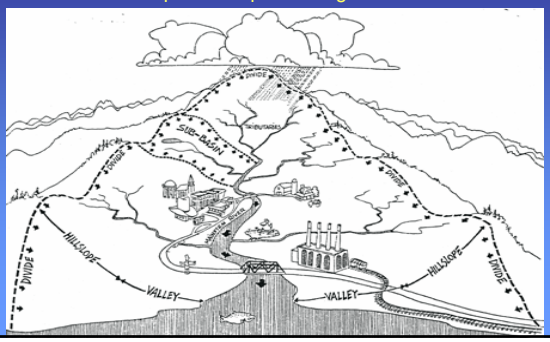
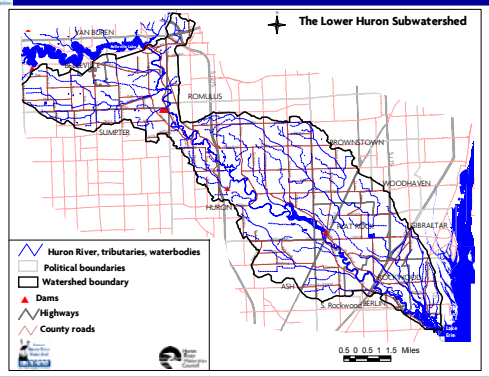
What Is a Watershed?

A watershed is the area of land that drains to a particular point along a stream



Location



Why Watersheds Matter

State of Michigan Designated Uses

- Agriculture
- Industrial water supply
- Public water supply at point of intake
- Navigation
- Warmwater fishery
- Indigenous aquatic life and wildlife
- Partial body contact recreation
- Total body contact recreation (between 5/1 and 10/31)

Pollution Sources

1. Point Sources
   - Discrete Location & Outfall
   - Easily Identifiable
   - Easily Remediated

Pollution Sources

2. Nonpoint Sources
   - Multiple, Discrete Locations & Outfalls
   - Difficult to Identify
   - Difficult to Remediate

Nonpoint Source Runoff

#1 Cause of water pollution in U.S.

90% of U.S. population lives within 10 miles of a polluted waterbody

(source: U.S. EPA)

What's a Watershed Plan?

A holistic approach to address all sources of pollution or stress within a watershed.

General Permit lingo:

The purpose is to identify and execute the actions needed to resolve water quality and water quantity concerns, including those related to a TMDL, which are caused by wet weather discharges from separate storm water drainage systems by fostering cooperation among public and private entities in the watershed.

Progress Checklist

1. Identify and network with local agencies and citizens

- ☒ Identify water quality concerns
- ☒ Identify other groups or individuals with similar concerns
- ☒ Form a steering committee
- ☒ Identify a lead organization
- ☒ Discuss all existing and perceived concerns
- ☒ Define the geographic scope of the watershed based on the concerns

Progress Checklist

2. Know the watershed

- ☒ Identify designated and desired uses
- ☒ Identify pollutants
- ☒ Identify sources of pollutants
- ☒ Identify causes of pollutants
- ☒ Develop goals based on designated and desired uses

Impaired Waters

- 2003 TMDL for Pathogens (*E. coli*) in 0.5 mi of Wagner-Pink Drain resulting from failing septic systems and raw/partially treated sewage
- Port Creek: further evaluation recommended in 2004 by MDEQ for poor biota

Key Concerns
- Loss of natural features
- Altered hydrology (flashy flows, flooding)
- Soil erosion and sedimentation
- Excessive nutrients

Current Conditions

- Flow of Huron at River Road
  wet weather ~2,000 cfs; baseflow ~350 cfs
- Scouring from force of impounded water, some dry reaches, flashy flows due to drains and calyey soils
- Lower Huron is a low gradient channel
- Fair to good gradient for 7 mi, much flooded by Flat Rock Dam
- Influenced by French Landing Dam upstream and Lake Erie at the mouth

Current Conditions

- *E. coli* high in Wagner-Pink Drain
- Conductivity in acceptable range except for Port Creek
- Dissolved oxygen is acceptable
- Mercury exceeds state standards d/s of Rockwood
- pH in acceptable range
- Phosphorus (TP, SRP) exceeds state standards
- Significant temperature variation in creeks
- Total dissolved solids exceed state standards in the Huron

Current Conditions

- Benthic macroinvertebrates in poor to acceptable range
- Warmwater fisheries limited by turbidity, competition, lack of cover/habitat
- In 1986, 17 species between Flat Rock and Rockwood; 35-40 species expected
- Steelhead stocking continues
- Mussels struggling to hang on; many listed species

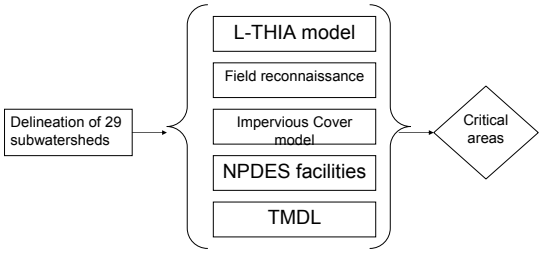
Progress Checklist

3. Define the critical area

☒ Designate the geographical area(s) that contribute the greatest pollution to the Lower Huron River

☒ Designate the geographical area(s) that contribute the greatest benefits to the Lower Huron River

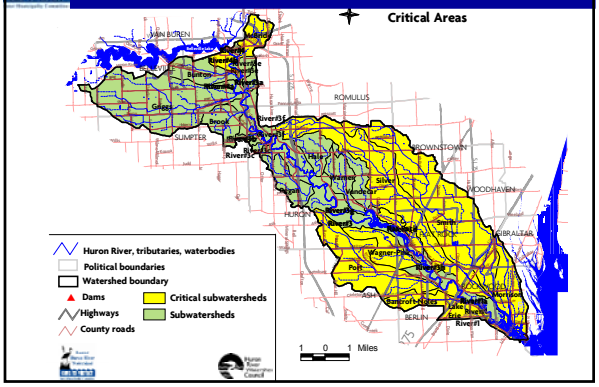
Critical Areas



Critical Areas

Ranking	Critical subwatershed
1	Wagner-Pink
2	Smith
3	Lake Erie
4	Morrison
5	Silver
6	Bancroft-Noles
7	River #1
8	McBride
9	Port
10	River #4b
11	Flat Rock

Critical Areas



Progress Checklist

4. Survey critical areas

☒ Conduct an inventory of the watershed

☒ Use data collected to modify list of known and suspected pollutants, sources (location of) and causes

5. Prioritize pollutants, sources and causes

☒ Prioritize pollutants based on designated uses

☒ Prioritize sources and causes of the pollutants

Progress Checklist

6. Determine objectives

☒ Develop objectives for each goal

7. Identify systems of best management practices needed

☒ Identify BMPs for each source or cause of pollution

☐ Combine BMPs into systems, where possible

Progress Checklist

8. Identify and analyze projects, programs and ordinances

☒ Identify the local programs, projects and ordinances that impact water quality

☒ Evaluate them to determine if they're consistent with your goals

☒ Identify opportunities to coordinate with or improve upon existing programs

Codes & Ordinances Worksheet

Background

part of step 8

- Based on model development principles for protection of the quality of the local environment
- A tool for assessing a community's development "rules" and standards
- Identifies opportunities for improving development code in terms of reducing polluted stormwater runoff

Codes & Ordinances Worksheet

This opportunity for improvement is shared by the communities

❶ Impervious surface cover reduction

- Cul-de-sac radius
- Sidewalk requirements for new developments
- Size of parking lot spaces and the required number of spaces
- Parking ratios
- Street, sidewalk, driveway and ROW widths

Codes & Ordinances Worksheet

This opportunity for improvement is shared by the communities

❷ Stormwater runoff – quantity and quality

- Increase on-site retention other than stormwater basins
- Promote and allow use of vegetated swales for stormwater conveyance
- Minimize "old-fashioned" management practices for maintaining vegetated channels, i.e. discontinue mowing the grass

Codes & Ordinances Worksheet

This opportunity for improvement is shared by the communities

❸ Land runoff

– Develop programs to reduce non-point source pollution from overland runoff to surface waters

❹ Protective ordinances

– Adopt ordinances to require buffers for streams, wetlands, floodplains and steep slopes

– Adopt a wetland ordinance to protect wetlands that are less than 5 acres in size

Codes & Ordinances Worksheet

This opportunity for improvement is shared by the communities

❺ Land conservation

- Reduce building setback requirements regardless of lot size
- Develop and adopt a TDR program

➢Communities select and prioritize which recommendations to adopt; interest in watershed-wide standards

Progress Checklist

9. Inform and involve the public

☒ Identify target audiences

☒ Develop messages for target audiences

☒ Select delivery mechanisms for disseminating the messages

☒ Develop an information & education strategy

Coordinate with Public Education Plan

Progress Checklist

10. Develop an evaluation process

☐ Understand methods for evaluation and the importance of evaluation

☐ Select evaluation methods

Assemble the plan