



STORMWATER MANAGEMENT COMMISSION

We hope to see you at the next TAC meeting on **Thursday, June 20, 2019** at 9:00 AM.

The meeting will be held at our normal location:

Lake County Central Permit Facility

500 W. Winchester
Main Conference Room
Libertyville, IL 60048

Meeting Topic:

The TAC-approved Interim Guidance Memo #1 was issued on May 16, 2019. The concern for increased detention is a critical item that needs a comprehensive examination of the criteria that factor into design requirements. TAC will discuss detention volume options for consideration, feasibility, pro's/con's, and the amount of volume that should be allowed for a given option, if any.

The options assume Appendix I will be amended to match Table 2 in the Interim Guidance Memo #1. Options are not mutually exclusive and may be combined. Additional options will be developed and discussed at subsequent TAC meetings. TAC meetings are open to the public and provide opportunities for public comment.

A 30-day public comment period is officially open to collect feedback regarding the increased rainfall impacts for Lake County. We are encouraging all stakeholders and interested parties/individuals to submit their perspectives, ideas, and concerns. Comments may be submitted to Kurt Woolford at kwoolford@lakecountyil.gov until July 6, 2019.



STORMWATER MANAGEMENT COMMISSION

**TECHNICAL ADVISORY COMMITTEE
AGENDA**

June 20, 2019

9:00 AM – 12:00 PM

500 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 30-day Public Comment Period
 - 4.2 Tentative WDO Amendment Schedule
- 5.0 APPROVAL OF THE MINUTES
 - 5.1 May 16, 2019 Minutes
Action Requested: APPROVAL
- 6.0 OLD BUSINESS
 - 6.1 Detention Volume Option #1: Release Rate Adjustments
Presentation: Cook Co. Release Rates Study (Illinois State Water Survey)
Action Requested: APPROVAL OF NEEDS/METHODOLOGY
 - 6.2 Detention Volume Option #2: Unit Area Curve Revisions
WDO Appendix K
Action Requested: APPROVAL OF NEEDS/METHODOLOGY
 - 6.3 Detention Volume Option #3: Credit Trading Market
Presentation: StormStore Concept (Metropolitan Planning Council)
Action Requested: APPROVAL OF FEASIBILITY/VOLUME ALLOWED
 - 6.4 Detention Volume Option #4: Fee-In-Lieu
WDO Section 509
Action Requested: APPROVAL OF FEASIBILITY/VOLUME ALLOWED
- 7.0 NEW BUSINESS
 - 7.1 Upper Des Plaines River Watershed Future Build-Out Study
Action Requested: APPROVAL OF METHODOLOGY/ASSUMPTIONS
- 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@lakecountyl.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@lakecountyl.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>



For additional information, please read our latest [News Releases](#).

Stormwater Management Commission News

Posted on: June 7, 2019

Public Comment Period for Increased Rainfall in Lake County Open

The Stormwater Management Commission (SMC) opened a 30-day public comment period on Thursday, June 6, to collect feedback regarding increased rainfall in Lake County. With Lake County receiving significantly higher rainfall amounts, precipitation is a critical factor on flood damage reduction, economic impact, infrastructure design and regulations, and on stormwater storage requirements for development sites.

As SMC provides guidance and recommendations on how to review development and stormwater infrastructure projects using the updated rainfall as best available data, stakeholders and interested individuals are encouraged to submit their perspectives, ideas, and concerns. The information gathered will be considered to set new standards for the Watershed Development Ordinance, a countywide ordinance that sets forth minimum requirements for the stormwater management aspects of development within Lake County.

Comments may be submitted to Kurt Woolford at kwoolford@lakecountyiil.gov until July 6, 2019.

For additional information:

[News Release: Lake County Sets New Flood Stage Record in 2018](#)

[News Release: Scientific Study Shows Significant Increase in Rainfall Standards for Lake County](#)

Next ⇒

[Upper Des Plaines River Engineering Impact Analysis](#)

Other News in Stormwater Management Commission News

[Upper Des Plaines River Engineering Impact Analysis](#)

Posted on: April 17, 2019

[To: Enforcement Officers, Certified Wetland Specialists and Other Interested Parties:](#)

Posted on: February 8, 2019

[IWEER Wetland Delineation Course July 16-19, 2019](#)

Posted on: February 4, 2019

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**STORMWATER MANAGEMENT COMMISSION
MEMORANDUM**

TO: Lake County Stormwater Management Commission

FROM: Kurt Woolford, Chief Engineer

DATE: May 24, 2019

RE: Updated Bulletin 70 Rainfall

ACTION REQUESTED: APPROVAL TO OPEN 30-DAY PUBLIC COMMENT PERIOD

Staff requests approval to open a 30-day public comment period to collect feedback regarding the increased rainfall for Lake County. The attached technical memorandum was issued in order to provide guidance and recommendations on how to review development and stormwater infrastructure projects using the updated rainfall as best available data.

The increased rainfall will have a **significant** impact on stormwater storage requirements for development sites, primarily increased detention volume storage. There are many potential options to consider, and we encourage all stakeholders and interested parties/individuals to submit their perspectives, ideas, and concerns. WDO amendment language will be developed at the TAC meetings for SMC approval. TAC meetings are open to the public and provide opportunities for additional public comment.

A tentative timeline of events through final Ordinance adoption is listed below. Dedicated public information meetings are planned for July, along with an additional public comment period starting in November.

DRAFT WDO Adoption Schedule	Date	Comment
Updated Bulletin 70 Rainfall Report	03/13/2019	Report issued by the Illinois State Water Survey.
Municipal Advisory Committee	04/10/2019	Staff presentation and discussion of increased rainfall.
SMC Meeting	05/02/2019	Policy discussion to use best available data.
Technical Advisory Committee	05/16/2019	Unanimous approval of Interim Guidance Memo #1. Issued same day.
SMC Meeting	06/06/2019	Open 30-day public comment period.
TAC Meetings	June - Oct.	Additional WDO amendment approvals. Meetings as needed.
PWPT and E&E Meetings	06/26/2019	Introduction of increased rainfall, evaluation, and impacts.
Public Info Meeting #1: Highland Park	07/16/2019	Presentations, online resources/tools, discussion, Q&A.
Public Info Meeting #2: Barrington	07/24/2019	Same agenda and information as first meeting.
SMC Meeting	08/01/2019	Recommend 1-year target date for updated rainfall use: August 1, 2020.
SMC Meeting	11/07/2019	Open 60-day public comment period for all WDO amendments.
SMC Meeting	01/09/2020	Staff update and presentation of comments received.
PWPT and E&E Meetings	02/05/2020	Introduction of WDO amendments.
SMC Meeting	02/06/2020	Approval of WDO amendments.
PWPT and E&E Meetings	Feb. 2020	Approval of WDO amendments.
Committee of the Whole	03/05/2020	Discussion of pertinent items/issues.
County Board WDO 2020 Adoption	03/10/2020	Final approval of WDO amendments.
Final Ordinance Packet Mailout by SMC	03/13/2020	Community adoption procedures in progress March through July 2020.

Comments may be submitted to Kurt Woolford at kwoolford@lakecountyil.gov until July 6, 2019.

**TECHNICAL ADVISORY COMMITTEE
MEETING MINUTES
May 16, 2019
Lake County Stormwater Management Commission
500 W Winchester, Libertyville, IL**

1.0 CALL TO ORDER 9:04 AM

TAC Members & Alternates		Staff Present	General Public	
Brian Frank	Mei Zhu	Ernesto Huaracha	Peter Stoehr	Scott Griffith
Joy Corona	Tom Polzin	Kurt Woolford	Nick Leach	
Kathy Chernich (left at 11:15am)	Brian Valleskey	Kelcey Traynoff	Ron Milanesio	
Donald Dressel	Kurt Baumann	Angela Panateri	Angelo Zografos	
Mike Zemaitis			Jacob Wellbank	
Jim Anderson (arrived at 10:30am)			William Hupperich	

Guest: Mark Hoskins, IDNR/OWR, 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 and demonstrated the flood inundation web apps that were created by Lake County GIS. The web app created by the IDNR for the Des Plaines River was also demonstrated, showing the three active gage systems located on the Des Plaines River at the Russel Road, Gurnee, and Lincolnshire locations.
- 4.2 Mr. Woolford presented several slides from 2017’s IAFSM conference and explained that the North Branch communities also had record flooding, in addition to the other areas in the County. A self-report form was created during the 2017 flood for people to document the damage in order to make the County’s damage assessment more efficient.
- 4.3 Mr. Woolford addressed the Des Plaines River FIS discharge of flows from the upper Des Plaines watershed. The current 100-year discharge is 3700 cfs. An analysis is being done to evaluate the impacts of the Bulletin 70 rainfall updates when they are applied to the upper Des Plaines watershed.
- 4.4 Mr. Woolford explained that SMC staff looked at a HEC-HMS detention volume-increase model for several development sites, created by the MWRD. The Bulletin 70 rainfall updates for Lake County were applied to the model, while keeping the normal water level, high water level, and release rates, the same. The modeling results showed increases in storage volume greater than 50% for Lake County.

5.0 APPROVAL OF THE MINUTES

- 5.1 Mr. Kurt Baumann moved to approve the April 18, 2019 TAC minutes, seconded by Ms. Joy Corona. Vote: Approved 9-0-0 (unanimous).

6.0 Old Business

- 6.1 Mr. Woolford introduced the interim Technical Guidance Memo for the Bulletin 70 updates and explained that the Commission supported the use of the best available data that is published for Bulletin 70. Mr. Hoskins, from IDNR/OWR stated that their office will be requiring future developments to use the increased rainfall amounts starting in January of 2020 and if a permit was previously issued, redesign will not be necessary.

- 6.2 Mr. Woolford walked through the proposed WDO provisions that are recommended to be updated based on the new rainfall data. TAC members discussed edits and suggestions to the memo. One of the largest discussion items was the flood protection elevation and how to obtain a reasonable value.
- 6.3 TAC members recommended sending out the Technical Guidance Memo as soon as possible so the Enforcement Officers and others are aware of how to proceed. Mr. Woolford discussed the public comment periods that will be in July, after the memo goes to the Commission in June.
- 6.4 Ms. Corona moved to approve the document, as modified, and send out as an interim memo, seconded by Ms. Mei Zhu.
Vote: Approved 9-0-0 (unanimous).

7.0 New Business - None

8.0 ADJOURNMENT

- 8.1 Motion to adjourn by Ms. Corona, seconded by Mr. Jim Anderson. Meeting adjourned at 11:34 AM.
Vote: Approved 9-0-0 (unanimous).

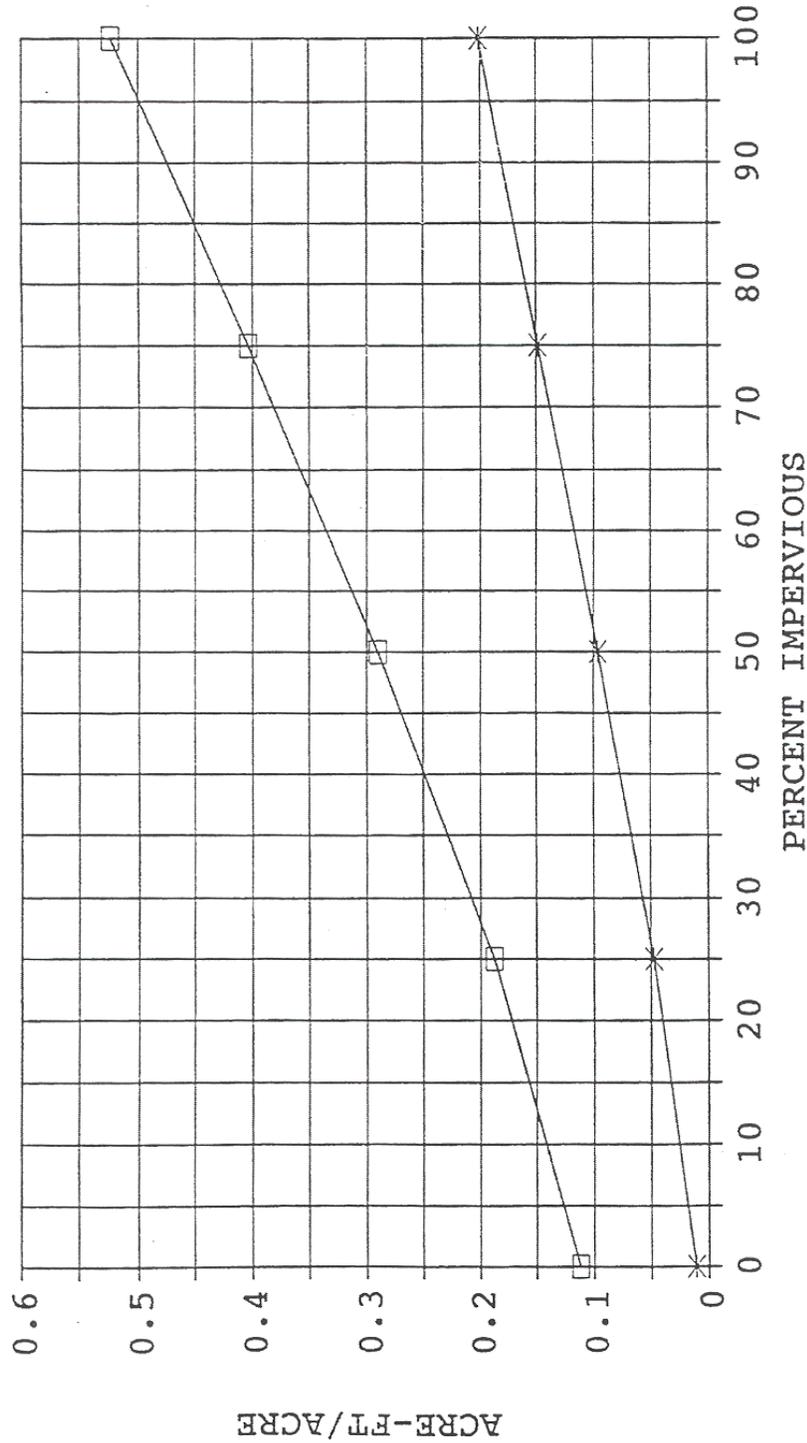
Appendix J: Watershed Specific Release Rates

WATERSHED		Release Rates (cfs/acre)		
MAJOR TRIBUTARIES		100 Year	2 Year	
MINOR TRIBUTARIES		Storm Event	Storm Event	Comments ^{1/}
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

- 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.



STORMWATER MANAGEMENT COMMISSION

May 16, 2019

TO: Lake County WDO Enforcement Officers and Public Works Directors
FROM: Kurt Woolford, Chief Engineer, Lake County Stormwater Management Commission
RE: **Updated Bulletin 70 Rainfall Interim Guidance Memo #1**

The updated Bulletin 70¹ rainfall is 20-45% higher than the current values used in the Watershed Development Ordinance² (WDO). The large increase reflects current climate conditions and also is due to the prior practice of using records from a single precipitation gage located at the Waukegan Airport. The use of a single point is no longer recommended to represent a large area or entire county. See Exhibit 1: July 2017 Rainfall Totals for the discrepancy between the Waukegan point and Lake County.

Rainfall Data Source	Inches	WDO Increase (Inches/%)	Region Increase (Inches/%)
Original Bulletin 70 – Waukegan Point	6.50	0.00 / 0%	-
Original Bulletin 70 – Northeast Region	7.58	1.08 / 17%	0.00 / 0%
Updated Bulletin 70 – Northeast Region	8.57	2.07 / 32%	0.99 / 13%

Future climate models³ for Cook, DuPage, Lake and Will Counties indicate the largest rainfall increases will occur in Lake County and trend toward the regional averages. Adopting the new rainfall reduces the divergence from the increasing regional trends and positions the County to adapt to future conditions and reduce flood risk. It is expected that State and Federal agencies will be adopting the updated information.

Based on policy discussion, there is a high likelihood that SMC will be adopting the updated Bulletin 70 rainfall as best available data in the next WDO revision (anticipated March 10, 2020). Prior to that date, a series of guidance memos will be issued providing recommendations on how to implement the new rainfall for development projects. Table 2 below provides the best available data and its recommended use is on the following page.

Table 2: DRAFT Updated Rainfall Depth-Duration Frequency Table (Inches)

Duration	2 year	5 year	10 year	25 year	50 year	100 year	500 year
5 min	0.40	0.52	0.62	0.77	0.90	1.03	1.35
10 min	0.70	0.90	1.08	1.35	1.58	1.80	2.36
15 min	0.90	1.16	1.39	1.74	2.03	2.31	3.03
30 min	1.24	1.59	1.91	2.39	2.78	3.17	4.16
1 hour	1.57	2.02	2.42	3.03	3.53	4.03	5.28
2 hour	1.94	2.49	2.99	3.74	4.35	4.97	6.52
3 hour	2.14	2.75	3.30	4.13	4.80	5.49	7.20
6 hour	2.51	3.23	3.86	4.84	5.63	6.43	8.43
12 hour	2.91	3.74	4.48	5.61	6.53	7.46	9.78
18 hour	3.14	4.04	4.84	6.06	7.05	8.06	10.57
24 hour	3.34	4.30	5.15	6.45	7.50	8.57	11.24
48 hour	3.66	4.71	5.62	6.99	8.13	9.28	12.10
72 hour	3.97	5.08	6.05	7.49	8.64	9.85	12.81
120 hour	4.42	5.63	6.68	8.16	9.39	10.66	13.81
240 hour	5.60	7.09	8.25	9.90	11.26	12.65	16.00

Table 2 References: For storm durations of 1 hour or greater, rainfall values were obtained from Table 5 of Updated Bulletin 70, 2019. For storm durations less than 1 hour, values were calculated using ratios listed in Table 18 of Bulletin 70, 1989⁴.

The Enforcement Officer may require a stormwater system capacity analysis using Table 2 above for all regulated development that have not received a Watershed Development Permit. Section 400.04 of the WDO allows the Enforcement Officer to require this submittal item. Accordingly, SMC strongly recommends using the updated rainfall to ensure protection of buildings from flood damage to the greatest extent possible [WDO Purpose: 102.06]. Specifically, the following WDO provisions should use the updated rainfall data presented in Table 2 above for projects that have not started construction. Stormwater and drainage projects that do not require a WDO permit, but include components listed below, are also recommended to use the Table 2 rainfall for infrastructure sizing. This will reduce future flood damage risk.

1. 506 Stormwater Conveyance Systems (Entire Section); and
2. 507.01 Stormwater Facility Emergency Overflow Structure; and
3. 507.02 Building Protection Above Emergency Overflow Elevation; and
4. 703.01 & 706.06 Flood-proofing Activities; and
5. 705 & 900 Public Health Protection Standards. In lieu of using the updated rainfall data, you may conservatively use $FPE = BFE + 3$ feet; or use the 500-year FEMA elevation plus 2 feet; and
6. 706 & 901 Building Protection Requirements. In lieu of using the updated rainfall data, you may conservatively increase elevation by one (1) additional foot above current WDO requirements; or use the 500-year FEMA elevation plus the current WDO freeboard requirement; and
7. 707 Bridge, Culvert Crossing, and Roadway Approaches; and
8. 800 Flood-Prone Area Requirements (except compensatory storage)

The #1 item of concern for the updated rainfall is the significant volume increase for detention. The current 100-year detention design requirement of 6.5 inches, is now equivalent to the updated 25-year rainfall amount (6.45 inches). The volume of the pond should be recommended to be enhanced if possible, although SMC acknowledges that increasing footprint and excavation of ponds could represent significant impact to the configuration of imminent, or near construction development. The concept of imminent or near construction is also an item that will need to be discussed, defined and recommendations included in forthcoming WDO language. Further guidance may be provided regarding detention storage.

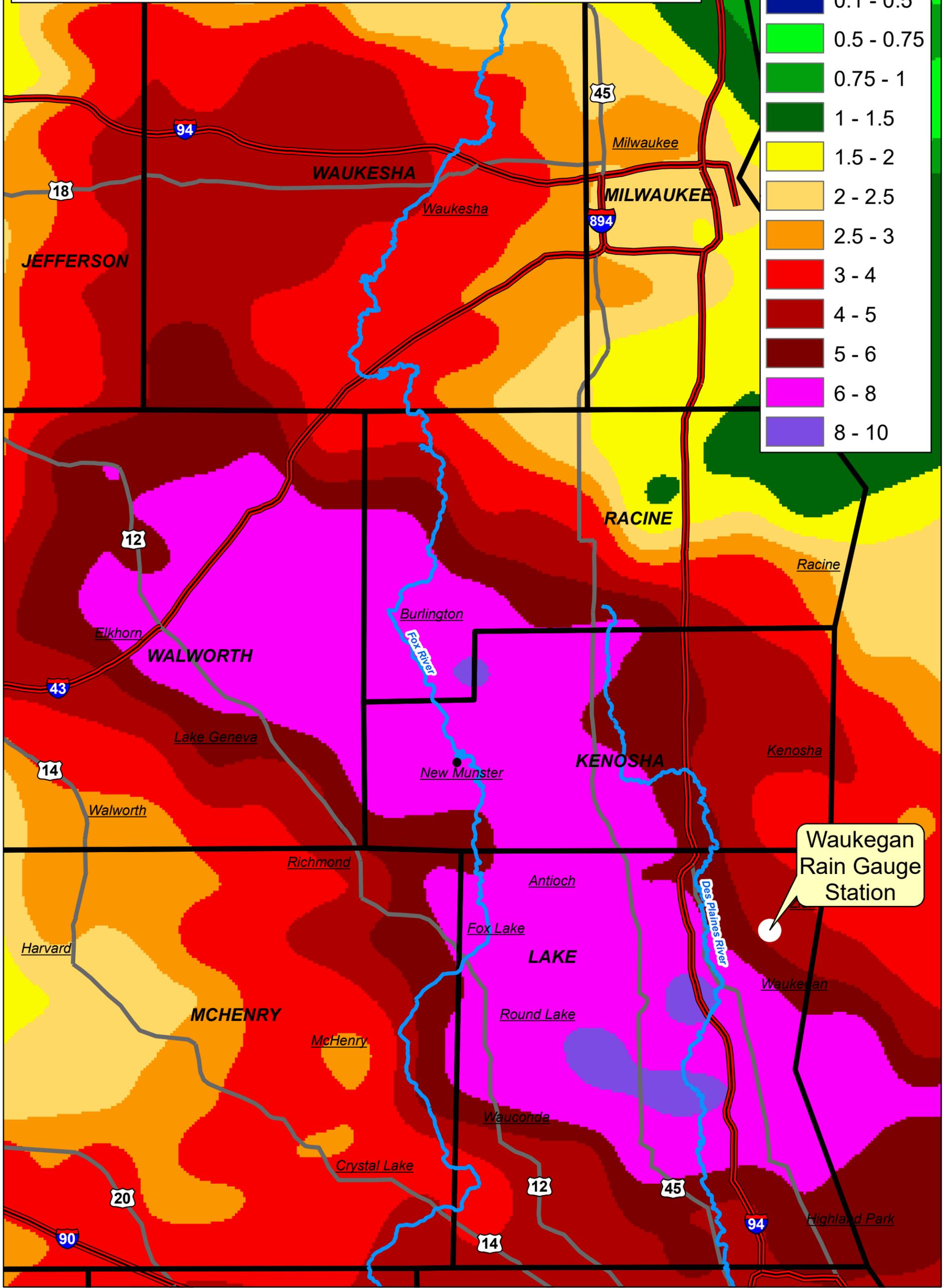
It is our understanding that the Illinois Department of Natural Resources / Office of Water Resources (IDNR/OWR) will require the updated Bulletin 70 starting on January 1, 2020. Base Flood Elevations (BFEs) and Floodplain modeling that will require IDNR/OWR or FEMA approval are recommended to use the Table 2 rainfall as best available data. A second report from the ISWS is due this fall and will revisit the Huff distribution curves that are used for floodplain modeling. The Technical Advisory Committee will review this information once it is available and further guidance will be provided.

References

1. J. Angel, Momcilo, M. 2019. [Frequency Distributions of Heavy Precipitation in Illinois: Updated Bulletin 70](#). Illinois State Water Survey Contract Report 2019-05, Champaign, IL.
2. October 13, 2015. [Lake County Watershed Development Ordinance](#). Lake County, IL.
3. Momcilo, M., J. Angel, K. Wang, G. Byard, S. McConkey, and Z. Zaloudek. 2017. [Impacts of Potential Future Climate Change on the Expected Frequency of Extreme Rainfall Events in Cook, DuPage, Lake, and Will Counties in Northeastern Illinois](#). Illinois State Water Survey Contract Report 2017-05, Champaign, IL.
4. Huff, F. A., and J. R. Angel. 1989. [Rainfall Distributions and Hydroclimatic Characteristics of Heavy Rainstorms in Illinois \(Bulletin 70\)](#). Illinois State Water Survey, Champaign, IL.

Exhibit 1: July 2017 Flood Rainfall Totals

Rainfall Totals (inches)



- County Boundary
- Rivers
- Interstates
- US Highways

-DRAFT-



This map is provided for general locational information only. Map features have been derived from various sources, each of which has its own scale and accuracy. The locations of all features are approximate.
 Lake County Stormwater Management Commission
 September 1, 2017
 DATA SOURCES:
 U.S. Census Bureau
 National Weather Service
 United States Geological Service
 Lake County Stormwater Management



STORMWATER MANAGEMENT COMMISSION