

Rein in *the Runoff*



Spring Lake Stormwater Integrated Assessment Project “Rein in the Runoff”

Stakeholder Steering Committee Meeting
January 27, 2009

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Grand Valley State University



Agenda

- ❖ Project Review/Update (10 min.)
- ❖ Technical Update (10 min.)
- ❖ Breakout Discussion (30 min.)
- ❖ Wrap-Up (5 min.)



Photo Credit: Progressive AE



Photo credit: AWRI

Integrated Assessment

- ❖ Applying existing scientific information
- ❖ Educating and involving stakeholders
- ❖ Our policy issue:
 - Identify stormwater management alternatives, while allowing for future development
 - Mitigate impacts
 - Improve water quality

Project Work Plan

1. Step 1: Document status/trends of stormwater problem
 - ✓ Examine existing datasets and information
 - ✓ Identify the scope of the stormwater problem in Spring Lake watershed
 - ✓ Develop conceptual ecological model
2. Step 2: Describe environmental, social, economic causes
 - ✓ Presentations to stakeholders
 - ✓ Stakeholder Steering Committee
 - ☐ Public meetings (Ongoing)
 - ☐ Feedback and input (Ongoing)
3. Step 3: Generate forecasts
 - ✓ Model simulations (PAM, L-THIA, Pload)
 - ☐ Stakeholders review future development scenarios
 - ☐ Develop menu of site-specific BMPs
4. Step 4: Provide technical guidance implementing BMPs
5. Step 5: Present final options
 - ☐ Review and revise findings
 - ☐ Final report and presentations



Photo credit: E. Isely

Stakeholder Process

- ❖ Stakeholder Steering Committee
- ❖ Project Name
- ❖ Project Logo
- ❖ Water Quality Survey
- ❖ Project Flyers and newsletters postings
- ❖ Model inputs

**Rein in
*the Runoff***

Logo design compliments of Shane VanOosterhout,
Kendall College of Art & Design, Grand Rapids, MI



Photo credit: E. Isely

Online Resources

<http://www.gvsu.edu/wri/reinintherunoff>

WHAT CAN YOU DO TO REDUCE STORMWATER POLLUTION?

- **Cars and boats**
 - Maintain your vehicles so that they do not leak oil or other fluids.
 - Be sure to wash vehicles on the grass or at a designated car or boat wash so that dirt and soap do not flow into our storm drains and waterways; even biodegradable cleaning products can still be toxic to fish and stimulate algae growth.
- **Yards and gardens**
 - Apply only the recommended amount of fertilizer.
 - Never apply fertilizers or pesticides before a heavy rain.
 - If fertilizer falls onto driveways or sidewalks, sweep it up instead of hosing it away.
 - Mulch leaves and grass clippings and place in the yard at the curb - not in the street. This keeps leaves out of the gutter, where they can wash into the water or storm drain.
 - Turn your gutter downspouts away from hard surfaces.
 - Seed bare spots in your yard to avoid erosion.
 - Consider building a rain garden in low-lying areas of your lawn.
 - Use captured rainwater to water your garden.
- **Septic systems**
 - Proper maintenance includes having your septic system pumped every three (3) to five (5) years.
 - For older systems, make sure it can still handle current volumes.
 - Never put chemicals down your septic system. This can harm the system and seep into the groundwater.
- **Pets**
 - Clean up after your pet on walks and in your yard.
 - Dispose of all pet waste in the garbage.
- **Chemicals**
 - Keep lawn and household chemicals in tightly-sealed containers, where rain cannot reach them.
 - Dispose of old or unwanted chemicals at household hazardous waste collection sites or events.
- **Other**
 - Never put anything in a storm drain.
 - Don't litter.

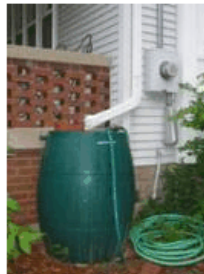




Photo credit: E. Sterrett Isely




Improving water quality in Spring Lake

www.gvsu.edu/wri/reinintherunoff


Rein in the Runoff is a collaborative, community-based project that is identifying the causes, consequences, and corrective actions required to minimize the adverse impacts of stormwater discharges to Spring Lake, the Grand River and Lake Michigan.

Learn More
Visit our updated **Stormwater Education** page on our website to learn more about what you can do to minimize your household contribution of pollutants to our waterways.

Take our online water quality survey and tell us what you know about stormwater and stormwater runoff:
<http://www.gvsu.edu/wri/waterqualitysurvey>



Algae bloom in Spring Lake at the Fruitport Boat Launch (July 2008)



Rain barrels capture rainwater that can be used to water lawns and gardens.

Join us
At our upcoming Stakeholder Steering Committee Meetings at the Spring Lake Library.

Visit the **Stakeholder** page on our website or contact us for more information.

Contact us
For more information about this project,
Elaine Sterrett Isely (elaisy@gvsu.edu)
Alan Steinman (steinman@gvsu.edu)
At GVSU's Annis Water Resources Institute: (616) 331-3749

Rein in the Runoff logo design: development of Shore, VanOverbeek, Kimmel College of Art & Design, Grand Rapids, MI

[Introduction](#) [Project Description](#) [Stakeholders](#) [Stormwater Education](#) [Contacts](#)

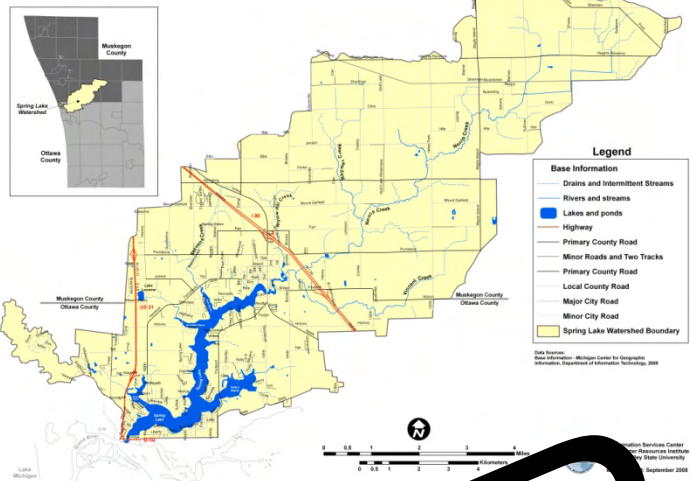
Rein in the Runoff **Stormwater Integrated Assessment in Spring Lake**
STORMWATER EDUCATION

What do you know about stormwater?
Take our "**Rein in the Runoff**" Water Quality Survey.

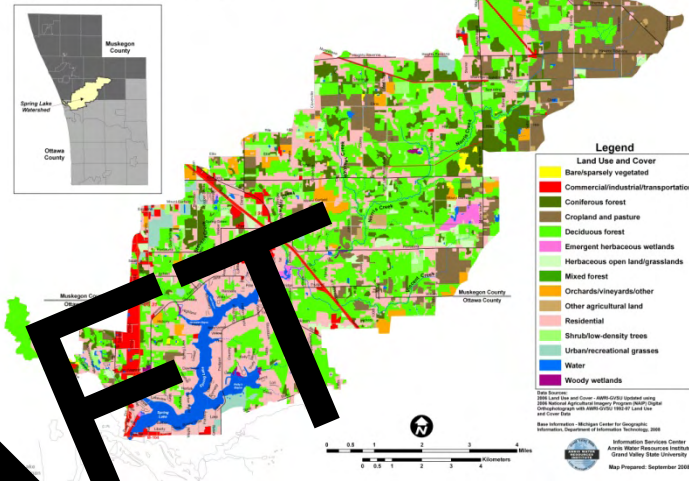
THE BASICS
WHY IS STORMWATER RUNOFF A PROBLEM?
HOW DO YOU MANAGE STORMWATER RUNOFF?
WHAT CAN YOU DO TO REDUCE STORMWATER POLLUTION?
REFERENCES

Watershed Atlas

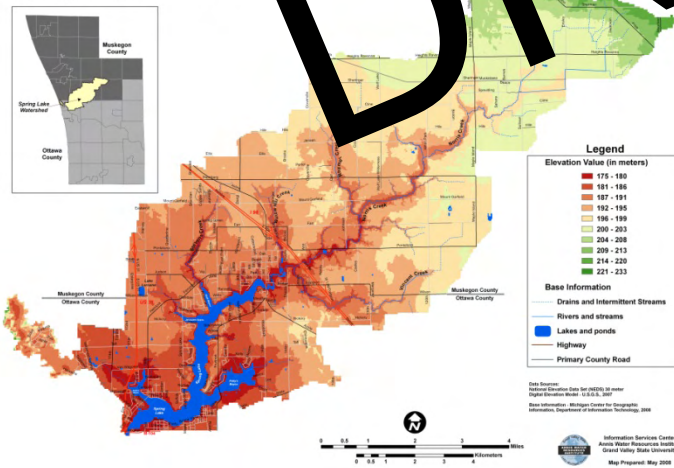
Base Information Spring Lake Watershed



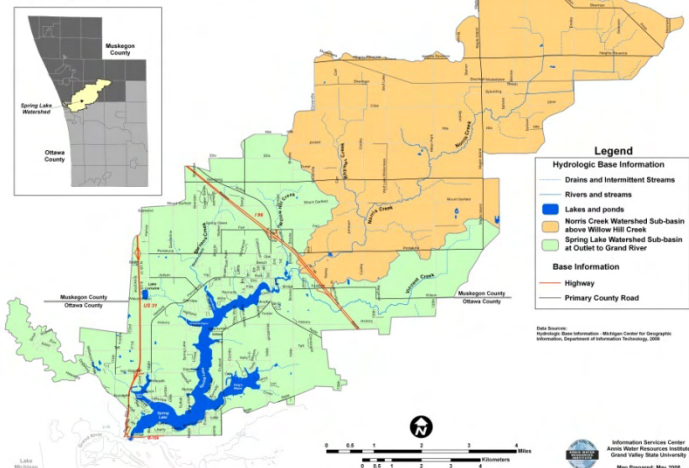
2006 Land Use and Cover Spring Lake Watershed



Digital Elevation Model Spring Lake Watershed



Hydrology Spring Lake Watershed



BMP Matrix

	Bioretention/Rain Gardens	Vegetated/Bio Swales	Grow Zones
Description	Shallow landscaped surface depressions designed to infiltrate and/or filter stormwater	Stormwater conveyance channel designed to filter and/or infiltrate stormwater	Native planting area
Detail	Shallow landscaped surface depressions; recommended to use deep-rooted native plants; underdrain and mechanism to direct overflow runoff is necessary; should be located at least 10' from any building.	Shallow stormwater channel that is densely planted with a variety of grasses, shrubs, and/or trees. Check dams can be used to improve performance and maximize infiltration, especially in steeper areas.	A grow zone is an upland and/or riparian native planting area.
Where Effective	Roof runoff from residential / commercial areas; parking lots (use curb cuts to direct stormwater runoff to depressed areas and/or consider "inverted" islands rather than landscaped islands.	Vegetated swales typically treat runoff from highly impervious surfaces such as roadways and parking lots.	Parks, riparian corridors and other areas that are currently maintained as mowed lawn but may not be actively used or accessed. Grow zones are excellent opportunities for reducing local maintenance costs by converting turf (or impervious) areas to deep-rooted native vegetation.

Structural BMPs



Photo credits: E. Isely



- ❖ Riparian buffers
 - Agricultural areas
- ❖ Lake-front buffers
- ❖ Vegetative/infiltration swales
 - Along roads with existing swales
- ❖ Lake-front dead end roads
- ❖ Regional storage/infiltration
 - Public properties
- ❖ Cisterns/rain barrels
- ❖ Rain gardens
 - Neighborhood wide project

Non-Structural BMPs

- ❖ Ordinances
 - Stormwater
 - Riparian buffers
 - Wetlands/woodlands protection
 - Fertilizer
- ❖ Good housekeeping practices
 - Regular street sweeping
- ❖ Stormwater utility

	Spring Lake Township	Spring Lake	Ferrysburg
Stormwater Ordinance	Yes	No	Yes
Fertilizer Ordinance	Yes	Yes	Yes
Wetland Ordinance	Yes	Yes	No
Animal Waste Ordinance	No	Yes	Yes

Costs/Benefits of BMPs

- ❖ Cost data for BMP installation and maintenance
- ❖ Values associated with improved water quality
 - Real estate values
 - Recreation and aesthetic values
- ❖ Savings associated with decreased water treatment and supply

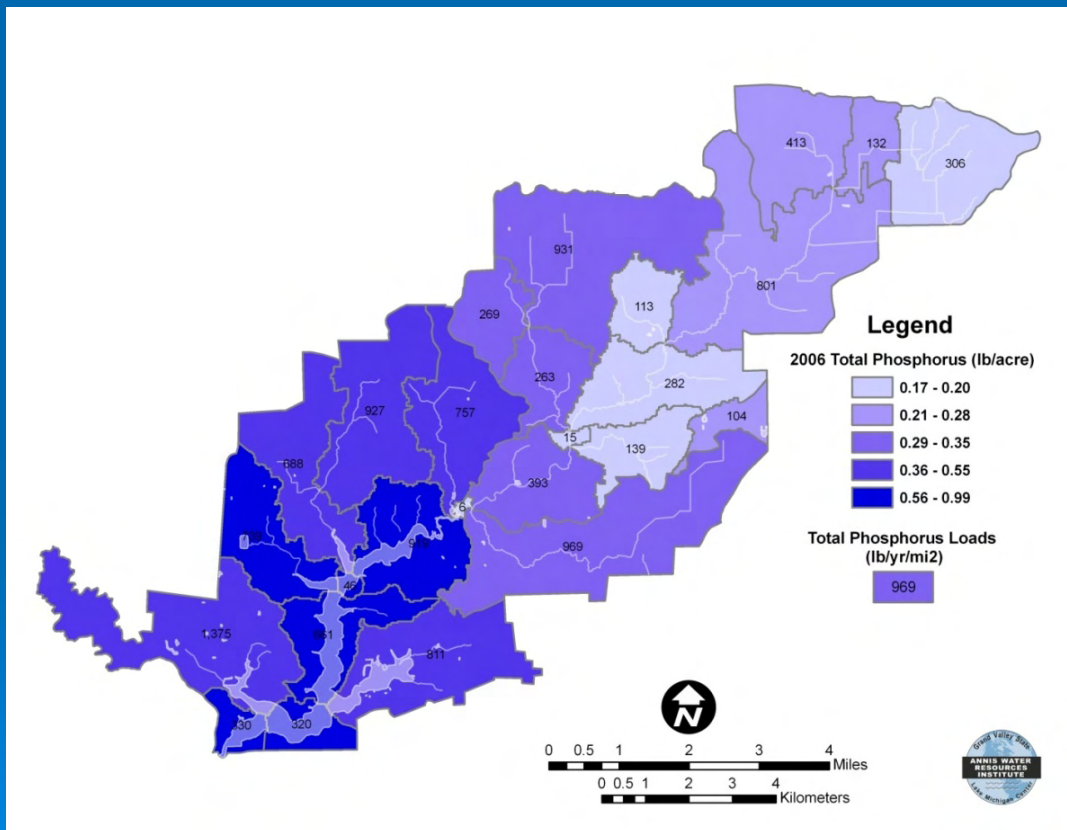


Photo credit: E. Isely

BMP Opportunities/Priorities

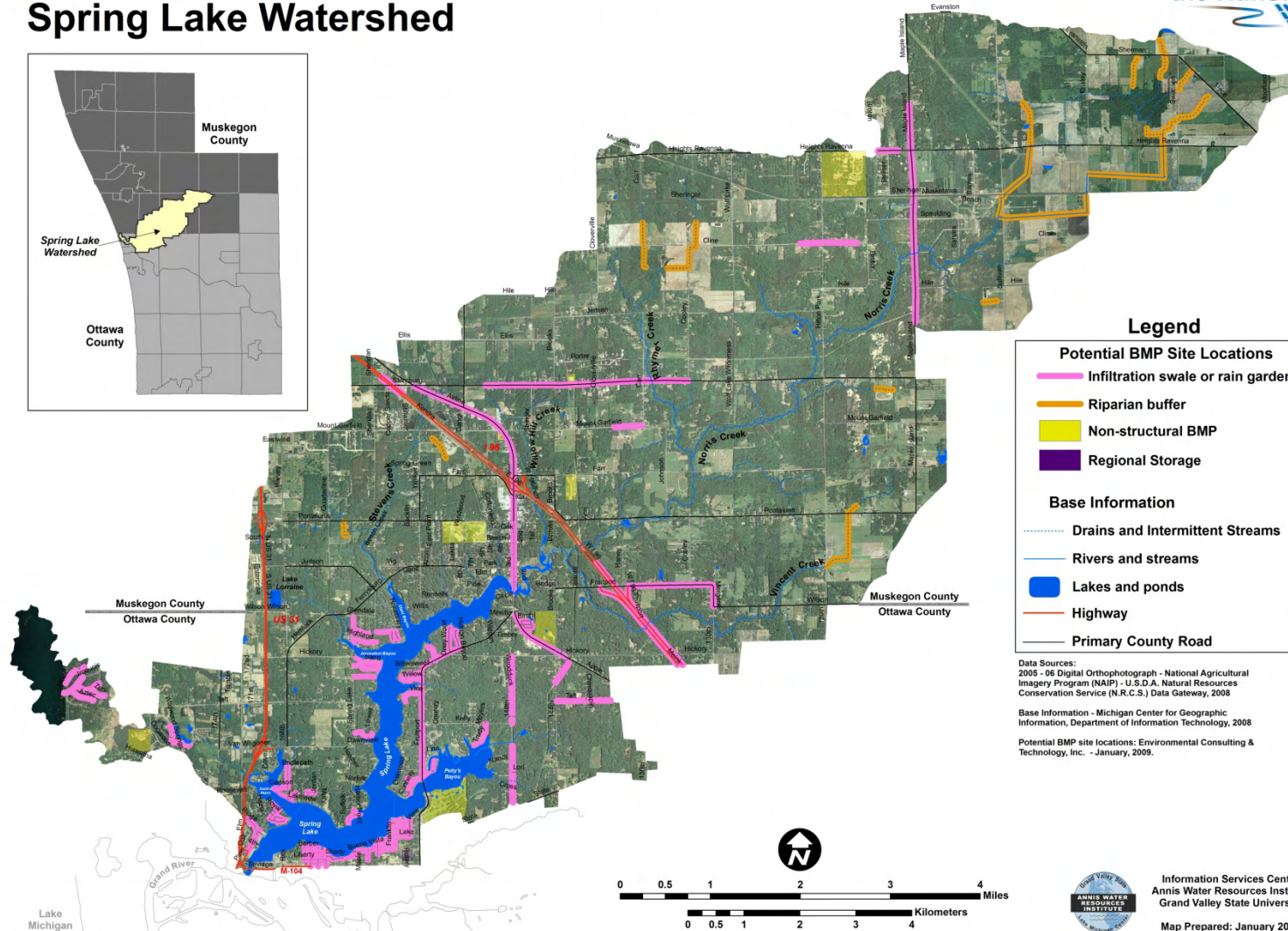
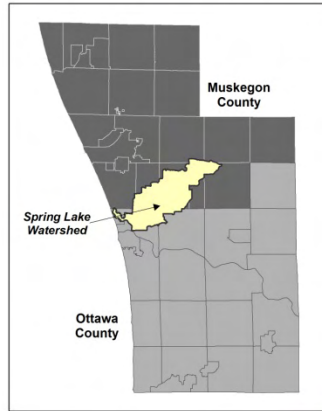
❖ Factors to consider

- PLOAD results
- Hydrologic soil types
 - ◆ A & B soils are good candidates for infiltration
- Existing land cover/land use
- Publicly owned land
- Potential costs



Potential BMP Sites

ECT Potential BMP Site Locations Spring Lake Watershed



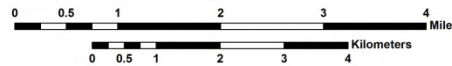
Legend

- Potential BMP Site Locations**
- Infiltration swale or rain garden
 - Riparian buffer
 - Non-structural BMP
 - Regional Storage
- Base Information**
- Drains and Intermittent Streams
 - Rivers and streams
 - Lakes and ponds
 - Highway
 - Primary County Road

Data Sources:
 2005 - 06 Digital Orthophotograph - National Agricultural Imagery Program (NAIP) - U.S.D.A. Natural Resources Conservation Service (N.R.C.S.) Data Gateway, 2008

Base Information - Michigan Center for Geographic Information, Department of Information Technology, 2008

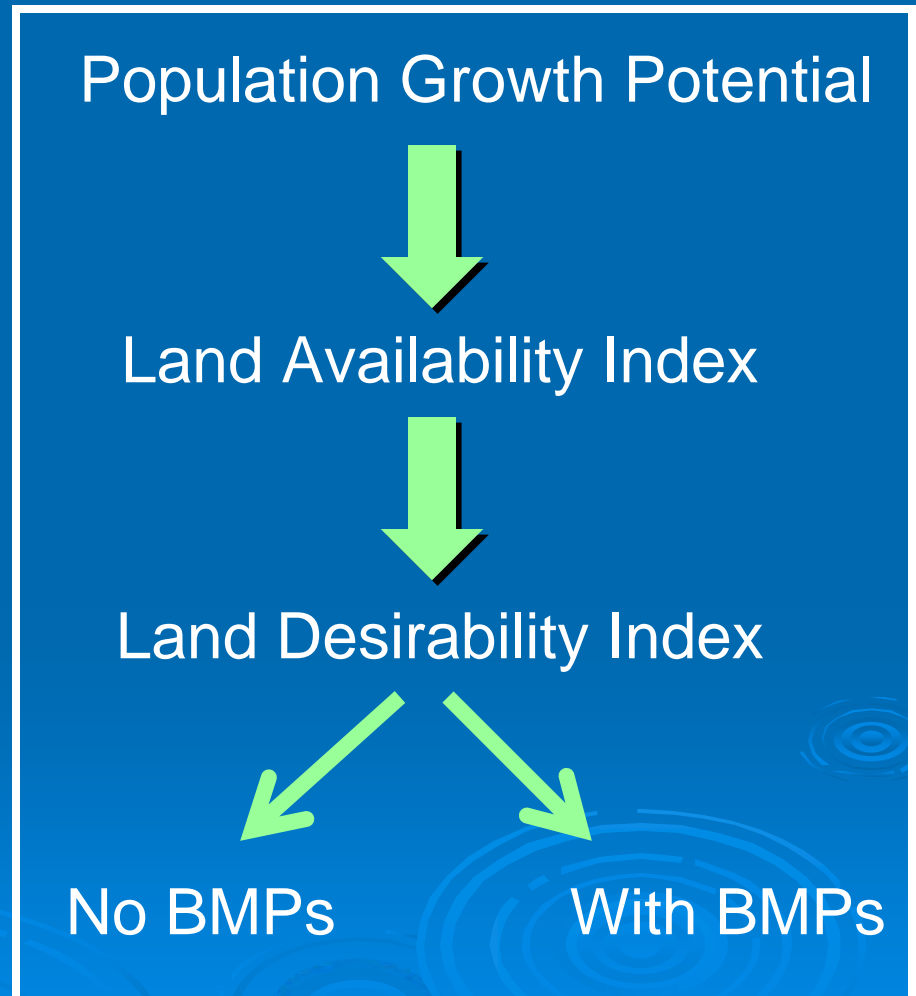
Potential BMP site locations: Environmental Consulting & Technology, Inc. - January, 2009.



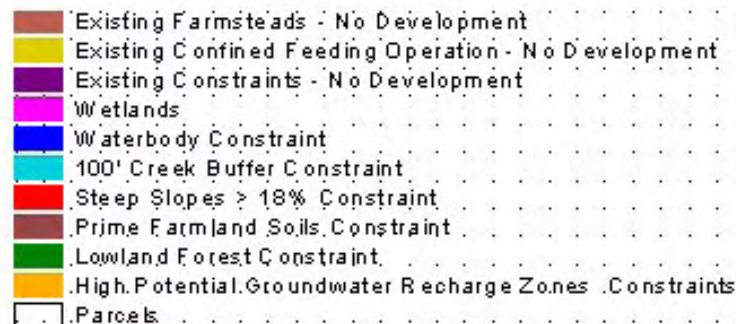
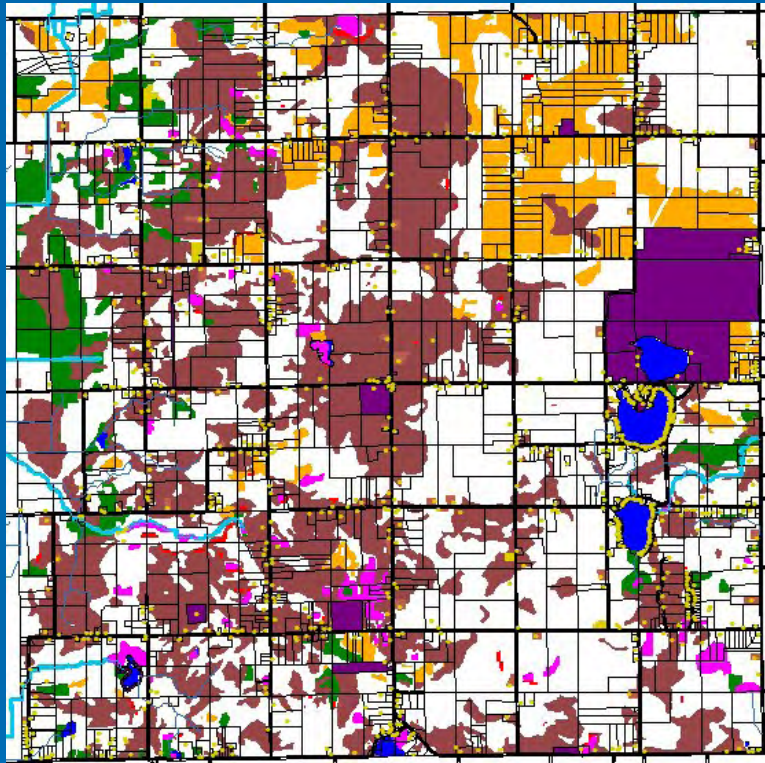
Information Services Center
 Annis Water Resources Institute
 Grand Valley State University
 Map Prepared: January 2009

Population Allocation Model (PAM)

- ❖ PAM uses patterns of past development to predict the location of future urban and exurban growth



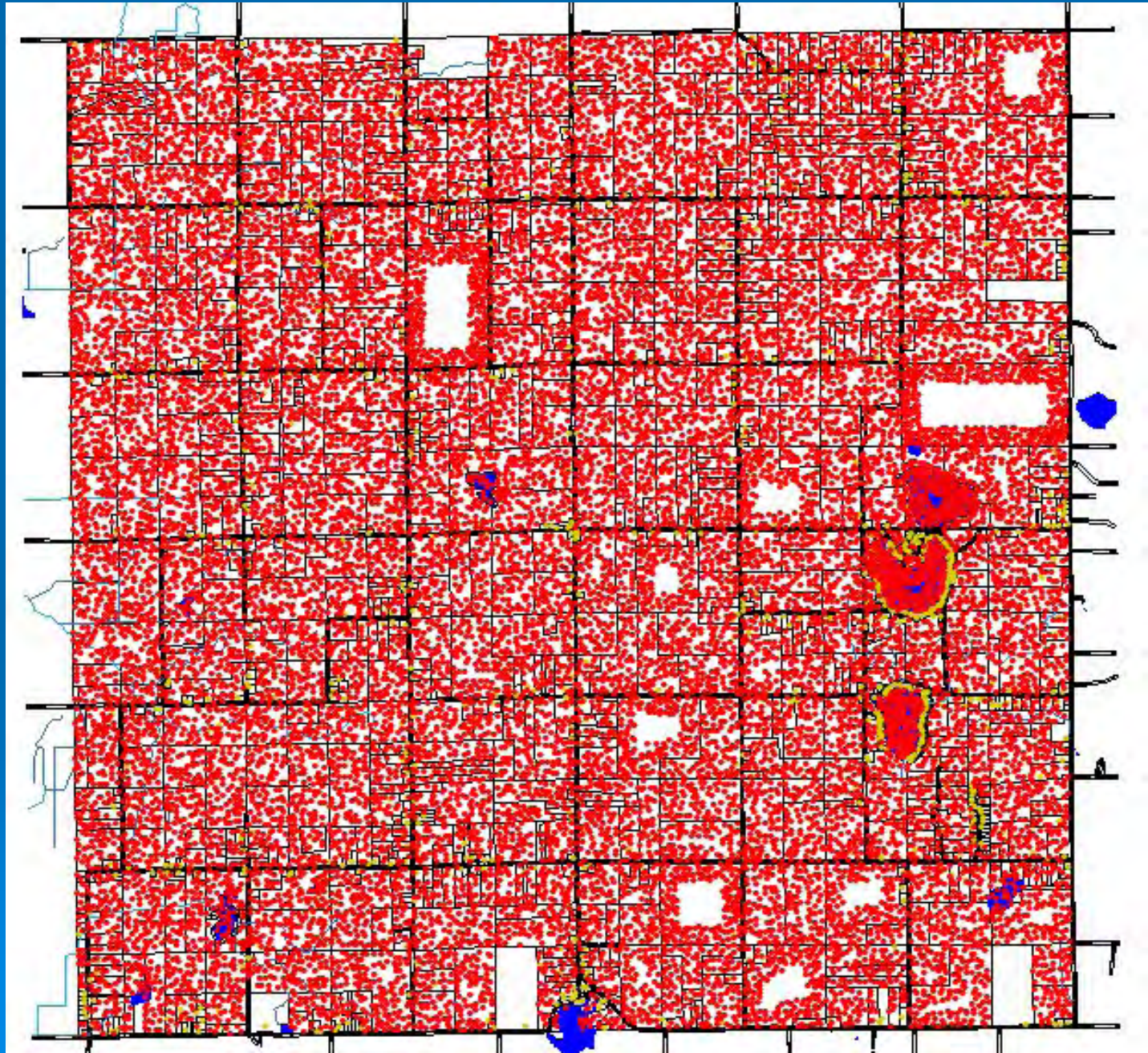
Community Build-Out Analysis



- ❖ With no development constraints
- ❖ With constraints in place
 - Natural features
 - Public lands
 - Farmsteads
- ❖ With additional constraints
 - BMPs

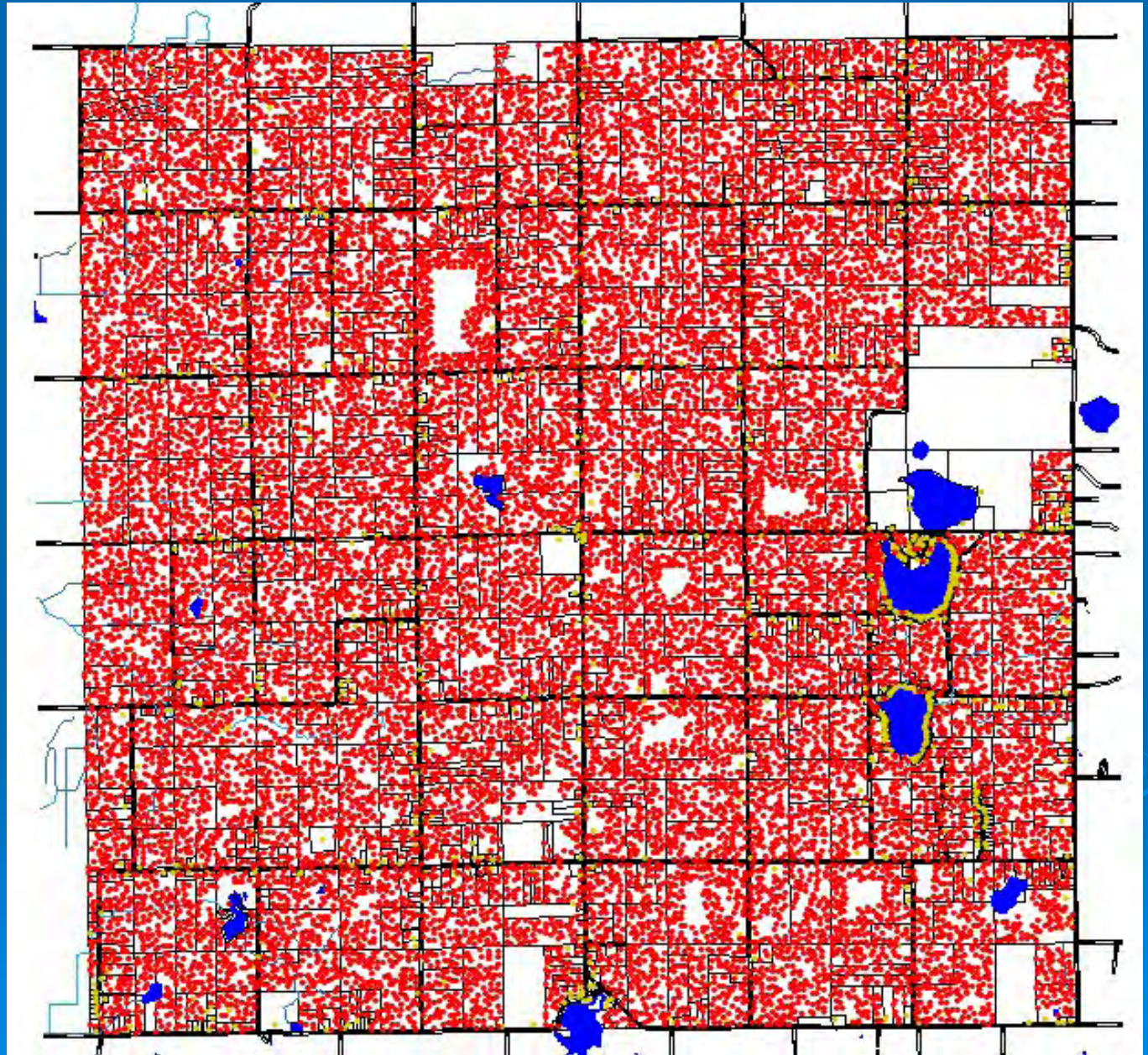
Scenario #1

Zoning
as is with
no
constraints



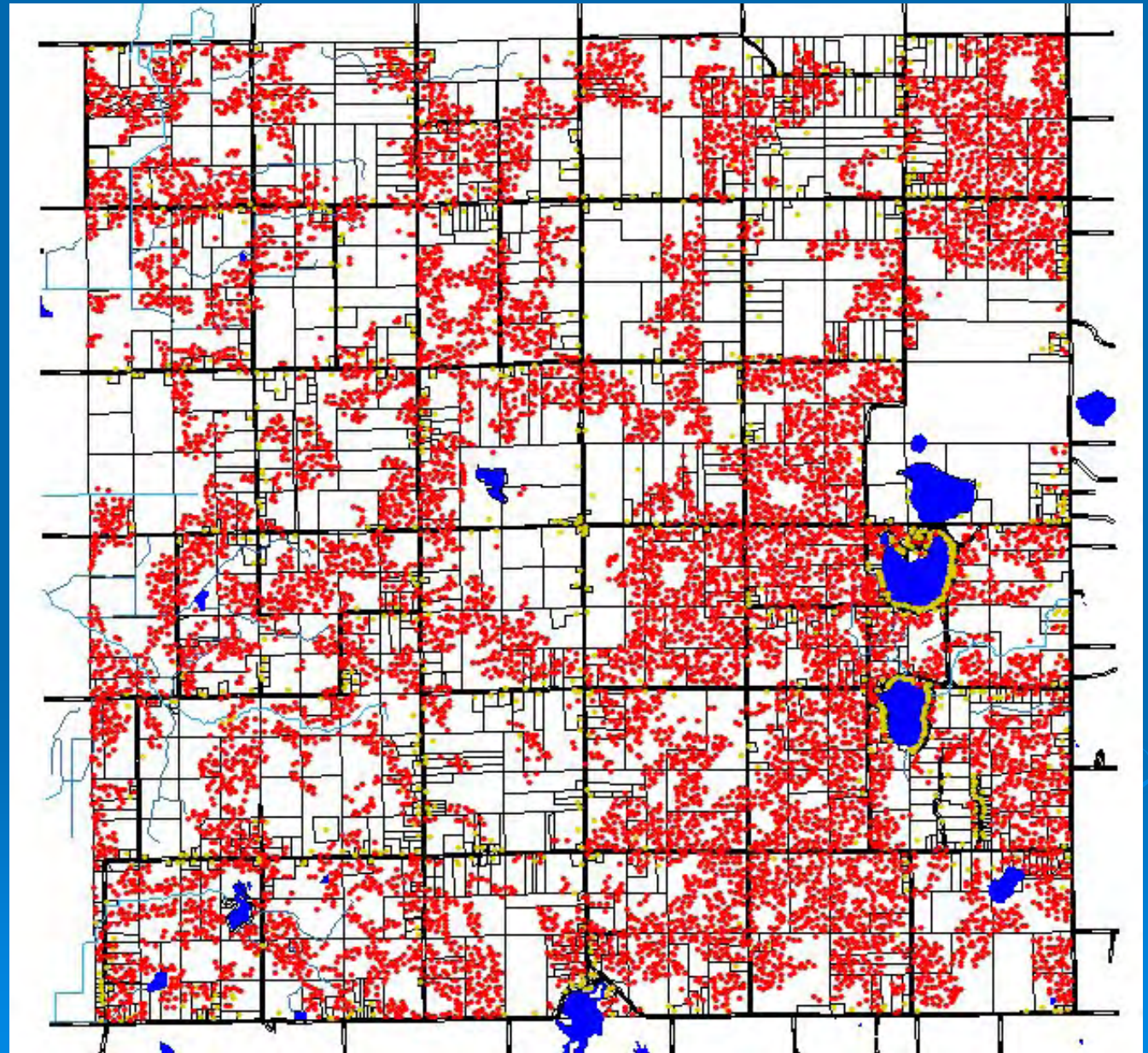
Scenario #2

Zoning
as is with
undevelopable
land
constraints



Scenario #3

Zoning
as is with
undevelopable
land and
important
natural
resource
features
constraints



Examples of Additional Scenarios

- ❖ Add new zoning districts and minimum lot size requirements
- ❖ Add additional natural resources features that can reduce development potential
- ❖ Use density reduction requirements instead of no development areas




Current Ideas/Feedback?

Run scenarios with:

- ❖ 1960 – 2000 population growth rates
 - ❖ 1990 – 2000 population growth rates
 - ❖ Other growth rates?
-
- ❖ Unconstrained development
 - ❖ Constrained by natural features
 - ❖ Other constraints?

Breakout Discussion

1. Identify sites needing protection or stormwater management
 2. Application of BMPs
 3. Identify growth rates/constraints
 4. Identify upcoming meetings/events
- 

Next Meeting

Earth Day Celebration:

Saturday, April 18

Earth Fair

Mulligan's Hollow

1:00 – 4:00 p.m.