

IAFSM Conference 2011 DuPage County Countywide Stormwater and Flood Plain Ordinance - Update

Stormwater Ordinance Past and Future
March 10, 2011



Purpose of Update

Review and optimize the stormwater management requirements to remain competitive in maintaining and attracting businesses while preserving the high standard of flood control and environmental protection for County residents.

Benchmarking the Ordinance

National/Local Ordinance Review

- Detention Requirement is highly restrictive compared to most programs.
- Ordinance does not yet address national trend of encouraging reduction of impervious surfaces.

Why Now-is it Broken?

- Effective Date February 15, 1992
- Amended 11 times since effective date—but not comprehensively overhauled.
- The County is different now.
 - Slowdown in population growth.
 - Increase in preserved Open Space.

Why Now-is it Broken?

- Developed land uses and infrastructure are aging.
- Types of development Projects have changed.
- Moving forward towards integrating water quality/quantity with environmental resource protection in a healthy redevelopment environment.

Zoning/Land Use As A Distinction in a Stormwater Ordinance

- A Stormwater Ordinance is an act of Political Will-Zoning/Land Use more easily understood by elected officials and Public.
- Single Family Homes are the most generally exempt Land uses
- Commercial/Industrial/Multifamily held to more consistent standards.
- Does this approach truly “make sense”?

Impervious Area As A Distinction in a Stormwater Ordinance

- Draft Ordinance attempts move away from Zoning classifications by looking at Impervious areas and changes to impervious areas, in addition to the absence or presence of Natural features. Marker for Runoff Volume and Pollutants.
- An Indirect Incentive to reduce impervious surfaces in Developments.
- Different approach to Stormwater Detention (Extreme Event) but integrated with Best Management Practices (Average Annual).



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Percent Impervious as a Threshold Option

By StormBlog53 | Date: Oct 28 | Filed in Stormwater Management | No comments yet.

It appears that the majority of the effects on stormwater quantity and quality can be tracked either explicitly or implicitly through the measurement of the percentage of impervious area on a zoning parcel of land. In reviewing literature and studies done in this regard, a few observations may prove useful in the ordinance rewrite.

- » Total Impervious Area (TIA) is often distinguished from Effective Impervious Area (EIA) when tracking impacts. EIA is the portion of the TIA that has improved drainage area. It is similar to concepts like "Directly connected Impervious Area" found in TR-55. Unfortunately, it takes quite a bit of investigation to separate EIA from TIA on a project parcel, and often generalized ratios dependent on description of the land use are used rather than direct measurement.
- » An on-going challenge in stormwater Ordinance language is finding language for and descriptions of "Development" that make meaningful distinctions technically, practically and administratively. One potential way out of this on-going problem is to use the % impervious of a project as a threshold trigger for certain mitigation requirements. Here is an example:
 - » Define any project that is less than 10% TIA as not requiring a site runoff storage facility.
 - » Define projects that increase the % impervious area of a project site as requiring a site runoff storage facility to mitigate the change, if the TIA is greater than 10%.
 - » If a project can be shown to significantly reduce the EIA, then a site runoff storage facility may not be required.
 - » These are only examples, but consider something like the holdings of the Forest Preserve District, or the trend toward Low Impact Design.
 - » The overwhelming majority of studies show that percent impervious can be correlated with the "health" of streams, with nearly all studies beginning to register stream impairments as low as 10% impervious. While that is the "bad news", it also tells us what is, and is not likely to, further degrade water quality. Many studies cite the

breaking news

- » Percent Impervious as a Threshold Option
- » Comments on National Ordinance Review
- » Survey for Ordinance "Users"
- » Re-ordering/Re-arranging Ordinance Articles
- » Definitions of Development and Types

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Evolving Approach to Best Management Practices (BMP)

- In 1992, there was only one sentence mentioning BMPs and all it said was that they were required in accordance with the Clean water Act.
- County/Municipal effort culminated in current Ordinance approach effective August 2008.
- Draft Ordinance attempts to recognize the integration of BMPs into other aspects of Stormwater Management.
- Emphasize treatment of Impervious surfaces as a marker for runoff volume and pollutants.

Article 4: Stormwater Management Certifications

When are BMP's Required?

Current Ordinance (Old 15-149)

- Whenever a stormwater Management Permit is required.
- NOT REQUIRED if the parcel is less than one-acre in size and the land use is single or two-family residential.

Draft Ordinance (New 15-40 Table 1)

- A Stormwater Certification is required.
- Has “built in” BMP's each with its own applicability: Water Control Volume-WCV (New 15-73) and Buffers (New Article 12) as well as use of “traditional” BMPs (New Article 8)
- If The Project adds more than 500 sq ft of impervious area, the WCV is required.

Article 8: BMP's

- Integrated Post- Construction BMP Strategy
 - Suspended Solids as a marker for Pollutants.
 - Infiltration/Filtration (WCV)
 - Buffers along “Waters of DuPage County”
 - Current Draft Calls for a design to achieve removal of 80% of Total Suspended Solids (TSS) generated on-site.
 - Intent was a greatly simplified approach, but current draft language is inadequate.
 - Will be adding a design rainfall event to focus on frequent events, and other changes.

Site Runoff Storage (Detention)

- As much a Public Policy as a science.
- Creates the single largest and most costly Stormwater Management Infrastructure required by the Ordinance.
- On previously developed property (Redevelopment) Compliance is often extremely problematic and costly.
- Create an indirect incentive to reduce impervious surfaces, while providing Water Control Volume

Article 4: Stormwater Management Certifications

When is site runoff storage (detention) required?

Current Ordinance

Current Ordinance (Old 15-111.2)

Required if:

- Parcels 3-acres or greater for single or two family residential
- Parcels are one acre or greater for multiple family or non-residential land uses, and new development is cumulatively greater than 25,000 sq ft from Feb. 15, 1992
- Area of development is greater than one-acre for road developments

Current Ordinance (Old 15-111.3)

Consider granting an exception for:

- Grading of pervious area
- Reconstruction of an existing parking lot
- Regional stormwater management or flood control project
- Stream bank stabilization
- Construction or reconstruction of pedestrian/bike path
- Wetland banks or wetland mitigation sites
- one single family residence on a lot greater than three acres
- Special rules for an existing lot which is being developed and over 80% impervious already.

Article 4: Stormwater Management Certifications

When is site runoff storage (detention) required? Draft Ordinance

Draft Ordinance (New 15-40 Table 1 and 15-68 Table 2)

- Required if based on Total Impervious Area (TIA) of the site
 - TIA increases, or has decreased less than 5%, And cumulative new TIA from Feb. 1992 is greater than 25,000 sq. ft.
 - And, TIA of developed site is over 10%.
 - “Open Space Development” or “Roadway” projects only if they will increase discharges after development and only enough to maintain pre-project discharge rates.

Draft Ordinance (New 15-40 Table 2 and 15-73)

- Requires a “Water Control Volume” if new TIA is greater than 500 sq. ft.
- Can satisfy BMP requirement,
- Required volume is deducted from any required site runoff storage

Table 2. Site Runoff Storage and Water Control Volume Requirements

Project Type	Site Runoff Storage	Water Control Volume Applicable Rainfall Depth
Roadway Projects	Special	1.00 in.
Open Space Development Projects	Special	0.75 in.
Public Water and Sewer Improvement Project	Not Required	Not Required
All development where, compared to the Pre-Project Site, the TIA has increased or decreased less than 5% and the TIA of the With-Project Site is:	And new TIA is greater than 25,000 sq ft.	And new TIA is greater than 500 sq ft.
Equal to or less than 10%	Not Required	0.75 in.
Greater than 10%	Required	0.75 in.
All development where, compared to the Pre-Project Site, the TIA has decreased at least 5% and the TIA of the With-Project Site is:		
Equal to or less than 50%	Not Required	0.50 in.
Greater than 50% but less than 80%	Not Required	0.75 in.
Greater than 80%	Not Required	1.00 in.

Article 9: Site Runoff Conveyance, Storage & Water Control Volume

- Represents a tradeoff in costs for Stormwater Management infrastructure between extreme events and frequent events.
- Site stormwater Storage based on 0.1 cfs/acre release rate, 100-year rainfall of 7.58 in. in 24-hours
- Water Control Volume based on rainfall depths of 0.5 inches to 1.00 inches, capturing 90% of all rainfall events and about 70% of average annual total rainfall

Article 12: Buffers

- Buffers already exist in the Current Ordinance around wetlands (Old 15-135.15), this section intentionally expands the use but replaces the Riparian area requirements of (Old 15-137)
- Definition of “Waters of DuPage” (Appendix A)
 - Lakes, Rivers, Streams, Mudflats Wetlands Sloughs, wet meadows or Natural ponds, but not:
 - Drainage, irrigation or roadside ditches in upland soils
 - Artificial Lakes, ponds or wetlands in uplands; Artificial bodies of water for ornamental purposes
 - Water filled depressions incidental to construction or mining unless abandoned for 5-years.

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Article 12: Buffers

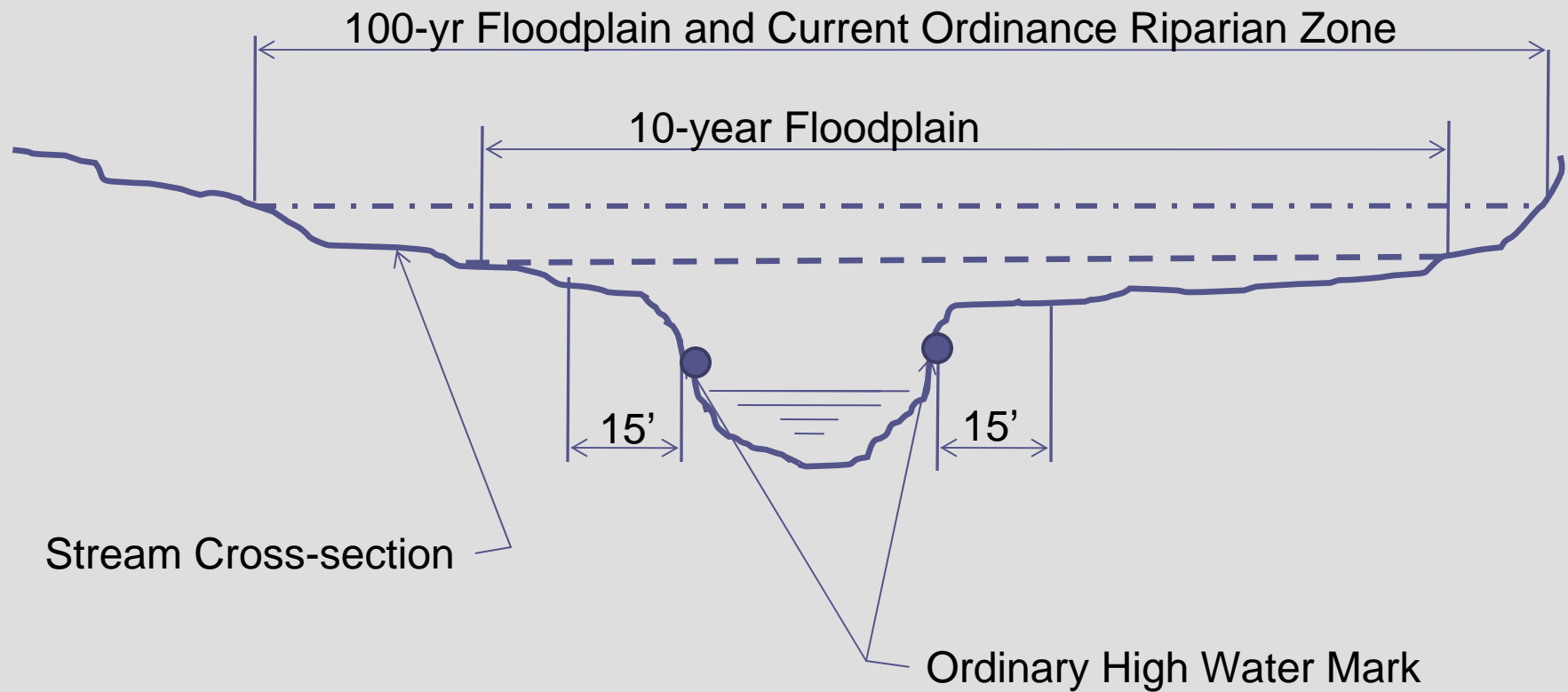


Illustration of Buffer Width

Non-Wetland Waters of DuPage

Article 12: Buffers

- Impervious areas and buildings within width are not part of Buffer
- Development of Buffer cannot occur without mitigation of lost functions, and does not have to be on a 1 to 1 area basis.
- Existing maintained lawns or landscape beds can be maintained or replaced.

Use of the FEQ model and Continuous Simulation in a Permitting Context

- FEQ used with Continuous Simulation in DuPage County since the beginning of the program
- The “rules” of its use are informal and experience based, Draft tries to clarify and codify its practical application.

Article 10: Floodplain Management

FEQ models that show higher Base Flood Elevations than the Regulatory Model will be used to regulate structures when:

- QA/QC of model is certified by the Director.
- Affected Communities are notified and Notice published to the Public.
- Model Input files will be distributed to affected Communities.

Article 10: Floodplain Management

For permitting a project in the Floodway, and FEQ is the FEMA approved model, Modeling “tolerances” are given when evaluating no adverse impacts:

- Allowable increase of a single storm in the continuous series of 0.25', As long as it does not represent a “trend” among similar storms.
- Allowable change in flow of 10%.
- No increase in velocity greater than 10%, unless non-erosive or protected from erosion

Article 11: Wetlands

Wetland Hydrology- Indirect Impacts

- A new approach which focuses on more frequent events to evaluate indirect impacts.
- Simplified review of added impervious surfaces and the response of closed depressions to changes in volume.
- Test rainfalls are 0.5", 1.5" and 3.0".
- Checks for changes in water surface elevation in the wetlands of 3" or more.
- Focuses on the effect of impervious surfaces: directly connected and otherwise.

Public Comment Period

- Closed March 4
- Meetings with Municipal Engineers during public comment period:
 1. Concern that all developments will require hiring a DuPage Certified Wetland Specialist
 2. Question the practicality of requiring Water control Volume for single family homes
 3. FEMA compliant accessory structures allowable in the floodplain
 4. Request that General Certifications be developed before Ordinance Amendment is effective.
- Other comments received.

Next steps

- Compile comments received and develop responses with Steering Committee.
- Present comments and responses to Stormwater Committee.
- Prepare a revised draft reflecting comment response.
- Present draft to Stormwater Committee for second public comment period.
- Compile and respond to comments.
- Prepare final ordinance for Stormwater Committee and County Board approval.

<http://ec.dupageco.org/StormWaterUpdate/>

*A Stormwater Ordinance
is an act of Political Will.*

Questions?