KANE COUNTY

Rudd, Young, Feltman, Podraza, Wallers, Slowinski, Bardol, Wills, Olsem, Culp, Lobbes, Ag Chair

Non-Voting: Wilford, Finke, Custic, Polzin

STORMWATER MANAGEMENT TECHNICAL ADVISORY COMMITTEE

SEPTEMBER 27, 2017

Auditorium **Agenda** **12:00 PM**

Kane County Government Center, 719 S. Batavia Ave., Bldg. A, Geneva, IL 60134

1. **Call to Order**
2. **Approval of Minutes:** August 23, 2017
3. **Public Comments**
4. **Discussion: Detention Threshold Triggers**
5. **Discussion: Detention Design Parameters**
6. **Discussion: Discharge of Runoff – Outfall and Downstream Impacts**
7. **Discussion: Fee-in-Lieu**
8. **New Business**
9. **Adjournment**

Recommendations

Stormwater Management

I. Overview:

Based upon our discussion of the topics below at the August TAC meeting we have provided our initial recomendations. Additional information regarding the surrounding county ordinances has been provided in a tabular format as requested.

II. Objectives:

To obtain a consensus from TAC on the direction for the following:

A. Detention threshold,
B. Detention design parameters, and
C. Runoff discharge requirements.

** The details and ordinance language will be discussed with TAC during future phases of this project.*

III. Topics

A. Detention Threshold Trigger:

Detention should be based upon impervious instead of zoning classifications.

Updated language should:

1. Improve definition of Impervious and establish guidelines for when detention is required;
2. Provide a definition for Stormwater Mitigation Measures (infiltration trench, rain garden, detention);
3. Provide definition for Watershed Benefit Measures (grassed buffer/waterway, 2 stage channel, edge of field practices, prairie or wetland creation, reconnection of wetland and floodplain to channel);
4. Require Stormwater Mitigation Measures where the downstream system doesn't have capacity or there are existing drainage issues;
5. Provide option for Watershed Benefit Measures in lieu of detention for large open space parcels and farms with a small percentage of impervious area;
6. Provide exemptions for linear projects (such as trails);
7. Consider a maximum impervious percentage for small lots;
8. Consider credit for removal of existing impervious area;
9. Better define redevelopment to clarify if existing impervious area being replace by new impervious area will require detention; and

10. Address how new development on a site with detention built before Jan 1, 2002 should be handled.

Current County Ordinance Detention Threshold Triggers:

Kane	DuPage	McHenry	Lake	Cook
Zoning Based	Impervious Based	Impervious Based	Impervious Based	Zoning Based
> 3 acre multi-residential; >1 acre Commercial; >1 acre roads	> 25,000 sq. ft. of new impervious area (15.72.A.1); See Table 1 for Special Cases of Development requiring "Site Runoff Storage, Special"	> 20,000 square feet of new impervious area; >1 acre of new impervious + existing impervious equals >10% of property; Total impervious exceeds 5% of property; > 1.5 acres of new impervious for roadway developments (Article IV.B.5.a)	> 1 acre impervious area; > 3 acre disturbed area; Impervious area ratio => 50% unless < 0.5 acre of new impervious; > 1.5 acre Impervious per mile of road (300.06-07)	> 5 acre parcel for residential subdivision; > 3 acre parcel for multi-family; > 3 acres parcel for non-residential; > 1 acre of new impervious for ROW (504.1); See Table 2 for Summary of Site SW Management Requirements.

B. Recommended Detention Design Parameters:

<u>Detention Design should remain based upon 0.1 cfs/acre.</u>

Updated language should:

1. Address difference between Ordinance requirements and 2002 memo. Add more detail in Ordinance as appropriate and delete parts of memo people are not using;
2. Allow for lower release rate if the downstream system does not have capacity or there is an existing drainage issue;
3. Provide detail on how bypass flow is to be handled;
4. Require a 4" minimum restrictor size;
5. Require retention to be 1" over all new impervious area; and
6. Consider an intermediate overflow that still restricts flow to downstream drainage system capacity in case of a blocked restrictor in the freeboard for restrictor sizes below a certain size.

Current County Ordinance Detention Release Rates:

Kane	DuPage	McHenry	Lake	Cook
0.1 cfs/acre for 100-yr	0.1 cfs/acre for 100-year (15.73.A); 5 acres – 100 acres/Site Runoff Storage, Special: 2-yr, 24-hr & 100-yr, 24-hr pre-development runoff rate (15.73.B); >100 acres: 2-yr & 100-yr critical duration up to 24-hr (15.73.C);	0.04 cfs/acre for 2-year, 24-hr; 0.15 cfs/acre for 100-yr, 24-hr (Article IV.B.5.b) *Excludes watershed specific release rates	0.04 cfs/acre for 2-yr, 24-hr; 0.15 cfs/acre for 100-yr, 24-hr (502.01-02) *Excludes watershed specific release rates	0.30 cfs/acre for 100-yr (504.3) *Excludes watershed specific release rates

C. Discharge of Runoff – Outfall and Downstream Impacts

<u>The discharge of runoff from new development should use Illinois Drainage Law as a guide and update existing Kane County Stormwater Ordinance language to protect downstream properties from</u>

extended release rates, increases in volume, increase flood elevations and flood damage, groundwater flow, and protect groundwater only systems from surface water.

Updated language should:

1. Offsite outfall
    a. Define “open water course”;
    b. Evaluate the downstream drainage to an “open water course” when a development discharges to undeveloped land or open space;
    c. Require that offsite subsurface groundwater or drain tile systems shall not be used for surface water discharges, but may be used for retention or stormwater mitigation underdrains at a rate that does not exceed 0.03 cfs/acre (see language from Technical Manual). Flow from sump pumps and curtain drains must be conveyed in a storm sewer to an “open water course” or municipal storm sewer with approval by the governing agency;
    d. Require that offsite outfalls to agricultural surface drainage systems and steep slope zones that do not have a base flow must be conveyed 100% underground 48 hours after a 100 yr-24 hr event to prevent extended releases from stormwater facilities from damaging crops and accelerating erosion;
    e. Require that offsite outfalls to depressional storage or urban flood areas shall not increase flood elevations and must mitigate for additional volume produced so not to increase flood duration in closed depressions;
    f. Require outfalls be constructed in rights of ways or easements adjacent to rights of way for developments in rural areas when engineering is feasible or reasonable;
    g. Require 21 day review by:
        i. Drainage District if the development discharges to an active drainage district within the County; or
        ii. Downstream municipality (including unincorporated Kane) if development discharges into or outside of municipal boundary that is not the Certified Community that will be issuing the permit;
    h. Encourage fee-in-lieu or recapture agreements for downstream storm sewer construction that will benefit multiple properties;
    i. Work with Attorney to develop language based upon Illinois Drainage Law case law if downstream property owner refuses access across property and right of way option is not feasible or reasonable. Define maximum extent practicable and reasonable use.
2. Onsite
    a. No changes

3. Offsite Tributary
    a. Require sizing of offsite tributary for drain tile connections be sized based upon chart (see attached) to allow for subsurface drainage improvements to occur on upstream tributary farms

b. Require that offsite tributary drain tile connections have a free discharge into the drainage system within the development and are not subject to head pressure within the storm sewer system or surcharge resulting in fluctuating water elevations in a detention facility.
c. Require that offsite adjoining tributary ag property be provided a grassed waterway through the development that bypasses the storm drainage system and detention within the development. Developer shall work with ag property owner and develop a means for a maintainable sediment and farm debris removal system. Maintenance costs for this system shall be included in long term maintenance plan for the development.

Current County Ordinance Discharge to Subsurface Considerations (tile systems):

Kane	DuPage	McHenry	Lake	Cook
Yes	---	Yes	Yes	Yes

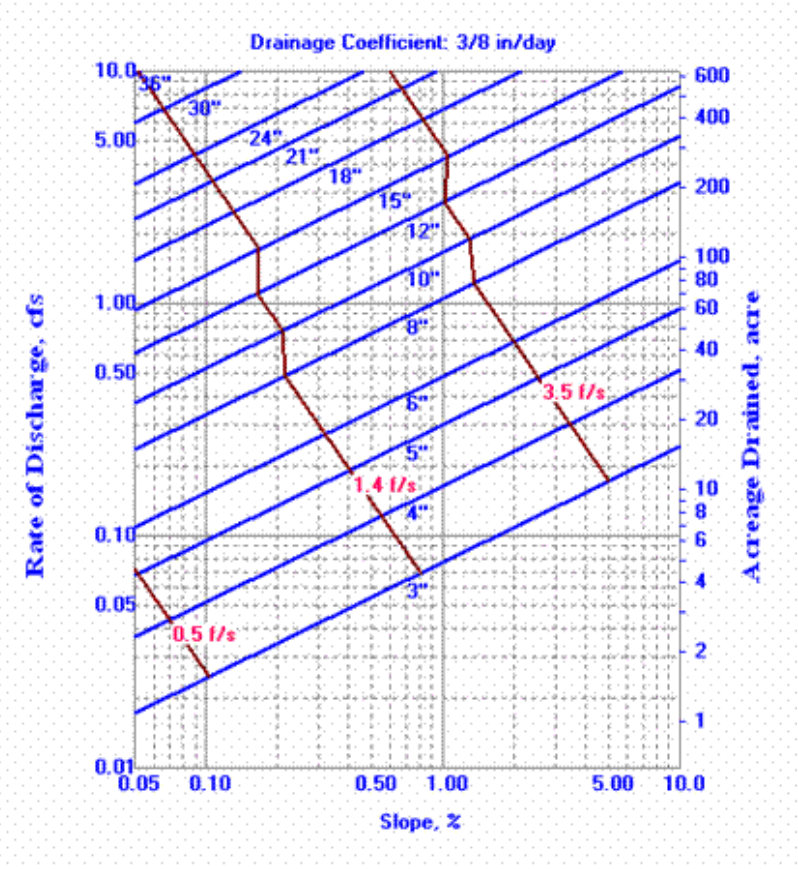

Figure 13. Design chart for plastic tubing using a drainage coefficient of 3/8 in/day.

Source: Illinois Drainage Guide, Department of Agricultural and Biological Engineering, University of Illinois

D. Recommended Fee In Lieu of Detention Parameters:

Fee in Lieu should allow for flexibility and ensure protection of downstream property.

Updated language should:

1. Fee in Lieu should be allowed for development and redevelopment;
2. Fee in Lieu value should not be included in the Ordinance but established by each Certified Community;
3. The watershed shall be defined as the Fox River or Kishwaukee Watersheds, Certified Communities may adopt sub-watershed requirements.

Current Collar County Ordinance Fee in Lieu Parameters:

Kane	DuPage	McHenry	Lake	Cook
Yes	Yes	No	Yes	No

MEMORANDUM

TO: Kane County Stormwater Management Technical Advisory Committee (TAC)

FROM: S.M. "Monica" Hawk, PE, CFM

DATE: September 9, 2017

RE: Topics of Discussion for September 27, 2017 meeting
Identifying Issues - Stormwater Management

The following memo provides TAC members with an overview of the current ordinance standard and technical manual guidance to facilitate discussion for the following topics:

I. Discharge of Runoff – Outfall and Downstream impacts
II. Drain Tiles

I. Discharge of Runoff – Outfall and Downstream impacts

Current Ordinance Standard: 9-28 A

Stormwater facilities shall be required and designed so that runoff exits the site at the point where it exited prior to development (unless a change is required and approved in writing by the administrator) and in a manner so as not to increase flood damage downstream. Concentrated discharges from new developments must enter conveyance systems capable of carrying the design flow rate without increasing flood damage, erosion or maintenance costs downstream.

Current Technical Manual Guidance: § T202(a) Stormwater Facility Discharges

For simple developments with few drainage facilities, these criteria should be met if:

1. *All site runoff exits the site through vegetated swales (i.e., runoff velocities are minimized); and*
2. *All site runoff exits the site either into an adjacent drainage way or spreads overland in the same direction as the predevelopment drainage, or into a drainage easement that is continuous until it reaches an existing downstream drainageway*
3. *The runoff from the site demonstrated to be safely conveyed to a stream.*

For larger developments or smaller developments that do not meet the above conditions, these criteria require that the developer consider the full impact site drainage system may have on downstream locations. It is necessary to:

1. *Identify all points where runoff will exit the drainage site. This will include point discharge locations (where sump pumps discharge or where flows from drainage pipes, culverts, swales, or other drainage ways exit the site) as well as areas where diffused overland flow will exit the site.*
2. *Determine whether these immediate discharge points will be affected by the discharge. This will include considering the exit points susceptibility to water damage (i.e., is the drainage ditch expected to convey water, or is a walkway expected to stay dry, etc.?).*
3. *Determine whether the discharge quantity will affect the discharge point adversely. In general, if:*
   a) *The existing drainage patterns have been retained such that the points of discharge from the site have the same tributary areas as before discharges; and*
   b) *The discharge quantity at each point will be less than the pre-development flow rate to that point under pre-development conditions; and*
   c) *The point has been historically free from flood damage; then*

   The discharge quantity will probably not cause damage to the adjacent property. It is the responsibility of the applicant to check if the waterway can handle the post development flows long term without causing severe erosion. The applicant should consider using an energy dissipater system at the outlet of a storm sewer system that empties into a waterway.

   If all the conditions above are not met, the developer must demonstrate that the proposed site drainage will not affect adjacent properties adversely. The developer is not responsible for rectifying off-site pre-existing failures to meet the criteria of the Ordinance. However, the developer is responsible for demonstrating that the development will not exacerbate existing related flood problems.

- **Discussion Starter <u>to Identify Issues</u> with the current standards:**
  1) **Are these standards being followed?**
  2) **Is there concern with these standards or difficulty enforcing?**

II. Drain Tiles

Current Ordinance Standard: 9-28 D

Stormwater systems shall properly incorporate and be compatible with existing subsurface and surface drainage systems including agricultural systems. Designs shall not cause damage to existing drainage systems or to existing adjacent or tributary agricultural land uses. The following principles and requirements shall be observed in the design:

1. *Off Site Outfall: Agricultural subsurface and surface drainage systems shall be evaluated with regard to their capacity and capability to properly convey low flow groundwater and site runoff storage facility release without damage to downstream structures and land uses. If the outfall drain tile and surface drainage systems prove to be inadequate it will be necessary to modify the existing systems or construct new systems which will not conflict with the existing systems and will not impact existing land uses.*

2. *On Site: Agricultural drainage systems shall be evaluated in accordance with article V of this chapter. All existing on site agricultural drain tiles not serving a beneficial use shall be abandoned by trench removal prior to other development and recorded on record drawings. If any existing drain tiles continue to upland watersheds the developer must maintain drainage service during construction until new storm sewers can be installed for a permanent connection.*
3. *Off Site Tributary: Existing drainage systems shall be evaluated with regard to existing capabilities and reasonable future expansion capacities. All existing tributary drain tiles shall be incorporated into the new stormwater system including observation structures located at the limits of the site and shall provide a free flow discharge. Agricultural tributary surface conveyance shall be accepted by the new development with consideration given to water quality and sediment filtering control.*
4. *Preservation Of Existing Systems: New roadway construction shall preserve existing subsurface systems within the right of way. Inspection wells shall be placed at the right of way and tiles found not to be flowing between inspection wells at the end of construction shall be replaced.*

Current Technical Manual Guidance: § T202(d) Existing Sub-Surface and Surface Drainage Systems

The applicant must locate all existing field tile systems on the project site. Particular attention should be paid to those field tile systems that are used to convey off-site flow through the site to a downstream location. It is the responsibility of the developer to maintain adequate capacity of off-site drain tile systems entering the site. The potential for expansion of an existing agricultural drain can be determined by checking the topography tributary area upstream of a development which contains hydric soil and multiplying by 0.003 cfs/acre. If a drain tile system outlets into an adjacent property's drain tile system, the downstream drain tile capacity must be calculated using the slope and size of the drain tile. If the developer is not able to determine the capacity of the downstream system, then the assumption for the capacity should be limited to 0.003 cfs/acre multiplied by the amount of acres of hydric soil tributary to the downstream system at the point where it exits the developer's property. The developer has the option of:

1. *Release into the existing drain tile system at the pro-rated capacity of the downstream field tile or 0.003 cfs/acre, whichever is less; or*
2. *Negotiate with the downstream property owner to upsize the field tile system to a greater capacity.*

If the developer releases at 0.003 cfs/acre for the storm with 1% probability of occurrence in any year, the remaining 0.097 cfs/acre would need to be safely conveyed overland to the downstream property and discharged without scouring. The pro-rated capacity of a field tile can be determined as a percentage of the tributary area.

All field tile systems that do not serve a particular benefit (i.e., - draining open space) must be removed. It is not acceptable to only remove a few sections of the tile system. The concentration and conveyance of infiltrated runoff may cause problems if partial tile systems are left in place. Any on-site field tiles which remain on-site must be identified in record drawings.

- **Discussion Starter <u>to Identify Issues</u> with the current standards:**
  1) **Are these standards being followed?**
  2) **Is there concern with these standards or difficulty enforcing?**