be functioning properly)

Nutrients and Food Web

Nutrients and Food Web Assets

Participants were asked to consider the following questions related to strengths that the partners *already* have and to think about them using the PESTLE framework:

1. What are we doing well?
2. What are our assets?

The notes that follow are the ideas generated during this session.



Political

- TMACOG
- Balanced growth initiative (OEPA - formerly OH Lake Erie Commission)
- Education programs about water supply, nutrient loading



Economic

- Walleye fishing
- Ecotourism and recreation
- OSU Extension and Sea Grant
- Black Swamp Conservancy land acquisitions
- Interested parties for clean water and recreation interests



Social

- Partners for Clean Streams
- American Rivers
- SWCD
- Sea Grant
- OSU/UT/BGSU/Heidelberg/MSU resources



Technological

- GIS and aquifer information
- Testing and identification of sources for heavy metals



Legal

- Open space/green space ordinances for developers
- Green space credits
- Ordinances for water detention/retention requirements
- Developer fees (SSICR)



Environmental

- Fertile soil needs less nutrients/fertilizer
- NRCS technical assistance
- Urban Federal Partnership projects
- Buffer strips and CRP programs being implemented

Nutrients and Food Web Opportunities

For this session, participants were asked to consider the following questions related to aspirations and opportunities that are being underutilized for watershed planning:

1. What are we passionate about?
2. How can we make a difference?

The notes that follow are the ideas generated during this session.



Political

- Better collaboration with Perrysburg Township
- Improved education/participation in water source/supply discussion
- Cooperation between agricultural and environmental group



Economic

- Pursuit of grant funding from TMACOG, Black Swamp Conservancy



Social

- Erie Hack (student/non [profit] competition to solve Lake Erie issues)
- Trainings for non-agricultural fertilizer BMPs
- Soil testing and land owner education
- Improve use of 4R (ag) practices



Technological

- Watershed plans
- Funding for equipment upgrades - water treatment
- Farm applications
- Manure management plans



Legal

- Western Lake Erie TMDLs
- Nutrient management plans (required as a result of declaring Lake Erie impaired)
- Identification and testing of septic tanks
- Implementation and enforcement of existing septic and packing plant ordinances



Environmental

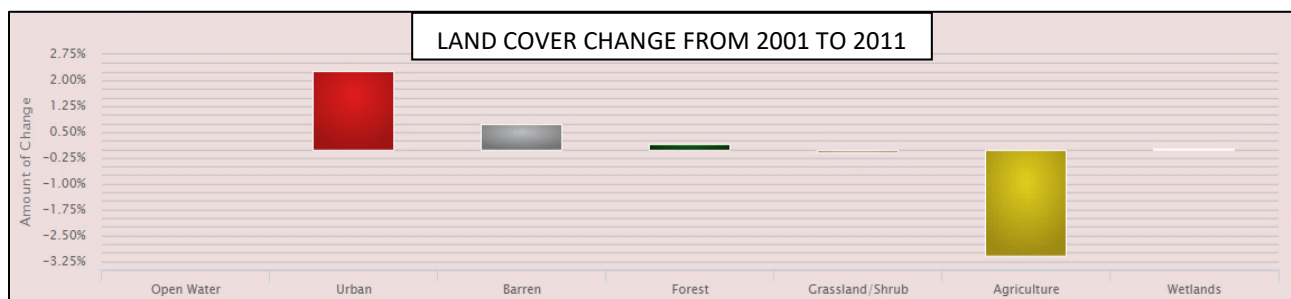
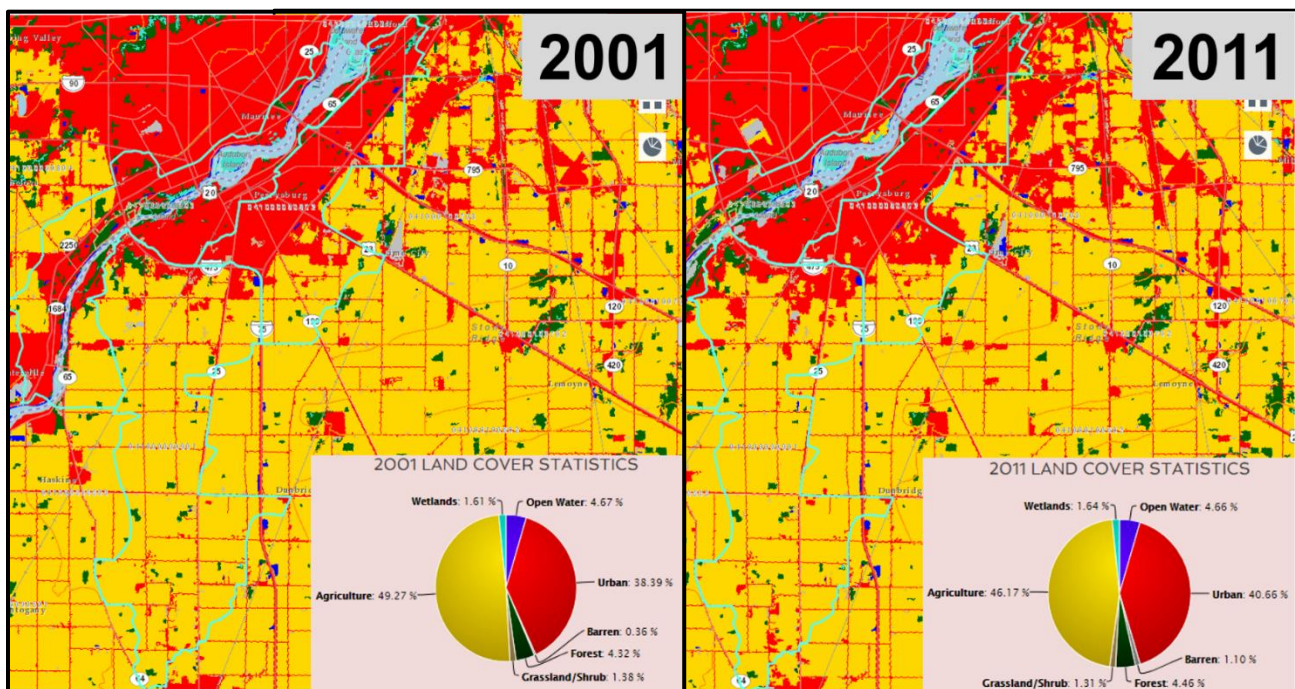
- Buffer strips and constructed wetlands
- Microcystin (Glenn - “has improved fishing in Lake Erie”)
- Education about water supply and nutrient loading to Lake Erie in Perrysburg

TECHNICAL MAPS AND DATA SESSION

Historic Land Use

The following maps display the change in land cover between 2001 and 2011 using National Land Cover Dataset (NLCD) published in those years. The bar graph indicates the percent change in land cover for major cover types within the watershed. Between 2001 and 2011, urban land covers increased by more than 2 percent, while agricultural lands decreased by more than 3 percent. These changes are most evident along the fringes of existing urban areas, where sprawl may be occurring.

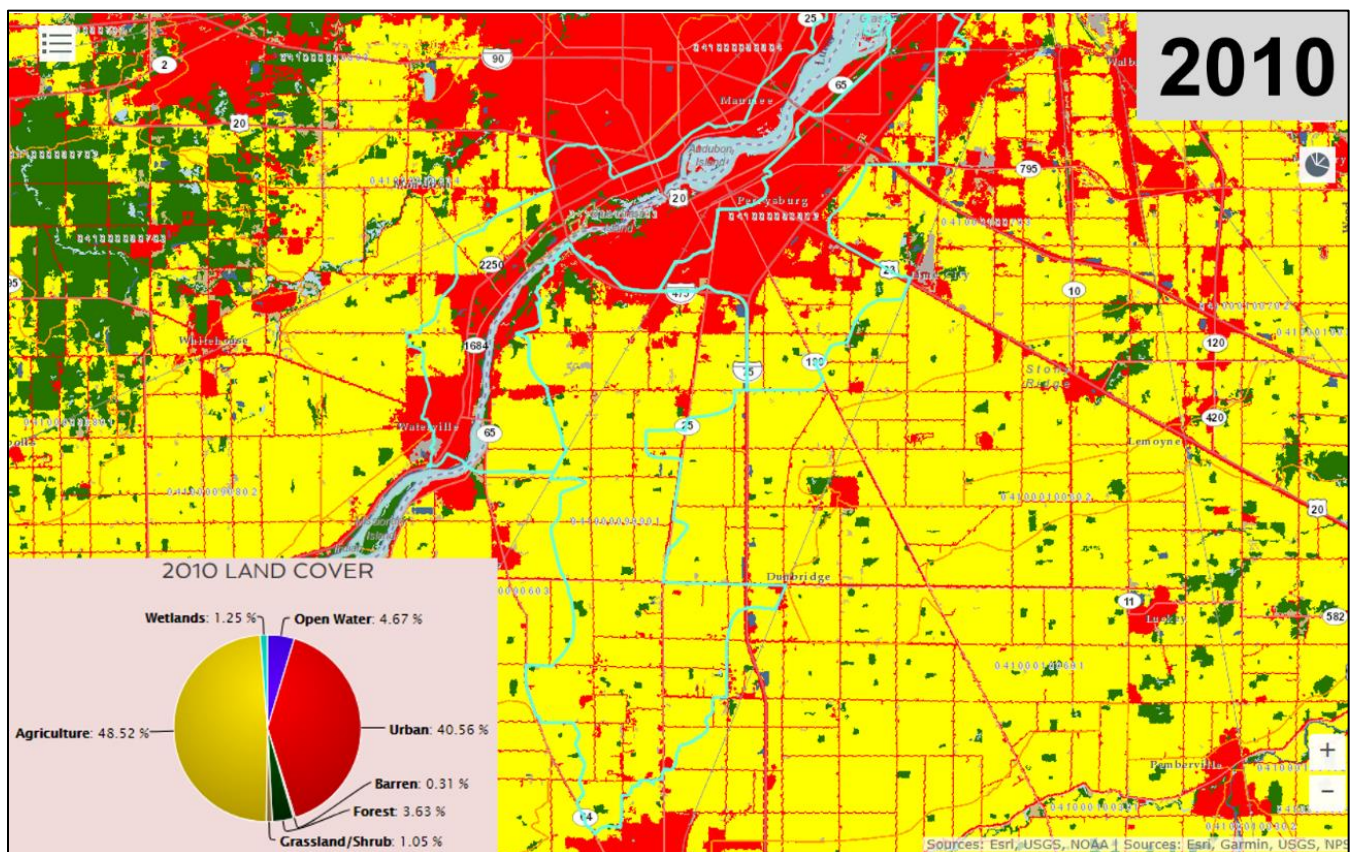
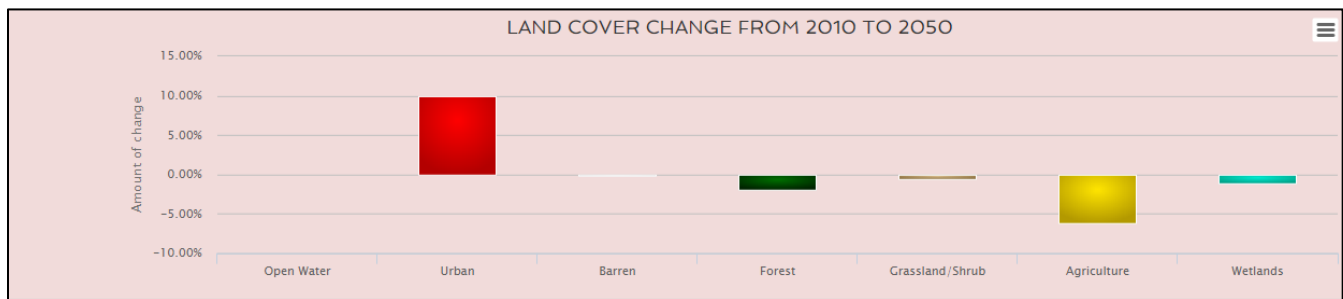
As of 2011, over 46 percent of the watershed consisted of agricultural lands and nearly 41 percent of land uses are urban.

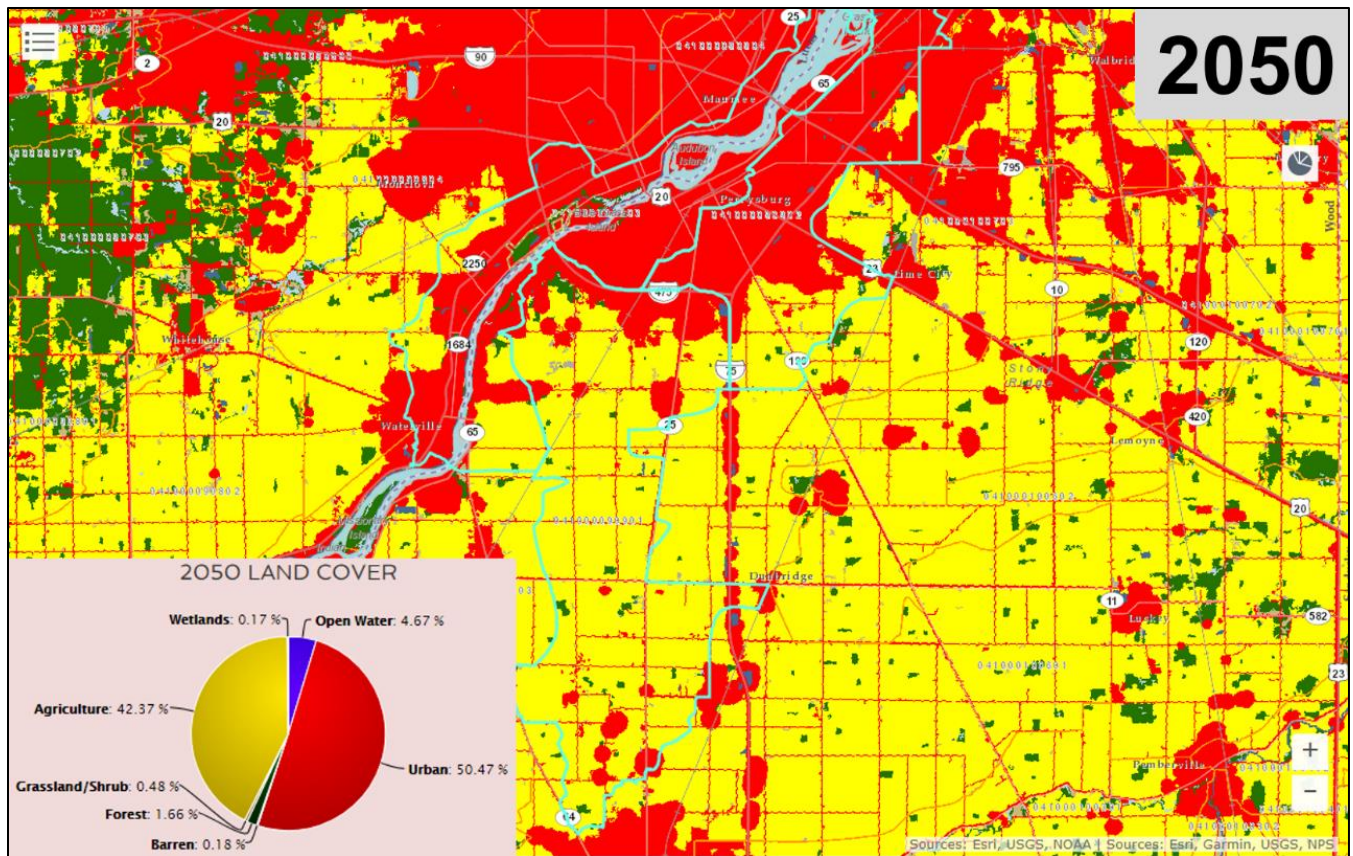


Projected Future Land Use

Using historic patterns of land use and land cover, population, and artificial intelligence technologies, researchers at Purdue University developed a simulation model (called the Land Transformation Model or LTM; Pijanowski, Brown, Shellito, & Manik, 2002; Pijanowski & Robinson, 2011; Tayyebi et al. 2012) to predict future land use and land cover around the Great Lakes.

In the target watershed area around Perrysburg, the LTM predicts a 10 percent increase in the amount of urban land cover by the year 2050. Wetlands, forested lands, and agricultural lands are expected to decrease by 1 percent, 2 percent, and 6 percent, respectively. Locations of these changes are shown in the maps below.

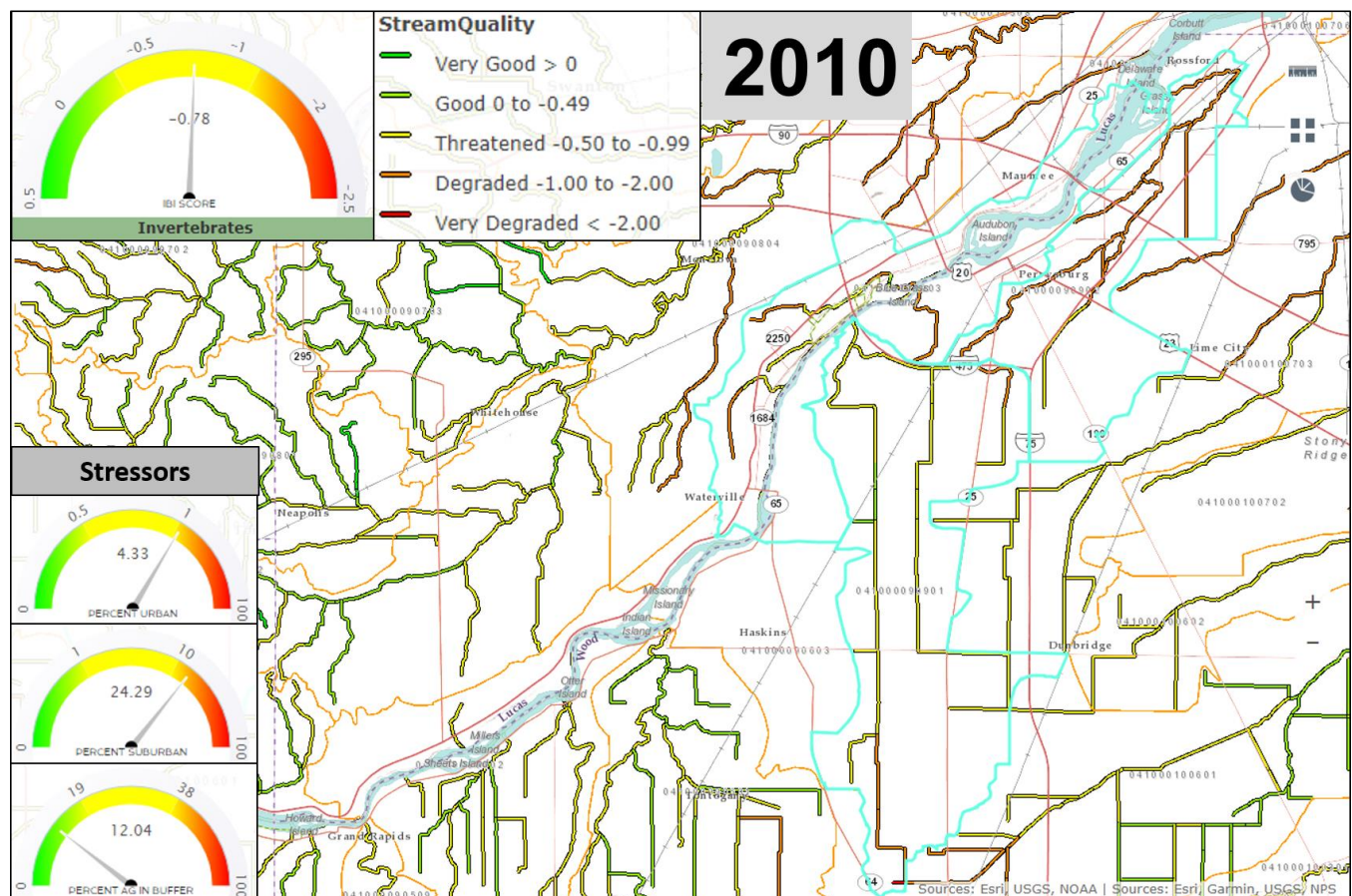




For more information about the Land Transformation Model, visit www.tippingpointplanner.org/resources.

Historic Stream Health

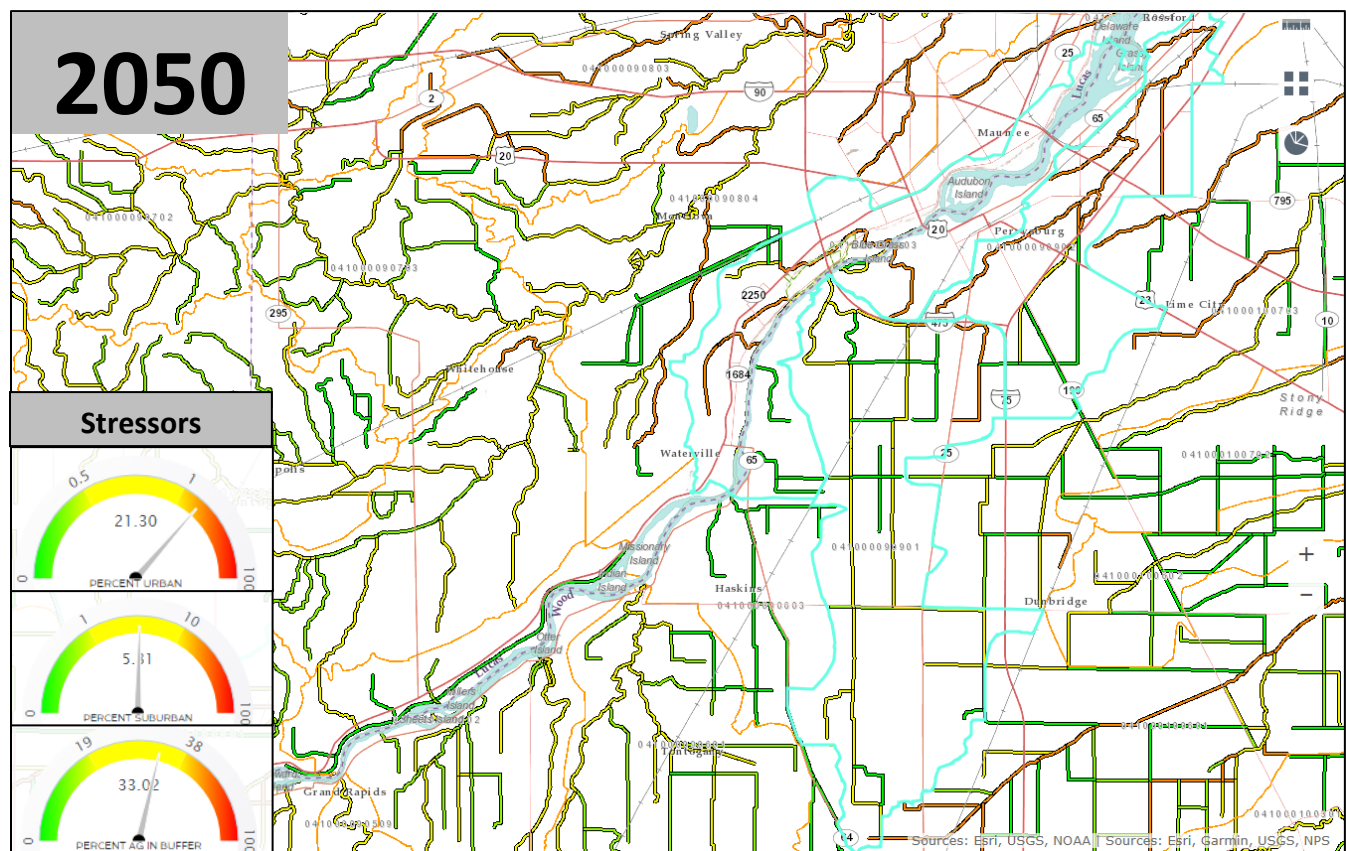
The stream health model (Riseng, Wiley, Seelbach, & Stevenson, 2010) uses three (3) stressors to model an Index of Biological Integrity (IBI) score to indicate stream health: Percent urban land cover, percent suburban land cover, and percent agricultural land within a 150 meter buffer of a stream. The displayed IBI score in the Invertebrates gauge below works on a scale where lower scores reflect worse stream condition. High percentages of stressors cause low IBI scores. In these watersheds, the percentage of urban and suburban land within the watershed area are the major drivers of stream health. Although the average condition across the entire watershed has not yet reached a tipping point, the IBI score is outside the “safe” zone and approaching a potential tipping point. Continuing to provide stream buffers or setback from streams will be important for protecting stream health.



Future Stream Health

The future stream health map shows how IBI scores are projected to change in the future, based on projected land use in the categories of urban, suburban, and Agriculture within 150 meters of a stream. The future land use land cover change projections are based on the Land Transformation Model (Pijanowski et al., 2002), and applied to the stream health model developed by Riseng et al. (2010).

The percent urban is expected to increase drastically between 2010 and 2050. The model suggests an increase from 4 percent to 21 percent and an increase in agricultural land within a 150 meter buffer from 12 percent to 33 percent. These stressors are likely to have a significant impact on the stream health within the three watersheds.

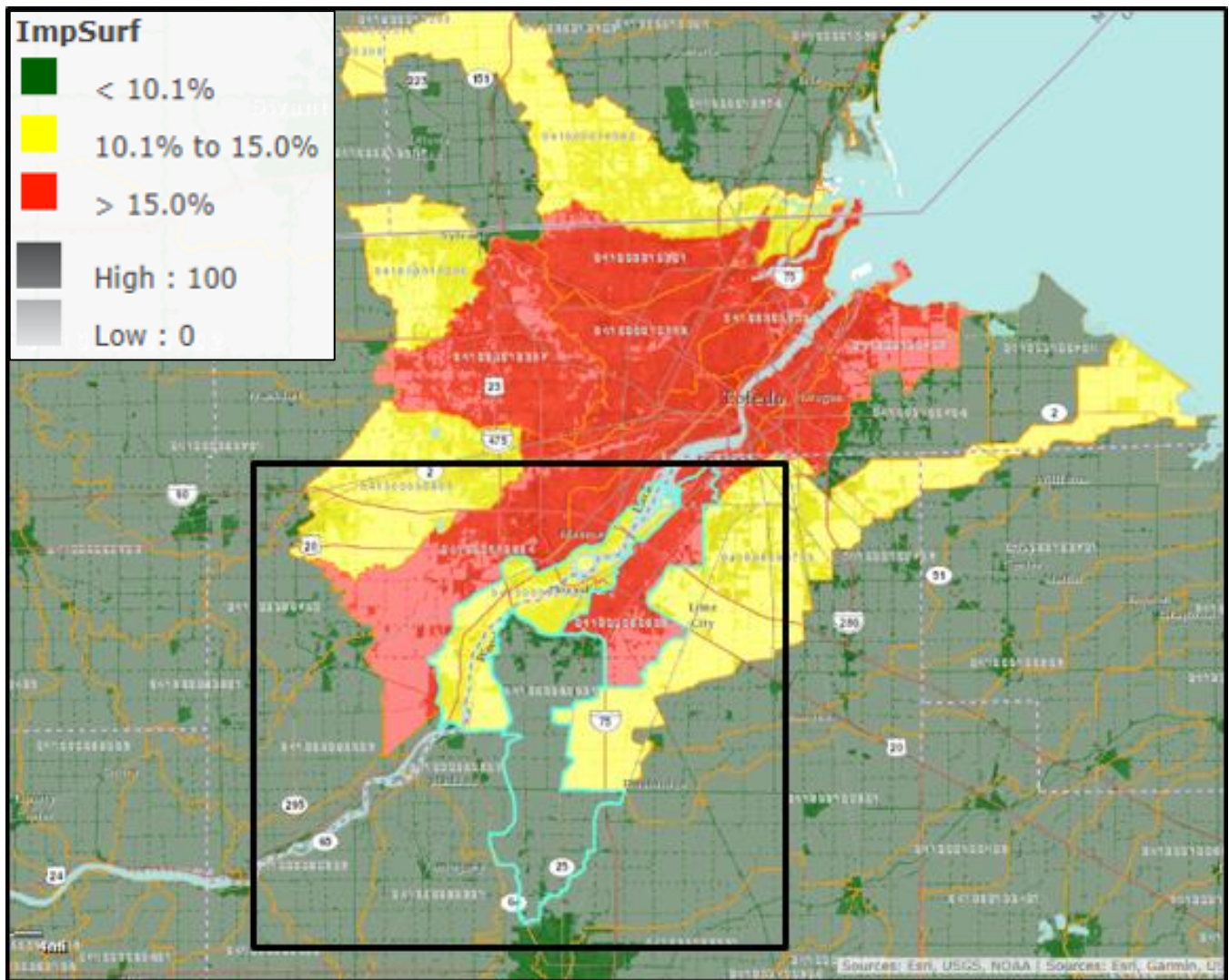


For more information about the Stream Health model, visit www.tippingpointplanner.org/resources.

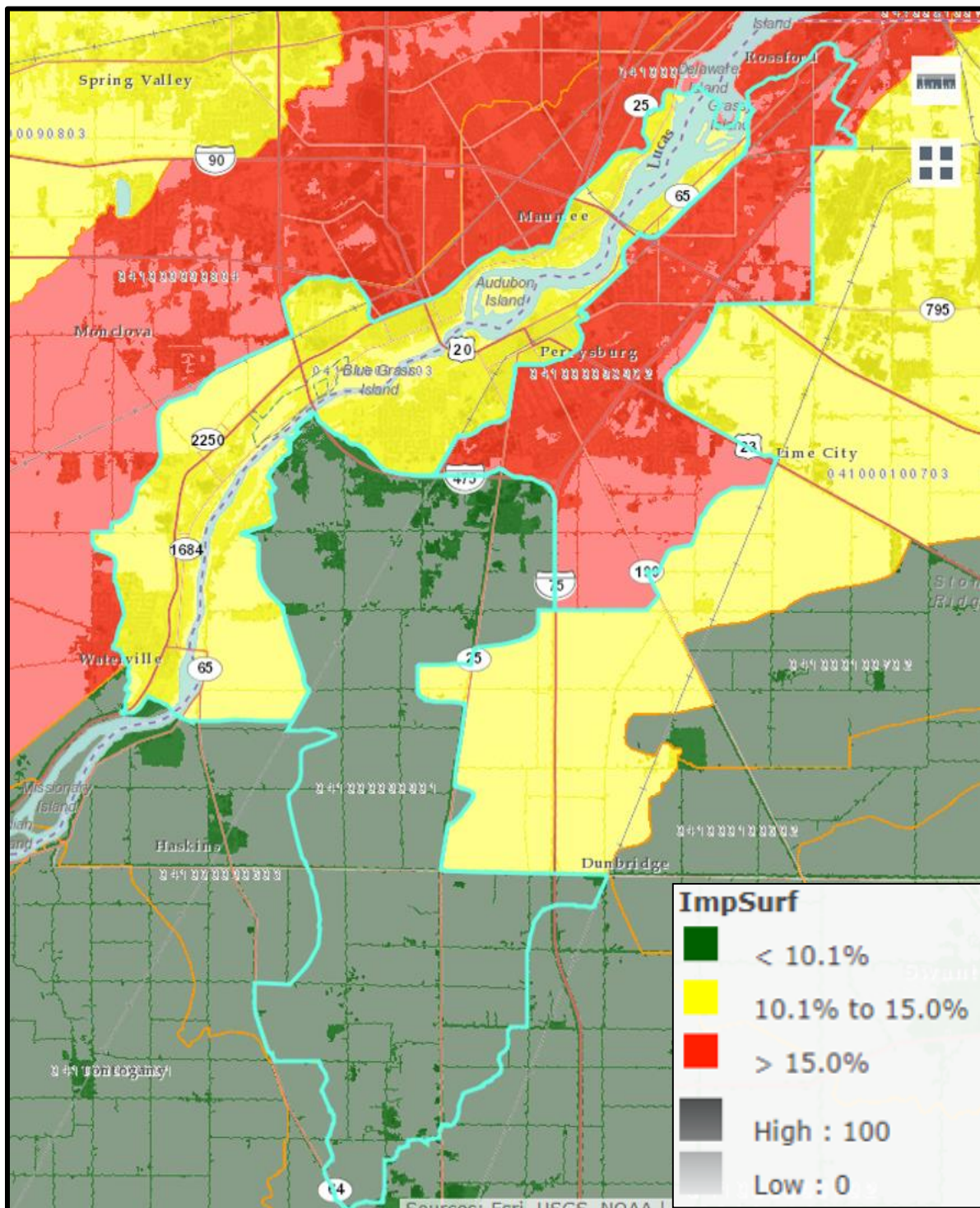
Percent Impervious Surface

Impervious surfaces reduce the amount of water that can infiltrate into the ground, which increases storm water runoff, pollutants, and sediment loads leading to degraded water quality. Water quality impairments can occur with as little as 10 percent impervious surface area and greatly increase when impervious surface areas exceed 20 percent of land cover in a watershed.

The following maps show impervious surfaces in the Maumee region and in Perrysburg watersheds.



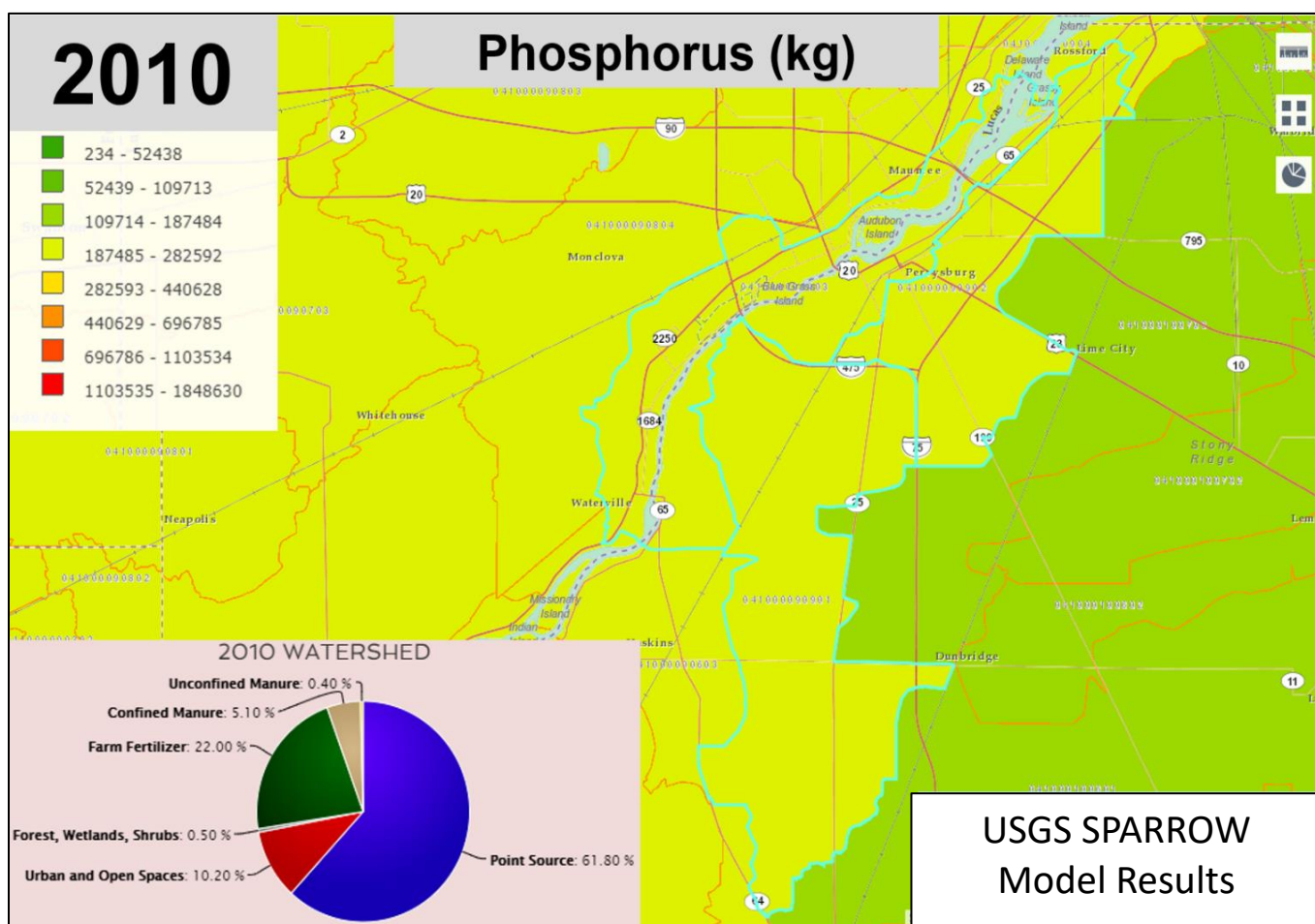
Impervious surfaces within the Perrysburg watershed are high (>15%) in the downtown areas and near the Maumee River where land is mostly developed. The percentage of impervious surfaces is much lower in the rural/agricultural areas in the southernmost watershed area.



Historic SPARROW Nutrients 2010

The SPARROW model (Robertson & Saad, 2011; Schwarz, Hoos, Alexander, & Smith, 2006) models the total phosphorus load (kg) exiting your HUC 8 watershed into western Lake Erie Basin historically and in the future. The map displays the boundaries of the HUC 12 watersheds within the larger HUC 8 watershed for which the data are calculated.

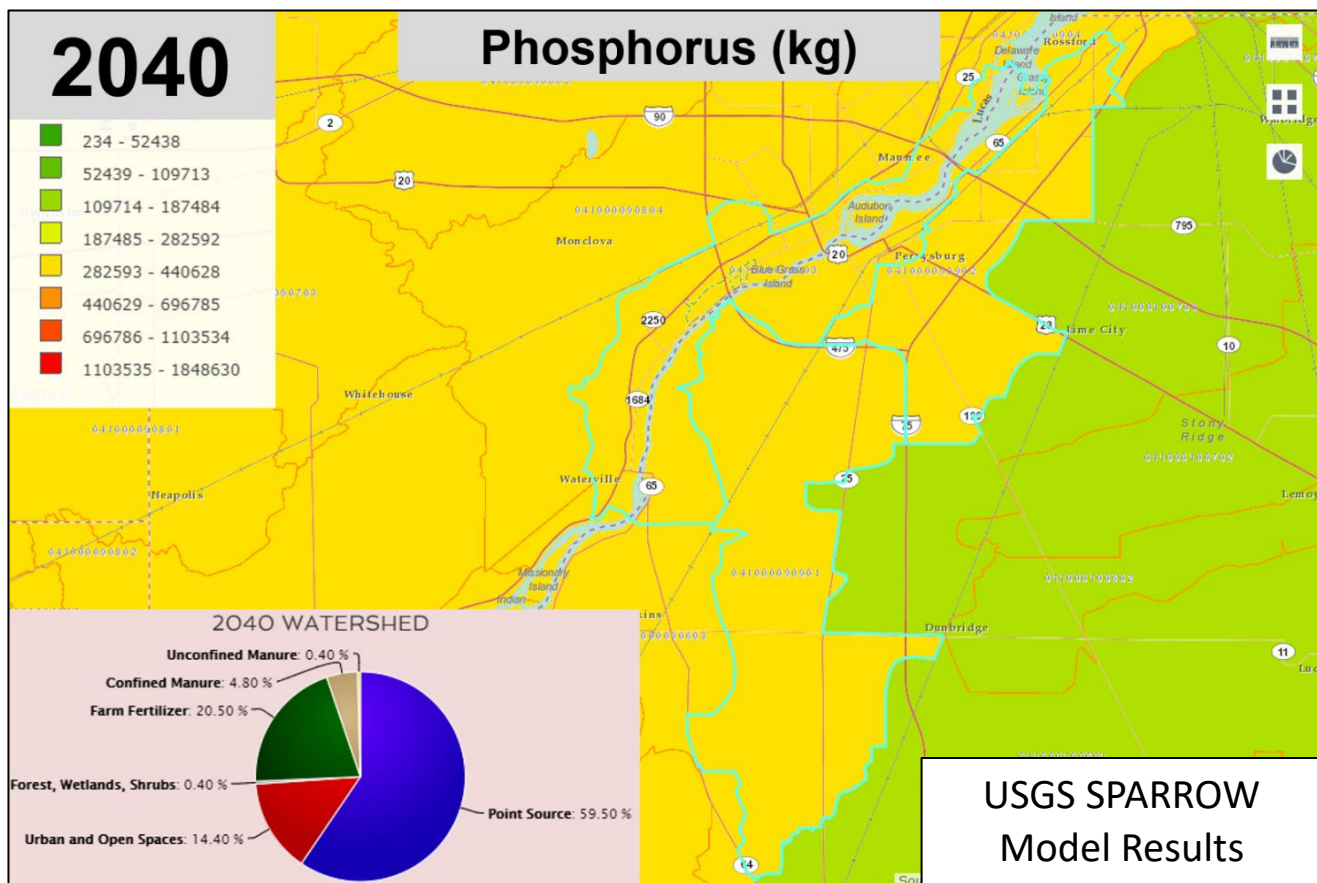
In 2010, 90 percent of the total phosphorus (P) loading from these watersheds came from point sources and agricultural sources (farm fertilizer, and confined and unconfined manure). The modeled P load coming from this HUC 8 watershed is considerable (187-283 metric tons/year). The Great Lakes Water Quality Agreement target for the western basin of Lake Erie is a 40 percent reduction in total phosphorus loading, which would require a reduction of 75-113 metric tons from this HUC 8 watershed.



Note: Because SPARROW is modeling nutrient loading at a HUC 8 scale, a portion of the modeled load could be coming from outside of the defined HUC 12 watersheds and may not be applicable for management using this watershed plan.

Future SPARROW Nutrients 2040

The map below displays the predicted total phosphorus load (kg) exiting the HUC 8 in 2040 (LaBeau, Robertson, Mayer, Pijanowski, & Saad, 2014). The major sources of total phosphorus are not expected to change significantly in the future, with point sources remaining the dominant source of total phosphorus loading. The P load from this HUC 8 watershed is expected to increase in 2040.



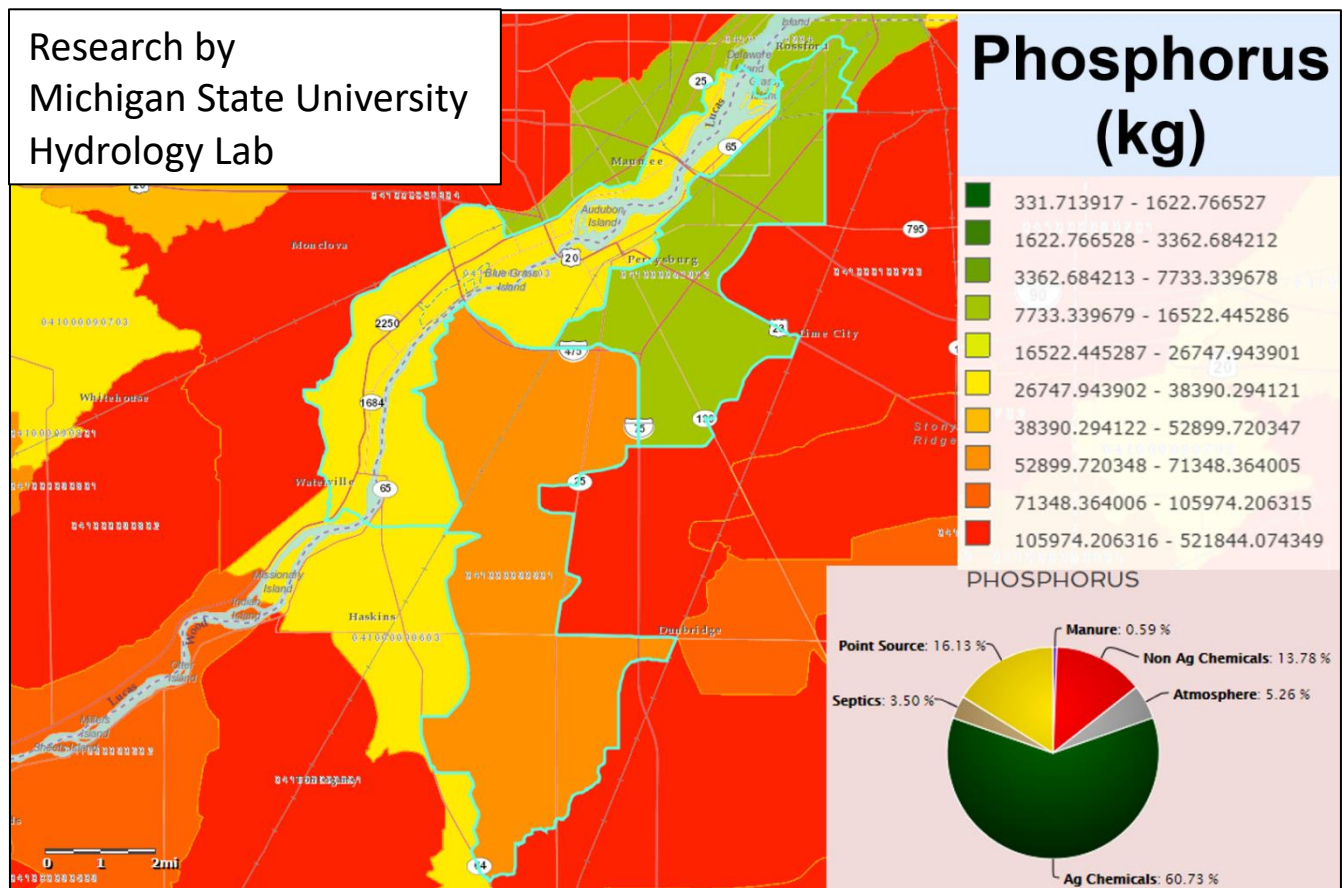
Note: Because SPARROW is modeling nutrient loading at a HUC 8 scale, a portion of the modeled load could be coming from outside of the defined HUC 12 watersheds and may not be applicable for management using this watershed plan.

For more information about the SPARROW model, visit www.tippingpointplanner.org/resources.

Spatially Explicit Nutrient Sources Map (SENS): Total Phosphorus

The SENS Map (Luszcz, Kendall, & Hyndman, 2015) models, calculates and estimates the amount and sources of total phosphorus (P) being applied to the landscape in the three Perrysburg HUC 12 watersheds. The dominant sources of P are agricultural chemicals (61 percent) and point sources (16 percent).

The model and map indicate the three HUC 12 watersheds that drain the City of Perrysburg are among the lowest contributors of P in the region.

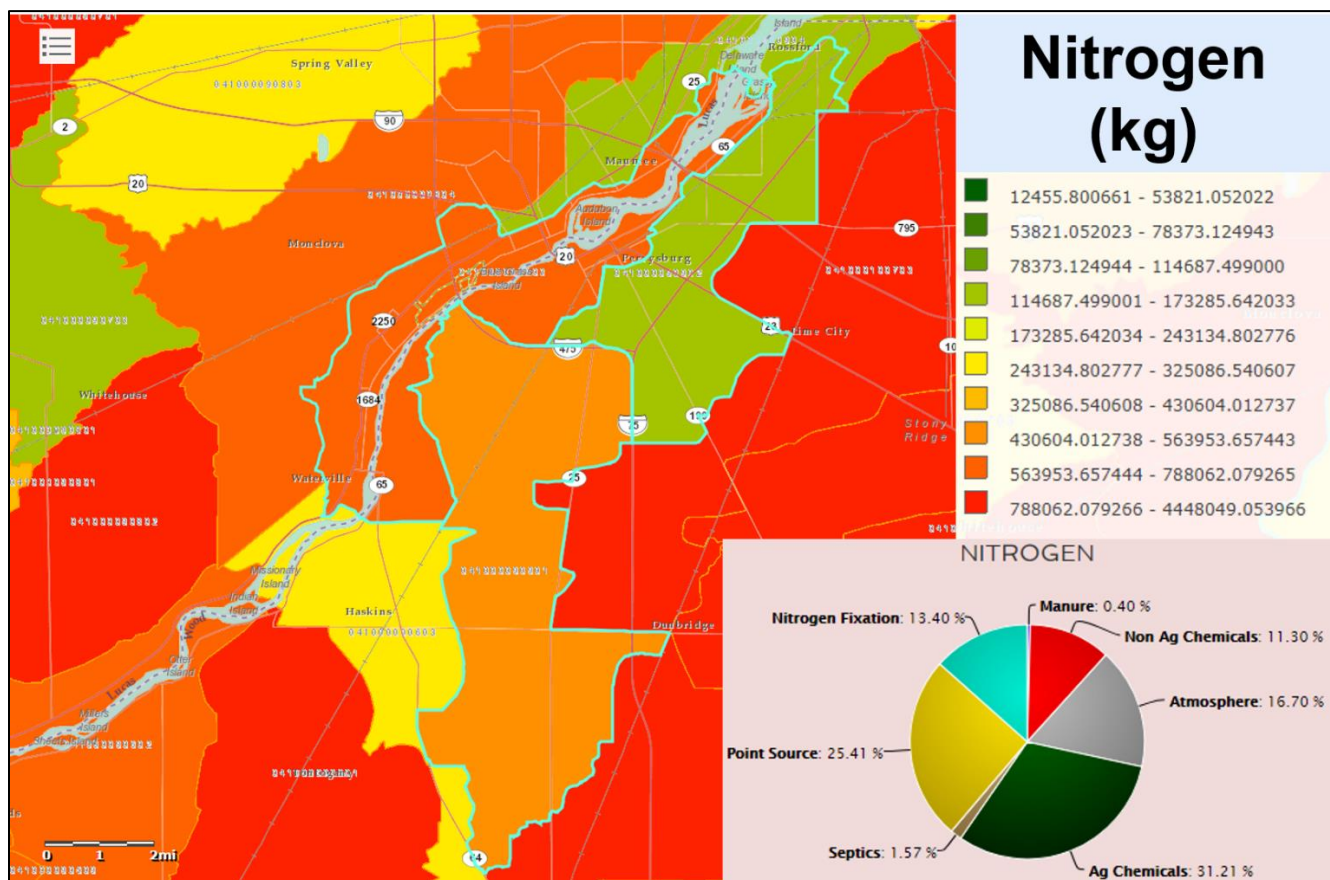


For more information about the SENS Map and model, visit www.tippingpointplanner.org/resources.

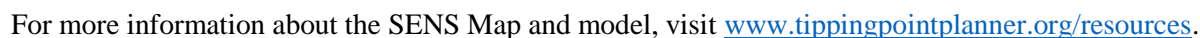
Spatially Explicit Nutrient Sources Map (SENS): Nitrate-Nitrogen

The SENS Map also models, calculates and estimates the amount and sources of nitrate-nitrogen (N) being applied to the landscape in your watersheds. In these HUC 12 watersheds, there are several significant sources of N including agricultural chemicals, point sources, atmospheric deposition, and non-agricultural chemicals (likely from lawns, golf course, etc.).

The model and map indicate the majority urban of the three Perrysburg HUC 12 watersheds applies a lower amount of N to the landscape, while the suburban and agricultural watersheds contribute a relatively high amount of N.



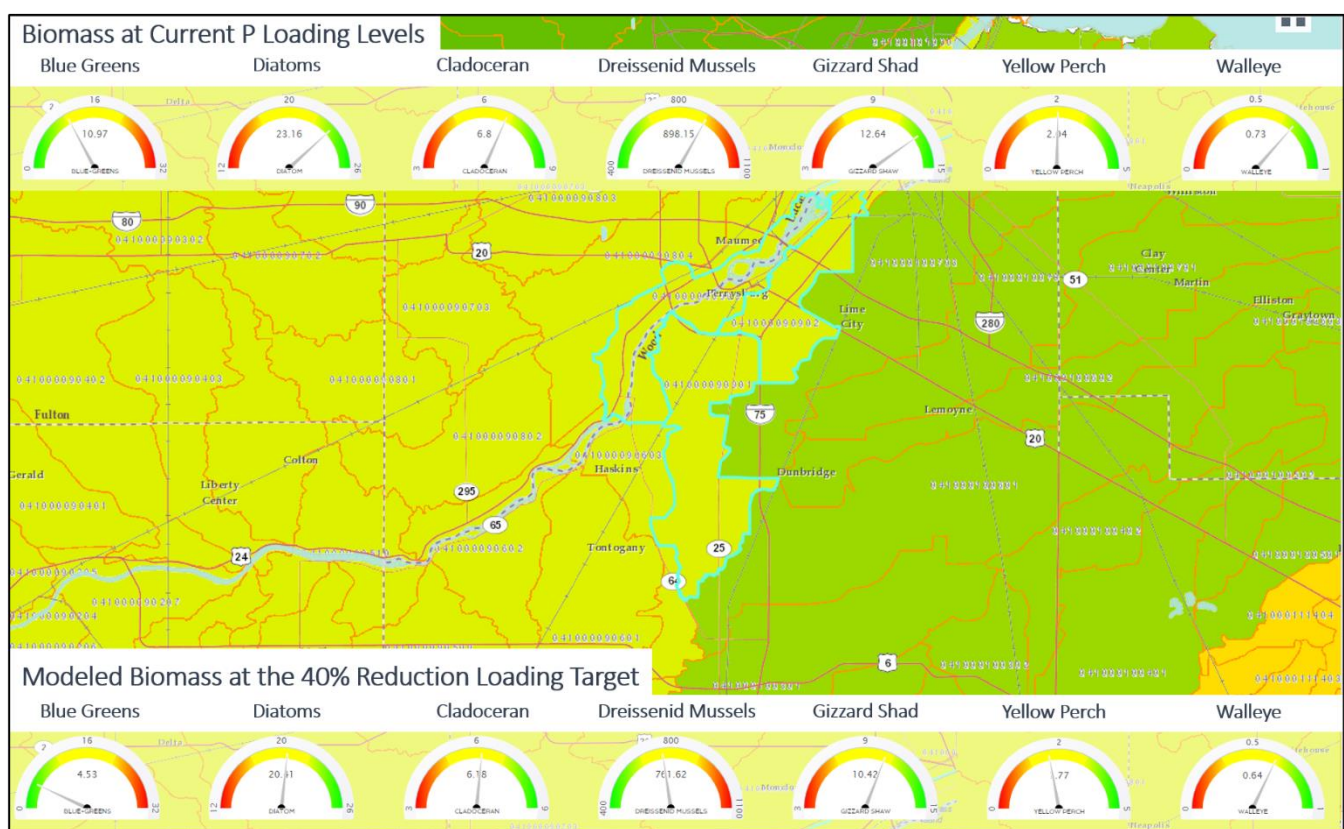
As for phosphorus, 54 percent of the applied P comes from the Grassy Creek Diversion watershed. The primary source of P in this watershed is chemical agricultural fertilizer (88 percent of all P coming from the watershed)



Western Lake Erie Food Web Models at Current and GLWQA Phosphorus Loading Levels

Researchers from the University of Michigan and the National Oceanic and Atmospheric Administration (NOAA) developed a model to understand how nutrient loading impacts food webs in the Great Lakes (Kao, Alderstein, & Rutherford, 2014). The food web model designed for the western Lake Erie Basin shows Tipping Points for algae, microorganisms, invertebrates, and fish species at current total phosphorus loading levels and at the Great Lakes Water Quality Agreement total phosphorus loading levels.

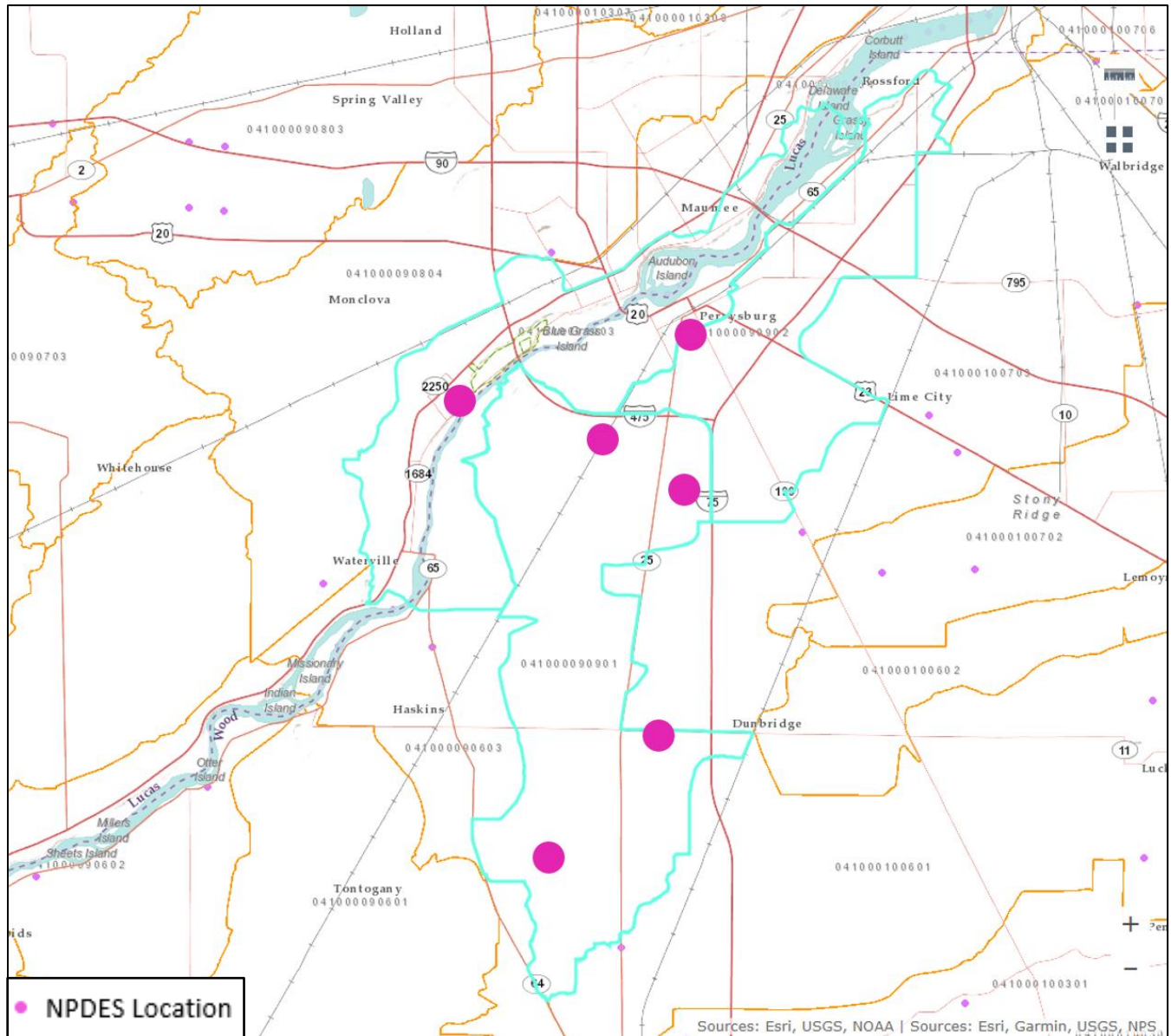
Note how each member of the food web may be affected by a reduction of total phosphorus to the Great Lakes Water Quality Agreement target (indicated by the gauges in the map below). A 40% reduction of total phosphorus significantly reduces the biomass of harmful blue-green algae and Dreissenid mussels in Lake Erie without greatly reducing the biomass of yellow perch or walleye.



For more information about the Lake Erie Food Web model, visit www.tippingpointplanner.org/resources.

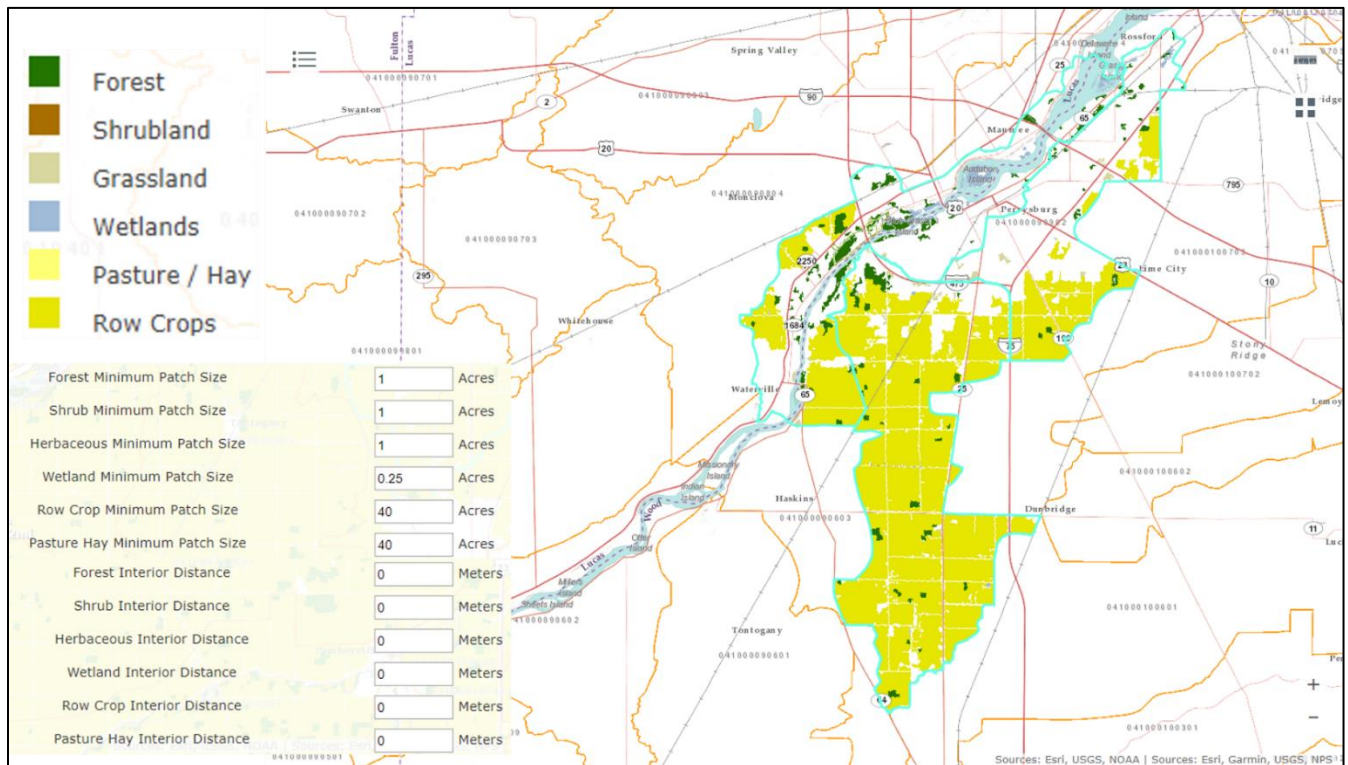
Existing NPDES Sites

The National Pollutant Discharge Elimination System (NPDES) is a federal regulatory system designed to control the discharge of pollutants into waterways from point sources. The approximate locations of permitted discharge sites are displayed on the map below.



Open Space Map

Using Tipping Point Planner, planning groups can prioritize open space for land use purposes as well, such as forest corridors for recreational trails. The map below was configured to show patches of forested lands exceeding one acre. There are very few forested lands (3.6 percent of all land cover, as of 2010) within the three HUC 12 watershed area of Perrysburg. Existing forested lands could be a target for management and preservation during future planning efforts and could serve as a backbone for create greenways or be targets for restoration.



TECHNICAL BREAKOUT SESSION QUESTIONS

Land Use Planning and Open Space

Question 1: Are there any land use conversion trends that concern you?

- Greenfield development is concerning. Some loss of forested lands, forests are seeing pressure
- Younger families/individuals looking for smaller properties
- Village of Riverbend seeing higher density pressure
- Stigma against renters (less apt to maintain, transient, less sense of place, less ownership mentality)
- As we encroach into ag, we're asking farmers to do more with less (more pesticides, fertilizer to feed more people with less land)

Question 2: What would the desired condition be (slow trend, reverse trend, or keep things like they are)?

- Higher density is desired by some planners, depending on location. Concentrate higher density in prime locations. Developers pressuring for higher density, but code currently doesn't allow for as much of that (increased minimum lot sizes, but market pressure driving the other way)
- Density is inevitable. Trend is looking toward multi-family units
- Planned Unit Development – requirements for leaving open space/natural areas on the acreage for development – provides additional benefit of open space
- May need to consider smaller areas for neighborhood commercial uses (keep traffic from traveling into town for needs)
 - Closer amenities, less car travel on major streets, neighborhood commercial nodes, mixed uses

Question 3: Are land uses that currently affect water quality, causing stream health to reach a tipping point?

- Percent suburban is driving poor stream health
- Percent urban is also causing issues

Question 4: What about in the future?

- Percent suburban decreases slightly
- Urban continues to rise, especially in the Grassy Creek area
 - Grassy Creek is an important drainage for the region
 - Flood carrying capacity, drainage, density, nutrients from urban sources

Question 5: What land use categories (Ag in buffer, Ag, Urban) are causing this condition?

- Urban, Urban, Urban – mostly in grassy creek
- Some suburban, very little ag in buffer until 2050

Question 6: Thinking about visioning results, what are the primary goals for open space in the watershed (hiking, biking, wildlife habitat, etc.)?

- Walking paths and bike paths to increase connectivity
- Tie in with existing networks
 - Wabash Cannonball trail – abandoned railroad line (rail to trail)
 - North coast inland trail, Chessie Circle trail

Question 7: Given these goals, what are the appropriate open space configurations that provide this type of land/habitat? (Set parameters accordingly and generate map)

- Existing roadways will need to be converted to shared transit/bike/walking paths
- Connection between malls/commerce and downtown
- Connection between natural areas and parks

Question 8: Given composite map that results, where are critical open spaces that need to be protected?

- Must be cooperative development between developers and public entities (City, Parks, etc.)

Question 9: Given composite map that results, where are critical open spaces that need to be created/enhanced?

- Organized sports have a major deficiency for locations for practices/games
- Could be a major driver of economic development
 - Near existing corridors (25/75)
 - To the south
- Use river corridor to connect amenities
 - Newly designated as a water trailPrivate landowners oppose expansion of expansion and connectivity by land

Green Infrastructure and Stormwater

Question 1: Is impervious surface coverage a concern?

- Parkland and agricultural areas reducing amount of impervious surface areas
- Goal of Perrysburg – determine percentage that should not be impervious – provide guidance for how to write specifications
 - Develop specifications and guidelines for new development plans
 - Residential and industrial specifications needed
- Show demonstration practices in center part of town
 - Conduct tours of different ages of GI, including maintenance
- Phase II NPDES
 - Types of impervious surfaces and soils
 - Managing stormwater for new development per EPA requirements

Question 2: Where should green infrastructure efforts or improvements be located?

- TMDLs for each watershed, what is best fit for the type of GI
- Create new types of green infrastructure
 - Older part of town - retrofit and improve areas such as alleys
 - Identify percentages of green infrastructure such as a portion of a parking lot

Question 3: Types of Green Infrastructure Practice Implementation – focus on following locations:

- Bacteria – Grassy Creek Diversion
- Bacteria and sediment – Grassy Creek
- Private, older neighborhoods – no right of ways or easements
- Interest in additional modeling using L-THIA, ideally want to use optimization model and land transformation model for green infrastructure placement

Question 4: Incentive options for practice adoptions:

- Identify and use funding options such as cost share, stormwater utility

Nutrients and Food Web

Question 1: Are current loading levels to Lake Erie good or bad for sportfish species?

- Good

Question 2: Are current loading levels to Bay good or bad for other species in the food web species?

- Bluegreen algae is high

Question 3: Given the results on the fish, invertebrate, and algae species above, and now thinking about the overall food web, are the current loading levels high, low or acceptable to maintain a healthy food web and recreational fishery in Lake Erie?

- High (Goal should be to use new GLWQA target or 40% reduction in current loading levels)

Question 4: If any action is needed, which nutrient loading source should be targeted?

- All major sources of P and N should share in the 40% reduction
 - Point sources (including CAFOs, small community lagoon systems, and packing plants)
 - Ag Chemicals and non-ag chemicals
 - Septic Systems

Question 5: Is phosphorus leaving your watershed and entering Lake Erie at a level that we should be concerned?

- Yes – need a 40% reduction to meeting GLWQA target

Question 6: What are the biggest contributing sources now and in the future?

- Biggest existing sources of Phosphorus are Point Sources and Ag Chemicals – in future, “Urban and managed open space” become more important

Question 7: What should we be most concerned about Nitrogen, Phosphorus, or both?

- For nitrogen Crooked creek/Maumee River watershed is most important (54% of land application) Grassy creek diversion is 2nd most important (32%)
- For phosphorus, Grassy creek diversion watershed is most important (54% of land application) Crooked creek/Maumee River is 2nd most important (36%)

Question 8: What are the largest sources of this nutrient being applied to the land in your watershed?

- Ag chemicals, point sources and non-agricultural chemicals are the top three application sources in order for both Nitrogen and Phosphorus.
- For Phosphorus: Ag chemicals is highest (60.7%), point sources and non-agricultural chemicals are almost tied for second (16.1% & 13.8% respectively)
- For Nitrogen: Ag chemicals is highest (31.2%), point sources second (25.4%) and non-agricultural chemicals third (11.3%)
- Important Ag chemical application strategies being recommended locally to reduce losses of N and P include:
 - Grid test and variable application of P; Use modern N application formula; Use 2 application strategy for fertilizer (Spring and side dress)

ACTION PLANNING SESSION

Land Use Planning and Open Space

The following goals were selected by the Land Use Planning and Open Space work group:

1. Reduce/Mitigate Impervious Surfaces
2. Reduce Nutrient Loading from Lawns
3. Protect Existing Forests and Wildlands
4. Farmland Protection
5. Protect Surface Water Intake

Strategies to Address Land Use Planning and Open Space Goals

Goal 1. Reduce/Mitigate Impervious Surfaces

Strategies:

- Comprehensive Plan
- Watershed Plan
- Conservation Design Ordinance
- Stormwater Utility Fee Incentives

Goal 2. Reduce Nutrient Loading From Lawns

Strategies:

- Lot Size Requirements
- Stormwater Utility Fee
- Green Infrastructure/LID
- Implement Smart Growth Practices
- Land Owner Education
- Water Resources Plan
- Wetland Conservation/Buffer Ordinance
- Tax Incentives or Differential Assessment
- Create and Preserve Riparian Wetlands
- Rain Garden Workshops
- Sediment/Erosion Control Workshops
- Lawn to Lake Care Education
- Lawn Management Ordinance

Goal 3. Protect Existing Forests/Wildlands

Strategies:

- Growth Controls
- Density or Floor Area Ratio (FAR) Bonuses
- Implement Smart Growth Practices
- Landowner Education
- Conservation Easement
- Tree Protection Ordinance

Goal 4. Farmland Protection

Strategies

Prime Farmland Protection Plan

Goal 5. Protect Surface Water Intake

Strategies:

- Lawn Management Ordinance

Strategy Notes, Action Items, Schedules, and Responsible Parties

The following action registers outline the strategies, action items, and schedules required to address and implement the goals selected by the Land Use Planning and Open Space breakout group during the Tipping Point Planner sessions. The strategies are intended to create plan-of-work, including three suggested timeframes for when tasks should be completed: 2018-2019 (short-term), 2020-2023 (medium-term or within the next grant cycle), and 2024-2029 (long-term strategic planning). Sample ordinances, outreach samples, and other reference information can be found in Appendix 1.

The following tables are incomplete and must be completed by the group.

Goal 1: Reduce and/or Mitigate Impervious Surfaces						
		Schedule				
Strategy	Action Item	2018-2019	2020-2023	2024-2029	Responsible Party	Notes
Comprehensive Plan						<ul style="list-style-type: none"> 2020 comp plan is in budget phase
Watershed Plan						<ul style="list-style-type: none"> Currently a function of this workshop

Strategy	Action Item	Schedule			Responsible Party	Notes
		2018-2019	2020-2023	2024-2029		
Conservation Design Ordinance	PUD process could be used to educate and incentivize developers to develop "conservation subdivision" style development					<ul style="list-style-type: none"> • PUD used to protect identify naturally sensitive areas • The PUD process exists currently • Should consider Goal 2. Reduce Nutrient Loading from Lawns
Stormwater Utility Fee Incentives						

Goal 2. Reduce Nutrient Loading from Lawns

Strategy	Action Item	Schedule			Responsible Party	Notes
		2018-2019	2020-2023	2024-2029		
Lot Size Requirements						<ul style="list-style-type: none"> Some groups advocate for larger lot sizes, some groups advocate for smaller lot sizes <ul style="list-style-type: none"> Recommend review of requirements
Stormwater Utility Fee						<ul style="list-style-type: none"> ERU as metric for charging stormwater fees is something the city is considering

Strategy	Action Item	Schedule			Responsible Party	Notes
		2018-2019	2020-2023	2024-2029		
Green Infrastructure/LID	Demonstration projects				City of Perrysburg, Developers	<ul style="list-style-type: none"> City is taking the lead on demonstrating these projects Used for stormwater management
Implement Smart Growth Practices						<ul style="list-style-type: none"> Discussion on existing infrastructure limiting growth to certain areas of community, 25 corridor (to south of Perrysburg) is the desired location for further development

Strategy	Action Item	Schedule			Responsible Party	Notes
		2018-2019	2020-2023	2024-2029		
Landowner Education	Develop enforcement policy/oversite on landscape firms/commercial fertilizers to be aware of or control the amount of fertilizers applied.				Appropriate City Offices	<ul style="list-style-type: none"> • Further research necessary in cooperation with private sector • Current process has loose definitions and may not be "binding" on the contractor. "Clear choices Clear Water" program could be partner to achieve progress
Water Resources Plan						
Wetland Conservation/Buffer Ordinance						<ul style="list-style-type: none"> • State is taking lead, though local regulations can be "stricter" than state requirements <ul style="list-style-type: none"> ○ They cannot be looser

Strategy	Action Item	Schedule			Responsible Party	Notes
		2018-2019	2020-2023	2024-2029		
Tax Incentives or Differential Assessment						<ul style="list-style-type: none"> Incentives to reduce the costs related to deployment of environmental management programs
Create and Preserve Riparian Wetlands						<ul style="list-style-type: none"> Wetland mitigation program at state level Zoning overlays could achieve this in next comp plan / zoning ordinance

Strategy	Action Item	Schedule			Responsible Party	Notes
		2018-2019	2020-2023	2024-2029		
Rain Garden Workshops						<ul style="list-style-type: none"> Conducted by city
Sediment/Erosion Control Workshops						<ul style="list-style-type: none"> Conducted by City - required in city construction review process
Lawn to Lake Care						

		Schedule				
Strategy	Action Item	2018-2019	2020-2023	2024-2029	Responsible Party	Notes
Lawn Management Ordinance						

Goal 3. Protect Existing Forests and Wetlands

Strategy	Action Item	Schedule			Responsible Party	Notes
		2018-2019	2020-2023	2024-2029		
Growth Controls						<ul style="list-style-type: none"> Consider Comprehensive Plan, Watershed Plan, Conservation Design Ordinances, Shoreland Ordinances, Biodiversity Plan, and Lot Size Requirements
Density or Floor Area Ratio (FAR) Bonuses						

		Schedule				
Strategy	Action Item	2018-2019	2020-2023	2024-2029	Responsible Party	Notes
Implement Smart Growth Practices						
Landowner Education						

		Schedule				
Strategy	Action Item	2018-2019	2020-2023	2024-2029	Responsible Party	Notes
Conservation Easement						
Tree Protection Ordinance						

Goal 4. Farmland Protection

Strategy	Action Item	Schedule			Responsible Party	Notes
		2018-2019	2020-2023	2024-2029		
Prime Farmland Protection Plan						<ul style="list-style-type: none"> Consider: Watershed Plan, Conservation Design Ordinance, Growth Controls, Implement Smart Growth Practices, BMP Demonstration Sites, and Conservation Easements

Goal 5. Protect Surface Water Intake

		Schedule				
Strategy	Action Item	2018-2019	2020-2023	2024-2029	Responsible Party	Notes
Lawn Management Ordinance						

Green Infrastructure and Stormwater

The following goals were selected by the Green Infrastructure and Stormwater work group:

1. Reduce/Mitigate Impervious Surfaces
2. Reduce Nutrient Loading from Lawns
3. Protect Existing Forests and Wildlands
4. Farmland Protection
5. Protect Surface Water Intake

Strategies to Address Green Infrastructure and Stormwater Goals

Goal 1. Reduce/Mitigate Impervious Surfaces

Strategies:

- Stormwater Utility Fee Incentives
- Stormwater Utility Fee
- Green Infrastructure/LID
- Implement Smart Growth Practices
- Landowner Education
- BMP Demonstration Sites

Goal 2. Reduce Volume & Rate of Runoff

Strategies:

- Shoreland Ordinance
- Rain Barrel Sales

Goal 3. Reduce Nutrient Loading From Lawns

Strategies:

- Landowner Education
- BMP Demonstration Sites
- Rain Garden Workshops
- Sediment/Erosion Control Workshops
- Lawn Management Ordinance
- Low-Impact Turf Grass Maintenance

Goal 4. Reduce Nutrient Loading and Pathogens from Septic Systems

Strategies:

- Septic Inspection and Maintenance
- Mandatory Sewer Connection Ordinance

Strategy Notes, Action Items, Schedules, and Responsible Parties

The following action registers outline the strategies, action items, and schedules required to address and implement the goals selected by the Land Use, Nutrients, and Water Quality breakout group during the Tipping Point Planner sessions. The strategies are intended to create plan-of-work, including three suggested timeframes for when tasks should be completed: 2018-2019 (short-term), 2020-2023 (medium-term or within the next grant cycle), and 2024-2029 (long-term strategic planning). Sample ordinances, outreach samples, and other reference information can be found in Appendix 1.

The following tables are incomplete and must be completed by the group.

Goal 1. Reduce/Mitigate Impervious Surface

Strategy	Action Item	Schedule			Responsible Party	Notes
		2018-2019	2020-2023	2024-2029		
Stormwater Utility Fee Incentives	County approved feasibility study - board of commissioners; will be part of tax bill					<ul style="list-style-type: none"> • Need sample ordinances • Toledo, Rossford • Potential for consultant to support effort • Budget availability for stormwater through city • Peer-community references
	Internal discussion with Town		✓			
Stormwater Utility Fee						

Strategy	Action Item	Schedule			Responsible Party	Notes
		2018-2019	2020-2023	2024-2029		
Green Infrastructure/LID						
Implement Smart Growth Practices	Review of parking lot spaces and reduce amount					<ul style="list-style-type: none"> Residential and commercial lot coverage - impervious surface Planning and Zoning

Strategy	Action Item	Schedule			Responsible Party	Notes
		2018-2019	2020-2023	2024-2029		
Landowner Education						
BMP Demonstration Sites	Continue to identify sites for demonstration projects				Wood Co Planning Commission, NW Water and Sewer District, TMACOG, Rain Garden Initiative	<ul style="list-style-type: none"> Residential, industrial, commercial, education <ul style="list-style-type: none"> Annual bus tours – TMACOG Preferred GI sites: <ul style="list-style-type: none"> More wet ponds on larger sites (subdivision) Grass swale / filter strip to dry basin Most examples in Lucas Co.

Goal 2. Reduce Volume & Rate of Runoff

Strategy	Action Item	Schedule			Responsible Party	Notes
		2018-2019	2020-2023	2024-2029		
Shoreland Ordinance	Riparian setbacks					<ul style="list-style-type: none"> Conservation easements, specifically for riparian areas - need management (permits); can tie to utility credit; roadside ditches
	Split zoning / scenic along river					
	Floodplain requirements					
Rain Barrel Sales						

Goal 3. Reduce Nutrient Loading From Lawns

Strategy	Action Item	Schedule			Responsible Party	Notes
		2018-2019	2020-2023	2024-2029		
Landowner Education	Targeted education and outreach <ul style="list-style-type: none"> Landscapers, door hangers for leaves on street/dumping yard waste 					<ul style="list-style-type: none"> Contractor workshop - builders; ID targeted issues to educate people - examples oil based on monitoring; gray water / illegal connections in sewer shed = partnerships
	Watershed Watch <ul style="list-style-type: none"> Student programs, service learning opportunities – Grassy Creek 					
	Rain Barrel Workshops for home owners at farmers market/fair					
BMP Demonstration Sites						

		Schedule				
Strategy	Action Item	2018-2019	2020-2023	2024-2029	Responsible Party	Notes
Rain Garden Workshops						
Sediment/Erosion Control Workshops						

		Schedule				
Strategy	Action Item	2018-2019	2020-2023	2024-2029	Responsible Party	Notes
Lawn Management Ordinance						
Low-Impact Turf Grass Maintenance						

Goal 4. Reduce Nutrient Loading and Pathogens from Septic Systems

		Schedule				
Strategy	Action Item	2018-2019	2020-2023	2024-2029	Responsible Party	Notes
Septic Inspection and Maintenance						
Mandatory Sewer Connection Ordinance						

Nutrients and Food Web

The following goals were selected by the work group:

1. Reduce Nutrient Loading from Crops
2. Reduce Nutrient Loading from Livestock
3. Reduce Nutrient Loading from Treatment Plants
4. Buffer Streams

Strategies to Address Nutrients and Food Web Goals

Goal 1. Reduce Nutrient Loading From Crops

Strategies:

- Open Space Plan
- Shoreland Ordinance
- Wetland Conservation/Buffer Ordinance
- Riparian Overlay Zone
- Drainage Management (Drainage Board Requirements)
- Create and Preserve Riparian Wetlands
- Lawn to Lake Care Education

Goal 2. Reduce Nutrient Loading From Livestock

Strategies:

- Shoreland Ordinance
- Landowner Education
- Wetland Conservation/Buffer Ordinance

Goal 3. Reduce Nutrient Loading From Treatment Plants

Strategies:

- Growth Controls
- Stormwater Utility Fee Incentives
- Green Infrastructure/LID
- Mandatory Sewer Connection Ordinance

Goal 4. Buffer Streams

Strategies

- Conservation Design Ordinance
- Landowner Education
- Conservation Reserve Program
- Transfer/Purchase of Development Rights
- Tree Planting Program
- Establish Vegetative Corridors or Landscaped Boulevards

Strategy Notes, Action Items, Schedules, and Responsible Parties

The following action registers outline the strategies, action items, and schedules required to address and implement the goals selected by the Nutrients, and Food Web breakout group during the Tipping Point Planner sessions. The strategies are intended to create plan-of-work, including three suggested timeframes for when tasks should be completed: 2018-2019 (short-term), 2020-2023 (medium-term or within the next grant cycle), and 2024-2029 (long-term strategic planning. Sample ordinances, outreach samples, and other reference information can be found in Appendix 1.

The following tables are incomplete and must be completed by the group.

Goal 1. Reduce Nutrient Loading from Crops

Strategy	Action Item	Schedule			Responsible Party	Notes
		2018-2019	2020-2023	2024-2029		
Open Space Plan					City of Perrysburg, Perrysburg Township	<ul style="list-style-type: none"> Riparian overlay, water resources plan, biodiversity plan, and open space plan will be highly related and overlapping. Minimal input from City in Nutrients/Food Web breakout.
Shoreland Ordinance					City of Perrysburg, Perrysburg Township, Office of Coastal Management	<ul style="list-style-type: none"> Target along Maumee River Related to Riparian Overlay Minimal input from City in Nutrients/Food Web breakout

		Schedule				
Strategy	Action Item	2018-2019	2020-2023	2024-2029	Responsible Party	Notes
Wetland Conservation/Buffer Ordinance						
Riparian Overlay Zone						

		Schedule				
Strategy	Action Item	2018-2019	2020-2023	2024-2029	Responsible Party	Notes
Drainage Management (Drainage Board Requirements)						
Create and Preserve Riparian Wetlands						
Lawn to Lake Care Education						

Goal 2. Reduce Nutrient Loading from Livestock

Strategy	Action Item	Schedule			Responsible Party	Notes
		2018-2019	2020-2023	2024-2029		
Shoreland Ordinance						See Goal: Reduce Nutrient Loading from Crops.
Landowner Education	Continue delivery to livestock operators and landowners using manure.	✓	✓		SWCDs, ODNR	<ul style="list-style-type: none"> Some manure management programs exist.

		Schedule				
Strategy	Action Item	2018-2019	2020-2023	2024-2029	Responsible Party	Notes
Wetland Conservation/Buffer Ordinance						

Goal 3. Reduce Nutrient Loading from Treatment Plants

		Schedule				
Strategy	Action Item	2018-2019	2020-2023	2024-2029	Responsible Party	Notes
Growth Controls						
Stormwater Utility Fee Incentives						

		Schedule				
Strategy	Action Item	2018-2019	2020-2023	2024-2029	Responsible Party	Notes
Green Infrastructure/LID						
Mandatory Sewer Connection Ordinance						

Goal 4. Buffer Streams

Strategy	Action Item	Schedule			Responsible Party	Notes
		2018-2019	2020-2023	2024-2029		
Conservation Design Ordinance	Work with NRCS, SWCD, and plan commission to develop conservation design ordinance				City of Perrysburg Planning and Zoning, Consulting	
Landowner Education	Continued outreach to landowners	✓	✓		OSU Extension, NRCS, SWCD	<ul style="list-style-type: none"> New BMPs to be incorporated

		Schedule				
Strategy	Action Item	2018-2019	2020-2023	2024-2029	Responsible Party	Notes
Conservation Reserve Program						
Transfer/Purchase of Development Rights						

Strategy	Action Item	Schedule			Responsible Party	Notes
		2018-2019	2020-2023	2024-2029		
Tree Planting Program	Identify native species suitable for urban forestry, ecosystem services, etc.				City of Perrysburg, OSU Extension, OH DNR	<ul style="list-style-type: none"> Develop technical assistance programs Other cities in Maumee area could be example or provide guidance for development of this program.
	Work with other cities with existing programs (Sandusky, etc.)					
Establish Vegetative Corridors or Landscaped Boulevards	Continue development and linking green spaces, residential/commercial areas, etc.					<ul style="list-style-type: none"> Work into Riparian plan

FINDINGS AND CONCLUSIONS

The process documented in this report reflects in-depth public engagement with the residents and civic leadership in Perrysburg, Ohio on land use planning, stormwater, and nutrient loading issues. Participants engaged with forecasting models and provided their vision for the future. Finally, the group selected goals and strategies to work toward implementation of its vision.

In addition to the goals and strategies outlined in this report, multiple topics and findings surfaced during the meeting series that are worth further consideration during the comprehensive plan update process. The following list—while not exhaustive—provides direction for planning and collaboration outside of the Tipping Point Planner framework:

1. Where will water come from in the future for Perrysburg? (Toledo or some other source including aquifer or piped in from some other source)
 - a. General feeling is that this should be a regional discussion and not be done separately by each community.
2. Combined Sewer Overflow (CSO) issue is important
 - a. There is interest in looking at green infrastructure as a potential solution when practical.
3. Ditch Maintenance is one issue in area
 - a. Balance between maintaining drainage function for watershed while maintaining as aesthetic quality and natural land cover when possible.
4. As the community grows and development expands, there are not existing policies that govern how landowners impact each other with onsite drainage
5. The city has pipe availability and capacity to accommodate some growth in adjacent areas
6. Interest in connecting existing active recreation sites.
 - a. The use of walking or bike corridors is of interest (and acquiring public easements or ownership where required)
 - b. Strong interest in improving connectivity of greenspace along the river
 - c. Interest in increasing public access to the river

Likewise, during the initial steering committee meeting at the start of the series, the committee spent time brainstorming community values that are important to consider during the planning process.

1. Walkability (especially in downtown area and between schools and subdivisions)
2. School quality is a strong community asset and the reason many live here
3. Safety is an important asset
4. Sporting opportunities for residents are important
5. Walleye fishing in the river is important to residents and to economic development

The community values create challenges for planners and elected officials, alike. For instance, how do we keep things affordable for existing residents as the community grows? How do we provide economic incentives for working farms to stay a part of the community and not convert to new developments? How do we balance the developers' desire to create high density development with the residents' resistance to dense developments? In addition to the findings listed above, the Illinois-Indiana Sea Grant and Ohio Sea Grant team also observed strategies elsewhere during the Tipping Point Planner process that may provide additional opportunities for discussion by the partners.

These findings include:

1. Public transition options for connecting downtown to Levis Commons and schools/subdivision areas
2. Establish and improve working collaborations between the various sectors contributing nutrients to Lake Erie (i.e. agricultural chemicals, point sources (includes CAFO's and small community systems), septic system inspection/regulation, non-agricultural chemical users)
3. Active regional planning discussion relative to sustainable water supply and demand planning

The process is not over; as shown in this report, there are many things left to be developed and decided. It is the hope of Illinois-Indiana and Ohio Sea Grant that the community continue to collaborate on the development of their comprehensive plan and that it be inclusive or informed by the contents of this report. Example strategies and ordinances—as well as sample plans—can be found in the appendix of this report. These resources include digital links to websites, documents, and other tools to help establish these strategies for Perrysburg and the surrounding area.

REFERENCES

- Kao, Y., Adlerstein, S., & Rutherford, E. (2014). The relative impacts of nutrient loads and invasive species on a Great Lakes food web: An Ecopath with Ecosim analysis. *Journal of Great Lakes Research*, 40, 35-52. doi:10.1016/j.jglr.2014.01.010
- LaBeau, M. B., Robertson, D. M., Mayer, A. S., Pijanowski, B. C., & Saad, D. A. (2014). Effects of future urban and biofuel crop expansions on the riverine export of phosphorus to the Laurentian Great Lakes. *Ecological Modelling*, 277, 27-37. doi:10.1016/j.ecolmodel.2014.01.016
- Luszcz, E. C., Kendall, A. D., & Hyndman, D. W. (2015). High resolution spatially explicit nutrient source models for the Lower Peninsula of Michigan. *Journal of Great Lakes Research*, 41(2), 618-629. doi:10.1016/j.jglr.2015.02.004
- Pijanowski, B. C., Brown, D. G., Shellito, B. A., & Manik, G. A. (2002). Using neural networks and GIS to forecast land use changes: A Land Transformation Model. *Computers, Environment and Urban Systems*, 26(6), 553-575. doi:10.1016/s0198-9715(01)00015-1
- Pijanowski, B. C., & Robinson, K. D. (2011). Rates and patterns of land use change in the Upper Great Lakes States, USA: A framework for spatial temporal analysis. *Landscape and Urban Planning*, 102(2), 102-116. doi:10.1016/j.landurbplan.2011.03.014
- Riseng, C. M., Wiley, M. J., Seelbach, P. W., & Stevenson, R. J. (2010). An ecological assessment of Great Lakes tributaries in the Michigan Peninsulas. *Journal of Great Lakes Research*, 36(3), 505-519. doi:10.1016/j.jglr.2010.04.008
- Robertson, D. M., & Saad, D. A. (2011). Nutrient inputs to the Laurentian Great Lakes by source and watershed estimated using SPARROW watershed models. *Journal of the American Water Resources Association*, 47(5), 1011-1033. doi:10.1111/j.1752-1688.2011.00574.x
- Schwarz, G.E., Hoos A. B., Alexander, R. B., & Smith, R. A. (2006). The SPARROW surface water-quality model: theory, application, and user documentation. U.S. Geological Survey Techniques and Methods Report. Book 6. Chapter B3. U.S. Geological Survey, Reston, VA.
- Tayyebi, A., Pekin, B. K., Pijanowski, B. C., Plourde, J. D., Doucette, J. S., & Braun, D. (2012). Hierarchical modeling of urban growth across the conterminous USA: developing meso-scale quantity drivers for the Land Transformation Model, *Journal of Land Use Science*. doi:10.1080/1747423X.2012.675364

Appendix 1. Example Ordinances and Strategies

Table of Contents

Green Infrastructure and Stormwater Ordinances and Strategies	2
BMP Demonstration Sites.....	2
Green Infrastructure/LID	3
Implement Smart Growth Practices	4
Land Owner Education.....	5
Low-Impact Turf Grass Maintenance	6
Rain Barrel Sales.....	7
Rain Garden Workshops	8
Sediment and Erosion Control Workshops.....	9
Septic Inspection and Maintenance	10
Shoreland Ordinance.....	11
Stormwater Utility Fee	12
Stormwater Utility Fee Incentives.....	13
Land Use Planning Ordinances and Strategies.....	14
Comprehensive Plan	14
Density or Floor Area Ratio (Far) Bonuses	15
Conservation Easement	16
Growth Controls	17
Lawn Management Ordinance	18
Lot Size Requirements.....	19
Low Impact Re/Development Ordinance	20
Prime Farmland Protection	21
Tax Incentives or Differential Assessment	22
Tree Protection Ordinance	23
Nutrients, Water Quality, and Food Web Ordinances and Strategies	24
Biodiversity Plan.....	24
Purchase of Development Rights	25
Law to Lake Care Education.....	26
Drainage Management (Drainage Board Requirements)	27
Conservation Design Ordinance	28
Mandatory Sewer Connection Ordinance	29
Open Space Plan.....	30
Riparian Overlay Zone	32
Tree Planting Program.....	33
Water Resources Plan.....	34
Wetland Conservation/Buffer Ordinance	35

Green Infrastructure and Stormwater Ordinances and Strategies

BMP Demonstration Sites

Description

Communities, businesses, or non-profits may install a stormwater practice that is not in common use in the area as an educational project to help others (designers, homeowners, regulators, etc.) better understand how this practice works and looks. This can be an effective tool at spurring further use of this practice by overcoming the barriers of "unknown" practices.

Strengths

Helps to bring awareness to the community as to what other practices are available that can be beneficial.

Weaknesses

Highlighting a single aspect could be problematic if it fails due to unforeseen circumstances.

Examples

Example 1: Lakeside Stormwater Demonstration Project

State/Contact: MN/Jesse Schomberg

Description: Installation of various stormwater BMP's in an existing residential neighborhood, with pre-and post-installation monitoring and survey work to determine acceptance, maintenance, and function of BMP's.

[Lakeside Neighborhood Stormwater Runoff Reduction Project](#)

Example 2: Examples of BMP

State/Contact: Environmental Protection Agency

Description: The EPA provides examples of BMP or Integrated Management Practices (IMP's) that can be used.

[National Menu of Best Management Practices for Stormwater](#)



Green Infrastructure/LID

Description

Green Infrastructure and low impact development employ natural systems and processes, such as encouraging stormwater to infiltrate into soils or be taken up by plants, to better manage urban stormwater. It can be used as a substitute for or as a supplement to conventional "grey" infrastructure employed in separate stormwater sewer collection and storage systems.

Strengths

Green infrastructure is generally as effective as conventional stormwater detention at removing many pollutants, but often costs substantially less to install and maintain over its lifespan. It may be a more cost-effective approach to managing stormwater in new development in many communities.

Weaknesses

Many landowners and municipal officials are unfamiliar with the maintenance requirements of green infrastructure practices. Cost-effectiveness might also be less favorable depending on site characteristics (such as a parcel having clay soils or shallow depth to bedrock) that might impair infiltration. The effectiveness of bio-infiltration can also vary by season (especially in the winter).

Examples

Example 1: Michigan

Description: Low Impact Development

[Low Impact Development Manual for Michigan](#)

Example 2: EPA

Description: A webpage explaining the concepts of Green Infrastructure/LID and a plethora of links to resources including reports, manuals, and multi-media.

[EPA Guidance Webpage](#)

Example 3: Chicago, Illinois

Description: City's website on their "Greenest Street in America" project. Includes video and guidebook developed for the program.

[Greenest Street in America Project](#)

Example 4: Ohio/Michigan

Description: TMACOG's website promoting Green Infrastructure for Stormwater Management.

[Green Infrastructure in the Toledo Metropolitan Area](#)

Implement Smart Growth Practices

Description

Smart Growth strategies require fewer resources from the environment and also generate less waste to return to the environment. Using various design strategies, the water resources of a region can be managed to reduce the amount of runoff, thereby reducing the amount of water needed to be moved to support a region.

Strengths

Effectively utilizing stormwater and wastewater can reduce the water costs of a community.

Weaknesses

Most design standards do not require consideration for efficient use of water resources and adding requirements are perceived as adding costs and burden to developers.

Examples

Example 1: EPA

Description: A webpage with links to applying for smart growth implementation assistance as well as other tool and technical assistance programs.

[EPA Smart Growth Website](#)

Example 2: Delaware

Description: A planning document to protect southern Delaware's water quality using smart growth strategies. Technology can be applied lake-based watersheds as well.

[Protecting Water Quality](#)

Example 3: New York

Description: Environmental conservation policy for the state of New York.

[NYS Smart Growth](#)

Land Owner Education

Description

Land education programs are designed to inform citizens and businesses on better land use management. Through training and seminars, these programs enable those participating to effectively manage their property in an environmentally friendly manner. These programs help to lessen the need for infrastructure investment and improvement in the future.

Strengths

Programs allow residents to make better informed decisions. Investing into citizen education can pay dividends in the long run in terms of reduced public repair and restoration projects.



Weaknesses

Program implementation and training can cost time and money. There is no promise programs will resonate with landowners.

Examples

Example 1: Website from Virginia Tech on land ownership

State/Contact: Virginia Tech University

Description: Landowner education programs through Virginia Tech University. Provides newsletters and resources for landowners allowing them to keep up to date on new material.

[Virginia Forest Landowner Education Program](#)

Example 2: Overview paper providing Guidance

State/Contact: Adam Downing (Virginia Cooperative Extension) James Finley (Penn State University)

Description: Paper providing information on land maintenance strategies. Gives advice on how the program should be set up and managed.

[Journal of Extension – Private Forest Landowners](#)

Example 3: State/General Guidance or Example

State/Contact: Indiana Department of Natural Resources

Description: Page provides links on various information involving financial assistance, technical assistance, species information and new information links.

[Indiana DNR Habitat and Wildlife Landowner Assistance](#)

Low-Impact Turf Grass Maintenance

Description

Many of the fertilizers and pesticides that traditionally have been used to improve lawn quality have side effects when they are washed off into sewers, rivers, and lakes. Polluted runoff can ruin rivers and lakes as habitats for wildlife by changing the ecosystem in a number of ways.

Strengths

Low impact lawn care encourages use of native plant species which require significantly less maintenance and preserves the natural ecosystem, expanding habitat for local wildlife

Weaknesses

Native landscaping may not be considered as attractive as many of the plants it would be replacing and therefore property value impacts may not always be positive.

Examples

Example 1: Illinois-Indiana Sea Grant Lawn to Lake Program

Description: A full website of instruction and resources about Natural Lawn Care and landscape practices that endanger the Lake Michigan ecosystem.

[Lawn to Lake Program](#)

Example 2: Minnesota

Description: A website with guidance and additional resources for the self-motivated lawn care provider.

[Low-Impact Lawn Care in Minnesota](#)

Example 3: Minnesota

Description: The Low-Input Lawn Care (LILAC) program helps property owners reduce inputs of product, expense, time, and labor required to maintain a lawn. It includes a lawn renovation guide and other resources.

[LILAC Program](#)

Rain Barrel Sales

Description

Rain barrels capture relatively small amounts of roof runoff, but the captured precipitation can be used by homeowners for watering gardens or yards, and provides a better understanding of the volume of water generated by rooftops. Communities or organizations frequently organize rain barrel sales, where large shipments of barrels can be sold at a reduced cost. Some companies will bring a truckload of barrels to your community and provide all the logistics in exchange for marketing assistance for the sale.

Strengths

Helps delay the contribution of precipitation to a combined sewer system, extending local wastewater treatment capacity. Reduces off-site stormwater runoff contributions to reduce flood risks, and saves on your water bill by using greywater for irrigation rather than expensive, treated, potable water.

Weaknesses

It doesn't need to rain much to fill the rain barrels, thus limiting their stormwater management and water reuse benefits. Also, water re-use opportunities are limited during the winter season.

Examples

Example 1: Minnesota

Description: One company that organizes truckload sales for communities.

[ORBIS Rain Barrel Truckload Sales](#)

Example 2: Ohio

Description: Cuyahoga Conservation Districts' webpage on Rain Barrels. Connects to installation directions, rain barrel workshops, and sales locations.

[Cuyahoga District Rain Barrel Program](#)

Example 3: Joliet, Illinois

Description: The city's webpage highlighting discounted rain barrels and guidance for maintenance of rain barrels throughout the year.

[Joliet Rain Barrel Program](#)

Example 4: Michigan

Description: Washtenaw Conservation District's webpage on the purchase, maintenance, and value of rain barrels for citizens within its boundaries.

[Washtenaw Rain Barrel Program](#)

Rain Garden Workshops

Description

Rain Gardens are useful structures that provide numerous benefits related to water resources and pollution prevention. These can be installed in homes, businesses, or community areas. These workshops take people through a step-by-step process on how to install a rain garden at the place of interest. Payoffs can include reduced runoff pollution, improved water quality, water conservation, and habitat creation.



Photo Credit: <http://www.healthyriverspartnership.com/>

Strengths

Helps to give interested citizens and organizations the knowledge to successfully install a rain garden.

Teaching proper techniques can reduce pollution runoff and allow for natural filtration of the water through the plants and soil.

Weaknesses

Takes time and effort to properly organize the workshops. Time invested may or may not pay off in citizen implementation.

Examples:

Example 1: Ohio

Description: Rain Garden manual giving overview of rain gardens, installation, plants to use, sizing, and maintenance.

[Rain Garden Guide](#)

Example 2: Wisconsin

Description: Rain Garden manual providing information covering rain gardens and methods to installation.

[Rain Garden Manual](#)

Example 3: New Jersey

Description: This is a detailed website that provides a wide arrange of information including rain garden overviews, training programs, installation techniques, and past rain garden examples.

[Rain Garden Resource Website](#)

Sediment and Erosion Control Workshops

Description

Erosion control workshops are designed to help reduce the amount of sediment and other particles displaced by natural and human related causes. Sediment loss reduces the effectiveness of farmlands that rely on the soil to be as efficient as possible. Workshops function to properly teach landowners, farmers, and others how to properly reduce the amount of sediment loss caused by changing weather patterns.

Strengths

Helps landowners, farmers, businesses, and others to reduce the amount of sediment lost on their property. Giving them the information to help change their practices can result in less pressure on government and environmental organizations. Helps to prevent further possible clean-up or projects in the future.

Weaknesses

Takes time and money to implement and organize. It is possible that the information relayed to those attending may not be utilized.

Examples

Example 1: Illinois

Description: Gives an overview of their erosion & sediment control workshop. Displays the template they used for a past three module workshop.

[Erosion and Sediment Control BMP Manual](#)

Example 2: USDA

Description: A comprehensive document discussing erosion control techniques, practices, and equipment for urban areas.

[Comprehensive Erosion Control Packet](#)

Example 3: Manitowoc, Wisconsin

Description: Codes regarding construction site erosion protocol.

[City of Manitowoc Erosion Control](#)

Septic Inspection and Maintenance

Description

Septic systems must be adequately maintained and septic tanks pumped out regularly to ensure their effectiveness in removing pollutants from wastewater. Communities may adopt inspection programs or ordinances to require such proper maintenance in order to protect ground- and surface-water resources.

Strengths

Inspection and maintenance programs are an effective way of protecting water quality and the public health, especially if private wells are in proximity to septic fields. Inspection requirements at time of sale can also protect future homebuyers against these risks.

Weaknesses

If some people are simply ignorant of health and environmental risks or too poor to afford to periodically pump out or repair their own failing septic systems, then an inspection and maintenance ordinance will have little impact on changing their behavior.

Examples

Example 1: Kent County, Michigan

Description: Ordinance for the inspection and maintenance of septic tanks in a county with a mix of rural and urban areas.

[Kent County Septic Ordinance](#)

Example 2: Indiana

Description: A county with a mix of rural and urban areas including South Bend has an ordinance regulating septic systems inspection and maintenance.

[St. Joseph Septic Ordinance](#)

Shoreland Ordinance

Description

A shoreland ordinance sets standards for development and land use along shorelines riparian corridors, including numerous factors such as setbacks, agricultural and forestry practices, sanitary systems, vegetation clearing, and erosion control. It is usually administered as an overlay zone - additional standards are imposed on the property in addition to those imposed by the base zoning.

Strengths

Shorelines are dynamic, risky, and vulnerable locations, requiring sound management.

Weaknesses

Shoreline property is expensive because proximity to the water is deemed to be a development amenity. Imposing additional restrictions on the use of riparian property and requiring additional stringent engineering practices may further raise riparian land and development costs.

Examples

Example 1: State or General Guidance

State/Contact: MN, Jesse Schomberg

Description: Minnesota's Alternative Shoreland Management Standards

[MN DNR Shoreland Management Standards](#)

Example 2: State or General Guidance

State/Contact: MI, Mark Breederland

Description: Michigan Natural Shoreline Partnership

[Shoreline Partnership](#)



and

Stormwater Utility Fee

Description

Stormwater runoff that does not infiltrate into the soils usually flows over impervious surfaces and ends up in a public sewer system, where it is treated and released to a waterway. Maintenance of the distribution system and operation of the wastewater treatment facility imposes costs on a community, usually recaptured through municipal property taxes or a sewer fee. Another financial approach is to create a stormwater utility, which charges landowners for the treatment of the captured stormwater and for the operations and maintenance of the stormwater collection system. The utility would impose its fee based on how much stormwater is being generated by each landowner, readily calculated from the amount of impervious surface on the parcel and amount of annual average precipitation in the community. Any stormwater diverted from the sewer system through infiltration or temporary retention (such as from a green roof or by using rain barrels) could be given a credit against the utility fee equal to the averted collection and treatment costs.

Strengths

A utility fee system gives greater transparency as to the true societal costs of managing stormwater runoff, rather than incorporating stormwater management into a sewer fee that would also include wastewater management costs. Once people better understand the costs of stormwater management, they would have an economic incentive to employ practices to divert more stormwater from the collection system, thus increasing its effective capacity without having to continually pay more money to expand it.

Weaknesses

Since people generally don't like paying taxes, they may not like paying an additional stormwater utility fee either.

Examples

Example 1: Merrillville, Indiana

Description: Stormwater utility fee brochure example.

[Merrillville Stormwater Utility Fee Brochure](#)

Stormwater Utility Fee Incentives

Description

Stormwater utility fees can be reduced if landowners install stormwater treatment systems.

Strengths

It costs communities money to transport, treat, store and manage stormwater discharges and landowners should pay these costs as utility fees. These fees are usually calculated according to lot area or lot coverage. It makes sense that if landowners divert a portion of their stormwater from reaching the stormwater system by encouraging its infiltration into soils or uptake by plants, then they should be credited against these utility charges. These credits can act as incentives to install and maintain green infrastructure and other on-site best practices.

Weaknesses

Practices that divert stormwater from an off-site system need to be maintained to function properly, so the credit system will need public oversight and compliance monitoring, which can impose administrative burdens and costs on a local government or utility.

Examples

Example 1: Downers Grove, Illinois

Description: The website below links to Downers Grove Stormwater Utility Fee Website.

Included in the website is a manual for the credits and incentives available to residents.

[Downers Grove Stormwater Utility Fee](#)

Example 2: Minneapolis, Minnesota

Description: The linked site leads to Minneapolis' incentive program for reducing one's stormwater utility fee. Minneapolis has the opportunity to reduce the fee by improving stormwater quality or reducing stormwater quantity.

[Minneapolis Stormwater Utility Fee Incentives](#)

Example 3: Sun Prairie, Wisconsin

Description: The Sun Prairie stormwater utility credit policy is focused on non-single-family residential properties and offers credits based on quality improvement and quantity reduction.

[Sun Prairie Stormwater Utility Credits](#)

Land Use Planning Ordinances and Strategies

Comprehensive Plan

Description

A comprehensive plan is an integrated policy document consisting of discrete elements that address different functional areas affecting a community's longer-term future growth or quality of life (such as housing, transportation, economic development, recreation and open space, natural resources, etc.) Such plans are usually formulated by a local plan commission and adopted by a local government.

Strengths

Provides comprehensive guidance to local officials and citizens about the future growth of their communities and shows the interrelationships between different growth objectives.

Weaknesses

Needs to be coupled to effective land use controls and incentives for communities to realize their policies and guide local growth -- a plan is only as effective as its weakest element

Examples

Example 1: Minnesota

Description: MN Community Planning Guidance
[County Comprehensive Local Water Management](#)

Example 2: Ohio

Description: Ohio Balanced Growth Program
[Comprehensive Planning -- Background](#)

Example 3: Wisconsin

Description: Wisconsin has a smart growth law and nearly every county and community has a plan.
[Element Guides](#)

Example 4: Wisconsin

Description: Comprehensive Plan example for the Bay-Lake region in Wisconsin.
[Plans in the Bay-Lake Region \(NE WI\)](#)

Density or Floor Area Ratio (Far) Bonuses

Description

Density is the permissible number of dwelling units that are allowed per unit of lot area -- for example, two dwelling units per acre, or requiring a half-acre lot per dwelling unit are identifiable measures of density found in zoning ordinances. Floor Area Ratio (FAR) is a zoning technique used to control building bulk. It sets a ratio of the building mass to the square footage of the building's lot area: for example, an FAR of 2 means that a building can't exceed an area of 40,000 square feet, if sited on a 20,000 square foot lot. A common zoning technique is for a district to have a relatively low density or FAR standard, but allow a landowner to build more floor area or more units per area of land area than would otherwise be allowed under the zoning provided that the landowner provides some public benefit or amenity to the community. The amount of excess density or FAR allowed as a zoning bonus depends on how valuable the amenity is deemed by the community. The purpose of these provisions is to encourage landowners to improve the quality of their developments to the benefit of the community, by creating an economic incentive for them to do.

Strengths

Both the community and the landowner benefit from the incentive zoning provision -- a win-win outcome

Weaknesses

If a community wants better development, then why not just require it through better zoning standards. Also an FAR standard, by itself, will not dictate the form that the building will take unless coupled to either a lot coverage requirement (controlling the building's footprint) or a maximum height requirement. There are also some real delay and uncertainty costs to landowners in having to negotiate out a project's amenities that would qualify for the bonus, instead of knowing what they can do as-of-right, but they don't have to elect to build under the bonus (unless the ordinance is designed to make it unfeasible to build unless the bonus option is exercised).

Examples

Example 1: Metropolitan Council, Saint Paul, Minnesota

Description: A quick overview on floor-area ratio

[Calculating Floor Area Ratio](#)

Example 2: Minneapolis, Minnesota

Description: A link to Minneapolis' Density and FAR regulations, as well as bonus eligibility. Placing parking underneath structures can increase permeable area to improve water catchment.

[Minneapolis Density Regulations](#)

Example 3: Rochester, Minnesota

Description: Rochester clearly states in its lot site development procedures that density bonuses can be made to preserve natural features, woodlands, and other native habitats.

[Rochester Density Bonus Policy](#)

Conservation Easement

Description

A contractual agreement usually entered into by a landowner with a governmental unit or non-profit organization to voluntarily restrict the development of their land. Conservation easements are usually filed in a registry of deeds, so that they run with the land and may be found by subsequent landowners during a title search. Very often, by giving up the right to develop portions of their property, landowners who enter into conservation easements may receive a charitable tax deduction for transferring or donating the value of their development rights to a public or nonprofit entity and will also usually have their undevelopable land appraised at a lower value for property tax purposes.

Strengths

Owners of land with valuable environmental resources or characteristics can help communities preserve these resources by voluntarily restricting their rights to develop their property, thus promoting the public good without the public needing to expend scarce budgetary resources to purchase the property.

Weaknesses

Conservation easements are voluntary instruments and landowners may have to be convinced to give up or to donate their valuable development rights to their properties. Some government or nonprofit organizations may also not have the resources or willingness to maintain the donated property in perpetuity if given the easement or other limited interests in the land.

Examples

Example 1: Michigan

Description: A model conservation easement for sites within the state of Michigan. The link above has access to an online version as well as a downloadable document.

[Michigan Model Easement](#)

Example 2: Wisconsin

Description: Dunn, WI has the following sample easement available for its citizens to model future agreements from.

[Dunn Sample Easement](#)

Growth Controls

Description

Growth controls slow down the rate or number of development permits that are issued in any given year, to ensure that there is sufficient infrastructure available to service the new development. Many such systems employ a point system, requiring that landowners need to accumulate sufficient points to qualify for a building permit, with the points awarded based on existing and projected capacity of the infrastructure and schools in proximity to the development site: the greater the proximity and capacity, the greater the number of points given the landowner.

Strengths

Growth controls can protect current residents from rapidly escalating taxes to subsidize the infrastructure needed for new development, and protect new residents from receiving inadequate public services when they move into their new developments

Weaknesses

Growth controls were justified by constraints on public expenditures for new infrastructure. They have been largely supplanted by impact fees -- where new development "pays its own way" by having developers pay their pro rata share of infrastructure demand created by their new projects. These fees are passed on to new homeowners, not to current community residents.

Examples

Example 1: San Luis Obispo, California

Description: San Luis Obispo's growth ordinance has several growth controlled developments specifically listed with it and is an example for other communities

[San Luis Obispo Growth Ordinance](#)

Example 2: Lyndeborough, New Hampshire

Description: A growth management ordinance with several restrictions on growth pace and quantity.

[Lyndeborough Growth Management Ordinance](#)

Lawn Management Ordinance

Description

Fertilizers and weed killers applied to lawns by homeowners or commercial lawn maintenance companies can run off the lawns following heavy rains, impairing the water quality of adjacent streams, ponds, and lakes. They can also infiltrate into the soils, threatening shallow wells. Restrictions on the types of chemicals that can be used and on their rates of application can reduce pollution risks to water resources and help protect the public health.

Strengths

Lawn applications of chemicals can, in the aggregate, generate large amounts of nutrient loading to nearby ground- and surface-water resources. Limiting the types of chemicals being applied (for example, banning phosphorus, a chemical that can readily cause harmful algal blooms in streams) can help maintain water quality. Limiting the amounts of fertilizers, herbicides, and chemicals being applied to lawns can also reduce pollution risks.

Weaknesses

Lawn management ordinances are very difficult to enforce, especially with respect to private homeowners doing their own lawn work. It will be easier to regulate lawn care companies and much more effective to educate homeowners about the risks of improper lawn chemical use than to try and regulate their activities directly.

Examples

Example 1: City of Minneapolis, Minnesota

Description: Lawn Fertilizer Ordinance to protect the city's lakes and rivers.

[Minneapolis Ordinance](#)

Example 2: Minnesota

Description: A statewide restriction on phosphorous fertilizers. The website has links to the law and other supporting documents.

[Minnesota State Ordinance](#)

Example 3: City of Ann Arbor, Michigan

Description: An ordinance restricting the types manufactured fertilizers allowed to be used within the city.

[Ann Arbor Ordinance](#)

Lot Size Requirements

Description

Reducing lot sizes can help reduce the impervious surface footprint from each new home, reduce sprawl, promote walkability, and protect open space.

Strengths

Less land consumption means that less infrastructure may be needed, saving the landowner money, and that the infrastructure that is installed can be used more efficiently.

Weaknesses

As with Traditional Neighborhood Design, not everybody wants to move from crowded city neighborhoods out to crowded suburban ones.

Examples

Example 1: City of Los Angeles, California

Description: The City of Los Angeles is trying to create more affordable housing within the city as the people have been priced out of all homes within the area.

[Subdivision Ordinance](#)

Example 2: Spring Green, Wisconsin

Description: Zoning code allows for a classification titled Village Small Lot Residential, which allows smaller than average lots to be developed for more high density residential uses.

[Spring Green Zoning Code](#)

Low Impact Re/Development Ordinance

Description

A regulation that promotes the use of on-site natural processes to attenuate pollution, manage hydrology, and provide open space.

Strengths

By managing hydrology and pollution on-site, a developer can reduce stormwater sewers and detention basins. Natural landscaping can improve the function of open space and promote the infiltration of runoff.

Weaknesses

Green infrastructure still requires maintenance, and landowners may be unfamiliar with these requirements. Effectiveness may depend on soils and temperature as well.



Photo Credit: Environmental Protection Agency

Examples

Example 1: Minnesota

Description: Permitting Green Infrastructure: A Guide to Improving Municipal Stormwater Permits and Protecting Water Quality

[LID/Green Infrastructure Ordinances](#)

Example 2: Michigan

Description: Low Impact Development

[Low Impact Development Guidebook](#)

[Low Impact Development Manual](#)

Example 3: EPA Guidance

Description: EPA's webpage on Low-Impact Development which has access to information about the issue in several media formats.

[EPA Low-Impact Development Page](#)

Prime Farmland Protection

Description

Strategies other than zoning can be used to protect farmland identified in a farmland protection plan. Agricultural tax abatement programs, which assess farmland at its current agricultural value rather than its zoned value, can reduce pressure on farmers to convert and sell off their farmland in order to pay their property taxes.

Strengths

Tax abatements may be given to active farms of certain specified minimum acreage located in areas of prime agricultural soils, to reduce economic pressure on farmers to convert the land to a non-agricultural use. In order to get the tax break, the farmer agrees to keep the land in active production for a given period of time, with a significant penalty of back-taxes coming due if the land is converted from farming before the end of the production period. These programs can help prevent the premature conversion of farmland on the urban fringe.

Weaknesses

Some argue that these tax abatement programs can be misused to support "hobby-farms" or to indirectly subsidize land speculation by reducing the holding costs for the land until adequate infrastructure is extended into the urban fringe.

Examples

Example 1: La Crosse County, Wisconsin

Description: La Crosse County's Farmland Protection Incentives

[La Crosse County Incentives](#)

Example 2: Wisconsin

Description: Pg. 12 discusses these agreements

[WI LFB Prime Farmland Protection Agreements](#)

Tax Incentives or Differential Assessment

Description

Most states have programs designed to reduce the amount of money farmers are required to pay in local real property taxes. Differential assessment programs allow officials to assess farmland at its agricultural use value rather than at market value.

Strengths

Differential assessments help farmers stay in business by lowering expenses and removing unnecessary penalties caused by geography. The programs also help correct inequalities in the tax system.



Photo Credit: Wisconsin Farm Bureau

Weaknesses

The land is not protected from longer term development and this is exploited by developers who keep their land in agricultural use pending development.

Examples

Example 1: Ohio

Description: A factsheet from Ohio State explaining how the Current Agricultural Use Value Assessment works for farmers across the state.

[Ohio Current Agricultural Use Value Assessment](#)

Example 2: Washington, D.C.

Description: Fact sheet from Farmland Information Center.

[Fact Sheet Differential Assessment and Circuit Breaker Tax Program](#)

Example 3: Wisconsin

Description: Wisconsin Farm Bureau's Webpage on the issues for local farmers, including links to guidelines, FAQs, and a guide book

[Wisconsin Incentives](#)

Tree Protection Ordinance

Description

Mature trees play a critical role in capturing rainfall and reducing runoff. Tree Protection Ordinance language can minimize the amount of trees cleared during development, specifically critical trees (by type, age, or size) that should be retained, and set separate parameters for replanting disturbed areas.

Strengths

Trees provide important environmental benefits, as well as add value to real estate.

Weaknesses

Tree protection requirements can impair or delay certain types of locally-desired developments that may require extensive tree removal, such as farmers expanding their agricultural fields, park requirements creating new golf course fairways or schools building new playfields. Mitigation requirements (i.e. planting more trees elsewhere than you cut down on a single site) might be a useful way to offset these impacts.

Examples

Example 1: Georgia

Description: City of Duluth: Landscaping and Tree Preservation

[Dimensional Standards](#)

Example 2: New York

Description: Laws and regulations regarding the removal of trees and protected plants

[NY Tree/Plant Removal Laws](#)

Nutrients, Water Quality, and Food Web Ordinances and Strategies

Biodiversity Plan

Description

A biodiversity plan is a type of open space plan that defines and protects different types of habitats and their connecting corridors for different species of federal, state, or local importance, interest, or concern.

Strengths

As with open space plans, a biodiversity plan can guide current and future growth to areas of a community that will have a smaller impact on important species of plants and animals and the plan can also identify areas of a community that ought to be acquired or managed to protect and buffer the species' habitats and their connecting corridors.

Weaknesses

The service of a wildlife biologist or ecologist will usually be required to develop a biodiversity plan. It is sometimes difficult and expensive to identify important species, their habitats and their movement corridors.

Examples

Example 1: State or General Guidance - Ohio

State/Contact: OH, Joe Lucente

Description: Ohio Balanced Growth Program

[Balanced Growth Program](#)

Example 2: State or General Guidance - Wisconsin

State/Contact:

Description:

[Comprehensive Planning Quick Links](#)

Purchase of Development Rights

Description

A local governing body will negotiate a sale of the right to develop a property with a land owner in order to preserve the land in an undeveloped state. The owners other rights to the land remain unchanged but the community will control any development that can occur on the property.

Strengths

Because it is a volunteer program, it scores high marks for political acceptance. It also allows the community to pay only for the rights they wish to control and not to require them to manage the property. Once the development rights have been sold, the tax valuation of the property is not influenced by other development in the area giving land owners stability in what to expect in terms of taxes.

Weaknesses

There is a significant amount of money required to acquire the development rights of a property and the funds for such a purchase come from some sort of tax revenue. Some see this as an agricultural subsidy.

Examples

Example 1: Ohio

Description: An introduction to PDRs and an overview of establishing and operating a system.

[OSU Purchase of Development Rights Fact Sheet](#)

Example 2: Wisconsin

Description: Overview of Purchase of Development Rights in Wisconsin and a case study of 2 examples.

[Planning Implementation Tools: Purchase of Development Rights](#)

Example 3: Ann Arbor, Michigan

Description: Ann Arbor's PDR program

[Ann Arbor Purchase of Development Rights](#)

Law to Lake Care Education

Description

Lawn to Lake is an outreach program for areas in the Great Lakes region. They advise homeowners, businesses, and others on how to properly take care of their lawns to promote better water resources. Through education and outreach they hope to provide those at risk with the education to make the correct choices.

Strengths

Helps to prevent chemicals used on lawns from entering the watershed. Keeps lawns and soils healthy while also protecting water resources.

Weaknesses

Time, energy, and money must be invested to create the outcomes above.

Examples

Example 1: State/General Guidance or Examples

State/Contact: Illinois-Indiana Sea Grant

Description: See above

[Lawn to Lake Homepage](#)

Drainage Management (Drainage Board Requirements)

Description

Drainage Boards set standards for drainage infrastructure and reduce flooding problems in new developments and adjacent neighborhoods with design requirements. Stormwater quality is also monitored by the board to protect the quality of drinking water and maintain fishing and swimming opportunities.

Strengths

Having a central authority can help ensure consistent design and regulation across the region, sharing the burden equally among stakeholders. Often times, those who create flooding problems do not see the impacts themselves.

Weaknesses

Additional regulation means additional cost, even to those who have had no problems in the past. Policies rarely charge those who are responsible for flooding, instead shifting the costs to the public as a whole.

Examples

Example 1: Monroe County, Indiana

Description: The county Drainage Board website has links to meeting minutes and the governing ordinances issued by the board.

[Monroe County Drainage Board](#)

Example 2: Michigan

Description: The governing law over drainage in Michigan. Within it are the laws upheld by the drainage boards and the roles they have in preserving water quality.

[Michigan Drainage Law](#)

Example 3: Wisconsin

Description: A presentation made by the state Drainage District program explaining how drainage districts work and their value in the state of Wisconsin.

[Drainage District Programs](#)

Example 4: New York

Description: Drainage laws and regulations for New York State.

[NY Drainage Laws and Regulations](#)

Conservation Design Ordinance

Description

Conservation Design Subdivision ordinances allow communities to preserve the overall density of development while protecting open spaces and important natural and cultural resources. Typically, the lot sizes for the zoning district the land is in determines the overall density, but actual lots are some fraction, 1/2, for example, of that base zoning lot size. Requirements are often placed on what part of the property is preserved as well, with priority given to important local natural or cultural features.

Strengths

Conservation design developments tend to be far more effective in preserving natural features and open space than conventional subdivisions, while being less expensive to develop (because their higher densities result in lower paving and infrastructure costs) and more affordable to buyers (since lot sizes are smaller).

Weaknesses

People often choose to move out of crowded cities to less crowded suburbs rather than choose to move into another crowded, urban-density development. Conservation design principles might not reflect current market demand and might therefore be more difficult for many developers (and for some purchasers) to embrace.

Examples

Example 1: State/General Guidance or Examples

State/Contact: OH, Joe Lucente

Description: Toolkit and Model Ordinances

[Ohio Balanced Growth: Toolkit and Model Ordinances](#)

Example 2: State/General Guidance or Example

State/Contact: MI, Mark Breederland

Description: Antrim County, Local Ordinance Gaps Analysis: An essential guide for water protection

[Antrim County - Local Ordinance Gaps Analysis](#)

Mandatory Sewer Connection Ordinance

Description

Subdivision regulation requiring that all new lots connect to a sewer system

Strengths

In areas of poor soils, septic systems may not function properly or might fail at unacceptable rates, risking the pollution of ground- and surface-water resources and the contamination of drinking water wells. In such places, requiring off-site wastewater collection and treatment, through either a public or package sewage treatment plant, may be a better option to protect the environment and public health.

Weaknesses

Developments may be located too far from existing sewage treatment plants (requiring the use of expensive pump stations), it may be too expensive to install a sewer collector line out to the project before it is scheduled to be extended under a capital improvement program, or an adjacent developer using sewers may charge exorbitant tap-in fee for a competitor to connect to his or her sewer.

Examples

Example 1: Illinois

Description: This is a model ordinance from the Illinois EPA for mandatory sewer connections.

[Illinois EPA Model Ordinance](#)

Example 2: Bear Creek Township, Michigan

Description: This is a simplified version of the Sewer Ordinance No. 22-05 adopted by the Bear Creek Board of Trustees.

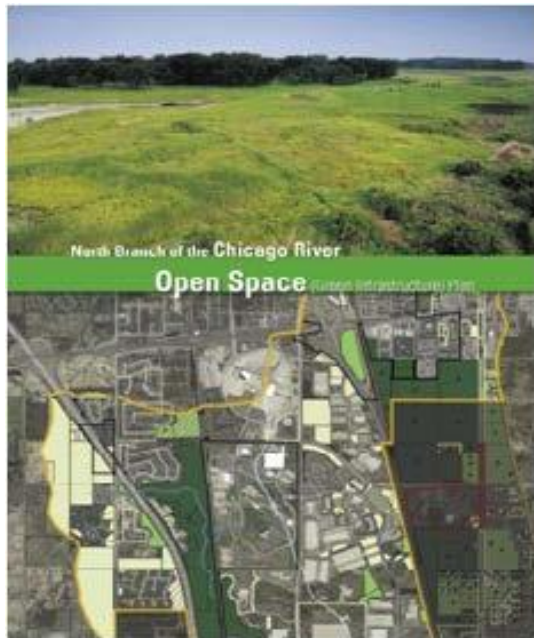
[Bear Creek Ordinance Summary](#)

Example 3: Hanover Township, Pennsylvania

Description: A mandatory sewer connection and use ordinance put in place in 2005.

[Hanover Ordinance](#)

Open Space Plan



Description

An open space plan can be an element of a comprehensive plan or a stand-alone policy document setting forth a community or region's current and projected needs for parks, wildlife habitat, agriculture, and recreation and identifying where such open space features ought to be spatially located.

Strengths

Can be used to promote smart growth policies by identifying undeveloped areas that ought to remain preserved, protected, or acquired.

Weaknesses

Funding and resources that are needed to acquire or protect open space might be constrained by tight budgets.

Examples

Example 1: State or General Guidance

State/Contact: OH, Joe Lucente

Description: Ohio Balance Growth Program

[Natural Areas Establishment and Management](#)

Example 2: State or General Guidance

State/Contact: MI, Mark Breederland

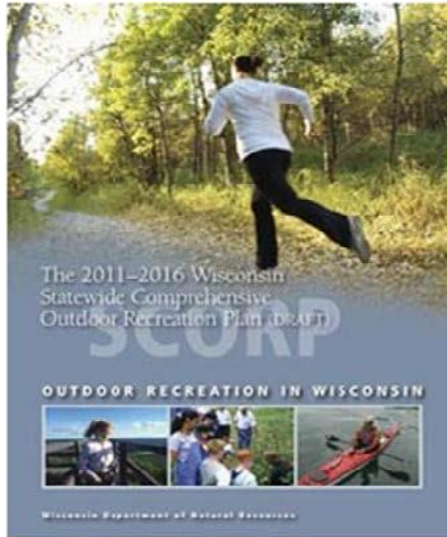
[Land Use Planning and Growth Management](#)

Example 3: Wisconsin Statewide Comprehensive Outdoor and Recreation Plan

State/Contact: Jeff Prey, WDNR

Description: The Statewide Comprehensive Outdoor Recreation Plan (SCORP) is done every five years to identify essential and contemporary issues that affect the future of outdoor recreation in Wisconsin

[SCORP](#)



Example 4: Wisconsin Community Open Space and Recreation Plan

State/Contact:

Description: Sauk County Comprehensive Outdoor Recreation Plan

[Outdoor Recreation Plan](#)

Riparian Overlay Zone

Description

Action by conservation groups and governmental bodies to preserve existing buffers and create new ones has increased in recent years. Retaining existing buffers is the most cost effective method of protecting waterways from runoff, sediment pollution, erosion, and flooding. Several tools are available to guide and limit development in affected areas.

Strengths

Riparian wetlands offer quality habitat for wildlife while offering space for pollutants to settle before entering streams. Developing and retaining existing buffers allows natural water processes to continue even in highly altered spaces.

Weaknesses

There is substantial opportunity cost by taking land out of production and usually the areas with the most need for a buffer are the most productive ones. Even though the land is left untouched, there is often a substantial amount of money that is required to subsidize the creation or preservation of the buffer.

Examples

Example 1: Pennsylvania

Description: The Riparian Buffer Preservation document addresses several ways to encourage preservation of wetlands and the best design practices for doing so.

[Pennsylvania DEP Guidebook](#)

Example 2: EPA

Description: EPA's clearinghouse for management measures to protect and restore riparian areas. The site has an FAQ section as well as links to guidance documents.

[EPA Website for the Protection and Restoration of Riparian Areas](#)

Example 3: Minnesota

Description: The Reinvest in Minnesota (RIM) Reserve is a program to accumulate easements for the preservation of wetlands that will reduce impacts of future flooding events.

[RIM Reserve Program](#)

Tree Planting Program

Description

Tree planting programs are often run by cities to increase the number of trees coverage throughout the city.

Strengths

Trees are attractive and often increase property values. They help consume carbon dioxide which is found in abundance in urban areas and can decrease heating and cooling costs by providing canopy to the ground beneath them.

Weaknesses

Even with planting programs, trees are often not free and require residents to pay fees that can be cost prohibitive. Some program severely limit the species of trees eligible for planting which decreases diversity and may not match the tree best suited to a location.

Examples

Example 1: Berkley, California

Description: Berkley's Tree Planting Program has the attached flyer that walks residents through the thought process of buying a tree and determining which tree is right for them.

[Berkley Tree Planting Program](#)

Example 2: Chicago, Illinois

Description: Chicago's Tree Planting program takes the cost burden from the residents but retains review power over if a site should receive a tree.

[Chicago Tree Planting Program](#)

Water Resources Plan

Description

Water resources planning is a specialized discipline of planning that deals with planning for and managing natural and man-made systems that are typically contained within watersheds and which include hydrologic, biological, economic, and political systems. (Source: Palmer and Lundberg; http://www.isws.illinois.edu/iswsdocs/wsp/iwrrp_palmer_lundberg.pdf)

Strengths

Water resources plans can address both ground- and surface-water resources, making them holistic with respect to managing different aspects of the hydrologic cycle.

Weaknesses

Many land use and transportation activities can impact water resources and, unless integrated into a comprehensive plan, development of a discrete water resources plan document can result in a very narrowly focused set of policies.

Examples

Example 1: State or General Guidance

State/Contact: MN, Jesse Schomberg

Description: MN County Water Management Plan guidance

[Minnesota Board of Water & Soil Resources - County Comprehensive Local Water Management](#)

Example 2: State or General Guidance

State/Contact: OH, Joe Lucente

Description: ODNR, Ohio Resources Water Council Strategic Action Plan

[Strategic Action Plans](#)

Example 3: State or General Guidance

State/Contact: MI, Mark Breederland

Description: Michigan

[Developing a Watershed Management Plan for Water Quality: An Introductory Guide](#)

Wetland Conservation/Buffer Ordinance

Description

These are requirements that ban development from wetlands, or which require that any filling of wetlands be mitigated through an offset system (i.e., more wetland must be improved or expanded than would be filled in). A buffer ordinance is also often adopted requiring that a landscaped setback be created or preserved around a riparian or isolated wetland, in order to intercept and reduce the amount of soil being carried by stormwater runoff before it reaches the wetland.

Strengths

Wetland provide important environmental benefits, including stormwater storage, habitat, and the biological removal and treatment of pollutants. Intercepting stormwater runoff before it reaches a wetland can keep wetlands from being slowly filled in by soils being carried by the runoff. Not only must the wetland itself be protected against being directly filled in, but also the surrounding area must be managed to protect against indirect filling-in of the wetland by sedimentation from adjacent activities.

Weaknesses

Wetlands pose costly engineering problems and serve valuable environmental functions, so it makes sense not to build in or around them. On the other hand, a wetland is often perceived by many as a development disamenity, since few want to live next to a swamp, and there is considerable pressure by developers to surreptitiously fill them in or pave them over to increase the value of their properties. Compliance monitoring of existing wetlands is a necessary process that will entail costs for the community.

Examples

Example 1: Mahtomedi, Minnesota Wetland Buffer Ordinance

State/Contact: MN, Jeff Rose

Description: A suburban community in Minnesota's Wetland Buffer Ordinance

[Mahtomedi Ordinance](#)

Example 2: Oswego, IL Stream and Wetland Protection Ordinance

State/Contact: IL, Jerry Weaver

Description: This small city at the edge of the Chicago metro area adopted a protection ordinance for their streams and wetlands in January 2008

[Oswego Stream and Wetland Protection Ordinance](#)

Example 3: Model Ordinance for Indiana Communities

State/Contact: IN, Michael Walter

Description: An Indiana attorney wrote a model ordinance for communities that is tailored to Indiana law. It is meant to facilitate the easy adoption of wetlands ordinances and promote wetlands protection.

[Model Indiana Ordinance](#)

Appendix 2. Workshop Sign-in Sheets

Meeting 1 Sign-In sheet 8/13/18: Steering Committee Meeting

Location: City of Perrysburg Administration Building

Name	Affiliation	Contact Email	Initials
Gregory Bade	Citizen	BD150@ICLOUD.com	GPB
Joe Lucente	OSU Sea Grant	Lucente.6@osu.edu	JL
Neil Munger	Wood County Park District	nmunger@woodparks.org	NM
Dave Steiner	Wood County Planning	wsteiner@co.wood.oh.us	WDS
Mark Dunsmour	City of Perrysburg	mdunsmour@ci.perrysburg.oh.us	
Tom Mackin	Mayor of Perrysburg		TM
Daniel Walker	IISG/Purdue	Walke422@purdue.edu	DW
Lydian Utley	IISG/Purdue	lutley@purdue.edu	LU
Ben Wegleitner	IISG	bwegleit@purdue.edu	BW
Kara Salazar	IISG	salazark@purdue.edu	KAS
Glenn Grisdale	City of Perrysburg	Glenn.grisdale@reveille.me	GTG
Mark Easterling	City of Perrysburg	Measterling@ci.perrysburg.oh.us	ME
Brody Walters	City of Perrysburg	bwalters@ci.perrysburg.oh.us	BLW
Cody Grodi	City of Perrysburg	cgrodi@ci.perrysburg.oh.us	CG
Lauren Rush	City of Perrysburg	lrush@ci.perrysburg.oh.us	LR
Brian C. Pijanowski	Purdue	bpijanow@purdue.edu	BCP
Jingqiu Chen	Purdue	Chen1415@purdue.edu	JC

Meeting 2 Sign-In sheet 8/13/18: Community Visioning Meeting

Location: Way Public Library

Name	Address	Phone	Email	Participating in upcoming Land Use Plan Update?
Ben Wegleitner		217-300-7286	bwegleit@purdue.edu	
Becky Williams	421 E. 6 th St. Perrysburg, OH	419-874-2558	bwilliams@ci.perrysburg.oh.us	
Neil Munger			nmunger@woodparks.org	
Tom Mackin	4105 W. Indiana Ave. Perrysburg, OH		tmackin@ci.perrysburg.oh.us	
Glenn Grisdale	Bowling Green, OH	419-353-7372	Glenn.grisdale@reveille.me	X
Adam Hoff	Moncloud Twp.	419-466-3343	Adam@hoffcsllc.com	X
City of Toledo	348 S. Erie Toledo, OH	419-936-3780	Gegina.collins@toledooh.gov	X
Jingqiu Chen	225 S. University St. West Lafayette, IN		Chen1415@purdue.edu	X
Brody Walters	201 W. Indiana Ave. Perrysburg, OH	419-872-8015	bwalters@ci.perrysburg.oh.us	X
Lauren Rush		419-872-8074	lrush@ci.perrysburg.oh.us	X
Dave Steiner	1 Courthouse Sq. Bowling Green, OH	419-354-9128	wsteiner@co.wood.oh.us	
Tom Lemon	Reveille	419-764-8611	Tom.lemon@reveille.me	X
Cheryl Rice USDA/NRCS		740-396-2855	Cheryl.rice@oh.usda.gov	
Greg Bade	26579 Cedar Wood	419-367-4715	BD150@ICLOUD.com	X
Mark Easterling		419-872-7987	Measterling@ci.perrysburg.oh.us	X

Meeting 3 Sign-In sheet 8/14/18: Technical Working Groups

Location: City of Perrysburg Administration Building

Name	Affiliation	Contact Email	Initials
Joe Lucente	OSU Sea Grant	Lucente.6@osu.edu	JL
Neil Munger	Wood County Park District	nmunger@woodparks.org	NM
Dave Steiner	Wood County Planning	wsteiner@co.wood.oh.us	WDS
Mark Dunsmour	City of Perrysburg	mdunsmour@ci.perrysburg.oh.us	
Ben Wegleitner	IISG	bwegleit@purdue.edu	BW
Mark Easterling	City of Perrysburg	Measterling@ci.perrysburg.oh.us	ME
Cody Grodi	City of Perrysburg	cgrodi@ci.perrysburg.oh.us	CG
Lauren Rush	City of Perrysburg	lrush@ci.perrysburg.oh.us	LR
Quercus Hamlin	MSU	Hamlin10@msu.edu	QFH
Anthony Kendall	MSU	Kendall30@msu.edu	ADK
Katie Baltz	Wood County Planning commission	kbaltz@co.wood.oh.us	KB
Beth Landers	Wood SWCD	bethlanders@woodswcd.com	BAL
Jim Carter	Wood SWCD	jimcarter@woodswcd.com	JC
Ed Rutherford	NOAA GLERL	Ed.rutherford@noaa.gov	
Becky Williams	City Council – City of Perrysburg		
Steve Holland	ODNR Coastal Management	Steve.holland@dnr.ohio.gov	SH
Zak Slagle	ODNR Div. of Wildlife	Zachary.slagle@dnr.state.ohio.gov	ZS
Regina Collins	City of Toledo	Gegina.collins@toledooh.gov	RC

Meeting 4 Sign-In sheet 8/15/18: Action Planning
Location: City of Perrysburg Administration Building

Name	Affiliation	Contact Email	Initials
Gregory Bade	Citizen	BD150@ICLOUD.com	GPB
Shawna Towns	City of Toledo	Shawna.callaghan@toledo.oh.gov	ST
Regina Collins	City of Toledo	Gegina.collins@toledooh.gov	RC
Zak Slagle	ODNR Div. of Wildlife	Zachary.slagle@dnr.state.ohio.gov	ZS
Neil Munger	Wood County Park District	nmunger@woodparks.org	NM
Mark Dunsmour	City of Perrysburg	mdunsmour@ci.perrysburg.oh.us	
Ben Wegleitner	IISG	bwegleit@purdue.edu	BW
Glenn Grisdale	City of Perrysburg	Glenn.grisdale@reveille.me	GTG
Mark Easterling	City of Perrysburg	Measterling@ci.perrysburg.oh.us	ME
Brody Walters	City of Perrysburg	bwalters@ci.perrysburg.oh.us	BLW
Cody Grodi	City of Perrysburg	cgrodi@ci.perrysburg.oh.us	CG
Lauren Rush	City of Perrysburg	lrush@ci.perrysburg.oh.us	LR
Kevin Laughlin	Wood County Engineering	klaughlin@co.wood.oh.us	KRL