

City of Lansing, MI

**STORMWATER MANAGEMENT
POLICIES AND PROCEDURES MANUAL**

January 2013

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City of Lansing, MI
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1. SITE PLAN STORMWATER MANAGEMENT REVIEW PROCEDURES

REVIEW PROCESS

As part of the site plan review process required through City of Lansing Ordinance 1242.04, the design of a proposed new development or redevelopment project will be reviewed to determine its compliance with current City policies for management of stormwater runoff.

PRELIMINARY DESIGN REVIEW

Since the incorporation of compliant, approvable stormwater management facilities can significantly impact overall site design, the City encourages design professionals and/or developers to schedule an informal preliminary design review meeting to discuss the proposed stormwater management facilities with Lansing Dept. of Public Service staff as early in the project development phase as possible. At a meeting of this type, Lansing Dept. of Public Service staff will be afforded the opportunity to provide guidance on the adequacy of the proposed stormwater facilities in advance of formal submittal of the full site plan. Conducting a preliminary design review is expected to have the secondary benefit of expediting review and approval of the stormwater facilities during formal site plan review. Depending upon the complexity of the project, the City Engineer may require the developer to submit a preliminary stormwater management plan (see below) for review prior to full site plan submittal. The preliminary plan may be used by the City Engineer to evaluate the type of stormwater management measures that may be necessary and appropriate for the proposed development and to ensure adequate planning for stormwater management on the site consistent with the requirements of the Design Manual.

The preliminary stormwater management plan shall meet all of the requirements for final stormwater management plans unless any such information or requirements are determined to be unnecessary by the City Engineer.

PREPARATION OF A STORMWATER MANAGEMENT PLAN

A stormwater management plan (SWM plan) is required for new development and redevelopment projects for which site plan submittal and subsequent approval is required AND the completed project will result in an on-site increase in impervious surface of 1,000 square feet or greater. A qualified Michigan licensed professional engineer, architect or landscape architect must stamp and sign the SWM plan. A SWM plan is to include all of the components listed in the following Stormwater Management Checklist.

STORMWATER MANAGEMENT CHECKLIST

1. General

- The stormwater management plan shall display and present the information required by this section through the use of maps, illustrations, reports, and calculations.
- The stormwater management plan shall specify the type, location and size of stormwater management systems to be provided, using final calculations and detailed construction drawings.
- If the development will be completed in phases, the stormwater management plan shall be prepared and submitted for the total project and for all phases. Further, upon completion of each phase, the stormwater management plan for the project shall be fully functional for the phases already completed and its functionality shall not be reliant in any way upon the

completion of future phases. Approval of one or more phases shall not ensure approval of subsequent phases.

- The stormwater management plan shall be prepared, signed and sealed by a qualified Michigan licensed professional engineer.

2. Drainage Report (submitted along with site plans)

- *Stormwater Management narrative.* A narrative will be included containing the basis of selection and operation of the drainage system.
- *Location and size.* The location of the development by means of a small location map, drawn to scale no less than 1" = 2000', and the size of the development in acres.
- *Zoning.* The zoning classification of the development site and all abutting parcels.
- *On-site and off-site features.* The location and description of all on-site features and sufficient information regarding off-site drainage patterns to allow for review of feasibility and permanence of drainage retention and/or detention, as well as the impact on local surface water and groundwater.
- *Stormwater control measure (SCM) construction plans.* The stormwater management plan shall include final SCM construction plans drawn to a scale not less than 1" = 50' and on sheets no larger than 24" x 36". The construction plans and related documents shall, at a minimum, include:
 - a) Location and specifications of all proposed stormwater management practices, methods, and facilities and method of stormwater conveyance (plan and profile).
 - b) Proposed storm drains, including rim elevations, invert elevations, pipe sizes, and pipe materials.
 - c) Calculations of runoff from upstream areas for all required design storm events for the condition prior to development and post-developed conditions (see Table 1 in Design Manual for applicable design storm events).
 - d) Calculation of runoff volume captured by SCM's for treatment facilities.
 - e) Proposed open channel facilities include slope, cross-section detail, bottom elevations and surface material.
 - f) Final sizing calculations for stormwater quality and quantity treatment facilities and stormwater conveyance facilities.
 - g) Storage provided by one-foot elevation increments.
 - h) Tributary area map for the stormwater management system and all components thereof indicating total size and average runoff curve number for each sub-area.
 - i) Analysis of existing soil conditions and groundwater elevation (including submission of soil boring logs) as required for proposed infiltration facilities.
 - j) The location of discharge for all drains and pipes.
 - k) Plans and details of proposed soil erosion and sedimentation control measures, both during construction (as required by Part 91 of the Public Acts of 1994) and permanent measures.
 - l) Details of all stormwater SCMs, including but not limited to:
 - Inlet systems

- Outlet structures
 - Overflow structures and spillways
 - Energy dissipation structures
 - Riprap or other armoring methods
 - Manufactured treatment devices
 - Cross-section(s) of the storage and infiltration system including dimensions, material composition and product details.
- m) Location of proposed stormwater management facility easements.
- n) Final landscaping plans and details.

OPERATION AND MAINTENANCE (O&M) PLAN

All structural and vegetative SCMs installed shall include a plan for maintaining maximum design performance through long term O&M. The O&M plan will ensure that the SCMs continued to meet the water quality and water quantity controls outlined in the Lansing Stormwater Management Design Manual. The applicant shall provide a stormwater O&M plan and agreement that at a minimum shall include:

- a) The names and addresses of the property owners, and, the owners of all components of the stormwater system.
- b) The names and addresses of the persons responsible for O&M.
- c) The names and addresses of the persons responsible for financing O&M and emergency repairs.
- d) The signatures of the owners and any other persons to be bound by the agreement.
- e) A detailed annual estimated budget for the expected life of the SCMs; and a demonstrated means of financing O&M and emergency repairs.
- f) A map showing the location of the stormwater systems and facilities, including catch basins, manholes/access lids, main and stormwater devices.
- g) A schedule for routine, non-routine, emergency and long-term inspection and maintenance of all structural and vegetative stormwater SCMs, with detailed tasks to be performed and detailed inspection and maintenance checklists.
- h) Operating instructions for stormwater outlet components.
- i) Vegetation maintenance schedule.
- j) Recordkeeping, tracking, inspection, and notice checklists and requirements.
- k) A statement recognizing the City's right to enter the property for the purpose of inspections.
- l) Provisions regarding the City's right to perform, or cause to be performed, any required O&M if the responsible persons fail or refuse to do so, and the obligation of property owner to fully reimburse the City for all costs and expenses incurred by the City in connection with such activity.

An example of a stormwater maintenance agreement is provided in the appendix.

EASEMENT REQUIREMENTS FOR STORMWATER MANAGEMENT SYSTEMS

The applicant shall provide stormwater management easements as determined necessary by the City Engineer to implement the approved final stormwater management plan and to otherwise comply with City requirements.

All easements and rights of way must comply with current requirements for recording documents in the State of Michigan, and include the following:

- A clear title that conveys intent
- Names and addresses of the grantor or grantee
- A description of the property from which the easement is to be obtained
- A description of the easement itself
- If applicable, a statement exempting the transaction from the Michigan Real Estate Transfer Tax Act
- The signature(s) of the grantor(s)
- A notary declaration.

All easements, agreements, covenants and quit claim deeds shall be recorded in the office of the Ingham County Register of Deeds. Original recorded documents will be retained by the City. Finalized documents shall be submitted to the City for recording before permits to proceed with construction will be issued.

All expenses incurred by the City relating to preparation and review of documents related to easements shall be fully reimbursed within ten days of billing by the developer, landowner or homeowners association.

IMPLEMENTATION PLANS

The applicant shall provide an implementation plan for construction and inspection during and after construction of all stormwater management system components required by the final stormwater management plan, including a schedule of estimated dates of completing construction of the stormwater management system shown on the plan; identification of the proposed inspection procedures to ensure that the stormwater management system components are constructed and operating in accordance with the final stormwater management plan; and recordkeeping requirements. The implementation plan will include arrangements acceptable to the City Engineer for notification by the applicant to the City Engineer before the commencement of construction of the stormwater management system (and before construction of critical components of the system) and for final verification of construction by a registered professional engineer.

PERMITS AND ASSOCIATED FEES

City of Lansing Storm Sewer Permits must be obtained prior to commencement of construction. The associated permit fees will be based upon the feet of pipe installed and the number of connection points to the public system. In addition, applicants must obtain any and all permits or authorizations from all other relevant agencies. Any plans requiring connection to existing conveyance systems not under the control of the City (i.e., County Drains, MDOT Drains, etc.) must be approved by the appropriate entity, and documentation of approvals, permits, etc., must be provided to the City before final site/construction plans are submitted for approval.

A helpful guide for determining applicable permits required consistent with State laws and rules is located at the following web address: www.michigan.gov/deq/0,4561,7-135-6830-89034--,00.html

Other permit requirements, such as those required by the Ingham County Drain Commissioner, may apply depending upon the proposed location of discharge and other factors

ISSUANCE OF THE STORMWATER MANAGEMENT PERMIT

Once the final plans and Stormwater Management Plan are approved, the City of Lansing Stormwater Management Permit will be issued. Approved final site/construction plans are valid for one (1) year. The one-year period may be extended if applied for by the applicant and approved by the City in writing.

Approval of the final site/construction plans is intended to be final approval. If either the Applicant or the City find it advantageous to make changes before the final site plan/plat is presented to the City for signature, such changes can be made, provided that the same procedures outlined above are repeated with each change in the layout.

POST-CONSTRUCTION REVISIONS AND CERTIFICATIONS

Once construction is completed, the following items should be addressed to reflect all changes that may have occurred during construction:

- Formal “as-built” construction plans of the site as actually constructed.
- Final certification by an Engineer stating that the final construction meets all of the original stormwater management design parameters.
- Easements verified and provided based on final construction

PLAN REVIEW FLOWCHART

Preliminary Design Review Meeting:

A preliminary review meeting with the City is voluntary but encouraged. It provides the developer a chance to scope out relevant questions that can lead to a more efficient review and approval.

Preliminary Plan Submittal:

The developer may be required to submit a preliminary plan based on the preliminary review meeting. If the preliminary plan is required, approval is necessary before review of the final stormwater management plan.

SWM Plan/Site Plan Submittal:

The developer of a proposed development project shall be required to submit a stormwater management permit application, and SWM plan along with site plans. The developer should ensure elements of the stormwater management checklist are included.

Review Process and Decision:

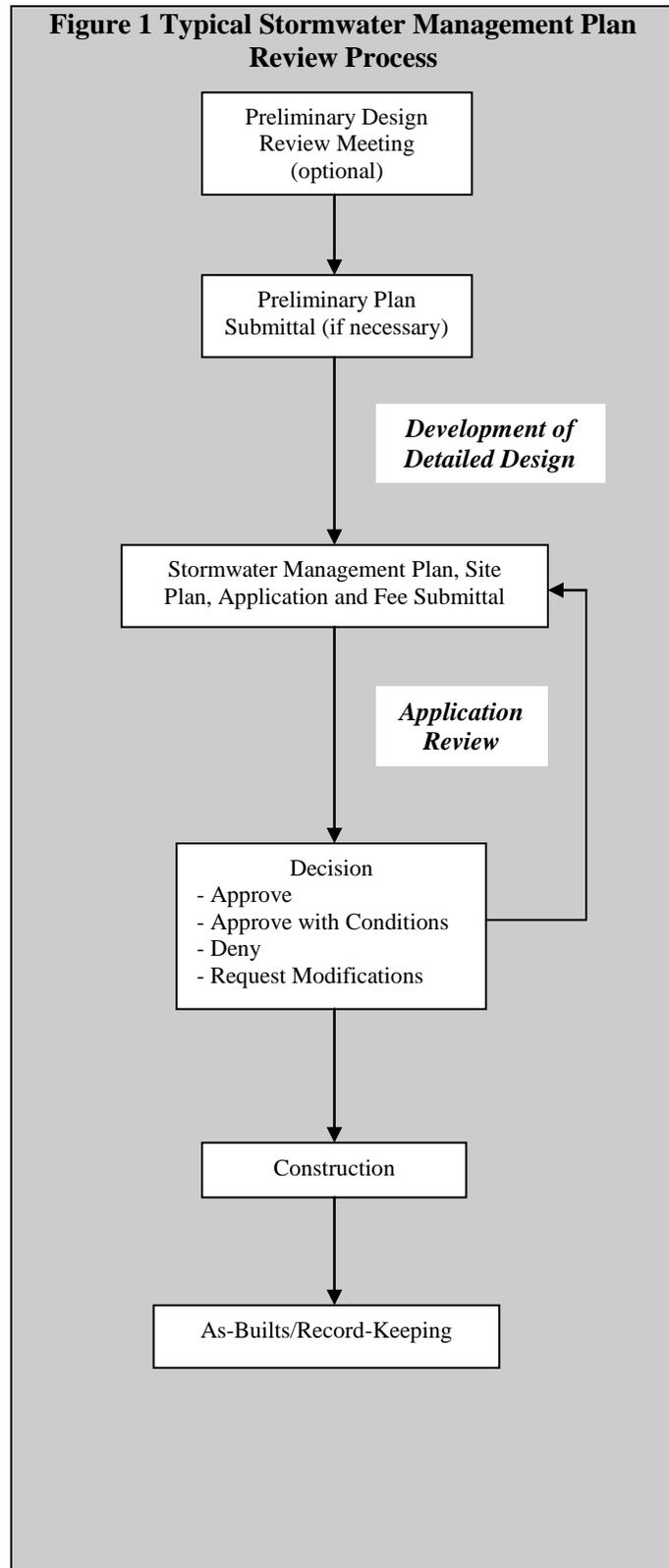
The City Engineer will review the SWM plan/site plan for required elements and reach one of the following decisions: Approve, Approve with Conditions, Deny, or Request a Modification to the application.

Construction:

The developer constructs the project ensuring that soil erosion control measures are used properly and SCMs are installed.

As-Builts/Record Keeping:

Upon completion of construction, as-builts shall be submitted to the City Engineer. The developer shall retain and preserve for no less than 3 years any and all records, related to stormwater management systems.



2. OFFSETS

INTRODUCTION

Development projects and redevelopment projects are required to control the effects of stormwater runoff, including water quantity and water quality, in accordance with the design manual and the City's NPDES Phase II Stormwater Permit. However, due to severe site restrictions, the construction of on-site SCMs for a very limited number of development or redevelopment sites may not be feasible, sufficient or practical.

In those isolated instances, the City recognizes that constructing on-site SCMs, even where it is physically possible, may not be the most effective method for controlling stormwater runoff. Therefore, the City has established a stormwater offset option to constructing on-site SCMs to be used only in these limited instances. The stormwater offset and offset fee system is established in such a way as to facilitate development and redevelopment on sites which could not otherwise be developed or redeveloped in the manner proposed, reduce costs for stormwater management, and avoid unnecessary delays for the developer.

However, it should be noted that the clear intent of the water quantity and water quality criteria as outlined in this policy is to encourage on-site compliance with these rules wherever possible, and as such *offsets are to be used only as a last resort*.

ADMINISTERING THE STORMWATER OFFSET OPTION

Where water quantity or water quality SCMs required by this policy cannot be fully accommodated on-site, the City may allow the Developer to utilize the stormwater offset option to meet all or a portion of the required on-site SCMs. The City Engineer must determine that on-site SCMs are not practical or the most effective method of controlling stormwater runoff.

Specifically, offsets may be used in the following situations:

- The use of on-site SCMs cannot meet the water quantity and water quality requirements of the City's Stormwater Ordinance and the Stormwater Management Design Manual;
- The use of off-site areas draining to on-site SCMs cannot meet the water quantity and water quality requirements; or
- Construction of on-site SCMs is not feasible, sufficient or practical.

In these situations, the City may allow an applicant to provide an offset or pay an offset fee to meet the water quantity and/or water quality requirements. Applicants must make every effort to provide at least some stormwater treatment on the project site, and if necessary, comply through a combination of on-site SCMs and offsets.

Offsets must result in water quantity or water quality reductions 1.5 times the water quantity and water quality requirements that would have applied to the on-site SCMs. Offset fees, where applicable must, as a minimum, cover all costs incurred by the City for planning, designing, constructing, and maintaining a SCM capable of meeting the water quantity and water quality requirements.

Offsets shall normally be located as close as possible to the actual development or redevelopment site, within the City limits, and within the same "subwatershed".

REQUEST BY DEVELOPER FOR STORMWATER OFFSETS

An applicant must demonstrate that full compliance with the water quantity and water quality requirements of this policy is not feasible or practical at the site using on-site stormwater SCMs. Supporting documentation, including but not limited to, detailed information about current or historic

land use, soil borings, or soil contamination analyses, shall be submitted to the City Engineer with the request to use offsets or pay offset fees.

An applicant may submit a request to use offsets in one of the scenarios mentioned above.

In general, the City Engineer must determine from the studies and evaluations conducted by the developer and from City files and reviews that constructing on-site SCMs will not effectively improve water quality, or they will not effectively reduce peak flows, or that it is not feasible because of design constraints.

In addition, any measure or practice that is used for an offset cannot be a measure that would have been required under existing laws, regulations, statutes, or permits. For example, the restoration of a wetland required as mitigation for another purpose cannot also be used as a stormwater offset. Similarly, any reforestation required under a conservation program cannot also be used as an offset.

EXAMPLES OF ACCEPTABLE OFFSET OPPORTUNITIES

Five offset options or opportunities are described below. Applicants are encouraged to develop and submit additional innovative ways to comply with the water quantity and water quality requirements. These will be reviewed and if acceptable to the City Engineer, approved on a case-by-case basis. As described previously, all offsets must result in water quantity and water quality reductions 1.5 times the water quantity and water quality requirements that would have been applied to the on-site SCMs.

Option 1- Constructing a New SCM

One type of commonly used offset involves providing treatment in locations where structural or non-structural SCMs previously did not exist. Good candidate sites for new SCM include public land, such as parks, schools, local government buildings, and recreational areas.

Option 2- Converting an Existing SCM to Achieve Higher Water Quantity and Water Quality Removals

Improving the efficiency of existing SCMs can be a very attractive retrofit option. Older stormwater SCMs were often designed to control stormwater quantity and not to provide water quality. Some examples include dry detention ponds that were constructed in the 1970s and 1980s solely for flood control. Consequently, this retrofit option typically involves modifying the existing hydraulic controls in the dry pond to increase detention times, create a permanent pool, form a shallow marsh, or a combination of these. In addition to increasing pollutant removal rates, this retrofit option can also enhance community and landscaping amenities provided by the pond.

Option 3- Modifying the Existing Conveyance Network to Enhance Pollutant Removal

The existing conveyance systems in most communities contain a network of storm drains, swales, ditches and catch-basins, which can provide good opportunities for retrofits. The City's existing stormwater conveyance system is mostly a collection system without treatment at the point of collection, discharge point or elsewhere throughout the conveyance. The objective of this retrofit option is to promote greater detention or infiltration within the conveyance system. This can be accomplished by adding extra storage, enhancing exfiltration or employing facilities to remove trash, debris, or sediment.

Option 4 Reducing the Imperviousness of an Existing Property

Some of the older developed areas of the City are so intensely developed that there is no available land for most offset options. As an alternative, the City may consider the option of reducing or eliminating existing impervious cover on publicly or privately owned lands. Some tax-delinquent properties may be available within the potential offset areas. These abandoned properties may be

purchased by a developer seeking an offset and can be subsequently converted to vegetated open space and maintained in a perpetual easement. Developers also have the option of purchasing private land for this purpose.

In some cases, reductions of impervious cover can be accomplished through the reconfiguration of existing parking lots and roads serving sites such as schools, government buildings, libraries, and hospitals.

Option 5 Innovative Offset Options

The City has some latitude to use innovative methods for offsets, as long as they can provide a reasonable estimate of the water quantity and water quality credit being earned toward the offset. Innovative techniques are encouraged. Several acceptable examples include restoring a degraded wetland, implementing a riparian reforestation project, improving existing stormwater ponds by planting forested buffer areas around the facility, and over-designing another pending project.

STORMWATER CREDITS FOR WATER QUALITY

Site planning practices that reduce the creation of impervious area in new residential and commercial developments and therefore reduce the water quality volume for the site are encouraged whenever feasible.

Site designers are encouraged to pursue innovative practices such as green rooftops, soil compost amendments, permeable pavements, and stormwater planters.

Where these techniques are employed, stormwater credits for the site may be approved by the City Engineer.