

Add to Section 12.5-1:

- (6) Land development activities and associated increases in site impervious cover alter the hydrologic response of local watersheds and increase stormwater runoff rates and volumes, flooding, stream channel erosion, sediment transport and deposition;
- (7) This stormwater runoff contributes to increased quantities of water-borne pollutants;
- (8) Improper design and construction of stormwater best management practices (BMPs) can increase the velocity of stormwater runoff thereby increasing stream bank erosion and sedimentation;
- (9) Impervious surfaces allow less water to percolate into the soil, thereby decreasing groundwater recharge and stream base flow;
- (10) Regulation of land development activities by means of performance standards governing stormwater management and site design will produce development compatible with the natural functions of a particular site or an entire watershed and thereby mitigate the adverse effects of stormwater runoff from development.

Add to Section 12.5-2:

- (6) To protect the safety and welfare of citizens, property owners, and businesses by minimizing the negative impacts of increased stormwater discharges from new land development and redevelopment.
- (7) To control the rate, quality and volume of stormwater originating from development and redevelopment sites so that surface water and groundwater are protected and flooding and erosion potential are not increased.
- (8) To encourage responsible development to occur in the City of Mexico
- (9) To control stream channel erosion.
- (10) To maintain the integrity of stream channels and networks for their biological functions, drainage, and natural recharge of groundwater.
- (11) To provide long-term responsibility for and maintenance of stormwater BMPs.

Add to Section 12.5-7:

“Bankfull” is an established river stage/elevation at a given location along a river which is intended to represent the maximum safe water level that will not overflow the river banks or cause any significant damage within the river reach.

"Detention" is the temporary storage of storm runoff in a stormwater BMP with the goals of controlling peak discharge rates. Extended Detention allows for storage and providing gravity settling of pollutants.

“Indigenous Vegetation” means any species that was present in Missouri prior to European Settlement or any plant identified as native or indigenous on lists maintained by agencies such as the Missouri Department of Conservation or United States Department of Agriculture.

“Infill Development” means land development that occurs within designated areas based on local land use, watershed, and/or utility plans where the surrounding area is generally developed, and where the site or area is vacant.

“Infiltration Facility” means any structure or device designed to infiltrate retained water to the subsurface. These facilities may be above grade or below grade.

“Maintenance Agreement” is a legally recorded document that acts as a property deed restriction, and that provides for long-term maintenance of stormwater BMPs.

“Managed Lawn Areas” means any area greater than one thousand (1,000) square feet where the vegetative ground cover is maintained at a uniform height of less than 5-inches.

“Mexico Stormwater Design Manual” means the engineering and/or project review document maintained by Mexico Public Works containing technical standards and specifications, policies, procedures, and other materials deemed appropriate to assist with compliance with the provisions of this ordinance.

“Ordinary High Water Mark” – That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter or debris, or other appropriate means that consider the characteristics of the surrounding area.

“Off-Site Facility” means a stormwater BMP located outside the subject property boundary described in the permit application for land development activity.

“On-Site Facility” means a stormwater BMP located within the subject property boundary described in the permit application for land development activity.

“Recharge” means the replenishment of underground water reserves.

“Redevelopment” means a site that has previously been built on with structures and or impervious areas, and additional improvements are proposed, or demolition of the existing improvements and new improvements are proposed.

“Riparian Zone / Riparian Buffer” is the land adjacent to streams, rivers, and lakes that actively interfaces with the waterbody through physical and chemical processes. Riparian zones filter nutrients and sediments, increase streambank stability, and provide shade that reduces stream temperatures

“Runoff Reduction” is defined as the total annual runoff volume reduced through canopy interception, soil infiltration, evaporation, transpiration, rainfall harvesting engineered infiltration or extended filtration.

“Sensitive Area” means areas containing features that are of critical importance to the protection of ecological or environmental resources, and include bluffs, springs, and wetlands.

"Stormwater Management" means the use of structural or non-structural practices that are designed to reduce stormwater runoff pollutant loads, discharge volumes, peak flow discharge rates and detrimental changes in stream temperature that affect water quality and habitat.

"Stormwater Retrofit" means a stormwater BMP designed for an existing development site that previously had either no stormwater BMP in place or a practice inadequate to meet the stormwater management requirements of the site.

“Streams” Perennial and intermittent watercourses identified through site inspection and United States Geological Survey (USGS) maps and further defined as follows:

Solid blue lines on the United States Geological Survey seven and one-half minutes series topographical map and have a drainage area of greater than 50 acres, dashed blue lines on the United States Geological Survey seven and one-half minutes series topographical map and have a drainage area of greater than 50 acres, and natural channels which are not shown on the United States Geological Survey seven and one-half minutes series topographical map as either blue or dashed blue lines but which have drainage areas of greater than 50 acres.

"Water Quality Volume (WQv)" means the storage needed to capture and treat 90% of the runoff from a storm that produces the average annual stormwater runoff volume.

“Watershed Management Plan” means a document, usually developed cooperatively by government agencies and other stakeholders, to protect, restore, and/or otherwise manage the water resources within a particular watershed or subwatershed. The plan commonly identifies threats, sources of impairment, institutional issues, and technical and programmatic solutions or projects to protect and/or restore water resources.

Add to: Article II. Plan Submittal/Review Requirements

Append to 12.5-26 COORDINATION WITH OTHER APPROVALS AND PERMITS

(4) *Stormwater Measures within Designated Flood Hazard Areas:* Construction of stormwater measures or facilities within a Federal Emergency Management Agency (FEMA) designated floodplain or floodway shall be avoided to the extent possible. When

this is unavoidable, all stormwater BMP construction shall be in compliance with all applicable requirements of the Floodplain Management Ordinance in Chapter 11, Article III, of the City Code.

12.5-27 PRE-APPLICATION MEETING DOCUMENTS

All applicants shall participate in a pre-application meeting with the Public Works and Planning departments to discuss potential approaches for stormwater design and opportunities to use design techniques to reduce runoff rates, volumes, and pollutant loads. During the pre-application meeting, the applicant shall provide information regarding design considerations as outlined in Chapter 2 of the Mexico Stormwater Design Manual.

12.5-28 PRELIMINARY STORMWATER MANAGEMENT PLAN

- (1) **Plan Requirements:** After the pre-application review, the applicant shall prepare a preliminary stormwater management plan describing, in general, how stormwater runoff through and from the development will be treated and conveyed. Required information is provided in Chapter 2 of the Mexico Stormwater Design Manual.
- (2) **Maximize Use of Techniques to Reduce Runoff by Design:** The stormwater management preliminary plan shall utilize to the maximum extent practicable site planning and design technique that reduce runoff rates, volumes, and pollutant loads. Such techniques include, but are not limited to, minimization and/or disconnection of impervious surfaces; development design that reduces the rate and volume of runoff; restoration or enhancement of natural areas such as riparian areas, wetlands, and forests; and distributed practices that intercept and treat runoff from developed areas.
- (3) **Preliminary Plan Prior to Design Plan:** The preliminary stormwater management plan must be approved by Mexico Public Works prior to submission of a stormwater management design plan (as part of the construction or final site plan) for the entire development, or portions thereof. In addition, the applicant or his representative shall meet on-site with the Director prior to approval of the stormwater management construction plan for the purposes of verifying the conditions of the site and all receiving channels.

If the development is a subdivision, the preliminary stormwater management plan must be submitted with the preliminary plat.

12.5-29 CLEARING AND ROUGH GRADING

If the developer/owner only desires to obtain a land disturbance permit for purposes of clearing and grading, they may do so upon approval of the preliminary plan, erosion and sediment control plan and a stormwater pollution prevention plan.

12.5-30 STORMWATER MANAGEMENT CONSTRUCTION PLAN

(1) **Submittal:** A stormwater management design plan containing all appropriate information as specified in this Ordinance and outlined in the Mexico Stormwater Design Manual Chapter 2 shall be submitted to the Director in conjunction with the, final development plan, final site plan, final subdivision construction plan, or any other land development plan subject to this ordinance.

(2) **Application Requirements:** The stormwater management design plan submittal shall contain:

- a completed application form provided by Mexico Public Works for any applicable permits as outlined in Section 8,
- the fee(s) required by Section 8.6,
- a stormwater management construction plan that satisfies the requirements of this section and the Mexico Stormwater Design Manual,
- a stormwater facilities and/or BMP maintenance plan for the period of construction and for post construction.

(3) **Consistency between Preliminary Plans and Construction Plans:** A copy of the approved preliminary stormwater management plan shall be submitted with the construction plans. The Director shall check the construction plan for consistency with the preliminary plan.

(4) **Stormwater Management Design Plan Content:** The stormwater management design plan shall contain maps, charts, graphs, tables, photographs, narrative descriptions, explanations, calculations, citations to supporting references, a record of all major permit decisions, and other information as may be necessary for a complete review of the plan, and as specified in the Mexico Stormwater Design Manual.

12.5-31 CONSTRUCTION PLAN REVIEW PROCEDURES

(1) **Review Period:** A thirty (30) calendar day review period begins on the day the complete stormwater management construction plan is accepted for review by Mexico Public Works. During the thirty (30) day review period, Mexico Public Works shall either approve or disapprove the plan and communicate the decision to the applicant in writing. Approval or denial shall be based on the plan's compliance with this Ordinance and the Mexico Stormwater Design Manual. Within thirty (30) days after receiving an application, the City shall, in writing:

- A. approve the permit application; or
- B. approve the permit application subject to such reasonable conditions as may be necessary to secure substantially the objectives of this regulation, and issue the permit subject to these conditions; or

- C. disapprove the permit application, indicating in general the deficiencies and the procedure for submitting a revised application and/or submission.

(2) **Modifications Needed for Approval:** In cases where modifications are required to approve the plan, Mexico Public Works shall have an additional thirty (30) days to review the revised plan from the initial and any subsequent resubmission dates. If the plan is approved, one copy bearing certification of such approval shall be returned to the applicant. If the plan is disapproved, the applicant shall be notified in writing of the reasons.

(3) **Substantive Changes to Plan:** No substantive changes shall be made to an approved plan without review and written approval by the Director. The City may request additional data with a plan amendment as may be necessary for a complete review of the plan and to ensure that changes to the plan will comply with the requirements of this ordinance. This does not apply to the land disturbance plan, which may be changed as construction warrants.

(4) **Expiration of Plan Approval:** The stormwater management construction plan's approval expires two years from the date of approval unless work has begun on the site or an extension request from the owner or design engineer has been received by the Director. If the stormwater management construction plan approval expires and is not granted an extension, the applicant shall file with the Director for renewal of the stormwater management construction plan.

12.5-32 MAINTENANCE AGREEMENT AND PLANS

Prior to approval by Mexico Public Works of a stormwater management construction plan, each owner shall submit a maintenance agreement and maintenance plan in accordance with the following:

- (1) **Responsible Party:** The owner shall be responsible for the operation and maintenance of such measures and shall pass such responsibility to any successor owner, unless such responsibility is accepted by the City.
- (2) **Requirement for Maintenance Agreement & Plan:** If a stormwater management construction plan requires structural or nonstructural measures, the owner shall execute a stormwater maintenance agreement prior to Mexico Public Works granting final approval for the plan, or any plan of development or other development for which a permit is required under this Ordinance. The agreement shall be recorded in the office of the Audrain County Recorder of Deeds and shall run with the land.
- (3) **Required Elements for Maintenance Agreement & Plan:** The stormwater maintenance agreement shall be in a form approved by the City, and shall, at a minimum:

- (a) **Designate Responsible Party:** Designate for the land development the owner, governmental agency, or other legally established entity (responsible party) which shall be permanently responsible for maintenance of the structural or non-structural measures required by the plan.
- (b) **Pass Responsibility to Successors:** Pass the responsibility for such maintenance to successors in title.
- (c) **Right of Entry for Stormwater Authority:** Grant Mexico Public Works and its representatives the right of entry for the purposes of inspecting all stormwater facilities and BMPs at reasonable times and in a reasonable manner. This includes the right to enter a property when Mexico Public Works has a reasonable basis to believe that a violation of this Ordinance is occurring or has occurred and to enter when necessary for correction of a violation of this Ordinance.
- (d) **Maintenance Plan:** Ensure the continued performance of the maintenance obligations required by the plan and this ordinance through a maintenance plan (which may be an attachment to the actual maintenance agreement). The plan shall include a list of inspection and maintenance tasks, a schedule for routine inspection and maintenance, actions to be taken when maintenance is required, and other items listed in the Mexico Stormwater Design Manual.

Article III. Performance Criteria for Stormwater Management

12.5-40 GENERAL STORMWATER MANAGEMENT CRITERIA

- (1) **Compliance with Federal & State Regulations:** All stormwater facilities and conveyance systems shall be designed in compliance with all applicable state and federal laws and regulations, including the Federal Clean Water Act and all applicable erosion and sediment control, wetland and flood plain regulations.
- (2) **Protect Public Health, Safety & General Welfare:** The design of stormwater BMPs shall consider public health, safety, and general welfare. These considerations include, but are not limited to: preventing the flooding of structures; safe passage of vehicles on roadways; preventing standing water in facilities, manholes, inlets, and other structures in a manner that promotes breeding of mosquitoes; preventing attractive nuisance conditions and dangerous conditions due to velocity or depth of water and/or access to orifices and drops; and preventing aesthetic nuisances due to excessive slopes, cuts and fills, and other conditions.
- (3) **Adherence to Mexico Stormwater Design Manual:** All stormwater facilities and BMPs shall be designed to the standards of the Mexico Stormwater Design Manual, unless a variance is granted or the applicant is exempt from such requirements. The

Design Manual provides guidance for minimum requirements. A variance is not needed to exceed the requirements.

- (4) **Stormwater Authority Discretion:** If hydrologic, geologic, topographic, or land use conditions warrant greater control than that provided by the minimum control requirements, the Director may impose additional requirements prior to the approval of the preliminary stormwater management plans, as deemed reasonable and necessary to control the volume, timing, rate and/or quality of runoff. The Director may restrict the use of certain stormwater BMPs, require additional pretreatment, and/or require a post-construction stormwater pollution prevention plan in certain circumstances. These include, but are not limited to: stormwater generated from stormwater hotspots, stormwater discharges that are conveyed with non-stormwater discharges, or areas where geologic conditions are conducive to groundwater contamination.
- (5) **Hydrologic Computation Assumptions:** Hydrologic parameters shall reflect the ultimate land development and shall be used in all engineering calculations. All pre-development calculations shall consider woods and fields to be in good condition, regardless of actual conditions at the time of application.
- (6) **Location of Stormwater Facilities on Lots:** Stormwater facilities within residential subdivisions that serve multiple lots and/or a combination of lots and roadways shall be on a lot owned and maintained by an entity of common ownership, unless an alternative arrangement is approved by the Director. Stormwater practices located on individual lots shall be placed within an easement and either maintained by the lot owner or maintained by an entity of common ownership.

12.5-41 ENGINEERED SYSTEMS

- (1) **Replicating Pre-Development Hydrology:** Stormwater management designs shall preserve the natural hydrologic functions, stream channel characteristics, and groundwater recharge of the pre-developed site as outlined in the Mexico Stormwater Design Manual and to the maximum extent practical. This shall be accomplished by treating runoff at the source, disconnecting impervious surfaces, preserving or enhancing natural flow paths and vegetative cover, preserving or enhancing natural open spaces and riparian areas, and other measures that replicate pre-development hydrologic conditions. The Director shall exercise discretion in the application of this standard, especially in cases of infill development, redevelopment, or other unique circumstances.
- (2) **Overland Flood Routes:** Overland flood routing paths shall be used to convey stormwater runoff from the 100-year storm event to an adequate receiving water resource or stormwater BMP such that the runoff is contained within the drainage easement for the flood routing path and does not cause flooding of buildings or related structures. The peak 100-year water surface elevation along flood routing

paths shall be at least one foot below the finished grade elevation at the structure. When designing the flood routing paths, the conveyance capacity of the site's storm sewers shall be taken into consideration.

- (3) **Velocity Dissipation:** Velocity dissipation devices shall be placed at discharge locations of the stormwater conveyance system and along the length of any outfall to provide non-erosive flow velocity from the structure to an adequate receiving stream or channel so that the natural physical and biological characteristics and functions of the receiving stream are maintained and protected.
- (4) **Discharges to Adjacent Property:** Concentrated discharges from the stormwater conveyance system or stormwater best management practices shall not be discharged onto adjacent property without adequate conveyance in a natural stream or storm sewer system. Drainage easements are required where stormwater discharges must cross an adjacent or off-site property before reaching an adequate conveyance.
- (5) **Flow toward streets:** In order to have sufficient traffic safety, any concentration of surface flow in excess of two (2) cubic feet per second (cfs) for the ten-year frequency rain shall be intercepted before reaching the street right-of-way and shall be carried by a storm drain to connect with a drainage structure at the low point in the street right-of-way or to discharge to a watercourse, or be captured in a BMP.

12.5-42 NATURAL SYSTEMS/RIPARIAN BUFFERS

(1) **Riparian Buffers:** Riparian buffers will be required as part of all new and redevelopment in the City of Mexico in order to promote the health, safety, comfort, and/or general welfare; conserve the values of property throughout the City; and lessen or avoid undue impact of stormwater runoff on adjoining properties and the environment. Buffers adjacent to stream systems provide numerous environmental protection and resource management benefits which can including: restoring and maintaining the chemical, physical and biological integrity of the water resources, removing pollutants delivered in urban storm water, reducing erosion and controlling sedimentation, stabilizing stream banks, providing infiltration of storm water runoff, maintaining the base flow of streams, contributing the organic matter that is a source of food and energy for the aquatic ecosystem, providing tree canopy to shade streams and promote desirable aquatic organisms, providing riparian wildlife habitat, furnishing scenic value and recreational opportunity, protecting the public from flooding, property damage and loss, and providing sustainable, natural vegetation. This section establishes minimum acceptable standards for the design of riparian buffers to protect the streams, wetlands, floodplains and riparian and aquatic ecosystems of the City of Mexico.

A. Riparian Buffer Plan Requirements

1. General Plan Requirements. All administrative surveys, plats, development plans, subdivision improvement plans and building permit site plans, shall set forth an informative, conceptual and schematic

representation of the proposed riparian buffers by means of maps, graphs, charts, or other written or drawn documents so as to enable the Director an opportunity to make a reasonably informed decision regarding the proposed activity.

2. Specific Plan: Riparian buffer plans shall contain the following information and shall be shown on one or more sheets as required by the Director:

- A site plan map at a minimum scale of 1"=200'.
- Map delineated and surveyed streams, springs, seeps, bodies of water, and wetlands (include a minimum of 200 feet into adjacent properties).
- Riparian buffer plans for an individual single family or two family dwelling or an administrative survey are not required to survey the features listed above.
- Delineated riparian buffers.
- Limits of the 100-year floodplain as shown on the adopted floodplain maps.

B. Plan Submittal. The buffer plan shall be submitted in conjunction with the required development permit application or land disturbance plan for any development, whichever is submitted first. The buffer must be clearly delineated on the site grading plan. Provide a note on the site grading and drainage plans or development site plan stating, "There shall be no clearing, grading, construction or disturbance of vegetation except as specifically approved by the Director."

C. Temporary Boundary Markers. Markers will be installed by the applicant prior to commencing clearing and grading operations and maintained throughout the applicant's development activities. The markers will be placed on the outside edge of the buffer zone prior to the start of any activity within 50-feet of the buffer or as shown on a land disturbance plan approved by the City. Markers shall be clearly visible and shall be spaced at a maximum of 100 feet. The markers shall be joined by marking tape or fencing. Orange construction fencing should be used to delineate the limits of the riparian buffer.

D. Plan Preparation. Riparian buffer plans, except for single family dwellings, or two family dwellings, shall be prepared by a professional surveyor, engineer or architect licensed to practice in the State of Missouri.

E. Design Standards for Riparian Buffers

1. General. An adequate buffer for a stream system shall consist of a predominantly undisturbed strip of land extending along both sides of a stream and their adjacent wetlands. The buffer width may be adjusted to include contiguous sensitive areas, such as steep slopes or erodible soils, where disturbance may adversely affect water quality, streams, wetlands,

or other water bodies. All specified riparian buffer widths are minimums and may be increased as specified in these regulations or on a voluntary basis by the property owner.

2. Buffer Measurement. The buffer shall begin and be measured from the ordinary high water mark of the channel during base flows.

3. Minimum Buffer Width. The required base width for all buffers shall be 30 feet or the width of the 100 year floodplain as shown on the City of Mexico Flood Insurance Rate Map, whichever is greater.

4. No Buffer Required. A riparian buffer shall not be required for portions of a stream that are less than 150 feet in length due to the stream having been previously enclosed within a pipe or box structure immediately upstream and downstream of the subject location. In such cases, said stream portion may be similarly enclosed in a pipe or box structure. Also, this article shall not be construed so as to prevent modifications to stream channels or wetlands if such modifications have been approved and permitted by a Federal Agency such as the U.S. Army Corps of Engineers.

5. Riparian Buffer Averaging. The riparian buffer width may be relaxed and the buffer permitted to become narrower at some points to allow for structures existing on the date of adoption of these regulations provided:

- The average width of the riparian buffer must meet the minimum requirement specified.
- There is no reduction in the width of the Streamside Zone
- No new structures are built in the 100-year floodplain. This does not restrict allowable uses in the streamside zone as defined below.

7. Waivers and Variances. The Director may grant a waiver for those projects or activities serving a public need, where no feasible alternative is available, or for projects where the repair and maintenance of public improvements is necessary, where avoidance and minimization of adverse impacts to wetlands and associated aquatic ecosystems have been addressed.

a. Application. The applicant shall submit a written request for a waiver to the Director. The application shall include information specified by the Director and specific reasons justifying the variance and any other information necessary to evaluate the proposed variance request. The Director may require an alternatives analysis that clearly demonstrates that no other feasible alternatives exist and that minimal impact will occur as a result of the project or development.

b. Review by Director. Upon receipt of all application materials the shall have 20 working days from the date of the complete application in which to issue a decision. If during review of the application the Director requests additional information, then the time between when the request was made and when the information is submitted shall not count against the review period.

c. Other Variances. Where undue hardships or practical difficulties may result from strict compliance with this section, the developer may file a variance in accordance with Section 12.5-187.

F. Two Zone Riparian Buffer System

1. Buffer Zones. The riparian buffer shall be composed of two distinct zones, with each zone having its own set of allowable uses and vegetative targets as specified in this section.

Table: Riparian Buffers			
Streamside Zone		Outer Zone	
Width	20'	Width	10'
Vegetation	Indigenous Vegetation	Vegetation	Managed lawns permissible
Uses	Flood control, permeable-surfaced foot and bicycle paths, road crossings, utility crossings, stream or stream bank restoration and restoration of indigenous vegetation	Uses	All uses allowed in Streamside Zone, hard surfaced biking/hiking paths, detention/retention structures, utility corridors, stormwater BMPs, residential yards, landscaped areas
Function	Protect the physical and ecological integrity of the stream ecosystem	Function	Protect key components of the stream, filter and slow velocity of water runoff

2. Streamside Zone

The zone immediately adjacent to the stream, 20 feet in width.

a. Function. The function of the streamside zone is to protect the physical, biological and ecological integrity of the stream ecosystem. The vegetative target for the streamside zone is undisturbed indigenous vegetation.

b. Adjoining Wetlands. The streamside zone will begin and be measured as defined and extend away from the ordinary high water mark. Wetlands that adjoin the buffer shall be added to the buffer. There shall be a 15-foot buffer around any edge of the wetland that is not within the riparian buffer (inner or outer zone).

c. Allowable uses in the streamside zone:

- Flood control structures, stream gauging and water quality monitoring equipment, stormwater treatment facilities in accordance with an approved plan
- Utility crossings
- Permeable surfaced foot and bicycle paths
- Road crossings
- Utilities where no practical alternatives exist as determined by the Director.
- Stream restoration, stream bank restoration or restoration of indigenous vegetation in accordance with an approved plan
- Roads, that exist on or before the date of adoption of these regulations, and associated maintenance activities.

d. Restricted uses in the streamside zone. The following uses are prohibited except where incidental to an allowable use:

- Clearing of existing vegetation,
- Grading, stripping or other soil-disturbing practices,
- Filling or dumping,
- Draining the buffer area by ditching, underdrains or other systems,
- Use, storage or application of pesticides, except for the spot spraying of noxious weeds or other species consistent with recommendations of the Missouri Department of Conservation, United States Department of Agriculture or University of Missouri Extension Service
- Storage or operation of motorized vehicles except for maintenance or emergency use.
- Walls, solid fences, chain link fences, woven or welded wire fences
- Structures or any type of impervious surface except as provided above

3. Outer Zone.

All that part of the riparian buffer that is not a streamside zone.

a. Function. The function of the outer zone is to prevent encroachment into the streamside zone and to filter runoff from residential and commercial development.

b. Adjoining Wetlands. The outer zone will begin at the outside edge of the streamside zone and extend outward, away from the streamside zone. Wetlands that adjoin the buffer shall be added to the buffer. There shall be a 15-foot buffer around any edge of the wetland that is not within the riparian buffer (inner or outer zone).

c. Allowable uses in outer zone

- All uses allowed in the streamside zone
- Utilities
- Hard-surfaced biking/hiking paths,
- Detention/retention structures,
- Storm water BMPs,
- Landscaped areas although planting of indigenous vegetation is encouraged.

d. Restricted Uses in Outer Zone

- Walls, solid fences, chain link fences, woven or welded wire fences
- Structures or any type of impervious surface except as provided above

G. Riparian Buffer Management and Maintenance

1. Management, Responsible Party. The riparian buffer, including wetlands and floodplains, shall be managed by the landowner to enhance and maximize the unique value of these resources. Management includes specific limitations on alteration of the natural conditions of the land and vegetation.

2. Allowed maintenance practices and activities in the streamside zone of the buffer. All allowed uses may be maintained subject to the review of the City. Any entity conducting an allowed activity within the streamside zone shall restore any disturbed area to its previous condition or in accordance with a plan approved by the Director. In addition to maintenance of allowed uses, the following maintenance activities may be conducted:

- Roads, bridges, paths, and utilities existing as of the date of adoption of these regulations.
- Removal of diseased or dead trees, brush and trash.
- Maintenance of all City approved improvements, including utilities
- Removal of debris which could cause flooding.
- Selective (spot) spraying of noxious or other vegetation

3. Restricted maintenance practices and activities within the streamside zone of the riparian buffer:

- Clearing of existing vegetation.
- Soil disturbance by grading, stripping, or other practices.
- Filling or dumping.
- Drainage by ditching, under drains or other systems.
- Use, storage, or application of pesticides.

- Storage or operation of motorized vehicles, except for maintenance and emergency use approved by the City or when operated on a legally established roadway.

4. Allowed maintenance practices and activities within the outer zone of the riparian buffer:

- All allowed uses.
- All maintenance practices and activities that are allowed in the Streamside Zone.

5. Restricted maintenance practices and activities within the outer zone of the riparian buffer:

- Structures or buildings except as otherwise allowed by these regulations

- (1) **Stream & Wetland Crossings:** All stream and wetland crossings subject to Section 404 of the Clean Water Act and/or state stream and/or wetland regulations shall minimize impacts on streams and wetlands, to the extent practical and achievable, by crossing streams and wetlands at a right-angle, reducing the footprint of grading and fill, matching the existing stream profile grade, and utilizing bridges, open bottom arches, spans, or other structures that do not restrict or alter stream or wetland hydrology. If multiple parallel culverts are placed within streams and/or wetlands, at least one culvert shall be countersunk at least 10% of the vertical diameter or measurement below the natural channel flowline to allow movement of aquatic organisms. As much as possible, the natural multi-stage channel shape shall be mimicked.
- (2) **Limited Stream Assessment Required:** A limited stream assessment as outlined in the Mexico Stormwater Design Manual is required when construction will enter the stream or streamside buffer zone.

12.5-43 STORMWATER QUANTITY CONTROL

- (1) **Runoff Reduction:** In order to replicate pre-development hydrologic conditions, and to promote baseflow to streams and wetlands, ten percent (10%) of the water quality volume shall be permanently reduced. This may be accomplished by disconnecting impervious areas, maintaining sheet flow to areas of natural vegetation such as riparian corridors and undisturbed forest lands, infiltration practices where soils conditions allow and/or collection and reuse of runoff.
- (2) **Channel Protection Criteria:** The stormwater system shall be designed so that post-development discharges will not erode natural channels or steep slopes. This will protect in-stream habitats and reduce in-channel erosion. The applicant shall use either Tier 1 or Tier 2 performance standards, as applicable, to meet this criterion.

A. **Tier 1 Performance criteria:** sites having less than 5 acres of land disturbance OR less than 20% post-developed imperviousness on the entire tract shall apply the following performance standards:

1. Wherever practical, maintain sheet flow to riparian buffers or vegetated filter strips. Vegetation in buffers or filter strips must be preserved or restored where existing conditions do not include dense vegetation .
2. Energy dissipaters and level spreaders must be used to spread flow at outfalls.
3. On-site conveyances must be designed to reduce velocity through a combination of sizing, vegetation, check dams, and filtering media (e.g., sand) in the channel bottom and sides.
4. If flows cannot be converted to sheet flow, they must be discharged at an elevation that will not cause erosion or require discharge across any constructed slope or natural steep slopes.
5. Outfall velocities must be non-erosive from the point of discharge to the receiving channel or waterbody where the discharge point is calculated.

B. **Additional criteria for Tier 2 sites:** Sites greater than 5 acres of land disturbance OR greater than 20% post-developed imperviousness on the entire track shall apply the performance standards in subsection (A), in addition to the following performance standards:

Site design techniques that decrease runoff volumes and peak flows. This shall be accomplished by controlling the post-development peak discharge rate to the pre-development rate. This criterion shall be met for the 1-year, 24-hour storm event, (or equivalent storm runoff volume using other methodologies). The release rate shall be equal to or less than the 2-year, 24-hour storm event. The Runoff Reduction and WQv measures may be applied towards meeting the storage requirements.

(3) **Flood Control Criteria:** Downstream overbank flood and property protection shall be provided by controlling the post-development peak discharge rate to the pre-development rate. This criterion shall be met for the 10-year, 24-hour storm event on residentially zoned properties and the 25-year, 24 hour storm event on non-residentially zoned properties.

Stormwater BMPs that impound water shall demonstrate that the 100-year storm can safely pass through the structure without creating damaging conditions downstream.

The Director may waive some or all of the requirements of this section as specified in (A), (B), (C), (D) or (E) below:

- A. **Discharge to Large Waterbody:** The land development discharges directly to a flood plain, major river or waterbody and the Director determines that waiving the flooding criteria will not harm public health and safety. The applicant shall secure drainage easements from any downstream property owners across whose

property the runoff must flow to reach the flood plain, major river or waterbody. The applicant shall also demonstrate that any piped or open-channel system in which the runoff will flow has adequate capacity and stability to receive the project's runoff plus any off-site runoff also passing through the system.

- B. **Insignificant Increases in Peak Flow:** The land development results in insignificant increases in peak flow rates.
- C. **Alternative Criteria Provided:** The land development is subject to a floodplain study that recommends alternative criteria for flood control.
- D. **Increases in Downstream Peak Flows or Flood Elevations:** The application shows that complying with the requirements of this section will result in increases in peak flows or downstream flooding conditions due to coincident peaks from the site and the contributing watershed or another factor.
- E. **Site Constraints:** Areas characterized by high water table, shallow bedrock, , contaminated soils, and other constraints may be subject to reduced volume control requirements. The Director may impose reasonable conditions in granting such a waiver.

When seeking a waiver in accordance with either (A), (B), (C), (D) or (E) above, the applicant shall demonstrate that stormwater discharges will not unreasonably increase the extent, frequency, or duration of flooding at downstream properties and structures or have an unreasonable adverse effect on streams, aquatic habitats, and channel stability. In making its determination to allow full or partial waivers, the Director shall consider cumulative impacts and also the land development's adherence to the land use plans and policies of the City of Mexico, including the promotion of infill and redevelopment in particular areas.

12.5-44 STORMWATER QUALITY CONTROL

- (1) **Water Quality Protection:** In order to protect the receiving waters from nonpoint source pollution, the remainder of the water quality volume that was not removed through runoff reduction, shall be treated through filtration BMPs such as sand filters, vegetated swales, or proprietary products.
- (2) **Treatment of the Water Quality Volume:** Post-development runoff from the water quality rainfall event that is not permanently removed through the application of the runoff reduction criterion shall be captured and treated in a water quality BMP to prevent or minimize water quality impacts from land development. Up to 10%, of a site's total impervious surface may discharge in a sheet flow condition through existing established vegetation such as may exist in a riparian buffer without otherwise being treated.

- (3) **Treat Entire Land Development:** The stormwater design shall provide for treatment of runoff from the water quality rainfall event to the maximum extent practicable through the use of structural and non-structural BMPs. Up to 10% of a site's total impervious surface may discharge in a sheet flow condition in a non-erosive manner through existing established vegetation such as may exist in a riparian buffer without otherwise being treated.
- (4) **Landscape Plan:** The design of vegetative stormwater BMPs shall include a landscape plan detailing both the vegetation to be in the practice and how and who will manage and maintain the vegetation.
- (5) **Treatment of Off-Site Stormwater:** Off-site stormwater conveyed through a land development shall be placed within an easement and conveyed in a manner that does not increase upstream or downstream flooding. Off-site stormwater shall be conveyed around on-site stormwater BMPs, unless the facilities are designed to manage the off-site stormwater.

12.5-45 REDEVELOPMENT

Land development that qualifies as redevelopment shall meet one of the following criteria:

- (1) **Reduce Impervious Cover:** Reduce existing site impervious cover by at least 20%.
- (2) **Provide Treatment:** Provide runoff reduction and water quality treatment for at least 20% of the site's pre-development impervious cover and 100% of any new impervious cover through stormwater BMPs designed in accordance with the criteria in Sections 4.2 through 4.3 and the Mexico Stormwater Design Manual.
- (3) **Apply Innovative Approaches:** Utilize innovative approaches to reduce stormwater impacts across the site.
- (4) **Provide Off-Site Treatment:** Provide equivalent stormwater treatment at an off-site facility within the same watershed and as immediately downstream of the site as feasible.
- (5) **Address Downstream Issues:** Address downstream channel and flooding issues through channel restoration, increase in existing system capacity and/or other off-site remedies.
- (6) **Combination of Measures:** Any combination of (1) through (5) above that is acceptable to Mexico Public Works.

12.5-46 ENVIRONMENTALLY SENSITIVE AREAS

This section shall be applicable to all land development, including, but not limited to, site plan applications, subdivision applications, and grading applications, in or draining to an environmentally sensitive area that disturbs more than one (1) acre. These provisions apply to any stormwater discharge or drainage on new development or redevelopment sites within The City of Mexico that meets one or more of the following criteria:

- A. Within 1000 feet of and draining to a losing stream*, Outstanding National or State Resource Water* or a water body identified as critical habitat for endangered species;
- B. Within 100 feet of a Class P Stream*;
- C. Within 1000 feet of and draining to, or changes the site hydrology of, a jurisdictional wetland as defined by the U.S. Army Corps of Engineers; or
- D. Runoff that discharges to a groundwater point recharge feature such as a sinkhole or other direct conduit to groundwater such as a cave.

*See listings in Missouri Water Quality Standards 10 CSR 20-7.031.

- (1) **General Stormwater Management:** Drainage patterns for proposed development must be designed to protect sensitive areas from the effects of runoff from developed areas, and to maintain the drainage areas of groundwater recharge features in a natural state. Special controls must be used where necessary to avoid the effects of erosion, sedimentation, and/or high rates of flow.
- (2) **Buffer zone limitations and prohibitions:** The natural vegetative cover must be retained within a buffer zone described in this section,. All construction activities including grading and filling are prohibited. Additionally, wastewater disposal or irrigation is prohibited.
- (3) **Buffer zone widths:** The following buffer widths are required to reduce construction activities and retain the natural vegetative cover in unique and environmentally sensitive areas throughout the City.
 - A. Point Recharge Feature (Sinkholes): For a point recharge feature, the buffer zone coincides with the topographically defined drainage area, except that the width of the buffer zone from the edge of the sensitive area shall not be less than 150 feet, or greater than 300 feet from the sinkhole eye.
 - B. Wetlands: For a wetland, the buffer zone shall be at least 15 feet.
 - C. Outstanding Resource Waters/Losing Streams: For national or state outstanding resource waters, the buffer zone shall be twice that of the regulatory riparian buffer.
 - D. Other Features: For other environmentally sensitive areas, the buffer zone shall be at least 50 feet.
- (4) **Wetland Protection:** Wetlands meeting the Army Corps of Engineers definition of a jurisdictional wetland must be protected in all watersheds. Protection methods for wetlands include:

- A. Appropriate setbacks that preserve the wetlands or wetland functions;
- B. Wetland mitigation, including wetland replacement;
- C. Wetland restoration or enhancement.

The Director may approve the removal and replacement of a wetland as approved by the U.S. Army Corps of Engineers or the elimination of setbacks from a constructed wetland that is primary use is for water quality control.

Article V. Ongoing Maintenance for Stormwater BMPs

12.5-100 GENERAL MAINTENANCE REQUIREMENT

All stormwater facilities and BMPs shall be maintained in accordance with the approved and recorded stormwater maintenance agreement and stormwater maintenance plan. If no maintenance agreement or plan is in place, the owner shall maintain the facility as it was designed in order to continue the mitigation of stormwater quantity and quality impacts. This maintenance shall include removal of overgrown vegetation, repair of erosion, repairs to any inlet/outlet structures, and removal of excess silt or any other maintenance deemed necessary to provide said mitigation. The design of stormwater facilities shall incorporate maintenance accommodation and long-term maintenance reduction features.

12.5-101 MAINTENANCE RESPONSIBILITY

The responsible party named in the recorded stormwater maintenance agreement (Section 3.7) shall maintain in good condition and promptly repair and restore all structural and non-structural stormwater facilities and BMPs and all necessary access routes and appurtenances (grade surfaces, walls, drains, dams and structures, vegetation, erosion and sedimentation controls, and other protective devices) in order to maintain the mitigation of stormwater quantity and quality impacts. Such repairs or restoration and maintenance shall be in accordance with the approved stormwater management design plan, the stormwater maintenance agreement, and the stormwater maintenance plan.

12.5-102 INSPECTION

The City shall be permitted to enter and inspect facilities subject to regulation under this ordinance as often as may be necessary to determine compliance with this ordinance. If the site has security measures in force which require proper identification and clearance before entry into its premises, the responsible party shall make the necessary arrangements to allow access to representatives of the City.

Unreasonable delays in allowing the City access to a permitted facility is a violation of a storm water discharge permit and of this ordinance.

If the City has been refused access to any part of the premises from which stormwater is discharged, and is able to demonstrate probable cause to believe that there may be a violation of this ordinance, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this ordinance or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, then the City may seek issuance of a search warrant from any court of competent jurisdiction.

12.5-103 RECORDS OF MAINTENANCE ACTIVITIES

The responsible party shall make records of the installation and of all maintenance and repairs, and shall retain the records for at least five (5) years. These records shall be made available to the Director or his representative during inspection of the facility and at other reasonable times upon request.

12.5-104 FAILURE TO PROVIDE ADEQUATE MAINTENANCE

In the event that the stormwater BMP has not been maintained and/or becomes a danger to public safety or public health, the Director shall notify the responsible party by registered or certified mail. The notice shall specify the measures needed to comply with the maintenance agreement and the maintenance plan and shall specify that the responsible party has thirty (30) days or other time frame mutually agreed to between the Director and the responsible party, within which such measures shall be completed. If such measures are not completed, then the Director shall pursue enforcement procedures pursuant to Section 9 of this Ordinance.

If a responsible person fails or refuses to meet the requirements of an inspection report, maintenance agreement, or maintenance plan the Director, after thirty (30) days written notice (except, that in the event the violation constitutes an immediate danger to public health or public safety, 24 hour notice shall be sufficient), may correct a violation of the design standards or maintenance requirements by performing the necessary work to return the BMP to proper working condition. The Director may assess the responsible party for the cost of repair work which shall be a lien on the property, or prorated against the beneficial users of the property, and may be placed on the tax bill and collected as ordinary taxes by the City of Mexico.

12.5-105 REQUIRED EASEMENTS

Whenever improvements to land are made, easements for the stormwater management facilities including structural facilities, engineered channels and overflow paths, shall be provided across private property. Easements through existing developments shall be obtained as deemed necessary. Drainage easements shall include access from a convenient public street or parking lot. Minimum dimensions are as follows:

1. Where a storm drain consists of a closed conduit, the width shall be the greater of fifteen (15) feet or the sum of the conduit diameter and twice the cover depth over the conduit.
2. Where the drainage system consists of an engineered channel, easements shall at a minimum be as wide as the top of bank width plus ten (10) feet each side.
3. The width of the easement must contain the overflow from the 100 year (1% annual chance) storm event and shall indicate the highest expected water surface elevation of said event.
4. Access easements to and around detention/retention facilities shall be a minimum of fifteen (15) feet wide with cross slopes less than 5 horizontal to 1 vertical in order to be safely accessible by a vehicle unless otherwise approved by the Director.

12.5-106 INTERFERENCE AND DAMAGE

No person shall damage, discharge or place any substance into the drainage system which will or may cause obstruction to flow or other interference with the operation of the stormwater drainage system. Any person violating this section or damaging the stormwater drainage system shall be liable to the City for all expense, loss or damage incurred by the City due to such violation or damage, in addition to any other penalties set forth herein.

Section 12.5-161 STORMWATER DISCHARGE PERMIT

- (1) **Authorization to Discharge to MS4:** If runoff from a land development will flow to a municipal separate storm sewer system (MS4) or other publicly-owned storm sewer system, then the applicant shall obtain authorization from the system's owner to discharge into the system. The applicant must demonstrate that the system has adequate capacity for any increases in peak flow rates and volumes.
- (2) **Permit Required:** No stormwater drainage facility shall be constructed, altered or reconstructed without a stormwater discharge permit. To obtain a permit, the application form provided by the City shall be completed and plans must be submitted for review and approval of the Director. All such construction shall comply with the general requirements and design procedures, as set forth in this chapter, and the criteria of the Mexico Stormwater Design Manual.
- (3) Prior to the issuance by the City of a permit for any type of construction on land greater than 1 acre, the property owner, the developer or their agent shall have a stormwater management plan approved by the City in accordance with Section 3. The property owner, developer or their agent shall, at his own expense, submit necessary plans, designs and specifications to the City for review and approval. This plan shall:

- Include a pre- and post-development hydrologic analysis of the site
 - Identify pollutants of concern for each area of the site
 - Identify pollution prevention measures
 - Identify controls that provide treatment and reduce stormwater volumes and velocities
 - Identify any environmentally sensitive areas and provide a plan for protection of these areas per this chapter
 - Identify Low Impact Development opportunities that can best mimic the natural hydrology of the site and filter pollutants from the runoff.
 - Provide for long term operation and maintenance of controls
- (4) Provisions of this section for plan requirement shall be waived provided no land is disturbed and no trees, shrubs, grass or vegetation is destroyed or removed for construction, reconstruction, repair or alteration of any building provided the improvement does not alter or increase the flow of water.
- (5) The post-construction stormwater management plan shall show the location of any environmentally sensitive features (as listed in Section 4.7), the sensitive feature's drainage area, any sinkhole cluster area, or portions of such items, along with ground contours, a hydrologic analysis of the drainage area and significant physical features on the property, and detailed information on the work to be performed in or near the sensitive area. Upon review of the information presented by the applicant, the site, and such other information as may be available, the Director may issue a permit for work to be performed in or near the sensitive area.

All work shall be performed in accordance with the permit. The Director may designate certain areas where grading or construction equipment is not permitted or is otherwise limited.

Amend Section 12.5-164 - Fees:

The City has the ability to require a fee to support local plan review, inspection and program administration. Each developer/owner seeking a land disturbance or stormwater discharge permit shall pay a fee upon submittal of the plans, in amounts according to the schedule below:

- (1) Stormwater Discharge Permit: \$50.00
- (2) Major Amendment to a Stormwater Management Design Plan: \$25.00
- (3) Land Disturbance Permit: \$150.00
- (4) Land Disturbance Permit Renewal: \$75.00