



**STORMWATER MANAGEMENT COMMISSION**

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

The meeting will be held at an alternate location on campus:

**Lake County Division of Transportation**  
 600 W. Winchester  
 Main Conference Room  
 Libertyville, IL 60048

**Meeting Topic:**

Bulletin 70 Rainfall Update     <https://www.ideals.illinois.edu/handle/2142/103172>

The Lake County Watershed Development Ordinance (WDO) requires the use of the Rainfall Depth-Duration Frequency Tables for Lake County for regulatory design criteria (see table below). These rainfall amounts are used to calculate and size stormwater infrastructure such as storm sewers and detention basins. The rainfall data is also used for study (and re-study) of floodplain elevation determinations. The design rainfall data are referenced from the 1989 Illinois State Water Survey Bulletin 70 publication, which is based on observed precipitation data between roughly 1901 and 1983.

**Rainfall Depth-Duration Frequency Tables for Lake County**  
**Rainfall is in inches**

Duration	1 year	2 year	5 year	10 year	25 year	50 year	100 year	*Mult. factor
5 min	0.28	0.34	0.41	0.47	0.57	0.66	0.78	0.12
10 min	0.49	0.59	0.71	0.81	1.00	1.16	1.37	0.21
15 min	0.63	0.76	0.92	1.05	1.28	1.49	1.76	0.27
30 min	0.87	1.04	1.26	1.44	1.76	2.04	2.41	0.37
1 hour	1.10	1.32	1.60	1.82	2.23	2.59	3.06	0.47
2 hour	1.36	1.62	1.97	2.25	2.76	3.19	3.77	0.58
3 hour	1.50	1.79	2.18	2.48	3.04	3.52	4.16	0.64
6 hour	1.76	2.10	2.55	2.91	3.56	4.13	4.88	0.75
12 hour	2.04	2.44	2.96	3.38	4.13	4.79	5.66	0.87
18 hour	2.21	2.63	3.20	3.65	4.47	5.17	6.11	0.94
24 hour	2.35	2.80	3.40	3.88	4.75	5.50	6.50	1.00
48 hour	2.54	3.02	3.67	4.19	5.13	5.94	7.02	1.08
72 hour	2.73	3.25	3.94	4.50	5.51	6.38	7.54	1.16
<b>120 hour</b>	<b>3.08</b>	<b>3.67</b>	<b>4.45</b>	<b>5.08</b>	<b>6.22</b>	<b>7.21</b>	<b>8.52</b>	<b>1.31</b>
<b>240 hour</b>	<b>3.45</b>	<b>4.12</b>	<b>5.00</b>	<b>5.70</b>	<b>6.98</b>	<b>8.09</b>	<b>9.56</b>	<b>1.47</b>

References:     *Bulletin 70, Illinois State Water Survey Champaign, 1989*

\*Multiplication Factor - Average ratios of X-hour/24-hour rainfall for Illinois, 1989 Bulletin 70.

In March 2019, the Illinois State Water Survey released updated rainfall data for Bulletin 70, based on precipitation data from 1948 to 2017. An initial evaluation indicates that the revised rainfall amounts for Lake County are between 20% and 45% higher than those currently used in the table above.

SMC requests a technical discussion at the April 18th Technical Advisory Committee (TAC) meeting with a follow up report at the May 2nd SMC meeting. ISWS staff will participating via conference call. Future TAC meetings for WDO amendments are anticipated.



STORMWATER MANAGEMENT COMMISSION

**TECHNICAL ADVISORY COMMITTEE**

**AGENDA**

**April 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 TAC MEMBERSHIP UPDATE AND INTRODUCTIONS
  - 4.2 TAC BY-LAWS (AMENDED JUNE 2, 2016)
- 5.0 APPROVAL OF THE MINUTES
  - 5.1 JUNE 18, 2015 MINUTES
    - ACTION REQUESTED - APPROVAL
- 6.0 OLD BUSINESS
- 7.0 NEW BUSINESS
  - 7.1 BULLETIN 70 RAINFALL UPDATE
    - ACTION REQUESTED:
      - 1. Q & A WITH ILLINOIS STATE WATER SURVEY
      - 2. TECHNICAL DISCUSSION, FINDINGS, OPINIONS, AND IMPACTS ON:
        - A. §501 RUNOFF CALCULATIONS
        - B. §502 RELEASE RATES AND DISCHARGES
        - C. §503 RUNOFF VOLUME REDUCTION (RVR)
        - D. §504 WATER QUALITY TREATMENT
        - E. §505 BUFFER AREAS
        - F. §506 STORMWATER CONVEYANCE SYSTEMS
        - G. §507 STORMWATER FACILITIES
        - H. §508 ON-STREAM DETENTION
        - I. ARTICLE 6: SOIL EROSION AND SEDIMENT CONTROL
        - J. ARTICLE 7: FLOODPLAIN AND FLOODWAY REQUIREMENTS
        - K. ARTICLE 8: FLOOD-PRONE AREA REQUIREMENTS
        - L. ARTICLE 9: FLOOD TABLE LAND REQUIREMENTS
        - M. ARTICLE 10: WETLAND REQUIREMENTS
- 8.0 ADJOURNMENT

## Technical Advisory Committee

<p><b>James Anderson</b> (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> <b>John Nelson</b> Director of Operations &amp; 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><b>Ken Klick</b> 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><b>Tom Polzin (Vice Chairman)</b> (Term Expires May 2020) Hey &amp; 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> <b>Vince Mosca</b> Hey &amp; 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><b>Mike Zemaitis</b> (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> <b>Al Giertych</b> 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><b>Pat Bleck</b> (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> <b>Joy Corona</b> 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><b>Patrick Glenn</b> (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> <b>Mei Zhu</b> Senior Engineer Gewalt Hamilton Assoc. Inc. 625 Forest Edge Dr. Vernon Hills, IL 60061 Phone: 847-478-9700 Fax: 847-478-9701 Email: mzhu@gha-engineers.com</p>	<p><b>Bill Heinz</b> (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> <b>Kurt Baumann</b> Baxter &amp; Woodman 442 N. Cedar Lake Rd. Round Lake, IL 60073 Phone: 815-444-3313 Email: baumann@baxterwoodman.com</p>
<p><b>Kathy Chernich</b> (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> <b>Kaitlyn Pascus</b> 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><b>Peter Manhard</b> (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> <b>Brian Valleskey</b> Manhard Consulting, Ltd. 900 Woodlands Parkway Vernon Hills, IL 60061 Phone: 847-634-5550 Fax: 847-634-0095 Email: bvalleskey@manhard.com</p> <p><b>Marcy Knysz</b> 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><b>Don Dressel (Chairman)</b>  <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>  <b>Kay Whitlock</b>          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><b>Ramesh Kanapareddy</b>  <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>  <b>Manny Gomez</b>          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><b>Eric Steffen</b>  <i>(Term Expires May 2020)</i>          Senior Engineer          Lake County Planning          Building &amp; 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>  <b>Matt Meyers</b>          Assistant Chief Engineer/Operations Manager          Lake County Planning, Building &amp; Development          500 W. Winchester Rd.          Libertyville, IL 60048          Phone 847-377-2079          Fax: 847-984-5853          Email: mmeyers@lakecountyil.gov</p> <p><b>Brian Frank</b>          Senior Engineer          Lake County Planning, Building &amp; Development          500 W. Winchester Rd.          Libertyville, IL 60048          Phone: 847-377-2086          Fax: 847-984-5853          Email: bfrank@lakecountyil.gov</p>	<p><b>Heather Galan</b>  <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>  <b>Nicholas Leach</b>          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><b>Dave Ziegler</b>          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 18, 2015  
Lake County Stormwater Management Commission  
500 W Winchester, Libertyville, IL**

**1.0 CALL TO ORDER 9:05 AM**

<b>TAC Members &amp; Alternates</b>		<b>Staff Present</b>		<b>General Public</b>
Brian Frank	Patrick Glenn	Juli Crane	Mike Warner	Jeff Ende
Joy Corona	Tom Polzin	Mike Novotney	Glenn Westman	Nikki Pisula
Kathy Chernich	Brian Valleskey	Scott Griffith	Kurt Woolford	
Donald Dressel	Kurt Baumann	Daniel Krill	Kelsey Traynoff	
		Rich McMorris	Ashley Warren	

**2.0 ADDITIONS TO THE AGENDA – None**

**3.0 PUBLIC COMMENT- None**

**4.0 STAFF REPORT-**

- 4.1 Mr. Woolford introduced new SMC staff to the TAC. The TAC introduced themselves to new staff.
- 4.2 Mr. Woolford announced and thanked those TAC members and alternates whose term expired May 2015 for agreeing to extend their membership to 2017.

**5.0 APPROVAL OF THE MINUTES**

- 5.1 Mr. Patrick Glenn moved to approve the November 20, 2014 TAC minutes, seconded by Mr. Brian Valleskey  
Vote: Approved 6-0-2 (abstain: Frank, Corona, Polzin).

**6.0 Old Business - None**

**7.0 New Business**

- 7.1 WDO Amendment #3 was discussed. Mr. Glenn stated the addition to the WDO would be redundant because it is included in the definition of Isolated Waters of Lake County. Ms. Corona moved to strike Amendment #3, seconded by Mr. Glenn. Vote: Strike 6-0-2 (abstain: Chernich, Frank)
- 7.2 WDO Amendment #4 definition for Isolated Waters of Lake County Exclusions was discussed. Mr. Polzin motioned to approve as presented, seconded by Mr. Glenn.  
Vote: Approved 4-2-2 (Yes: Dressel, Polzin, Glenn, Baumann No: Corona, Frank Abstain: Chernich, Valleskey).
- 7.3 Staff presented an update regarding the new Waters of the U.S. Rule. Mr. Westman and Ms. Crane presented the potential impacts of the new Rule. An exhibit was distributed. Mr. Glenn motioned to recommend SMC to continue reviewing PJDs until the WOUS rule is published, seconded by Valleskey. Vote: Approved 7-0-1 (abstain - Chernich).

**8.0 ADJOURNMENT**

- 8.1 Motion to adjourn by Mr. Polzin, seconded by Mr. Valleskey. Meeting adjourned at 11:52 AM.  
Vote: Approved 8-0-0 (unanimous).

**LAKE COUNTY  
STORMWATER MANAGEMENT COMMISSION (SMC)  
TECHNICAL ADVISORY COMMITTEE  
BY-LAWS  
(Amended 06/02/2016)**

**ARTICLE I - NAME**

Technical Advisory Committee hereafter referred to as the "TAC".

**ARTICLE II - PURPOSE AND DUTIES**

The TAC shall be a review and research body to SMC. Advisory committee actions are not instructions to SMC, but rather shall constitute suggestions or recommendations. The duties of the TAC shall be as specified below and may be modified from time to time by the Chair of the SMC.

- A. Monitor ordinance implementation and overall development regulations, and recommend refinements to the Watershed Development Ordinance (WDO).
- B. Recommend and provide input for WDO-related Technical Guidance.
- C. Provide technical advice to the SMC.

**ARTICLE III - MEMBERSHIP**

- A. The TAC shall be made up of 13 voting members, appointed by the SMC Chair, with the advise and consent of the SMC per the SMC By-laws. The TAC appointments shall be for a period of four years and shall be made at the May SMC meeting or as vacancies arise. Vacancies may be filled by the SMC Chair, with advise and consent of SMC.
- B. Recommendations to the SMC Chair for appointment to TAC shall be made as vacancies arise or terms expire.
- C. So as to offer the SMC a cross-section of technical assistance, TAC shall contain representation from each of the following categories:
  - County Government Community
  - Development Community
  - Environmental Community
  - Municipal Government Community
- D. SMC staff shall make recommendations for vacant positions and forward to the SMC Chair for consideration. These recommendations will be reviewed and approved so as to meet the desired representation in III.C.

- E. The TAC member may also recommend two alternate representatives during their term of appointment by name to the TAC. Alternates shall be approved by the SMC Chair per Article III.A.
- F. A new TAC member or a new alternate may be recommended to the SMC Chair, if the designated person vacates their job or changes representative status. New members and alternates shall be approved by the SMC Chair per Article III.A.
- G. At the first meeting of the TAC after appointments have been made, per Article III.A., the TAC will choose among the members a Chair and Vice-Chair to call the meeting to order and preside over the meeting. The Vice-Chair shall assume the Chair's role if the Chair is unable to attend the TAC meeting.
- H. The SMC Chair shall be an ex-officio member of TAC, but shall not vote on advisory committee matters.

#### **ARTICLE IV - MEETINGS**

- A. The TAC shall meet at least biannually or more frequently as the need arises.
- B. A TAC member or their alternate must be in attendance at a meeting to vote on a specific issue.
- C. The TAC may adopt an electronics communication policy regarding meeting attendance in compliance with the Illinois Open Meetings Act (5 ILCS 120/7) (a)-(d).

## Woolford, Kurt A.

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**From:** Woolford, Kurt A.  
**Sent:** Wednesday, April 10, 2019 12:50 PM  
**To:** Woolford, Kurt A.  
**Subject:** FW: Bulletin 70 update

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**From:** Gardiner, Robert D. <RGardiner@lakecountyil.gov>  
**Sent:** Monday, March 25, 2019 2:53 PM  
**To:** Woolford, Kurt A. <KWoolford@lakecountyil.gov>; Traynoff, Kelcey <KTraynoff@lakecountyil.gov>; Warner, Mike D. <MWarner@lakecountyil.gov>; Jereb, Gary (Gary.Jereb@Illinois.gov) <Gary.Jereb@Illinois.gov>; Hoskins, Mark <Mark.Hoskins@illinois.gov>  
**Subject:** RE: Bulletin 70 update

Based on the response below they used data from Antioch and Waukegan. Antioch data ends in 2008 so it would not have captured the July 2017 event. Waukegan is the Waukegan Airport.

The Airport received (0700 to 0700):

7/11/17 – 7/12/17 2.18”

7/12/17 – 7/13/17 1.45”

Total rainfall at the Airport =3.63” over about a 14-hour period

The peak **measured** rainfall was about 7.2” over the 14-hour period so this would not have been captured in the analysis. The peak rainfall area was generally from Fox Lake to Third Lake.

Bob

Sincerely,

LAKE COUNTY STORMWATER MANAGEMENT COMMISSION

**Robert D. Gardiner, P.E., CFM**  
Permit Engineer

Lake County Stormwater Management Commission  
500 W. Winchester Road  
Libertyville, IL 60048

[rgardiner@lakecountyil.gov](mailto:rgardiner@lakecountyil.gov)

Direct: (847) 377-7704  
General: (847) 377-7700

From: Markus, Momcilo  
Sent: Friday, March 22, 5:50 PM  
Subject: FW: Bulletin 70 update  
To: Woolford, Kurt A.  
Cc: McConkey, Sally A, Angel, James Randal

Hi Kurt,

I am responding the question you asked Sally yesterday.

We used calendar years for frequency analysis. We used the complete daily data at Antioch and Waukegan. They could have recorded the July 2017 storm. We did not use the observed hourly data for frequency analysis (we used daily-to-hourly factors). I am guessing that you are interested in both daily and even more in hourly data in Lake County or vicinity for the storm in July of 2017.

What we used might not necessarily match the available records. We used only long-term records (Antioch and Waukegan). The best way to find out the gages in the county or the vicinity that might have recorded the July 2017 storm is to search the database. The data base is called **cli-mate** and it is open and free for the public. You need to create username and password. It is user friendly (<https://mrcc.illinois.edu/CLIMATE/>). You can find the available gages and daily/hourly precipitation records. Thanks.

Momcilo

**From:** Woolford, Kurt A. <[KWoolford@lakecountyil.gov](mailto:KWoolford@lakecountyil.gov)>  
**Sent:** Thursday, March 21, 2019 2:14 PM  
**To:** McConkey, Sally A <[sally@illinois.edu](mailto:sally@illinois.edu)>  
**Subject:** Bulletin 70 update

Hi Sally,

Do you know if the data used captured the July 2017 rainfall (record flood) in Lake County? The report says the date range is from 1948 to 2017. Looking for the exact date in 2017 if known? thanks

## Woolford, Kurt A.

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**From:** Gardiner, Robert D.  
**Sent:** Monday, April 8, 2019 4:30 PM  
**To:** Woolford, Kurt A.  
**Subject:** How will increased rainfall amounts affect storm sewer sizing

### Example

Existing 24-hour, 10-year rainfall amount in Appendix I =3.88".

A 12" pipe might carry 2.5 cfs for a given slope and roughness (e.g. 0.005 ft/ft and Hazen Williams C=100)

The proposed 24-hour, 10-year rainfall amount is 5.15", a 33% increase.

Therefore, the runoff for a parcel would be expected to also be about 33% higher.

If the current minimum pipe size is 12" under existing conditions, then a pipe would have to be about 13.4" in diameter to convey the increased flowrate (all other parameters being equal and still wanting to convey the proposed 24-hour, 10-year flowrate). This is about a 11% increase in pipe diameter.

We would like to be of assistance. If you have any questions, or would like to set up a meeting, please call our office at (847) 377-7705 or feel free to e-mail me. If you have any additional concerns that have not been addressed by the regulatory staff regarding the above comments, you may contact Chief Engineer Kurt Woolford [kwoolford@lakecountyil.gov](mailto:kwoolford@lakecountyil.gov) or Executive Director Michael Warner [mwarner@lakecountyil.gov](mailto:mwarner@lakecountyil.gov) at (847) 377-7700.

Sincerely,

LAKE COUNTY STORMWATER MANAGEMENT COMMISSION

**Robert D. Gardiner, P.E., CFM**  
Permit Engineer

Lake County Stormwater Management Commission  
500 W. Winchester Road  
Libertyville, IL 60048

[rgardiner@lakecountyil.gov](mailto:rgardiner@lakecountyil.gov)

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