



STORMWATER MANAGEMENT COMMISSION

We hope to see you at the next TAC meeting on **Thursday, July 18, 2019** at 9:00 AM.

The meeting will be held at an **alternate** location:

Lake County Division of Transportation

600 W. Winchester
Main Conference Room
Libertyville, IL 60048

Meeting Topic:

Continue discussion on stormwater detention options. Discuss results of the Upper Des Plaines River future build-out scenarios.

Presentation slides are available for download at:

<https://www.lakecountyil.gov/2338/Standing-Advisory-Committees>



STORMWATER MANAGEMENT COMMISSION

**TECHNICAL ADVISORY COMMITTEE
AGENDA**

July 18, 2019

9:00 AM – 12:00 PM

600 W. Winchester, Libertyville, Illinois



- 1.0 CALL TO ORDER
- 2.0 ADDITIONS TO THE AGENDA
- 3.0 PUBLIC COMMENT
- 4.0 STAFF REPORT
 - 4.1 Public Comment Period and Public Information Meeting Updates
- 5.0 APPROVAL OF THE MINUTES
 - 5.1 June 20, 2019 Minutes
Action Requested: APPROVAL
- 6.0 OLD BUSINESS
 - 6.1 Upper Des Plaines River Watershed Future Build-Out Scenario
Action Requested: STUDY RESULTS DISCUSSION
 - 6.2 Detention Volume Option #1: Release Rate Adjustments
Action Requested: VOLUME COMPARISON DISCUSSION
 - 6.3 Detention Volume Option #2: Unit Area Curve Revisions
WDO Appendix K
Action Requested: NEEDS/METHODOLOGY DISCUSSION
 - 6.4 Detention Volume Option #3: Credit Trading Market
Action Requested: ADDITIONAL FEASIBILITY DISCUSSION
 - 6.5 Detention Volume Option #4: Fee-In-Lieu
WDO Section 509
Action Requested: FEASIBILITY DISCUSSION/VOLUME ALLOWED
- 7.0 NEW BUSINESS
 - 7.1 NONE
- 8.0 ADJOURNMENT

Technical Advisory Committee

<p>James Anderson (Term Expires May 2020) Director of Natural Resources LC Forest Preserve District 1899 W. Winchester Rd. Libertyville, IL 60048 Phone: 847-968-3282 Fax: 847-367-6649 Email: janderson@lcfpd.org</p>	<p><u>Alternates</u> John Nelson Director of Operations & Infrastructure LC Forest Preserve Dist. 19808 W. Grand Avenue. Lindenhurst, IL 60046 Phone: 847-968-3407 Fax: 847-367-6649 Email: jnelson@lcfpd.org</p> <p>Ken Klick Restoration Ecologist LC Forest Preserve Dist. 1899 W. Winchester Rd. Libertyville, IL 60048 Phone: 847-968-3284 Fax: 847-367-6649 Email: kklick@lcfpd.org</p>	<p>Tom Polzin (Vice Chairman) (Term Expires May 2020) Hey & Assoc., Inc. 26575 W. Commerce Dr., Ste. 601 Volo, IL 60073 Phone: 847-740-0888 Fax: 847-740-2888 Email: tpolzin@heyassoc.com</p>	<p><u>Alternate</u> Vince Mosca Hey & Assoc., Inc. 26575 W. Commerce Dr., Ste. 601 Volo, IL 60073 Phone: 847-740-0888 Fax: 847-740-2888 Email: vmosca@heyassoc.com</p>
<p>Mike Zemaitis (Term Expires May 2020) Engineer of Design LC Division. of Transportation 600 Winchester Rd. Libertyville, IL 60048 Phone: 847-377-7400 Fax: 847-362-5290 Email: mzemaitis@lakecountyil.gov</p>	<p><u>Alternate</u> Al Giertych Assist. County Engineer LC Division of Transportation 600 Winchester Rd. Libertyville, IL 60048 Phone: 847-377-7400 Fax: 847-362-5290 Email: agiertych@lakecountyil.gov</p>	<p>Pat Bleck (Term Expires May 2020) Bleck Engineering Co., Inc. 1375 Western Ave. Lake Forest, IL 60045 Phone: 847-295-5200 Fax: 847-295-7081 Email: pbleck@bleckeng.com</p>	<p><u>Alternate</u> Joy Corona Bleck Engineering Co., Inc. 1375 Western Ave. Lake Forest, IL 60045 Phone: 847-295-5200 Fax: 847-295-7081 Email: jcorona@bleckeng.com</p>
<p>Patrick Glenn (Term Expires May 2020) Senior Engineer Gewalt Hamilton Assoc. Inc. 625 Forest Edge Dr. Vernon Hills, IL 60061 Phone: 847-478-9700 Fax: 847-478-9701 Email: pglenn@gha-engineers.com</p>	<p><u>Alternate</u> Mei Zhu Senior Engineer Gewalt Hamilton Assoc. Inc. 625 Forest Edge Dr. Vernon Hills, IL 60061 Phone: 847-478-9700 Fax: 847-478-9701 Email: mzh@gha-engineers.com</p>	<p>Bill Heinz (Term Expires May 2020) Village of Grayslake 585 Berry Ave. Grayslake, IL 60030 Phone: 847-223-2323 Fax: 847-223-4821 Email: wheinz@villageofgrayslake.com</p>	<p><u>Alternate</u> Kurt Baumann Baxter & Woodman 442 N. Cedar Lake Rd. Round Lake, IL 60073 Phone: 815-444-3313 Email: baumann@baxterwoodman.com</p>
<p>Kathy Chernich (Term Expires May 2020) U.S. Army Corp. of Engineers 231 LaSalle St., Ste. 1500 Chicago, IL 60604 Phone: 312-846-5531 Fax: 312-353-4110 Email: Kathy.G.Chernich@usace.army.mil</p>	<p><u>Alternate</u> Kaitlyn Pascus U.S. Army Corp. of Engineers 231 LaSalle St., Ste. 1500 Chicago, IL 60604 Phone: 312-846-5533 Fax: 312-353-4110 Email: kaitlyn.a.pascus@usace.army.mil</p>	<p>Peter Manhard (Term Expires May 2020) Vice President Manhard Consulting 900 Woodlands Parkway Vernon Hills, IL 60061 Phone: 847-634-5550 Fax: 847-634-0095 Email: pmanhard@manhard.com</p>	<p><u>Alternates</u> Brian Valleskey Manhard Consulting, Ltd. 900 Woodlands Parkway Vernon Hills, IL 60061 Phone: 847-634-5550 Fax: 847-634-0095 Email: bvalleskey@manhard.com</p> <p>Marcy Knysz Manhard Consulting, Ltd. One Overlook Point, Ste. 290 Lincolnshire, IL 60069 Phone: 847-325-7300 Fax: 847-634-0095 Email: mknysz@manhard.com</p>

Technical Advisory Committee

<p>Don Dressel (Chairman) <i>(Term Expires May 2020)</i> Christopher Burke Engineering 9575 W. Higgins Rd., Ste. 600 Rosemont, IL 60018-4920 Phone: 847-823-0500 Fax: 847-823-0520 Email: Ddressel@cbbel.com</p>	<p><u>Alternate</u> Kay Whitlock Christopher Burke Engineering 9575 W. Higgins Rd., Ste. 600 Rosemont, IL 60018-4920 Phone: 847-823-0500 Fax: 847-823-0520 Email: kwhitlock@cbbel.com</p>	<p>Ramesh Kanapareddy <i>(Term Expires May 2020)</i> City of Highland Park 1150 Half Day Rd. Highland Park, IL 60035 Phone: 847-432-9907 Fax: 847-432-0807 Email: rkanapareddy@cityhpil.com</p>	<p><u>Alternate</u> Manny Gomez City of Highland Park 1150 Half Day Rd. Highland Park, IL 60035 Phone: 847-432-1186 Fax: 847-432-0807 Email: egomez@cityhpil.com</p>
<p>Eric Steffen <i>(Term Expires May 2020)</i> Senior Engineer Lake County Planning Building & Development 500 W. Winchester Rd. Libertyville, IL 60048 Phone: 847-377-2109 Fax: 847-984-5853 Email: esteffen@lakecountyil.gov</p>	<p><u>Alternates</u> Matt Meyers Assistant Chief Engineer/Operations Manager Lake County Planning, Building & Development 500 W. Winchester Rd. Libertyville, IL 60048 Phone 847-377-2079 Fax: 847-984-5853 Email: mmeyers@lakecountyil.gov</p> <p>Brian Frank Senior Engineer Lake County Planning, Building & Development 500 W. Winchester Rd. Libertyville, IL 60048 Phone: 847-377-2086 Fax: 847-984-5853 Email: bfrank@lakecountyil.gov</p>	<p>Heather Galan <i>(Term Expires May 2020)</i> Village Engineer Village of Gurnee 325 N. O'Plaine Rd. Gurnee, IL 60031 Phone: 847-599-7582 Fax: 847-623-9475 Email: hgalan@village.gurnee.il.us</p>	<p><u>Alternates</u> Nicholas Leach Village of Gurnee 325 N. O'Plaine Rd. Gurnee, IL 60031 Phone: 847-599-7586 Fax: 847-623-9475 Email: NLeach@village.gurnee.il.us</p> <p>Dave Ziegler Director of Community Development Village of Gurnee 325 N. O'Plaine Rd. Gurnee, IL 60031 Phone: 847-599-7550 Fax: 847-623-9475 Email: davidz@village.gurnee.il.us</p>

**TECHNICAL ADVISORY COMMITTEE
MEETING MINUTES
June 20, 2019
Lake County Stormwater Management Commission
500 W Winchester, Libertyville, IL**

1.0 CALL TO ORDER 9:13 AM

TAC Members & Alternates		Staff Present	General Public	
Brian Frank	Mei Zhu	Ernesto Huaracha	Justin Keller	Tom Price
Heather Galan (left at 12:15pm)		Kurt Woolford	Mike Zigulich	Sarah Cardona
Kurt Baumann (left at 12:10pm)		Glenn Westman	Ron Milanesio	Judy Martini
Donald Dressel		Angela Panateri	Maria Lasday	Dave Brown
Mike Zemaitis		Mike Warner	Marie Hansen	Wayne Blake
Jim Anderson (left at 12:15pm)			Jeff Cooper	Joanna Colletti
			Dennis Dreher	
			Joe Keller	

Guest: Greg Byard with ISWS, via conference call.

2.0 ADDITIONS TO THE AGENDA – None

3.0 PUBLIC COMMENT- None

4.0 STAFF REPORT-

- 4.1 Mr. Kurt Woolford discussed the public comment period that was opened to collect feedback regarding the new rainfall data from the updated Bulletin 70.
- 4.2 Mr. Woolford discussed the timeline that was included in the packet for the updates to the WDO. At the August SMC meeting, the agenda will include recommending to the Commission that a target date of August 1, 2020 be set for the new rainfall to be effective (specified in the WDO).

5.0 APPROVAL OF THE MINUTES

- 5.1 Mr. Brian Frank moved to approve the May 16, 2019 TAC minutes, seconded by Mr. Jim Anderson. Vote: Approved 7-0-0 (unanimous).

6.0 OLD BUSINESS

- 6.1 Mr. Woolford began the discussion on detention volume, stating that the new sectional number for the 100-year, 24-hour rainfall event is now 8.57", which slightly more than a 2" increase from the current 6.50" standard for detention basin sizing. Based on modeling done by MWRD, a 1" increase was correlated to approximately a 30% volume increase. When SMC used the same model with the approximate 2" increase, the estimated increase was approximately 50%.
- 6.2 Mr. Woolford introduced the audience members who were from the Fox Waterway Agency and offered them an opportunity to discuss what they are seeing and experiencing in the Fox River Watershed. Main items included maximizing the use of existing infrastructure, concerns over the post-development and long-term maintenance and monitoring, release rates in detention ponds, and promoting awareness and education to homeowners about proper stormwater management practices.
- 6.3 Mr. Woolford introduced Greg Byard from the ISWS, who presented the Cook County watershed release rate study the MWRD completed. MWRD was looking to move towards watershed specific release rates and approached ISWS for assistance. The goal of the study was to focus on release rates that mitigate the impact of development on the 1% annual chance of flooding. The study

looked at four main components: release rate vs. existing runoff rate, watershed timing, increased runoff volume (in total), and impacts at restrictive structures. The study was divided into two phases. The first phase was a pilot study that looked at two sub watersheds, Upper Salt Creek and Stoney Creek, and look at how release rates were affected by different factors. The second phase applied methodology from the study and develop watershed specific release rates. One of the main results showed that release rates are effective, and they are able to mitigate future increases in water surface elevation due to development, but most effective in the smaller watersheds.

- 6.4 Ms. Sarah Cardona with MPC presented on the credit trading market. MPC is currently working with MWRD to roll out a program for credit storage. Currently, the program is in concept and being considered by MWRD. MPC believes that the option of credit trading could accelerate the rate at which the installation of detention and volume control is seen. It was discussed that a credit trading market in Lake County may not be feasible due to the current WDO detention threshold requirements.

7.0 NEW BUSINESS

- 7.1 Mr. Darren Olson gave an overview of the Upper Des Plaines River watershed study. He also explained that the goal of the analysis is to perform a sensitivity analysis of flood flows and flood profiles within Illinois, specifically Lake and Cook County, based on future development in Wisconsin. The following build-out scenarios were mentioned: full build-out (100% development) and one or two lesser build-out scenarios (e.g. 70% build-out or based on some sensitivity to land ownership).

8.0 ADJOURNMENT

- 8.1 Motion to adjourn by Ms. Mei Zhu, seconded by Mr. Mike Zemaitis. Meeting adjourned at 12:16pm
Vote: Approved 4-0-0 (unanimous).

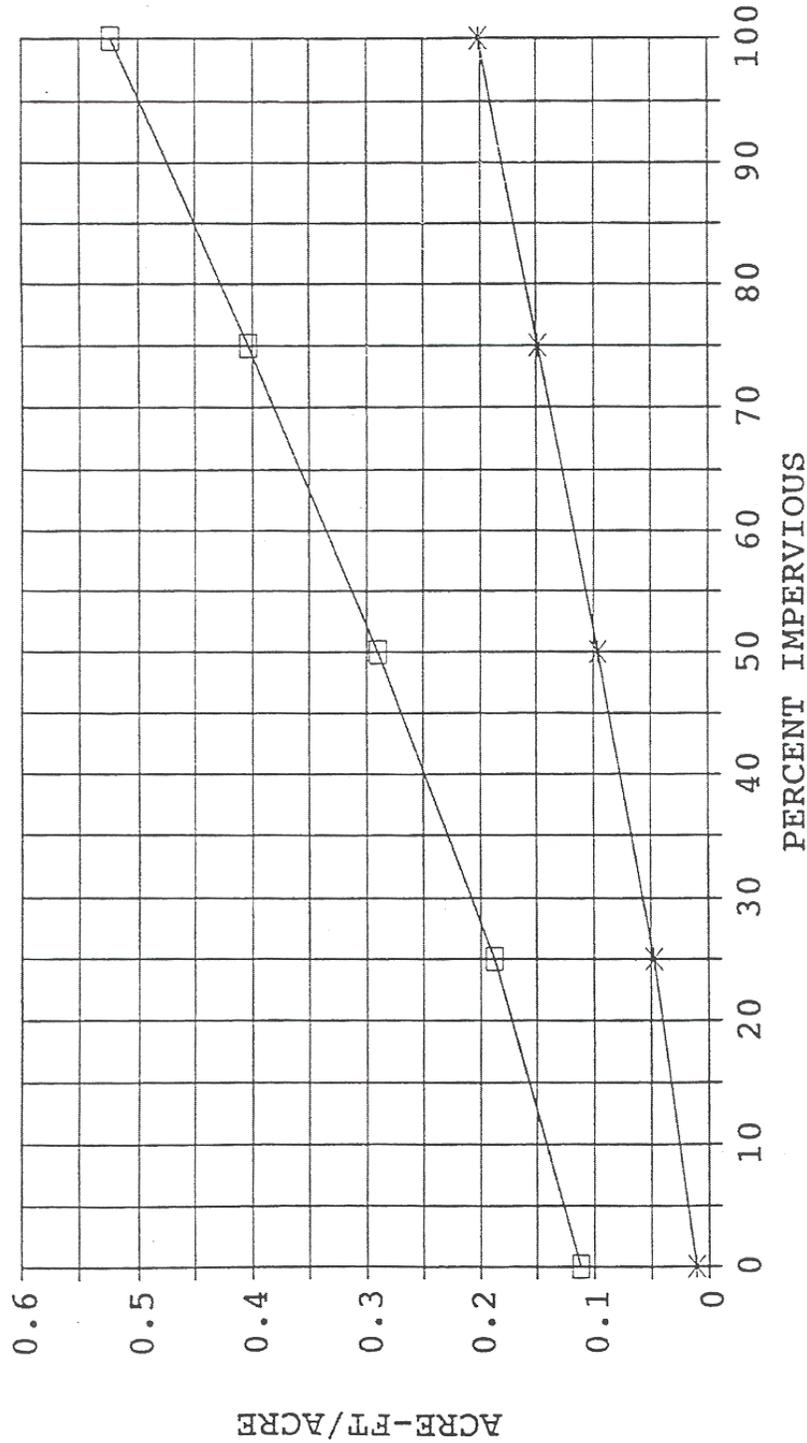
Appendix J: Watershed Specific Release Rates

WATERSHED		Release Rates (cfs/acre)		Comments ^{1/}
		100 Year	2 Year	
MAJOR TRIBUTARIES		100 Year	2 Year	
MINOR TRIBUTARIES		Storm Event	Storm Event	
FOX RIVER				
Fox River Mainstem		0.150	0.040	WDO Maximum Allowable
Flint Creek		0.150	0.040	WDO Maximum Allowable
Honey Lake Drain		0.150	0.040	WDO Maximum Allowable
Mutton Creek		0.150	0.040	WDO Maximum Allowable
Sequoit Creek		0.150	0.040	WDO Maximum Allowable
Slocum Lake Drain		0.150	0.040	WDO Maximum Allowable
Bang's Lake Drain		0.150	0.040	WDO Maximum Allowable
Squaw Creek Mainstem		0.090	0.020	Watershed Average Rate Based on 8/1/96 SMC adoption of the 11/3/82 FIS flow rate analysis.
Fish Lake Drain		0.090	0.020	Watershed Average Rate Based on 8/1/96 SMC adoption of the 11/3/82 FIS flow rate analysis.
Round Lake Drain		0.090	0.020	Watershed Average Rate Based on 8/1/96 SMC adoption of the 11/3/82 FIS flow rate analysis.
Eagle Creek		0.090	0.020	Watershed Average Rate Based on 8/1/96 SMC adoption of the 11/3/82 FIS flow rate analysis.
Tower Lake Drain		0.150	0.040	WDO Maximum Allowable
DES PLAINES RIVER				
Des Plaines River Mainstem		0.150	0.040	WDO Maximum Allowable
Aptakisic Creek		0.150	0.040	WDO Maximum Allowable
Buffalo Creek Mainstem		0.150	0.040	WDO Maximum Allowable
Tributary B to Buffalo Creek		0.150	0.040	WDO Maximum Allowable
Bull Creek Mainstem		0.150	0.040	WDO Maximum Allowable
Bull Creek Tributary		0.150	0.040	WDO Maximum Allowable
Gurnee Tributary		0.150	0.040	WDO Maximum Allowable
Indian Creek Mainstem		0.150	0.040	WDO Maximum Allowable
South Branch Indian Creek		0.150	0.040	WDO Maximum Allowable
West Branch Indian Creek		0.150	0.040	WDO Maximum Allowable
Forest Lake Drain		0.150	0.040	WDO Maximum Allowable
Seavey Creek		0.150	0.040	WDO Maximum Allowable
Diamond Lake Drain		0.150	0.040	WDO Maximum Allowable
Mill Creek Mainstem		0.150	0.040	WDO Maximum Allowable
North Mill Creek		0.150	0.040	WDO Maximum Allowable
Hastings Creek		0.150	0.040	WDO Maximum Allowable
Newport Drainage Ditch		0.150	0.040	WDO Maximum Allowable
Suburban Country Club Tributary		0.150	0.040	WDO Maximum Allowable
LAKE MICHIGAN				
Bluff/Ravine		0.150	0.040	WDO Maximum Allowable
Dead River		0.150	0.040	WDO Maximum Allowable
Bull Creek		0.150	0.040	WDO Maximum Allowable
Kellogg Creek		0.150	0.040	WDO Maximum Allowable
Pettibone Creek		0.150	0.040	WDO Maximum Allowable
Waukegan River		0.150	0.040	WDO Maximum Allowable
NORTH BRANCH CHICAGO RIVER				
Middle Fork		0.150	0.040	WDO Maximum Allowable
Skokie River		0.150	0.040	WDO Maximum Allowable
West Fork		0.150	0.040	WDO Maximum Allowable

^{1/} Individual Communities within these watershed boundaries may have more restrictive release rates.

Appendix K: Detention Volume Versus Percent Impervious

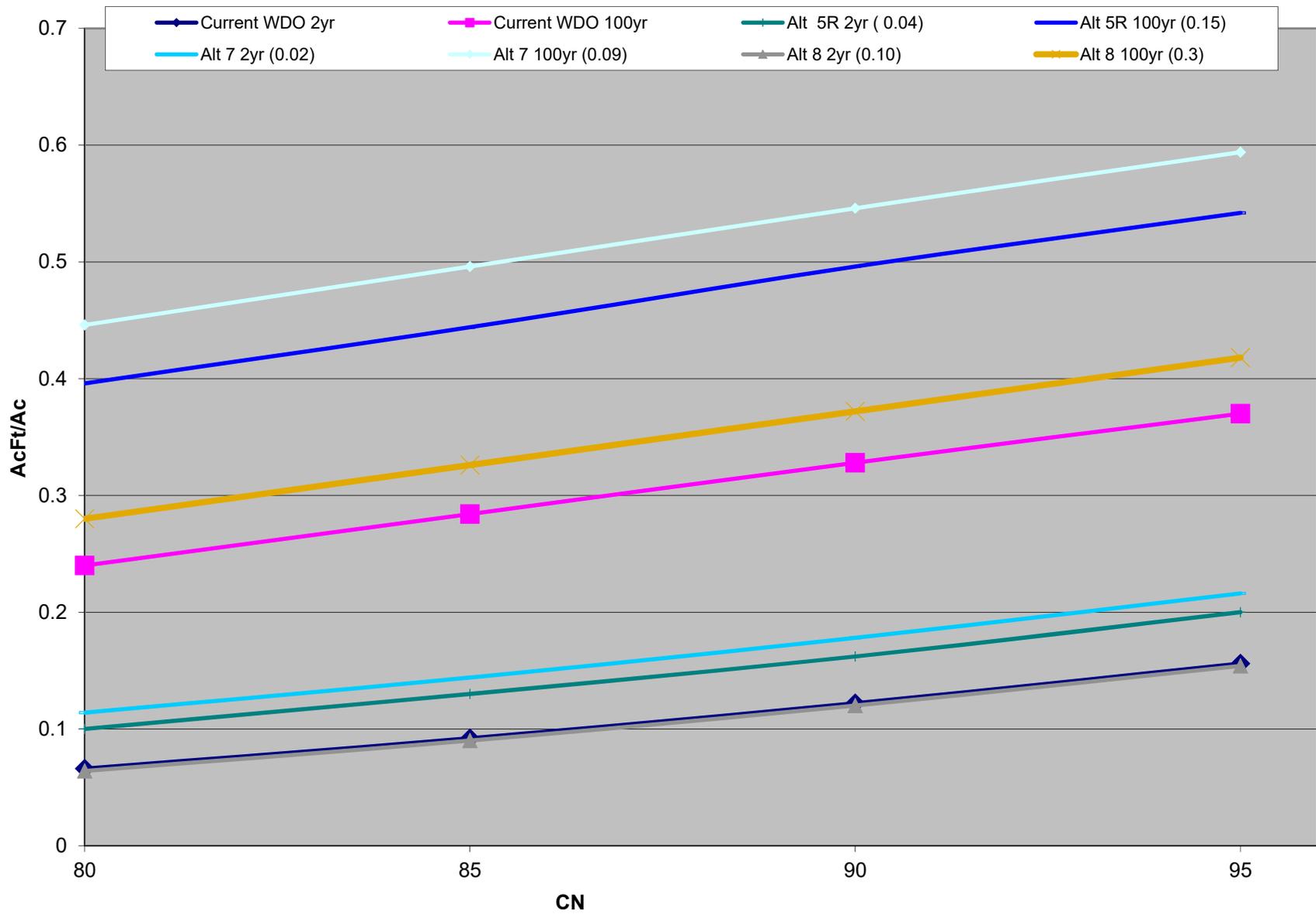
DETENTION VOLUME VS PERCENT IMPERVIOUS 2-YEAR AND 100-YEAR UNIT AREA DETENTION



2-year release = 0.04 cfs/acre, 100-year release = 0.15 cfs/acre

—*— 2-YEAR —□— 100-YEAR

Reference: Northeastern Illinois Planning Commission, Investigation of Hydrologic Methods for Urban Development in Northeastern Illinois



ALT 3R	0.15CFS/A	% imp	Detention Volume 100-ac Site 2.8 & 6.5			
			2-yr HEC-1	2-yr AcFt/Ac	100-yr HEC-1	100-yr AcFt/Ac
	CN					
lc80_3R	80	25	0.33	0.066	1.2	0.24
lc85_3R	85	44	0.46	0.092	1.42	0.284
lc90_3R	90	66	0.61	0.122	1.64	0.328
lc95_3R	95	86	0.78	0.156	1.85	0.37

ALT 5R	0.15CFS/AC		Detention Volume 5-ac Site 3.34 & 8.57			
			2-yr HEC-1	2-yr AcFt/Ac	100-yr HEC-1	100-yr AcFt/Ac
	CN					
lc80_5R	80		0.5	0.1	1.98	0.396
lc85_5R	85		0.65	0.13	2.22	0.444
lc90_5R	90		0.81	0.162	2.48	0.496
lc95_5R	95		1	0.2	2.71	0.542

ALT 7	0.09CFS/AC		Detention Volume 5-ac Site 3.34 & 8.57			
			2-yr HEC-1	2-yr AcFt/Ac	100-yr HEC-1	100-yr AcFt/Ac
	CN					
lc80_7	80		0.57	0.114	2.23	0.446
lc85_7	85		0.72	0.144	2.48	0.496
lc90_7	90		0.89	0.178	2.73	0.546
lc95_7	95		1.08	0.216	2.97	0.594

ALT 8	0.3CFS/AC		Detention Volume 5-ac Site 3.34 & 8.57			
			2-yr HEC-1	2-yr AcFt/Ac	100-yr HEC-1	100-yr AcFt/Ac
	CN					
lc80_8	80		0.32	0.064	1.4	0.28
lc85_8	85		0.45	0.09	1.63	0.326
lc90_8	90		0.6	0.12	1.86	0.372
lc95_8	95		0.77	0.154	2.09	0.418

¹ based on C type soils, open space as good condition

- 508.04** The release rate shall be 0.04 cubic feet per second per acre of the total tributary drainage area (on-site and off-site) at the elevation created by impoundment of the on-site 2-year storm volume plus the Detention Volume Safety Factor, and 0.15 cubic feet per second per acre of the total tributary drainage area (on-site and off-site) at the elevation created by impoundment of the on-site 100-year storm volume plus the Detention Volume Safety Factor and the required compensatory storage. The release rate and on-site detention volume shall be calculated using the 24-hour storm event. This release rate calculation shall be used unless other site conditions warrant further analysis and modification from this standard or unless watershed specific release rates have been adopted.
- 508.05** On-stream detention shall provide water quality treatment. One of the following two methods shall be used:
- A. A wet detention facility with a minimum permanent pool volume equal to the calculated sediment volume accumulated over a one-year period for the entire upstream watershed and an average normal water depth of at least four (4) feet. The facility shall also have a live storage volume that, at a minimum, equals the water quality treatment standards of §504 Water Quality Treatment of this Ordinance for the development site.
 - B. A separate off-line sediment basin with a volume meeting the water quality treatment standards of §504 Water Quality Treatment of this Ordinance for the tributary drainage area to the sediment basin.
- 508.06** Impoundment of the stream as part of on-stream detention shall be designed to allow the migration and movement of present or potentially present indigenous species, which require access to upstream areas as part of their life cycle. The impoundment shall not cause or contribute to the degradation of water quality or stream aquatic habitat.
- 508.07** Compensatory storage requirements shall be satisfied and shall be in addition to detention volume requirements.
- 508.08** No on-stream detention shall be allowed in areas designated as a high-quality aquatic resource.

§509 Fee-In-Lieu of On-Site Stormwater Storage

- 509.01** The SMC may require, as part of an adopted basin plan or floodplain study, the payment of a fee-in-lieu of on-site stormwater storage to fulfill all or part of the on-site stormwater storage requirement for a development. The adoption of a floodplain study or basin plan is per Appendix E: Enforcement Officer Duties, Section D of this Ordinance.
- 509.02** The following fee-in-lieu of on-site stormwater storage procedures apply to communities with adopted procedures for requiring and collecting fee-in-lieu of revenues for stormwater storage requirements in this Ordinance:
- A. The Enforcement Officer may require, or the applicant may submit, a written request for the payment of a fee-in-lieu of on-site stormwater storage to fulfill all or part of the on-site detention requirement below the detention threshold minimum limit set by this Ordinance in 300.06 and 300.07 and for compensatory storage requirements for streambank and shoreline restoration fills of less than two hundred (200) cubic yards. A request for fee-in-lieu of on-

site stormwater storage shall be either rejected or approved within forty-five (45) days of the written request unless additional engineering studies are required.

- B. Approval of a request for fee-in-lieu of on-site stormwater storage on a development site below the detention threshold in 300.06 and 300.07 of this Ordinance and for compensatory storage requirements for streambank and shoreline restoration fills of less than two hundred (200) cubic yards shall be determined by the Enforcement Officer.
- C. Fee-in-lieu of on-site stormwater storage shall be the lesser of:
 - 1. The fee computed for each acre-foot or cubic yard or part thereof of stormwater storage approved in accordance with the procedures and schedules as approved by the SMC for Non-Certified Communities or the community elected board of officials in a Certified Community; or
 - 2. The estimated construction cost as approved by the SMC for Non-Certified Communities or the community elected board of officials in a Certified Community of the applicant's proposed and approved on-site stormwater storage, including land costs.
- D. A fund will be maintained by the Certified Community or the SMC for Non-Certified Communities for each of the four major Lake County watersheds for the purpose of identifying and controlling all revenues and expenditures resulting from fee-in-lieu of on-site stormwater storage approvals. All fee-in-lieu of on-site stormwater storage revenues received from each watershed shall be deposited in these funds for use within that watershed. A Certified Community may opt to allow SMC to administer fee-in-lieu-of revenues and expenditures through execution of an Intergovernmental Agreement specifying that arrangement.
- E. The following requirements must be met before a fee-in-lieu of on-site stormwater storage will be approved:
 - 1. The downstream stormwater management system has "adequate downstream stormwater capacity" (see Appendix A: Definitions); and
 - 2. The SMC for Non-Certified Communities or the community elected board of officials in a Certified Community has an adopted fee-in-lieu of on-site stormwater storage program.
- F. Fee-in-lieu of on-site stormwater storage revenues may be used to plan, design, or construct an upgrade to existing or future stormwater management systems if the upgrade is consistent with a basin plan, floodplain study, or stormwater system improvement that has been approved by the SMC for Non-Certified Communities or the community elected board of officials in a Certified Community.

509.03 The fee-in-lieu of on-site stormwater storage option shall be authorized for all public road developments on existing alignments provided the downstream drainage system has adequate stormwater capacity and that it will not result in negative impacts to the drainage system.