Stormwater Program Stakeholder Update #2

Why are we meeting today?
To get familiar with Topeka’s proposed POST-CONSTRUCTION stormwater regulations and resources

- Stormwater BMP Design
  - TMC Chapter 13.35 (revised)
  - Stormwater BMP Design Handbook (new)

- Stormwater BMP Maintenance
  - TMC Chapter 13.40 (new)
  - BMP Owner’s Manual (new)

- Stream Buffers
  - TMC Chapter 13.10 (revised)

- Floodplain Management
  - TMC Chapter 17.10 (revised)
Goals for SW Ordinance change

➢ Comply with the NPDES Phase 1 Municipal Stormwater Permit and EPA audit findings
  • Require stormwater quality treatment at new developments and redevelopments ≥ 1 acre
  • Requirements for municipal design plan review, construction, and maintenance processes
➢ Align and integrate stormwater quality and quantity designs
➢ Flexible, familiar, and locally relevant

Stormwater BMP Design
Design Regs & Resources

Topeka Municipal Code

- **TMC 13.35 Stormwater Management** – regulates permanent stormwater quality BMPs and detention/retention design and construction

Design Criteria & Drafting Standards
- Drainage system design (i.e., inlets, pipes, channels, culverts)
- Detention/Retention basin design
- Design plan preparation and submittal requirements
- Erosion and sediment control practices

Stormwater BMP Design Handbook
- Design requirements for stormwater quality BMPs
- Detention/Retention basin design
- Design plan preparation and submittal requirements

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Stormwater Management Ordinance

**TMC Chapter 13.35**

Establishes core requirements for stormwater BMP design & const.

**CONTENT:**
- Applicability of ordinance and sw quality & quantity performance standards
- Criteria for Exemptions & Waivers
- General design conditions
- Stormwater Management Plan (SWMP)
- During Construction
  - Adhere to approved plan
  - Maintain constructed BMPs
- Construction Termination
  - Stormwater BMP Record Drawing
  - Final Inspection

**DOES NOT INCLUDE:**
- Technical detail on performance stds.
- Calculation methods, design specifications, design parameters
- A list of required elements for SWMPs and BMP Record Drawings

Refers to the Stormwater Design Handbook for all the above
**Stormwater BMP Design Handbook**

**Chapters**
1. Introduction
2. Design Process & Plans
3. SW Quality Design
4. SW Quantity Design
5. LID Techniques

**Appendices**
A. Acronyms & Definitions
B. SWMP checklist
C. Required Forms
D. BMP Record Drawing checklist
E. BMP Certification Statement
F. BMP Design Procedure Forms

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**Project Applicability Flowchart**

**Chapter 2**
Design Process & Plans

Stormwater BMP Design Handbook
Chapter 2
Design Process & Plans
Stormwater BMP Design Handbook

Stormwater Management Plan Reqmts.

- Plan prep requirements
- Checklist in appendix
- Example plan sheets
  - BMP location map for O&M subplan
  - BMP Planting subplan
Construction Termination Process

Chapter 2
Design Process & Plans

Stormwater BMP Design Handbook

- New to Topeka
- Targeting:
  - BMP construction per approved SWMP
  - BMP cleanliness and readiness to function properly as PERMANENT INFRASTRUCTURE
- Includes:
  - Stormwater BMP Record Drawing
  - Final inspection

The future property owner is responsible for BMPs once construction is finished.

These steps confirm the BMPs are clean and functional for the future Owner.

Stormwater BMP Record Drawing

Chapter 2
Design Process & Plans

Stormwater BMP Design Handbook

- Checklist in appendix
- Some items will come from SWMP (if no changes during construction)
- Includes:
  - BMP/easement location maps
  - Certifications/Agreements
  - As-Built Plan
  - BMP Planting Plan

Excerpt from the Stormwater BMP Record Drawing Checklist

2. CERTIFICATIONS, LEGAL DOCUMENTS, AND AGREEMENTS

- Signed original Engineers and Landscape Architects certification statement (see Appendix D)
- If applicable, signed originals of any other legal agreements or certifications pertaining to the stormwater BMPs or stormwater conveyance system (e.g., agreement with downstream property owner for use of offsite BMPs or drainage easements, etc.)
- Copy of recorded plat with accurate description of constructed stormwater BMPs, their stormwater management easements, and all other easements. Plats must include statement: “Stormwater BMPs shall be maintained in accordance with TMC Chapter 13.40.”
WHAT IS REQUIRED
- Performance Standard and General Policies

HOW TO DESIGN BMPS
- Encouragement for LID
- Guidance on Green Infrastructure BMPs
- Policies and Guides for Infiltration BMPs
- Policies for Vegetated BMPs
- Guidance for BMP Selection, Location, and Protection
- Aligning Quality & Quantity Designs
- Intro to Green Street Design

Performance Standards & Related Info
- Requires the Level of Service Method
- Refers to MARC Manual for
  - LOS Calculation Method/Policies
  - BMP Design Specifications
- Emphasizes Green Infrastructure
Infiltration BMP feasibility criteria
- For BMPs without an underdrain

Policies for Infiltration BMPs

Chapter 3
Stormwater Quality Design

Stormwater BMP Design Handbook

- Infiltration BMP feasibility criteria
  1. Is the BMP located in soil characterized by a type "D" soil hydrology unit group?
  2. Is the BMP located more than 100 feet from a drinking water supply well or a sampling well or more than 50 feet from a drinking water well in a non-operational state?
  3. Is there at least a three-foot separation distance from the bottom of the BMP to the elevation of the seasonal saturated soils or the top of bedrock?
  4. Is the BMP located more than 1,000 feet upgradient, or 600 feet downgradient of a slope feature?
  5. Is the BMP located more than 1,000 feet from a building or structure? If yes, a groundwater monitoring program that confirms the drinking water supply well is not affected by the BMP must be provided.
  6. Is the BMP located more than 50 feet of a single family dwelling? If yes, a groundwater monitoring program that confirms the identified well is not affected by the BMP must be provided.
  7. Does a groundwater monitoring program confirm that a nested drinking water well is not affected by the BMP and will not be affected in the future?
  8. Is the BMP located more than 200 feet from the toe of a slope that is greater than 3:1 in a non-operational state?
  9. The BMP must not receive stormwater discharges from a stormwater basin or upgradient of a wetland, estuary, etc., or areas of known soil contamination.

Policies for Vegetated BMPs

Chapter 3
Stormwater Quality Design

Stormwater BMP Design Handbook

- BMP Planting Plan requirement
- Refers to MARC Manual
  - Native species encouraged by not mandatory except when specified by MARC Manual
- List of plant resources

- Underdrain design
- Infiltration bed protection
- Field infiltration test requirements
Landscape Credits

Chapter 3
Stormwater Quality Design

Stormwater BMP Design Handbook

Available for certain BMPs
Maximum credit of 20%

<table>
<thead>
<tr>
<th>BMP Type</th>
<th>Landscape Credit</th>
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<tr>
<td>VEGETATED BMPS</td>
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<tr>
<td>Native Vegetation Established or Preserved</td>
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<tr>
<td>Rain Garden</td>
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<tr>
<td>Bioretention</td>
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<tr>
<td>Vegetated Filter Strip</td>
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<tr>
<td>Native Vegetation Swale</td>
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<tr>
<td>Grass Vegetation Swale</td>
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<tr>
<td>BMPS THAT REDUCE IMPERVIOUS AREA</td>
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<tr>
<td>Green Roof</td>
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<td>Infiltration Basin</td>
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<tr>
<td>Infiltration Trench</td>
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<tr>
<td>DETENTION BMPS</td>
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<tr>
<td>Extended Wet Detention</td>
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<tr>
<td>Extended Dry Detention</td>
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BMP Selection, Location, and Protection Guidance

Chapter 3
Stormwater Quality Design

Stormwater BMP Design Handbook

Goal is to eliminate BMP failures from:
- improper BMP selection
- poor BMP location
- a lack of protection of key components

### BMP Selection, Location, and Protection Guidance

#### Stormwater Quality Design

#### Stormwater BMP Design Handbook
BMP Protection

### Stormwater Quantity Design
WHAT IS REQUIRED
- Watershed-based Performance Standards

HOW TO DESIGN STORAGE BMPS
- General Criteria
- Criteria specific to detention or retention BMPs
- Computational requirements and methods

Most of the design criteria come from APWA manuals used by KC-Metro.
Watershed-based Perf. Standards

Chapter 4
Stormwater Quantity Design

Stormwater BMP Design Handbook

Peak Flow Control Standard

- Post peak ≤ Pre peak
- 2, 5, 10, 25, 50, and 100-yr storms

Volume Control Standard

- No discharge of the volume from the 100-yr storm
- The volume captured by Green Infrastructure BMPs can count towards this requirement

Stormwater BMP Maintenance
**Stormwater BMP Maintenance Ordinance**

TMC Chapter 13.40

Establishes **core requirements** for inspection & maint. by **owners**.

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**CONTENT:**
- Applicability
- Owner responsibilities
- Authority for City inspections of BMPs
- **Prohibited uses and activities**

**DOES NOT INCLUDE:**
- How to inspect a BMP
- How to maintain a BMP

→ **Refers to the BMP Maintenance Manual for all the above**

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**BMP Maintenance Ordinance & Manual**

**What’s important about this to Developers & Site Designers?**
- Chapter 13.40 is relevant to the property **OWNER**. This may be the developer.
- The Manual should be used by the designer to develop the O&M Plan
BMP Maintenance Manual

Property Owner’s Guide to Stormwater BMP Maintenance

• Quick overview
• What is valuable to you?
  ○ O&M Plan resources

BMP Maintenance Manual

Section 1: Introduction and Storm Water BMPs 101
Section 2: BMP Operational and Success Criteria
Section 3: BMP Inspection
Section 4: BMP Maintenance
Section 5: Individual BMP Inspection Requirements
Section 6: Helpful Resources

Target Audience:
NOT written for engineer or designer
IS written for property owners

Messaging:
✓ Simple
✓ Educational
✓ Visual
✓ Themed
Section 5 Individual BMP Inspection Requirements

<table>
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<tr>
<th>BMP Management Practices (BMPs)</th>
<th>BMP Definition</th>
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Bioretention Example

- 2 Page Fact Sheet
  - BMP Overview
  - Specific owner requirements
  - Regular Maint. Activity

- Inspection Form
  - 4-5 page checklist
  - Available for BMP Stormwater Record Drawing
Stream Buffers

Reasons for Change

- Disconnect stream buffer and 100-yr floodplain
- Eliminate confusing language for buffer adjustments due to specific site characteristics
- Utilize science-based information

Buffer Area Ordinance

TMC 17.10
TMC 17.10 Buffer Areas

Science-Based Stream Buffer

- Setback limits based on Stream direction
- Ground slope
- Ground curvature
- Maximum flood depth
- Maximum water velocity
- Soil erodibility
- Maximum shear stress

Proposed Change

- Stream-side area buffer remains the same
- Outer area buffer is defined by the Science-Based Stream Buffer (provided by the City in a GIS-Layer)

Floodplain Ordinance
TMC 17.30- Floodplain Management Revisions

- Requirements added for construction in AH Zones illustrated as Ponding areas in the Topeka Levee Certification package.

- All fill in a designated AH Zone/Ponding area shall be offset by compensating cut to negate volume losses and should be frequency/stage based.
What Happens Next?

Next Steps

- City website
    https://www.topeka.org/utilities/about-the-stormwater-utility/

- Send comments and questions to
  - Braxton Copley (bcopley@topeka.org)

- **August** - Work sessions with the Planning Commission and City Council

- **September** - Ordinance consideration/adoption