

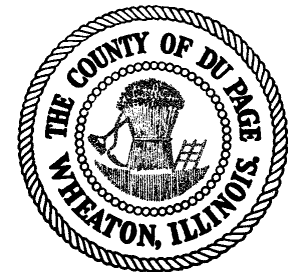
DuPage County Water Quality BMPs

Presented by: Clayton Heffter
DuPage County Economic
Development and Planning



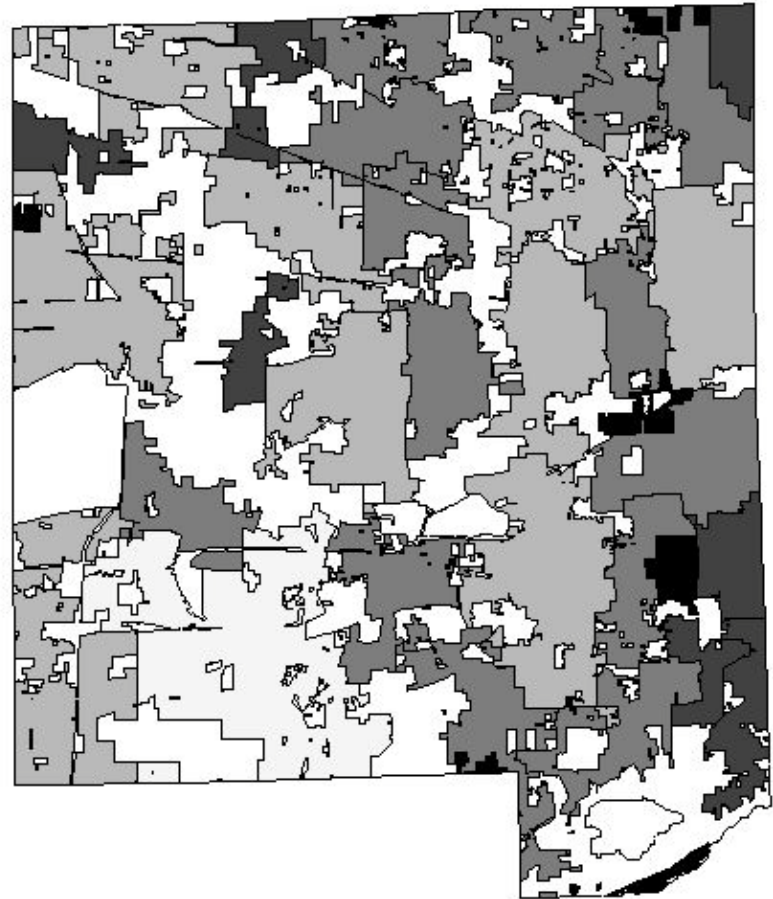
IAFSM Stormwater BMP Design Course

September 29, 2009



DuPage County Overview

- Year Formed- 1839
- Area- 332.1 mi²
- Population- 929,192 (2007 Census)
- 9 Townships
- 40 Communities



Countywide Stormwater Ordinance

- Site runoff and storage (detention)
- Floodplain/floodway
- Temporary erosion and sediment control
- Wetlands
- Riparian Environment

Countywide Stormwater Ordinance

- Site runoff and storage (detention)
- Floodplain/floodway
- Temporary erosion and sediment control
- Wetland
- Riparian
- **BMPs for water quality**

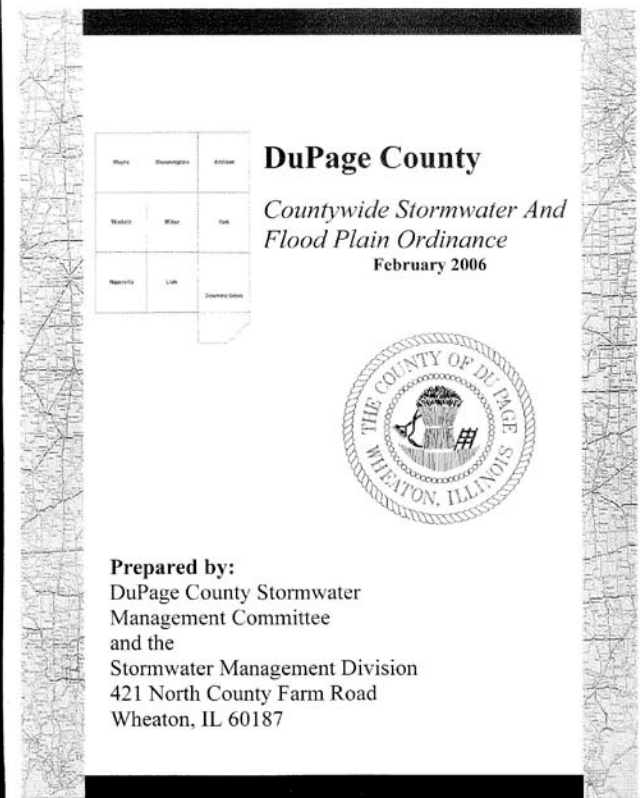
History of the Ordinance

- Stormwater Management Plan adopted September 1989
- Stormwater Ordinance adopted September 24, 1991

Effective February 15, 1992

- Revised:

1994	1996
1997	1999
2000	2003
2004	2005
2006	2008



Why Develop a BMP Program?

- Because of the water quality benefits: next step in a comprehensive stormwater program
- Because its required under NPDES

Each municipality in DuPage County is required to incorporate BMPs into their regulatory programs under NPDES Phase II. In 2003 the county began it's first 5-year cycle under Phase II of NPDES.



General NPDES Permit No. ILR40

IV. STORM WATER MANAGEMENT PROGRAMS

1. Public education and outreach on storm water impacts
2. Public involvement/participation
3. Illicit discharge detection and elimination
4. Construction site storm water runoff control
5. Post-construction storm water management in new development and redevelopment
6. Pollution prevention/good housekeeping for municipal operations

BMP Approach under Stormwater Ordinance

- **All Developments that require a Stormwater Management Permit must provide BMPs for the total area being developed.**
- **Generally, developed area is defined as any activity that changes the stormwater runoff characteristics or any activity in a special management area.**

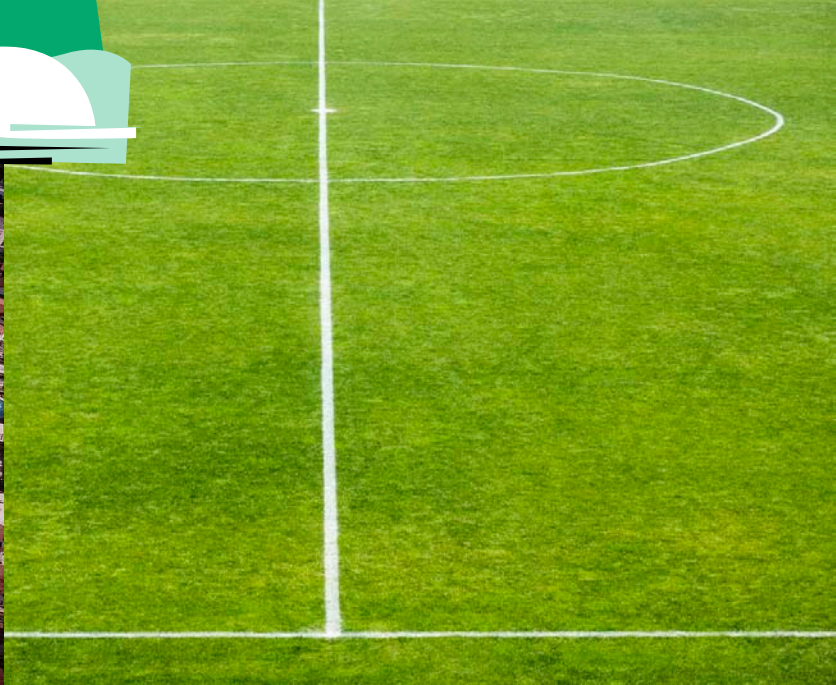
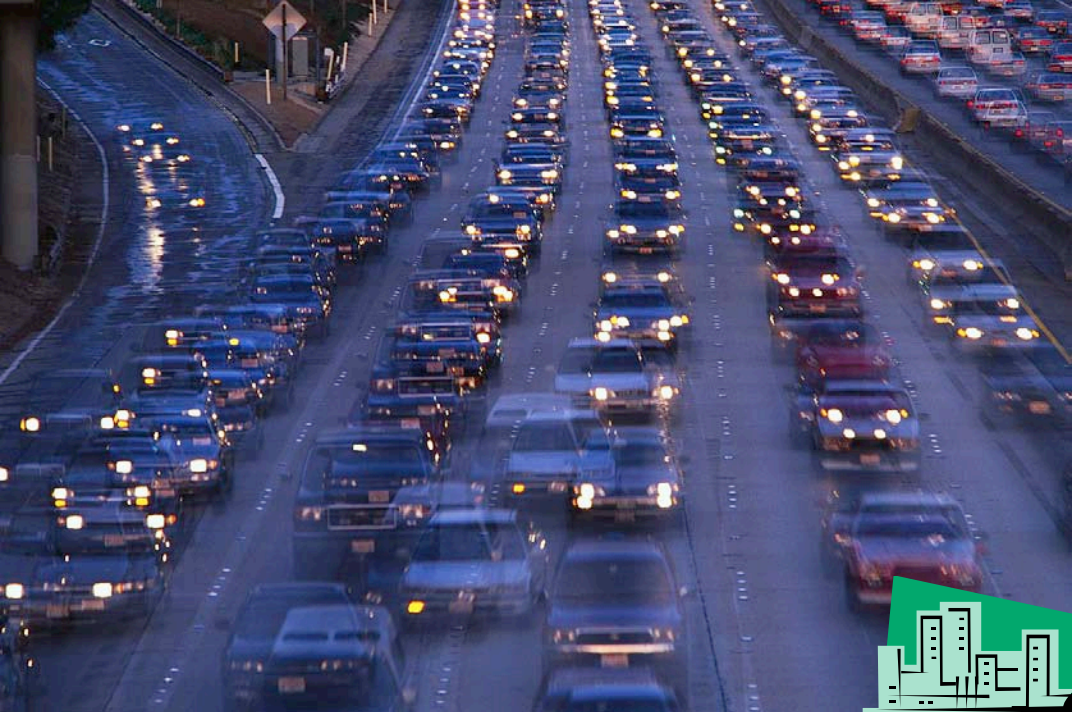
BMP Approach under Stormwater Ordinance

- **Select common target pollutants**
 - Total Suspended Solids (TSS)
 - Metals and Oils
 - Nutrients
- **Match target pollutants to expected loading by land use**
- **Identify and treat the water quality event**
 - 2-year 24 hour event = 3.04 inches

BMP Approach under Stormwater Ordinance

- **BMPs should be chosen and designed to treat the target pollutants generated by the development.**
- **Target pollutants will differ among land uses and by development.**





BMP Approach under Stormwater Ordinance

Permit applicants are asked to provide:

- **a view of the proposed developed area**
- **the location and detail of proposed BMP(s)**
- **A map of the area tributary to each BMP**
- **Documentation that BMPs are sized according to specific parameters found in the BMP Manual, or other applicable standards**

DuPage County

Water Quality Best Management Practices Technical Guidance

For Inclusion into Appendix E – Technical Guidance
for the DuPage Countywide Stormwater and Flood
Plain Ordinance

March 2008



Prepared by:
DuPage County Stormwater
Management Committee

With
DuPage County
Economic Development and Planning
And



Permanent BMPs By Land-Use The Selection Guide



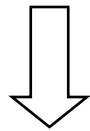
BMP Approach under Stormwater Ordinance

- **The BMP Selection Guide is intended to provide a convenient method of selecting permanent BMPs for inclusion into the site plan.**
- **Each land use guide assigns a numerical value to individual BMPs based on their ability to mitigate the target pollutants.**
- **The numerical values change between the land use guides and reflect the relative importance of the target pollutants.**
- **BMPs should meet an average importance value which also changes by land use.**

>1 ac. Multi-Family or Non-Residential Land Uses; Roads w/ Detention

Pollutant Category by Treatment Importance

More Important



Less Important

TSS

Metals/Oils

Nutrients

>1 ac. Multi-Family or Non-Residential Land Uses; Roads w/ Detention

<u>Sample Recommended BMPs</u>	<u>Value</u>	<u>Pollutant Treatment Limitation</u>
Vegetated Swale, native	2	Metals/Oil
Filter Strip 25' min. width, native	3	None
Permeable Pavers	3	None
Dry Detention	1	Oil
Wet Bottom Detention	2	Oil
Wetland Detention (no open water)	2	None
Constructed Wetland (CWD)	3	None
Manufactured	Varies	Varies
<u>Importance Value (BMP Effectiveness)</u>		
1 = Low 2 = Moderate 3 = High		

Notes:

BMPs should treat 100% of the developed area and average or exceed a **2.5** average importance value.

Other Green Infrastructure Practices

- **Green Roofs**



Courtesy Conservation Design Forum

Other Green Infrastructure Practices

- **Rain Gardens**



Community Rain Garden Program
City of Maplewood, MN

Challenges

- **Easements**

DuPage County has defined BMPs as a Storm Water Facility, causing each to be placed into an easement. An easement serves to notify new property owners of the existence of the BMP and allows the county to perform maintenance in the event the property owner fails to do so.

Challenges

- **Proper sizing of BMPs to treat target pollutant: some BMPs such as manufactured structures and vegetated swales, may have to be sized for the total tributary area instead of developed area which can be significantly smaller.**

Challenges

- **Manufactured structures:**
 - are proprietary and extremely variable
 - DuPage County chose to use a particle size distribution called OK110.
 - OK110 is not representative of typical particle size distribution in our area. However, this blend is the most common used to test a wide variety of structures, making it far easier to compare the benefits and disadvantages of different designs.
 - Watch for last minute substitutions by the contractor to ensure the replacement is comparable and appropriate

Challenges

- **Certain manufactured structures do not work under all conditions. A vortex structure may not work in a condition where water is backing into the structure (tailwater), for instance, in a flood plain.**

Challenges

- **Proper maintenance**

DuPage County requires a statement of maintenance from the property owner at the time of permit approval. Some municipalities opt to take over the maintenance themselves.

Challenges

The maintenance plan should take into account:

- **The type of maintenance and monitoring required for each BMP**
- **Access**
- **Frequency**
- **Performance standards**

Lessons Learned

- **It is important to involve all stakeholders early in the development process:**
 - Residents
 - the development community and their consultants
 - Other regulatory agencies
 - Municipal staff
 - Politicians

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 - Other regulatory agencies
 - Municipal staff
 - Politicians
 - **Minor stake holders**

Lessons Learned

- **Flexibility**
 - **Provide Options - treatment train**
 - **Detention Basins – double use for BMP credit**

Lessons Learned

- **The design, sizing and placement of effective BMPs should take place as early in the design process as possible. It is important to involve an engineer and an environmental scientist in pre-application meetings.**

Lessons Learned

- **Education of professionals is critical**
 - **Planners**
 - **Landscape Architects**
 - **Engineers/Scientists**
 - **Regulatory Staff**

Lessons Learned

- Cannot do it without strong political support.
- Don't try to do it all at once. Start out with basic needs and make it better over time.
- If it is successful, people will forget why the program exists and why they are paying to fund it. If it is not successful, people will wonder why the program exists and why they are paying to fund it.

Community Perception / Overall Successes

Love it or hate it?

Too much government or not enough?



**Download it on the web at:
www.dupageco.org/edp**

Questions?

