Erosion and Sediment Control Program Manual

City of Lenexa
Public Works
Watershed Management Division

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Introduction

Purpose

This manual is intended to provide guidance for the implementation of Lenexa's Erosion and Sediment Control (ESC) Program. It compiles and summarizes ESC related information, policies, procedures, and documents. The manual is intended to be a "living document" and will be updated and revised as the program is implemented.

Program Background

The mission of the Watershed Management Division is to reduce flooding, protect water and environmental quality and create recreational opportunities for the citizens of Lenexa through a proactive, integrated, watershed-based approach to storm water management. Lenexa's Watershed Management Division was established in the summer of 2000 to implement the city's innovative new storm water management program. Building on Lenexa's Vision 2020, the city adopted Watershed Management Policies, which laid the groundwork for the City's new Erosion and Sediment Control (ESC) Program.

- For more information about the City's ESC program, contact Rob Beilfuss, Watershed Program Water Quality Specialist, at 913-477-7666 or email at rbeilfuss@ci.lenexa.ks.us.
- For information about construction site erosion controls and field inspections contact Dale Clark, Erosion and Sediment Control Inspector, at 913-477-7685 or email at dclark@ci.lenexa.ks.us.

Regulatory History

In 1987, the Clean Water Act (CWA) was expanded to govern storm water discharges from municipal separate storm sewer systems (MS4s). EPA's Storm Water Program prohibited discharges from an MS4 without a National Pollution Discharge Elimination System (NPDES) permit. Storm water was regulated under the NPDES program using a phased approach. Phase I regulated discharges from large and medium MS4s (Population > 100,000), various industrial activities, and construction sites greater than 5 acres. Phase II expanded the program to regulate discharges from small MS4s (located in urbanized areas) and construction sites greater than 1 acre. Since Lenexa is located in an urbanized area, the Kansas Department of Health and Environment (KDHE) designated the City of Lenexa as a Phase II-regulated small MS4.

On October 1, 2004, the City of Lenexa was issued a Phase II NPDES permit which required best management practices (BMPs) to be implemented in six program areas. These program areas include: public education and outreach, illicit discharge detection and elimination, control of construction site runoff, post-construction storm water management, and pollution prevention/good housekeeping. As required by the

Phase II NPDES permit, the City of Lenexa developed a Storm Water Management Plan which addressed the six required program elements.

The Storm Water Management Plan required the City of Lenexa to develop an Erosion and Sediment Control ordinance. This requirement had already been met through the Land Disturbance Provisions (Article 4-1-N) which were adopted by the City of Lenexa on July 1, 2001. The Land Disturbance Provisions are intended to: control storm water runoff from construction activities; protect property from damage due to flooding and erosion; reduce water pollution and improve water quality; and, protect stream assets and valuable natural resources. These provisions are the cornerstone of the City's Erosion and Sediment Control Program and will be discussed in detail throughout this manual. A copy of the Land Disturbance Provisions is included in Appendix A.

Erosion and Sediment Control Principles

Erosion

Erosion is caused by the action of wind, rainfall, and runoff on bare soil. This manual deals specifically with erosion caused by rainfall and storm water runoff. The force of raindrops and surface runoff can detach soil particles from bare soil, making them available for transportation as sediment. A sites' erosion potential is influenced by several factors including soil type, vegetative cover, slope, and climate. Construction site clearing, grading, and other activities remove vegetation and expose bare soil, which can increase storm water runoff and erosion. Excessive runoff from construction sites can cause gully erosion, stream bank instability, and poor water quality. The following construction storm water best management practices (BMPs) are commonly used to control soil erosion:

- Erosion control blankets
- Diversion ditches
- Seeding/mulching
- Stabilized traffic areas and stream crossings
- Work phasing

Sedimentation

Sediment deposition occurs when the storm water runoff flows are insufficient for the transportation of soil particles. Heavier soil particles (sand and gravel) are deposited first as flow decreases. Lighter soil particles (silt and clay) are transported more easily and may travel significant distances from sources of erosion. Excess sediment from construction sites can plug storm water infrastructure, create hazardous driving conditions, and degrade water quality and aquatic habitats. There are many BMPs that are designed to reduce construction storm water runoff flows and keep sediment onsite. The following BMPs are commonly used to control sediment:

- Silt fence

- Mulch berms
- Triangular silt dikes
- Terracing
- Rock check dams
- Sediment basins
- Storm sewer inlet protection

BMP Design Criteria

In August 2003, the Kansas City Metropolitan Chapter of the American Public Works Association adopted Division 5100 Erosion and Sediment Control Design Criteria (APWA 5100). APWA 5100 establishes uniform erosion and sediment control standards for the proper design and implementation of construction storm water BMPs. The City of Lenexa has adopted APWA 5100 by reference in Section 4-1-N-12 of the Land Disturbance Provisions. A copy of APWA 5100 is included in Appendix B.

Land Disturbance Provisions

Summary

On July 1, 2001, the City of Lenexa expanded Chapter 4-1 (Zoning) of the Unified Development Code by adopting Article 4-1-N, Land Disturbance Provision. These provisions are intended to: control storm water runoff from construction activities; protect property from damage due to flooding and erosion; reduce water pollution and improve water quality; and, protect stream assets and valuable natural resources. These provisions are also intended to encourage responsible, high quality development that protects and enhances the quality of life for those who visit, reside, and work in the City. Article 4-1-N, Land Disturbance Provision is included as Appendix A.

The Land Disturbance Provisions (LDP) require that a permit be obtained for any land disturbance activity that disturbs more than 100 cubic yards of soil and/or disturbs greater than 5,000 square feet of surface area. Agricultural farming, landscaping/home gardening, reestablishment of lawn areas, and emergency activities are exempt from this requirement. The following process should be followed to obtain a Land Disturbance Permit:

- Submit completed application form, review fee ($100) and engineered plans to the Lenexa Planning Department. Contact the Development Engineering Division with questions regarding plan requirements or submittal package.
- Initial review and comment by the City (10 working day review timeframe for Land Disturbance Permit – review time is longer for Building Permit).
- Applicant revises plans to address City comments and questions and submits revised plan set (this process may occur more than once).
- City approves plans (typically applicant is notified by phone).

- Applicant schedules and holds pre-construction meeting with City planning staff, construction contractors, superintendent, and Erosion and Sediment Control Inspector.
- Pay fee and obtain Land Disturbance Permit. The permit fee is $165 per acre for commercial and subdivision. The fees and performance guaranty are required at issuance.

A Checklist for Land Disturbance Permit requirements is included as Appendix C.

Engineered Plans

If not otherwise included in a separate development application, the following information must be submitted to the Planning Director:

- a vicinity map showing the location of the site in relation to the surrounding area's water courses, water bodies, significant geographic and natural features, streets, and other significant structures;
- a site map including information specified in Section 4-1-N-8;
- Erosion and Sediment Control Plan including information specified in Section 4-1-N-9 (see Appendix D for an Erosion and Sediment Control Plan review checklist);
- a work schedule meeting the requirements of Section 4-1-N-10;
- the permit fee as set forth in Section 4-1-N-16;
- a performance guaranty as required by Section 4-1-N-22; and
- an engineering soils report in compliance with Section 4-1-N-11, only when specifically requested by the City.

See Appendix A: Land Disturbance Provisions for specific requirements described above.

Inspections/Meetings

After the Engineered Plans are approved, the applicant schedules and holds a pre-construction meeting with construction contractors, site superintendents, City planning staff, and the City's Erosion and Sediment Control Inspector. During this meeting, the applicant must provide a point of contact for erosion and sediment control activities. This person will be contacted as needed regarding any deficiencies in erosion and sediment controls, complaints, etc.

LDP Section 4-1-N-6, E states that by applying for a Land Disturbance Permit, the applicant or landowner performing or allowing the work consents to the City's right to enter the site for the purpose of inspecting compliance with the approved plan or for performing any work necessary to bring the site into compliance with the approved plan. Each site will be inspected as necessary to ensure that erosion and sediment control measures are installed and effectively maintained. At the discretion of the Public Works Director, inspections may occur at any or all of the following stages:

- upon installation of perimeter erosion and sediment controls, prior to proceeding with any other land disturbance activity;
- during the construction of sediment basins or storm water management structures, at the inspection points required by the permit;
- during rough grading, including hauling of imported or wasted materials;
- prior to the removal or substantial modification of any erosion and sediment control measure or practices; and
- upon completion of final grading, including establishment of ground covers and planting, installation of all vegetative measures, and all other work in accordance with the approved plan.

Requests for inspections shall be made at least twenty-four (24) hours in advance (exclusive of Saturdays, Sundays, and holidays) of the time of inspection desired.

Enforcement

In the event that work does not conform to the permit or conditions of approval or to the approved plan or to any instructions of the City, notice to comply shall be given to the permittee in writing. After a notice to comply is given, the permittee or the permittee's contractor (s) shall be required to make the corrections within the time period determined by the City. If an imminent hazard exists, the City shall require that the corrective work begin immediately.

Any permit may be suspended by the City, after notice, if the Public Works Director determines that:

- the site is not in substantial compliance with the approved plan or any permit condition;
- a violation of any provision of the Land Disturbance Ordinance or any other applicable law, ordinance, rule, or regulation relating to the work exists;
- a condition exists or any act being done that constitutes or will create a nuisance or hazard or endangers or will endanger human life or the property of others; or
- the approved plan is failing to achieve required erosion and sediment control objectives due to improper control feature installation or maintenance, improper control feature material specification, or failure of said control features to perform anticipated erosion and sediment control functions successfully.

Additionally, the City may post a stop work order directing that all land disturbance activity cease immediately, provided that:

- the Public Works Director determines that the land disturbance activity violates a condition or requirement of the permit or approved plan or any Land Disturbance Provisions or regulations;

- written warning notice has been furnished to the permittee or the permittee's representative that lists corrective measures required and the time within which corrections must be made; and
- the permittee fails to comply with the warning notice within the specified time.

A stop work order may be issued without warning notice where the Public Works Director determines that:

- land disturbance is taking place that requires a permit and one has not been approved;
- required erosion and sediment control measures are not installed, inspected, and approved before the land disturbance;
- the limits of disturbance are being violated; or
- inspection reveals the existence of any condition or any act that may create a nuisance, hazard, or endangers human life or the property of others.

A person must not continue or permit the continuance of work in an area covered by a stop work order, except to correct the deficiencies with respect to an erosion and sediment control measure.

Ten (10) working days after posting a stop work order, the Public Works Director, if the conditions specified in the stop work order to resume work, have not been satified, may issue a notice to the permittee, owner, or land user of the City's intent to perform work necessary to comply with the Land Disturbance Provisions. The City may go on the land and commence work after fourteen (14) working days from issuing the notice of intent. The costs incurred by the City to perform this work shall be paid by the owner or permittee out of the performance guaranty required by Section 4-1-N-22 of the Land Disturbance Provisions. In any event the amount due is not paid, the City Clerk shall certify the amount due to the Clerk of Johnson County, Kansas, and it shall become a lien upon all property. This amount shall be listed on the tax bill and be collected in the manner of ordinary taxes as authorized by law.

The City shall have the enforcement and remedial actions set forth in Section 4-2-I-2 of the City Code if any person allows or performs a land disturbance activity without obtaining a permit, as required by the Land Disturbance Provisions, allows or performs a land disturbance activity in a manner that does not comply with an approved plan or a permit, or works with a revoked or suspended permit.

Performance Guaranty

Prior to issuance of a Land Disturbance Permit, the applicant must submit a performance guaranty that meets the requirements of Section 4-1-N-22 of the Land Disturbance Provisions. The required performance guaranty shall be in the amount of

$5,000 per acre up to a maximum guaranty of 25 acres or $125,000 (acreage amount is determined by rounding up to the next whole acre).

BMP Maintenance Responsibilities

The permittee or the owner of the property must inspect, maintain, and promptly repair all grade surfaces, walls, drains, dams, structures, plantings, vegetation, and other erosion and sediment control measures and devices. The permittee, owner, or their contractor shall provide daily maintenance and repair of all erosion and sediment control structures and measures. Daily inspection activities should be documented and kept on site in the Storm Water Pollution Prevention Plan. After construction is complete, the permittee, owner, or their agent shall continue to regularly inspect the vegetation on site until adequate turf or other suitable vegetative cover is established.

Any person who performs utility related work is responsible for the repair or maintenance of all erosion and sediment control measures affected by the utility construction; however, the site owner or permittee is ultimately responsible for erosion and sediment control throughout the life of the project or until a certificate of completion is issued by the City.

Storm Water Pollution Prevention Plan (SWPPP)

Regulatory Summary

The Kansas Department of Health and Environment (KDHE), Bureau of Water, Industrial Section has established a program to protect waters of the State from construction site storm water runoff. The storm water program requires owners or operators of any project, or combination of projects, who engages in construction activities disturbing one (1) or more acres to have authorization to discharge storm water runoff under the construction storm water general permit #S-MCST-0110-1. Owners or operators must submit a Notice of Intent (NOI) to comply with the general permit at least sixty (60) days before starting construction. A copy of the NOI form is attached in Appendix D. In addition to the NOI form and fee, the owner operator must send KDHE a copy of the Site Map and Erosion and Sediment Control Plan, which are also required by the City, per the Land Disturbance Ordinance. When the soil disturbing activity is completed and final stabilization of the site is achieved, the permittee must notify KDHE to terminate the authorization to discharge.

Required Elements

The primary requirement of KDHE's general construction storm water permit is for the permittee to develop and implement a Storm Water Pollution Prevention Plan (SWPPP). A model SWPPP is included in Appendix E. EPA requires the SWPPP to address 12 elements:

1) demarcation of clearing (land disturbance) limits;
2) establishment of stabilized construction access;

3) control of runoff flow rates;
4) soil stabilization;
5) installation of sediment controls;
6) slope protection;
7) storm sewer inlet protection;
8) channel and outlet stabilization;
9) control of on-site pollutants;
10) dewatering control;
11) BMP maintenance; and
12) management of the project.

To address the required elements, the SWPP should include the following:

- Narrative description of:
  - regulatory background;
  - site location and existing conditions;
  - proposed construction and land disturbance activities;
  - work schedule/project phasing;
  - potential storm water contaminants;
  - storm water controls and best management practices (BMPs);
  - coordination of BMPs with construction activities;
  - BMP inspection and maintenance procedures; and
  - project contacts and coordination.
- Drawings
  - Vicinity Map
  - Site Map
  - Erosion and Sediment Control Plan
- Permits
  - Local (City land disturbance or building permits)
  - State (KDHE NOI approvals)
  - Federal (Corp of Engineers 404 permits)
- Signatures
  - Erosion and Sediment Control Plan and SWPPP must be prepared by a licensed engineer or a Certified Professional in Erosion and Sediment Control (CPESC).
- Site Inspection Forms/Logs (see Appendix F for an example erosion and sediment control inspection form)

KDHE requires the SWPPP to be kept on-site during the duration of the construction project and made available during an inspection. The City Erosion and Sediment Control Inspector will ask to see a copy of the SWPPP during site inspections. All inspection notes and plan revisions must be documented in the SWPPP.

Project Completion

Immediately upon completion of the project and after the site has been permanently stabilized, the permittee must notify the Public Works Director and schedule

a final inspection. If, upon final inspection of the project, the Director finds that all work subject to the inspection has been satisfactorily completed in accordance with any Land Disturbance Provision, the permit, and the approved plan, rules and regulations, and that any supporting documents required under Section 4-1-N-19-G are accepted, a completion certificate covering the work must be issued to the permittee by the City.