

## **ARTICLE 11 STORMWATER MANAGEMENT**

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**Division I. General Provisions.**

**Sec. 11-1. Findings.**

- (a) Land development projects and other land use conversions, and their associated changes to land cover, permanently alter the hydrologic response of local watersheds and increase stormwater runoff rates and volumes, which in turn increase flooding, stream channel erosion, and sediment transport and deposition.
- (b) Land development projects and other land use conversions also contribute to increased nonpoint source pollution and degradation of receiving waters.
- (c) The impacts of post-development stormwater runoff quantity and quality can adversely affect public safety, public and private property, drinking water supplies, recreation, fish and other aquatic life, property values and other uses of lands and waters.
- (d) These adverse impacts can be controlled and minimized through regulation of stormwater runoff quantity and quality from land development by the use of structural facilities as well as nonstructural measures, such as the conservation of greenspace.
- (e) Preservation and protection of natural areas for stormwater management benefits is encouraged through the use of incentives or “credits.”
- (f) The Georgia Greenspace Program provides a mechanism for preservation and coordination of those greenspace areas that yield stormwater management quality and quantity benefits.
- (g) Compliance by municipalities in the state of Georgia with a number of both State and Federal laws, regulations and permits is mandated to address the impacts of post-development stormwater runoff quality and nonpoint source pollution.
- (h) It is reasonable to establish this set of stormwater management requirements to regulate post-development stormwater runoff for protecting local water resources from degradation. The regulation of post-development stormwater runoff discharges in order to control and minimize increases in stormwater runoff rates and volumes, post-construction soil erosion and sedimentation, stream channel erosion and nonpoint source pollution associated with post-development stormwater runoff is in the public interest.
- (i) Stormwater pond technology is limited in its ability to protect watersheds and cannot reproduce predevelopment hydrological functions. Through the use of stormwater better site design practices, the need for stormwater ponds on individual development sites can sometimes be eliminated, or at least the pond size can be decreased.

**Sec. 11-2. Purpose and Objectives.**

The purpose of this article is to protect, maintain and enhance the public health, safety, environment and general welfare by establishing minimum requirements and procedures to

control the adverse effects of post-development stormwater runoff and nonpoint source pollution associated with development. Proper management of post-development stormwater runoff will minimize damage to public and private property and infrastructure, safeguard the public health, safety, environment and general welfare and protect water and aquatic resources. This article seeks to achieve that purpose through the pursuing of the following objectives:

- (a) Implement decision-making processes and procedures concerning land development that protect the integrity of the watershed and preserve the health of water resources;
- (b) Require that development projects maintain the pre-development hydrologic response in their post-development state as closely as is feasible to reduce flooding, stream bank erosion, nonpoint source pollution and increases in stream water temperature while maintaining the integrity of stream channels and aquatic habitats;
- (c) Establish minimum post-development stormwater management standards and design criteria for regulation and control of stormwater runoff quantity and quality;
- (d) Formulate design and application criteria for the construction and use of structural stormwater control facilities used to achieve minimum post-development stormwater management standards;
- (e) Strongly encourage the implementation of principles of low-impact development, including the use of nonstructural stormwater management and improved stormwater better site design practices such as preservation of greenspace and other conservation areas to the maximum practical extent, as are more fully described in Section 4.3 of Volume 1 of the Georgia Stormwater Management Manual and Section 4.1 of Volume 2 of said Manual
- (f) Establish provisions for the long-term responsibility for and maintenance of structural stormwater control facilities and nonstructural stormwater management practices to ensure such facilities continue to function as designed, are maintained, and pose no threat to public safety; and,
- (g) Adopt administrative procedures for submission and review of stormwater management plans, for the monitoring and inspection of projects under construction, and for long-term follow up inspection of completed projects.

**Sec. 11-3. Title.**

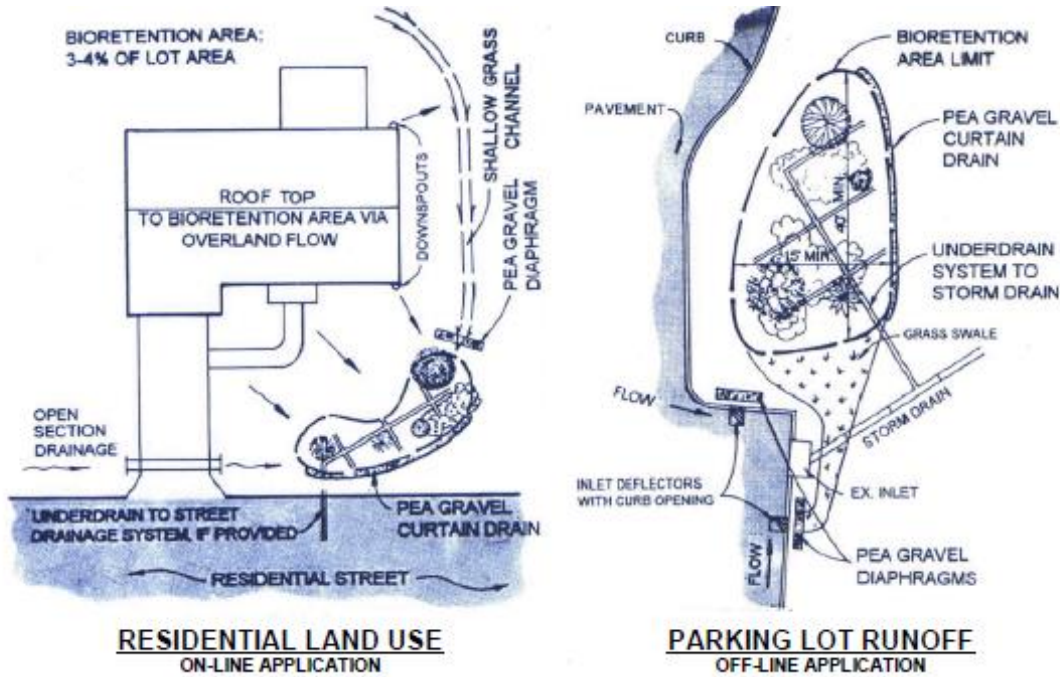
This article shall be known as the “City of Powder Springs Stormwater Management Ordinance.”

**Sec. 11-4. Definitions.**

*Applicant:* A person submitting a post-development stormwater management application and plan for approval.

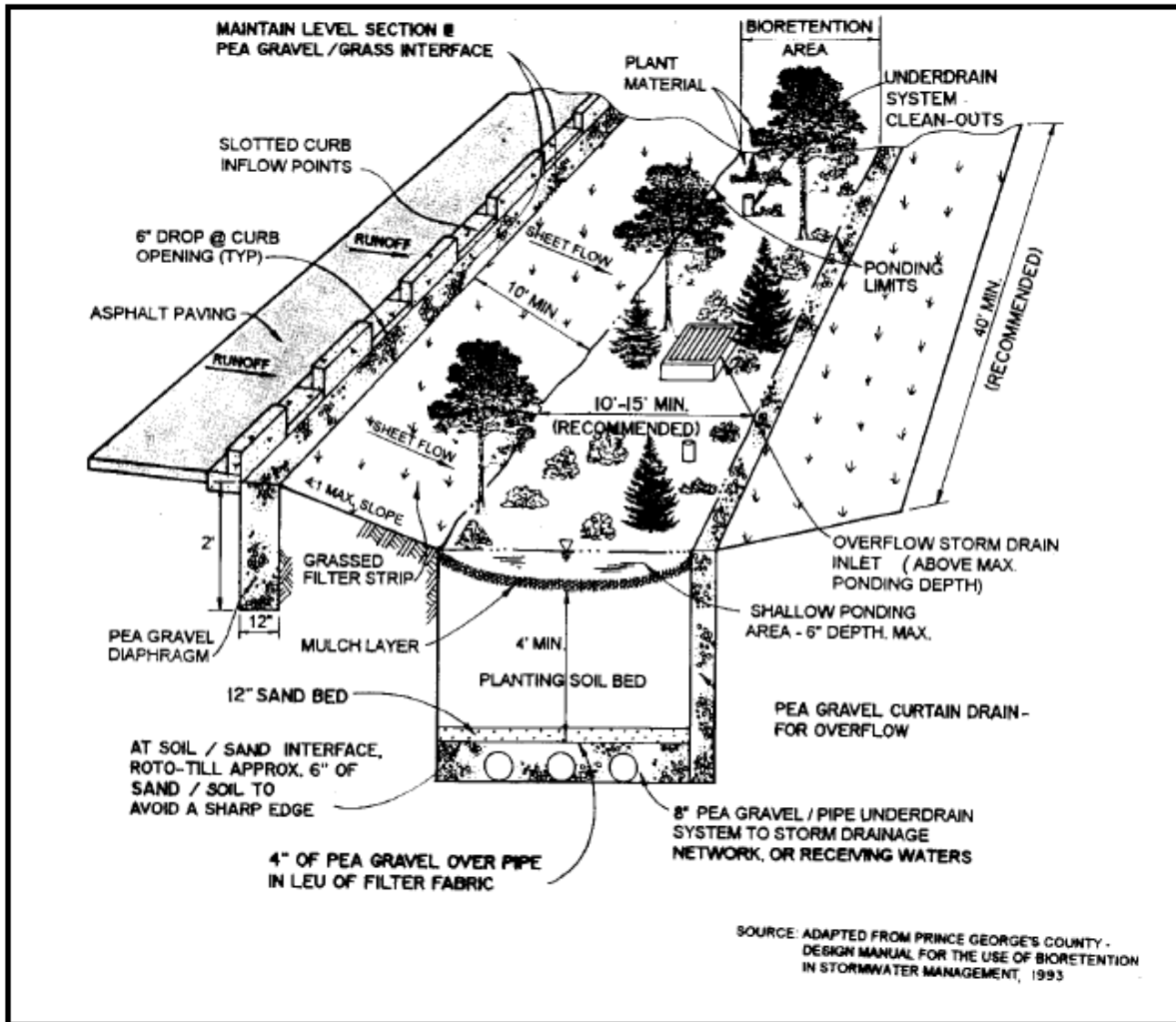
*As-built survey drawings:* Drawings specifying the dimensions, location, fixtures, elements, sizes, capacities and operational capabilities of streets and stormwater structures and facilities, and water and sewer systems, as they have been constructed.

*Bioretention:* A practice to manage and treat stormwater runoff by using a conditioned planting soil bed and planting materials to filter runoff stored within a shallow depression. The method combines physical filtering and adsorption with biological processes.



### Illustrative Bioretention

Source: Georgia Stormwater Management Manual, Vol. 2.



**Figure 3.2.3-3 Schematic of a Typical Bioretention Area**

(Source: Claytor and Schueler, 1996)

Source: Georgia Stormwater Management Manual, Vol. 2.

*Channel:* A natural or artificial watercourse with a definite bed and banks that conducts continuously or periodically flowing water.

*Conservation easement:* An agreement between a landowner and the City of Powder Springs, other government agency, or land trust that permanently protects greenspace by restricting the amount and type of development that may occur, while the owner retains the remaining property rights and ownership as a fee simple interest in the property.

*Detention:* The temporary storage of stormwater runoff in a stormwater management facility for the purpose of controlling peak discharge.

*Detention facility:* A retention basin or structure designed for temporary storage of stormwater runoff and gradual release of stored water at controlled rates.

*Developer:* A person who undertakes land development activities.

*Development:* A land development or land development project; the term “development” also encompasses “redevelopment.”

*Drainage:* A general term applied to the removal of surface or subsurface water from a given area either by gravity or by pumping; most commonly applied to surface water.

*Drainage easement:* An easement appurtenant or attached to a tract or parcel of land allowing the owner of adjacent tracts or other persons to discharge stormwater runoff onto the tract or parcel of land subject to the terms of the drainage easement.

*Drainage structure:* A device composed of a virtually non-erodible material such as concrete, steel, plastic or other such material that conveys water from one place to another by intercepting the flow and carrying it to a release point for stormwater management, drainage control or flood control purposes.

*Drainage system:* The surface and subsurface system for the removal of water from the land, including both the natural elements of streams, marshes, swales and ponds, whether of an intermittent or continuous nature, and the man-made element which includes culverts, ditches, channels, detention facilities and the storm sewer system.

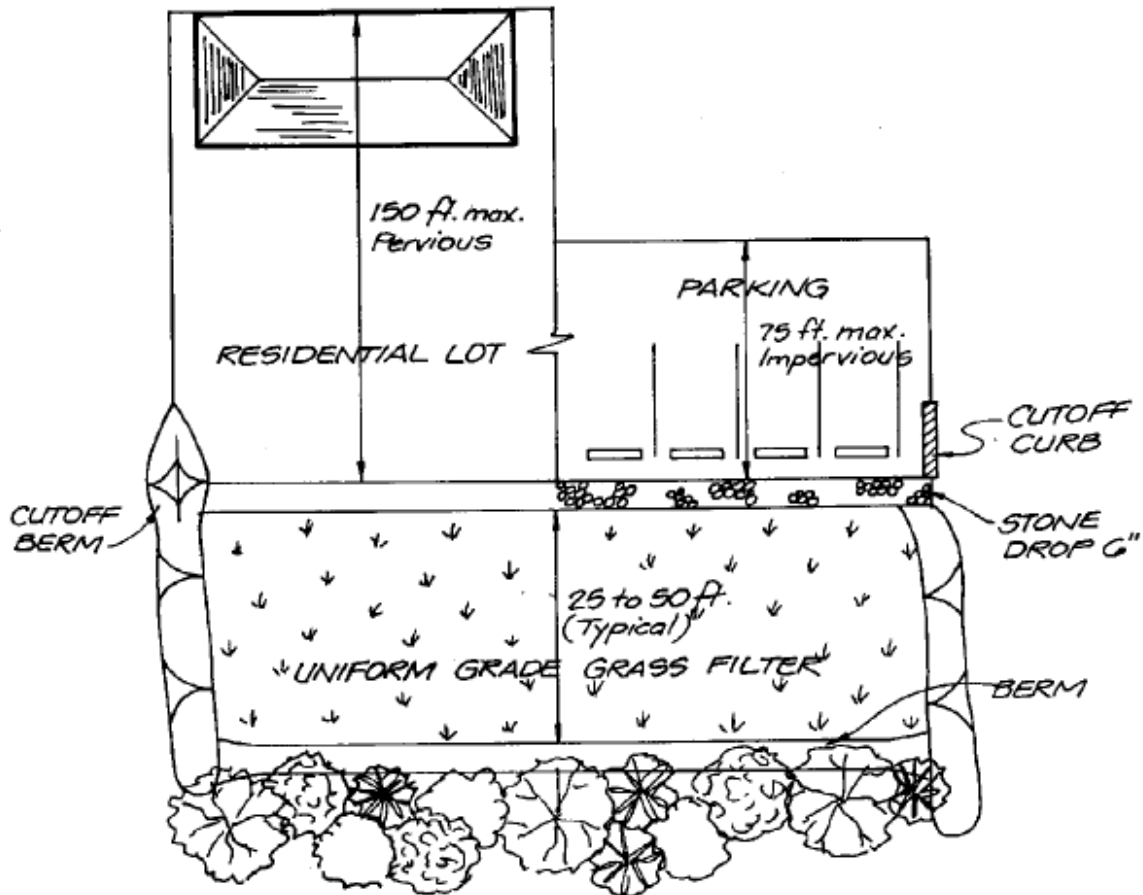
*Dry well:* A small excavated pit backfilled with aggregate, usually pea gravel or stone. Dry wells function as infiltration systems used to control runoff from building rooftops. Another special application of dry wells is modified catch basins, where inflow is a form of direct surface runoff. Dry wells provide the majority of treatment by processes related to soil infiltration, including absorption, trapping, filtering, and bacterial degradation.

*Erosion and sedimentation control plan:* A plan designed to minimize the accelerated erosion and sediment runoff at a site during land disturbance activities.

*Extended detention:* The detention of stormwater runoff for an extended period, typically 24 hours or greater.

*Extreme flood protection:* Measures employed to prevent adverse impacts from large low-frequency storm events with a return frequency of 100 years or more.

*Filter strip:* Typically a band of close-growing vegetation, usually grass, planted between pollutant source areas and a downstream receiving waterbody. Vegetation can filter sediment from runoff. Thus grass strips can be used to remove sediment from surface runoff. Vegetation also slows the velocity of runoff and helps maintain the infiltration capacity of a soil.



**Schematic of Filter Strip (With Berm)**

Source: Georgia Stormwater Management Manual, Vol. 2.

*Flooding:* A volume of surface water that is too great to be confined within the banks or walls of a conveyance or stream channel and that overflows onto adjacent lands.

*Georgia Stormwater Management Manual:* A three-volume set adopted by this article which provides policy and technical details to implement this article. The manual may be revised from time to time but at the time this article is adopted includes: Volume 1: Stormwater Policy Guidebook (1<sup>st</sup> edition, 2001); Volume 2: Technical Handbook (2001); and Volume 3; Pollution Prevention Guidebook (2012).

*Greenspace or open space:* Permanently protected areas of a site that are preserved in a natural, undisturbed state. Greenspace encompasses “open space.”

*Hotspot:* Any area where the use of the land has the potential to generate highly contaminated runoff characterized by concentrations of pollutants in excess of those typically found in stormwater.

*Hydrologic Soil Group (HSG):* A Natural Resource Conservation Service classification system in which soils are categorized into four (4) runoff potential groups. The groups range from

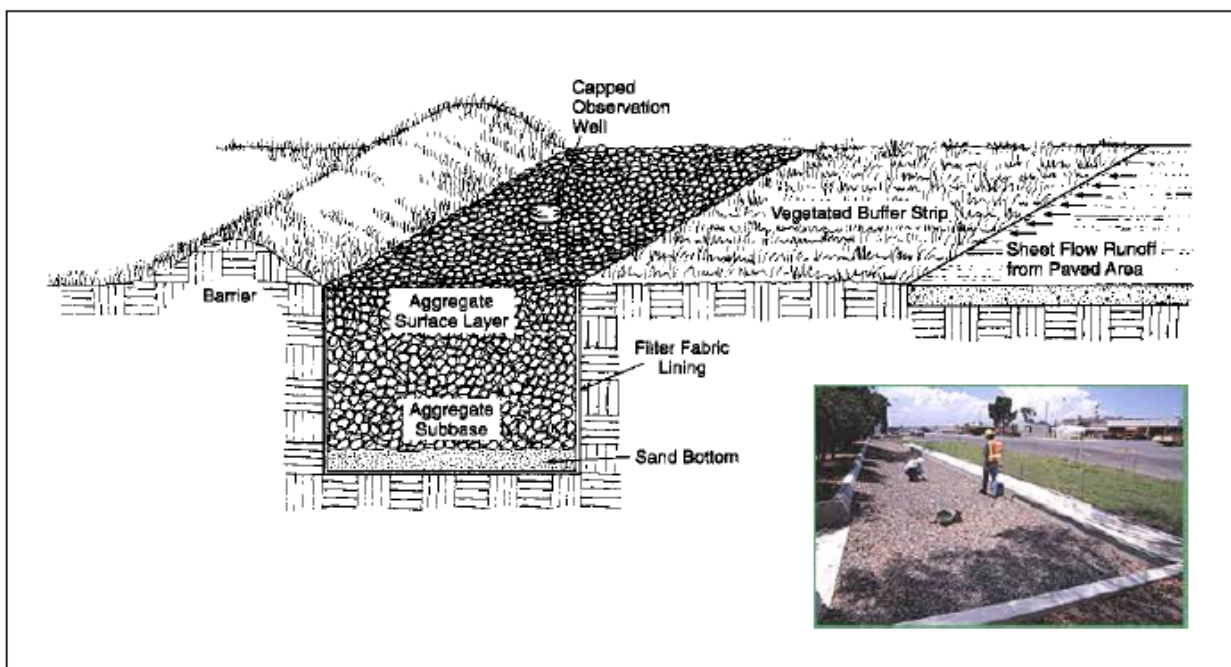
“Group A” soils, with high permeability and little runoff produced, to “Group D” soils, which have low permeability rates and produce significantly more runoff.

*Impervious cover:* A surface composed of any material that significantly impedes or prevents the natural infiltration of water into soil. Impervious surfaces include, but are not limited to, rooftops, buildings, streets and roads, and any concrete or asphalt surface.

*Industrial stormwater permit:* A National Pollutant Discharge Elimination System (NPDES) permit issued to an industry or group of industries that regulates the pollutant levels associated with industrial stormwater discharges or specifies on-site pollution control strategies.

*Infiltration:* The process by which stormwater runoff percolates into the subsoil.

*Infiltration trench:* An excavated trench that has been back-filled with stone to form a subsurface basin. Stormwater runoff is diverted into the trench and is stored until it can be infiltrated into the soil, usually over a period of several days. An infiltration trench may include pretreatment such as vegetated filter strips or grassed swales.



**Figure 3.2.5-1 Infiltration Trench Example**

Source: Georgia Stormwater Management Manual, Vol. 2.

*Jurisdictional wetland:* An area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation.

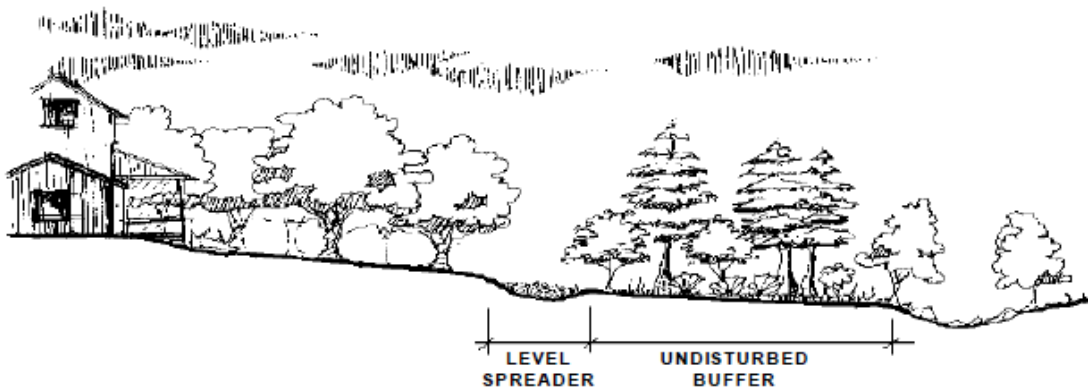
*Land development:* Any alteration to the land including, but not limited to, clearing, cutting, digging, grubbing, stripping, removal of vegetation, dredging, grading, excavating, transporting and filling of land, construction, paving and any installation of impervious cover.



*Land development activities:* Those actions or activities that comprise, facilitate or result in land development.

*Land development project:* A specific land development undertaking.

*Level spreader:* Typically, an outlet designed to convert concentrated runoff to sheet flow and disperse it uniformly across a slope to prevent erosion. Level spreaders can be used to convey sheet flow runoff from lawn areas within graded areas to bioretention facilities and transition areas.



**Figure 1.4.2-28 Use of a Level Spreader with a Riparian Buffer**  
(Adapted from NCDENR, 1998)

Source: Georgia Stormwater Management Manual, Vol. 2.

*Low-impact development (LID):* The integration of site ecological and environmental goals and requirements into all phases of urban planning and design from the individual lot level to the entire watershed. In the context of this article, low-impact development is a set of stormwater design practices that are non-structural stormwater controls, specifically stormwater better site design practices.

*Inspection and maintenance agreement:* A written agreement providing for the long-term inspection and maintenance of stormwater management facilities and practices on a site or, with respect to a land development project, which when properly recorded in the deed records constitutes a restriction on the title to a site or other land involved in a land development project.

*New development:* A land development activity on a previously undisturbed site that has been maintained in a natural state.

*Nonpoint source pollution:* A form of water pollution that does not originate from a discrete point such as a sewage treatment plant or industrial plant discharge, but involves the transport of pollutants such as sediment, fertilizers, pesticides, heavy metals, oil, grease, bacteria, organic materials and other contaminants from land to surface water and groundwater via mechanisms such as precipitation, stormwater runoff and leaching. Nonpoint source pollution is a by-product

of land use practices such as agricultural, silvicultural, mining, construction and subsurface disposal as well as from urban runoff sources.

*Nonstructural stormwater management practice or nonstructural practice:* Any natural or planted vegetation or other nonstructural component of the stormwater management plan that enhances stormwater quantity and/or quality control or other stormwater management benefits and includes, but is not limited to, riparian buffers, greenspace areas, overland flow filtration areas, natural basins and vegetated channels.

*Off-site facility:* A stormwater management facility located outside the boundaries of a development site.

*On-site facility.* A stormwater management facility located within the boundaries of a development site.

*Overbank flood protection:* Measures employed to prevent an increase in the frequency and magnitude of out-of-bank flooding, that is, flow events that exceed the capacity of the channel and enter the floodplain. Such measures are intended to protect downstream properties from flooding during a 2-year through 25-year frequency storm events.

*Owner:* The legal or beneficial owner of a site including, but not limited to, a mortgagee or vendee in possession, receiver, executor, trustee, lessee or other person, firm or corporation in control of the site.

*Permeable:* Soil or other material that allows the infiltration or passage of water or other liquids.

*Permit:* The permit issued by the City of Powder Springs to an applicant that is required for conducting any land development activity.

*Person:* Except to the extent exempted from this article, any individual, partnership, firm, association, joint venture, public or private corporation, trust, estate, commission, board, public or private institution, utility, cooperative, city, county or other political subdivision of the State, any interstate body or any other legal entity.

*Post-development:* The period, or conditions that may reasonably be expected to exist, following completion of land development activity on a site as the context may require.

*Pre-development:* The period, or conditions that exist on a site, prior to commencement of a land development project and at the time that plans for development of a site are approved by the City of Powder Springs. Where phased development or plan approval occurs, for example, preliminary grading and installation of roads and utilities, the existing site conditions at the time prior to commencement of any development activity shall establish pre-development conditions.

*Project:* A land development project.

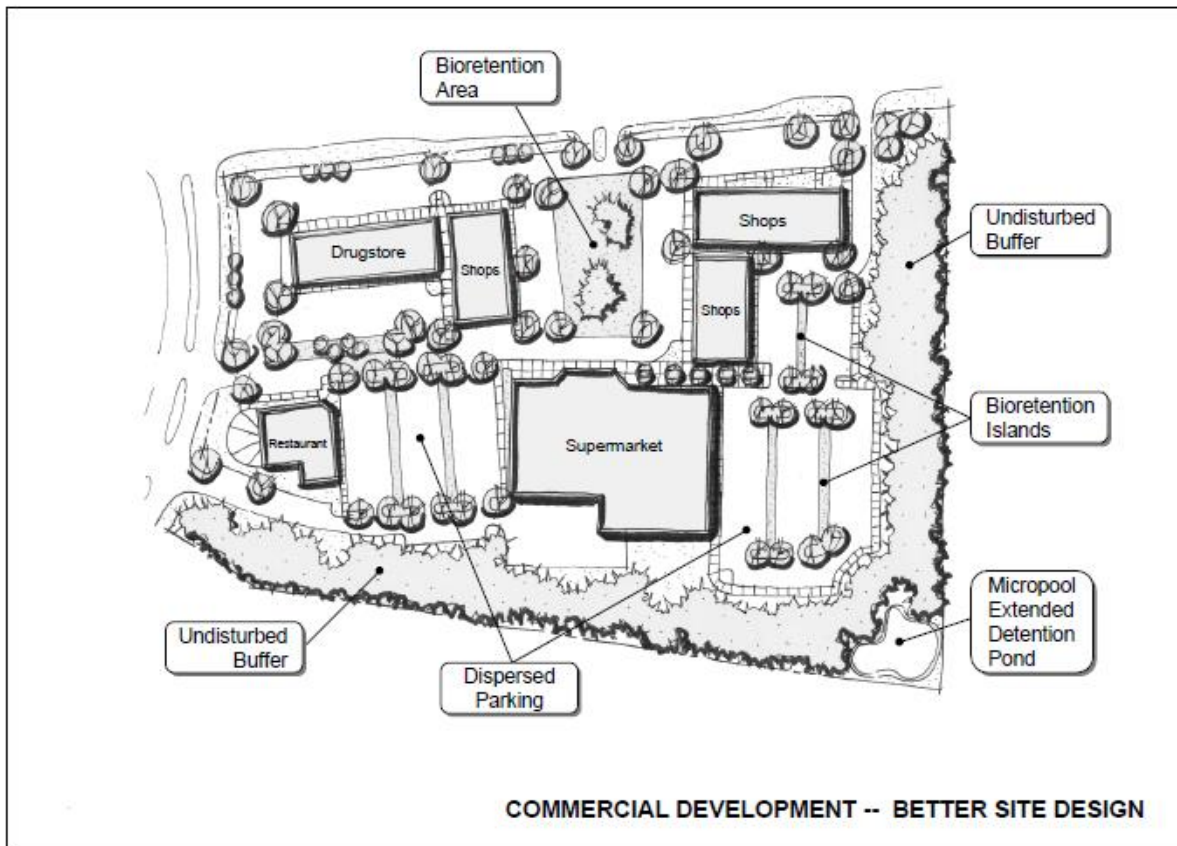
*Redevelopment:* A land development project on a previously developed site, but excluding ordinary maintenance, remodeling of existing buildings, resurfacing of paved areas, and exterior alterations or improvements that do not materially increase or concentrate stormwater runoff or cause additional nonpoint source pollution.

*Regional stormwater management facility or regional facility:* Stormwater management facilities designed to control stormwater runoff from multiple properties where the owners or developers of the individual properties may assist in financing the facility and the requirement for on-site stormwater management facilities is either eliminated or reduced.

*Runoff:* Stormwater runoff.

*Site:* A parcel of land being developed or the portion thereof on which a land development project is located.

*Stormwater better site design:* Nonstructural site design approaches and techniques that can reduce the impact of a site on the watershed and can provide for nonstructural stormwater management. Stormwater better site design includes conserving and protecting natural areas and greenspace, reducing impervious cover and using natural features for stormwater management.



Source: Georgia Stormwater Management Manual, Vol. 2.

*Stormwater credits for better site design:* A set of stormwater “credits” can be used to provide developers and site designers an incentive to implement better site design practices that can reduce the volume of stormwater runoff and minimize the pollutant loads from a site. The credit system directly translates into cost savings to the developer by reducing the size of structural stormwater control and conveyance facilities. (Reference: GSMM, Vol. 1, Sec. 4.1). The better site design practices that provide for site design stormwater credits include (per GSMM Vol. 1, Table 4.1.1-1 are: natural area conservation; stream buffers; use of vegetated channels; overland flow filtration/infiltration zones; and environmentally sensitive large-lot subdivisions. Credits are applied based on criteria in SWMM.

*Stormwater management:* The collection, conveyance, storage, treatment and disposal of stormwater runoff in a manner intended to prevent increased flood damage, stream bank channel erosion and habitat and water quality degradation, and to enhance and promote public health, safety and general welfare.

*Stormwater management facility:* Any infrastructure that controls or conveys stormwater runoff.

*Stormwater management measure:* Any stormwater management facility or nonstructural stormwater practice.

*Stormwater management plan:* A document describing the manner in which existing runoff characteristics will be affected by a land development project and containing measures for complying with the provisions of this ordinance.

*Stormwater management system:* The full array of structural and nonstructural stormwater management facilities and practices used to capture, convey and control the quantity and quality of the stormwater runoff from a site.

*Stormwater retrofit:* A stormwater management practice designed for a developed site that previously had either no stormwater management practice in place or a practice inadequate to meet the stormwater management requirements of the site.

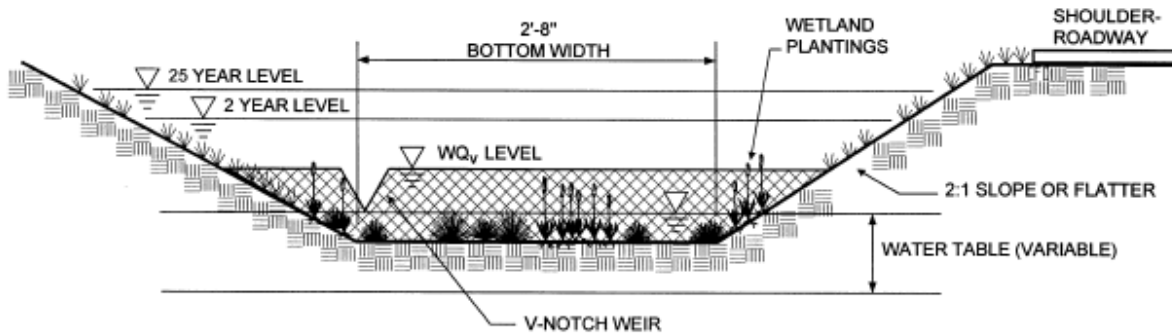
*Stormwater runoff:* The flow of surface water resulting from precipitation.

*Structural stormwater control:* A structural stormwater management facility or device that controls stormwater runoff and changes the characteristics of that runoff including, but not limited to, the quantity and quality, the period of release or the velocity of flow of such runoff.

*Subdivision:* The division of a tract or parcel of land resulting in one or more new lots or building sites for the purpose, whether immediately or in the future, of sale, other transfer of ownership or land development, and includes divisions of land resulting from or made in connection with the layout or development of a new street or roadway or a change in an existing street or roadway.

*Swale:* An open drainage channel designed to detain or infiltrate stormwater runoff. Grassed swales consist of two types: the dry swale, which provides both quantity (volume) and quality

control by facilitating stormwater infiltration; and the wet swale, which uses residence time and natural growth to reduce peak discharge and provide water quality treatment before discharge to a downstream location.



**Schematic of Wet Swale**

Source: Georgia Stormwater Management Manual, Vol. 2.

### Sec. 11-5. Applicability.

This article shall apply to all the following land development activities, including, but not limited to, site plan applications, subdivision applications and grading applications, unless specifically exempt by this article:

- (a) New development involving creation of 5,000 square feet or more of impervious cover or involving other land development activity affecting an area comprising one acre or more;
- (b) Redevelopment that includes creation, addition or replacement of 5,000 square feet or more of impervious cover or involving other land development activity affecting an area comprising one acre or more;
- (c) Any new development or redevelopment, regardless of size, defined to be a “hotspot” land use; or,
- (d) Land development activities that are below the minimum thresholds established in this section, when such activities are part of a larger development plan, even though multiple, separate and distinct land development activities may occur at different times and on different schedules.

### Sec. 11-6. Exemptions.

The following uses shall be exempt from the provisions and standards of this article:

- (a) Individual single family or duplex residential lots that are not part of a subdivision or a phased development project;

- (b) Additions or modifications to existing single family or duplex residential structures;
- (c) Agricultural or silvicultural land management activities within areas appropriately zoned for such activities; and,
- (d) Repairs to any stormwater management facility or practice deemed necessary by the city.

**Sec. 11-7. Designation of Administrator.**

The community development director is hereby appointed to administer and implement the provisions of this article; provided, however, that engineering considerations shall be the responsibility of the public works director. Both the community development director and the public works director are charged with encouraging and implementing low-impact development practices, especially in awarding (when warranted) credits for better site design as described in the Georgia Stormwater Management Manual and this article.

**[Secs. 11-8 to 11-10 Reserved].**

**Division II. Post-Development Stormwater Management Performance Criteria.**

**Sec. 11-11. Applicability.**

The performance criteria of this division shall be applicable to all stormwater management plans unless otherwise provided in this article.

**Sec. 11-12. Stormwater Design Manual.**

The City of Powder Springs hereby adopts and will utilize the policy, criteria and information, including technical specifications and standards, in the latest edition of the Georgia Stormwater Management Manual (GSMM) and any relevant local addenda, for proper implementation of the requirements of this article. The manual may be updated and expanded periodically, based on improvements in science, engineering, monitoring and local maintenance experience. It is the city's intent in adopting the manual to, in particular, apply stormwater better site design practices and credits for the implementation of stormwater better site design practices.

**Sec. 11-13. Water Quality.**

All stormwater runoff generated by any site shall be adequately treated prior to discharge. A stormwater management system will be deemed in compliance with this standard provided the following requirements are met:

- (a) The system is appropriately sized to treat the prescribed water quality treatment volume generated by the site as defined in the GSMM;
- (b) Appropriate structural stormwater controls or nonstructural practices are selected, designed, constructed or preserved and maintained according to the specific criteria in the

GSMM. Emphasis will be placed by the City of Powder Springs on encouraging the use nonstructural practices; and,

- (c) Runoff from hotspot land uses and activities identified by the City of Powder Springs is adequately treated and addressed through the use of appropriate structural stormwater controls, nonstructural practices and pollution prevention practices.

**Sec. 11-14. Stream Channel Protection.**

Protection of stream channels from bank and bed erosion and degradation shall be provided by using all of the following three approaches:

- (a) Preservation, restoration and re-vegetation or re-forestation using native plant species of the applicable stream buffer;
- (b) 24-hour extended detention storage of the 1-year, 24-hour return frequency storm event (this requirement may be adjusted or waived by the City of Powder Springs for sites that discharge directly into larger streams, rivers, wetlands, or lakes, or to a man-made channel or conveyance system where the reduction in these flows will not have an impact on upstream or downstream stream bank or channel integrity); and
- (c) Erosion prevention measures, such as energy dissipation and velocity controls.

**Sec. 11-15. Overbank Flooding Protection.**

Downstream overbank flood and property protection shall be provided by controlling or attenuating the post-development peak discharge rate to the pre-development rate for the 25-year, 24-hour return frequency storm event. In instances where control of the 1-year, 24-hour storm under this article is exempted, peak discharge rate attenuation of the 2-year through the 25-year return frequency storm event must be provided. This requirement may be adjusted or waived by the City of Powder Springs for sites where the post-development downstream analysis shows that uncontrolled post-development conditions will not increase downstream peak flows, or that meeting the requirement will cause greater peak flow downstream impacts than the uncontrolled post-development conditions.

**Sec. 11-16. Extreme Flooding Protection.**

Extreme flood and public safety protection shall be provided by controlling and safely conveying the 100-year, 24-hour return frequency storm event such that flooding is not exacerbated. This requirement may be adjusted or waived by the City of Powder Springs for sites where the post-development downstream analysis shows that uncontrolled post-development conditions will not increase downstream peak flows, or that meeting the requirement will cause greater peak flow downstream impacts than the uncontrolled post-development conditions.

**Sec. 11-17. Structural Stormwater Controls.**

- (a) All structural stormwater management facilities shall be selected and designed using the appropriate criteria from the Georgia Stormwater Management Manual.
- (b) All structural stormwater controls shall be appropriately designed to meet the intended function.
- (c) The effectiveness and pollutant removal of the structural controls must be documented through prior studies, literature reviews or other means and be approved by the City of Powder Springs prior to being included in the design of a stormwater management system. This standard shall apply to other structural stormwater controls not included in the GSMM, or those for which pollutant removal rates have not been provided. In addition, whenever hydrologic or topographic conditions or land use activities warrant greater control than that provided by the minimum control requirements, the City of Powder Springs may impose additional requirements. Such requirements shall be those deemed necessary to protect upstream and downstream properties and aquatic resources from damage due to increased volume, frequency and rate of stormwater runoff or increased nonpoint source pollution loads created on the site.
- (d) Applicants shall consult the GSMM for guidance as concerns the factors that determine site design feasibility when selecting and locating a structural stormwater control.

**Sec. 11-18. Stormwater Credits for Nonstructural Measures.**

The use of one or more site design measures by the applicant may permit a reduction in the water quality treatment volume required by this article. The applicant may, subject to approval by the City of Powder Springs, take credit for the use of stormwater better site design practices and thereby, reduce the water quality volume requirement. A minimum set of criteria identifies the circumstances under which the credit may be applied. The site design practices that qualify for this credit and the criteria and procedures for applying and calculating the credits are included in the GSMM; see also the definition of “stormwater credits for better site design” in this article.

**Sec. 11-19. Drainage System Guidelines.**

Stormwater conveyance facilities that may include, but are not limited to, culverts, stormwater drainage pipes, catch basins, drop inlets, junction boxes, headwalls, gutter, swales, channels, ditches and energy dissipaters shall be provided when necessary for the protection of public right-of-way and private property adjoining project sites. Existing or proposed stormwater conveyance facilities designed to carry runoff from more than one parcel shall meet the following requirements:



- (a) Methods to calculate stormwater flows shall be in accordance with the GSMM;
- (b) All culverts, pipe systems and open channel flow systems shall be sized in accordance with the stormwater management plan using methods contained in the GSMM; and,
- (c) Design and construction of stormwater conveyance facilities shall be in accordance with the criteria and specifications found in the GSMM.

**Sec. 11-20. Dam Design Guidelines.**

Any land disturbing activity that involves a site on which a dam is proposed shall comply with the Georgia Safe Dams Act and Rules for Dam Safety, as applicable.

**[Secs. 11-21 to 11-30 Reserved].**

**Division III. Permit Procedures and Requirements.**

**Sec. 11-31. Permit Application Requirements.**

No owner or developer shall perform any land development activities without first meeting the requirements of this article. Unless specifically exempted by this article, any owner or developer proposing a land development activity shall submit a permit application to the City of Powder Springs on a form provided by the City for that purpose and pay the applicable fee as established by fee schedule. Unless otherwise exempted by this article, the following information shall accompany a permit application:

- (a) Stormwater concept plan;
- (b) Stormwater management plan;
- (c) Inspection and maintenance agreement, if applicable;
- (d) Performance bond if applicable; and,
- (e) Permit application and plan review fees.

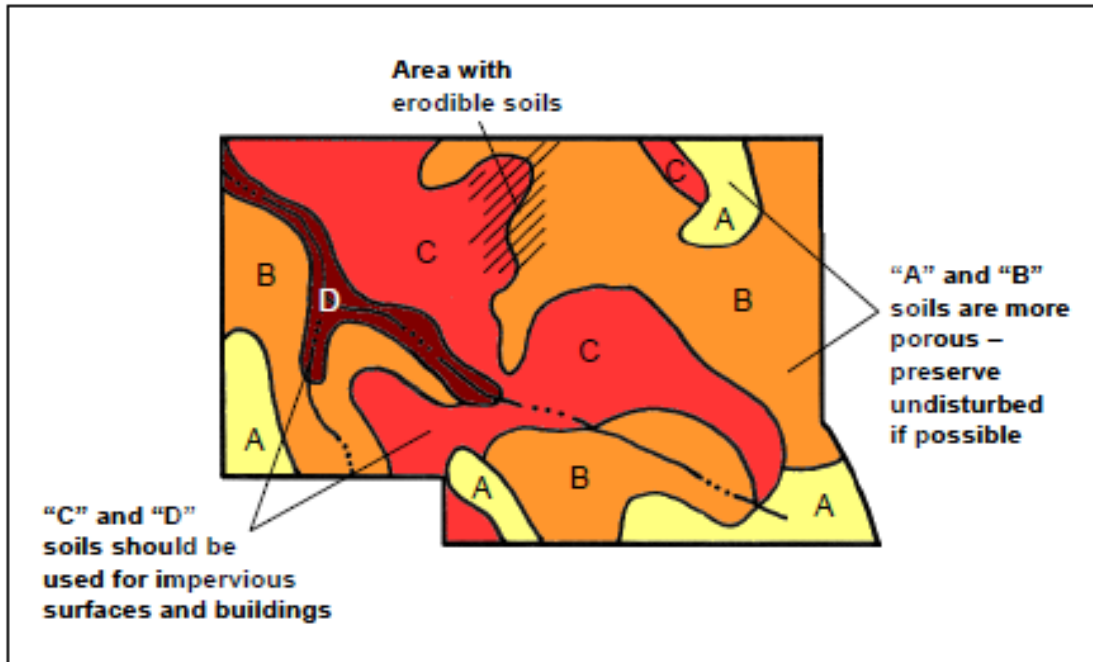
**Sec. 11-32. Stormwater Concept Plan and Consultation Meeting.**

The landowner or developer shall meet with representatives of the departments of community development and public works of the City of Powder Springs for a consultation meeting on a concept plan for the post-development stormwater management system to be used in the proposed land development project prior to submitting any stormwater management permit application. This consultation meeting shall occur at preliminary subdivision plat or other early step in the development process. The purpose of this meeting is to discuss the post-development stormwater management measures necessary for the proposed project and to assess constraints,

opportunities and approaches for stormwater management design prior to commencing formal site design engineering. During such consultation meetings, the city and applicant will examine the potential applicability of non-structural stormwater controls (stormwater better site design practices). Local watershed plans, the Cobb County greenspace protection plan, as applicable, and any relevant resource protection plans will be consulted in the discussion of the concept plan.

The following information shall be included in the concept plan that shall be submitted prior to the consultation meeting:

- (a) **Existing conditions/proposed site plans.** Existing conditions and proposed site plans that at a minimum illustrate: existing and proposed topography; perennial and intermittent streams; predominant soils from soil surveys; boundaries of existing predominant vegetation and proposed limits of clearing and grading; and location of existing and proposed roads, buildings, structures, parking areas and all other impervious surfaces;

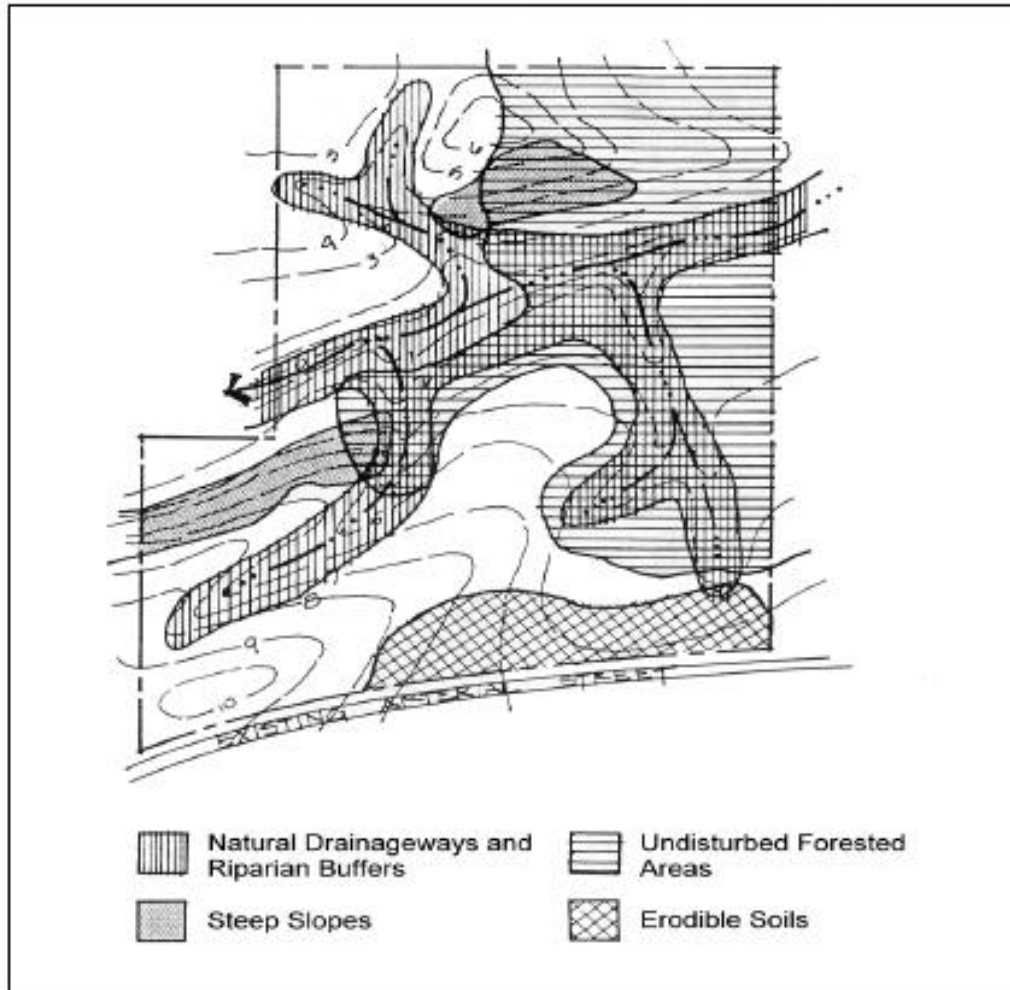


**Figure 1.4.2-7 Soil Mapping Information Can Be Used to Guide Development**

Source: Georgia Stormwater Management Manual, Vol. 2.

- (b) **Natural resources inventory.** A written or graphic inventory of the natural resources on the site and surrounding area as exists prior to commencement of the project. This description shall include a discussion of soil conditions, forest cover, topography, wetlands, and other native vegetative areas on the site, as well as the location and boundaries of other natural feature protection and conservation areas such as wetlands, lakes, ponds, floodplains, stream buffers and other setbacks (e.g., drinking water well

setbacks, septic setbacks, etc.). Particular attention must be afforded environmentally sensitive features that represent constraints to development;



**Figure 1.4.2-1 Example of Natural Feature Delineation**  
(Source: MPCA, 1989)

Source: Georgia Stormwater Management Manual, Vol. 2.

- (c) **Stormwater management system concept plan.** A written or graphic concept plan of the proposed post-development stormwater management system that includes the following information: preliminary selection and location of proposed structural stormwater controls; location of existing and proposed conveyance systems such as grass channels, swales and storm drains; flow paths; location of floodplain/floodway limits; relationship of site to upstream and downstream properties and drainages; and preliminary location of proposed stream channel modifications such as bridge or culvert crossings.

**Sec. 11-33. Stormwater Management Plan.**

- (a) The stormwater management plan shall describe the methods and approaches proposed to control and manage post-development stormwater runoff.
- (b) A description of the measures that will be employed to comply with the standards and requirements of this article, including performance criteria required by this article shall also be provided.
- (c) The stormwater management plan shall be in accordance with the criteria established in this article and be prepared under the direct supervisory control of either a registered professional engineer or a registered landscape architect licensed in the state of Georgia, who shall seal and sign the work. The work shall be conducted under the direct supervisory control of a registered professional engineer, Portions of the overall plan such as boundary surveys, contour maps and erosion and sedimentation control plans may be prepared and stamped by a registered land surveyor licensed in the state of Georgia, as appropriate.
- (d) The stormwater management plan must ensure that the requirements and criteria in this article are met, and that opportunities to minimize adverse post-development stormwater runoff impacts generated by the development are considered. The plan shall consist of maps, narrative, and supporting design calculations (hydrologic and hydraulic) for the proposed stormwater management system.
- (e) The stormwater management plan for each land development project shall provide for stormwater management measures located on the site of the project, unless provisions are made to manage stormwater by means of an off-site or regional facility.

**Sec. 11-34. Contents of the Stormwater Management Plan.**

The plan shall include all information required in the Stormwater Management Site Plan checklist found in the GSMM, including the following information:

- (a) **General.** Common address and legal description of the site, and a vicinity map;
- (b) **Existing conditions hydrologic analysis.** The existing condition hydrologic analysis for stormwater runoff rates, volumes and velocities, which shall include the following information:
  - 1. A topographic map of existing site conditions with the drainage basin boundaries indicated;
  - 2. Acreage, soil types and land cover of areas for each sub-basin affected by the project;
  - 3. All perennial and intermittent streams and other surface water features;

4. All existing stormwater conveyances and structural control facilities;
5. Direction of flow and exits from the site;
6. Analysis of runoff provided by off-site areas upstream of the project site; and
7. Methodologies, assumptions, site parameters and supporting design calculations used in analyzing the existing conditions site hydrology. For redevelopment sites, pre-development conditions shall be modeled using the guidelines established by the director of public works for the portion of the site undergoing land development activities.

(c) **Post-development hydrologic analysis.** The post-development hydrologic analysis for stormwater runoff rates, volumes and velocities, which shall include the following information:

1. A topographic map of developed site conditions with the post-development drainage basin boundaries indicated;
2. Total area of post-development impervious surfaces and other land cover areas for each sub-basin affected by the project;
3. Calculations for determining the runoff volumes that need to be addressed for each sub-basin for the development project to meet the post-development stormwater management performance criteria of this article;
4. Location and boundaries of proposed natural feature protection and conservation areas;
5. Documentation and calculations for any applicable site design credits that are being utilized; and
6. Methodologies, assumptions, site parameters and supporting design calculations used in analyzing the existing conditions site hydrology. Redevelopment sites on which the land development activity constitutes more than 50 percent of the entire site shall meet the performance criteria of this article as concerns the stormwater runoff from the entire site.

(d) **Stormwater management system.** The description, scaled drawings and design calculations for the proposed post-development stormwater management system, which shall include the following information:

1. A map and/or drawing or sketch of the stormwater management facilities, including the location of nonstructural site design features and the placement of existing and proposed structural stormwater controls, including design water surface elevations,

- storage volumes available from zero to maximum head, location of inlet and outlets, location of bypass and discharge systems, and all orifice/restrictor sizes;
2. A narrative describing how the selected structural stormwater controls will be appropriate and effective; cross-section and profile drawings and design details for each of the structural stormwater controls in the system, including supporting calculations to show that the facility is designed according to the applicable design criteria;
  3. A hydrologic and hydraulic analysis of the stormwater management system for all applicable design storms (including stage-storage or outlet rating curves, and inflow and outflow hydrographs);
  4. Documentation and supporting calculations to show that the stormwater management system adequately meets the post-development stormwater management performance criteria of this article;
  5. Drawings, design calculations, elevations and hydraulic grade lines for all existing and proposed stormwater conveyance elements including stormwater drains, pipes, culverts, catch basins, channels, swales and areas of overland flow; and
  6. A narrative describing how the stormwater management system corresponds with any watershed protection plans and/or local greenspace protection plan, as applicable.
  7. A narrative describing the extent to which non-structural stormwater controls, specifically including stormwater better site design practices, are implemented.
- (e) **Post-development downstream analysis.** A downstream peak flow analysis that includes the assumptions, results and supporting calculations to show safe passage of post-development design flows downstream. The analysis of downstream conditions in the report shall address every point or area along the boundary of the project site at which runoff will exit the property. The analysis shall focus on the portion of the drainage channel or watercourse immediately downstream from the project. This area shall extend downstream from the project to a point in the drainage basin where the project area represents 10 percent of the total basin area. In calculating runoff volumes and discharge rates, consideration may need to be given to any planned alteration in future, upstream land use. The analysis shall be in accordance with the GSMM.
- (f) **Construction-phase erosion and sedimentation control plan.** An erosion and sedimentation control plan in accordance with article 9 of this development code and the NPDES permit for construction activities. The plan shall also include information on the sequence/phasing of construction and temporary stabilization measures and structures that will be converted into permanent stormwater controls.
- (g) **Landscaping and open space plan.** A detailed landscaping and vegetation plan describing the woody and herbaceous vegetation that will be used within and adjacent to

stormwater management facilities and practices. The landscaping plan must also include the following information:

1. Arrangement of planted areas, natural and greenspace areas and other landscape features depicted on the plan drawings;
  2. Information necessary to install the landscape features shown on the plan drawings;
  3. Descriptions and standards for the methods, materials and vegetation to be used in the installation;
  4. Density of plantings;
  5. Descriptions of the stabilization and management techniques used to establish vegetation;
  6. Identification of the party responsible for ongoing maintenance of vegetation for the stormwater management facility and the practices to be employed to ensure that adequate vegetative cover is preserved; and
  7. The extent to which landscaping will implement stormwater better site design practices.
- (h) **Operations and maintenance plan.** Detailed description of ongoing operations and maintenance procedures for stormwater management facilities and practices to ensure their continued function as designed and built, or preserved. This plan will identify the components of a stormwater management facility or practice that must to be regularly inspected and maintained, and the equipment and skills necessary to the inspections and maintenance. The plan shall include an inspection and maintenance schedule, maintenance tasks, responsible parties for maintenance, funding, access and safety issues. Provisions for the periodic review and evaluation of the effectiveness of the maintenance program and the process for revisions or additional maintenance procedures shall be included in the plan.
- (i) **Maintenance access easements.** The applicant shall provide unfettered access to stormwater management facilities and practices requiring regular maintenance at the site from public right-of-way. Such access shall be sufficient to accommodate all necessary maintenance equipment. Such access shall also be for the purpose of inspection and repair and shall be guaranteed by the granting of a permanent, maintenance access easement. Upon final inspection and approval, a plat or document indicating that such easements exist shall be recorded and shall survive the transfer of title to the property.
- (j) **Inspection and maintenance agreements.** Unless an on-site stormwater management facility or practice is dedicated to and accepted by the City of Powder Springs, the applicant shall execute an easement and an inspection and maintenance agreement binding on all subsequent owners of land served by an on-site stormwater management facility or practice in accordance with this article.

- (k) **Evidence of acquisition of applicable local and non-local permits.** The applicant shall certify and provide documentation to the City of Powder Springs that all other applicable environmental permits have been acquired for the site prior to approval of the stormwater management plan.

**Sec. 11-35. Stormwater Management Inspection and Maintenance Agreements.**

- (a) **Execution required.** Prior to issuance of any permit for a land development activity requiring a stormwater management facility or practice hereunder, and for which the City of Powder Springs requires ongoing maintenance, the applicant or owner of the site shall execute an inspection and maintenance agreement and/or a conservation easement, if applicable, that shall be binding on all subsequent owners of the site.
- (b) **Approval.** The inspection and maintenance agreement must be approved by the City of Powder Springs prior to plan approval and recorded in the deed records upon final plat approval.
- (c) **Responsible party.** The inspection and maintenance agreement shall identify by name or official title the party responsible for implementing the inspection and maintenance procedures. Responsibility for the operation and maintenance of the stormwater management facility or practice, unless assumed by a governmental agency, shall remain with the property owner and shall pass on to any successor owner. In the event portions of the land are sold or otherwise transferred, legally binding arrangements shall be made to assign the inspection and maintenance responsibilities to the appropriate successors in title. These arrangements shall designate the party to be permanently responsible for the inspection and maintenance for each portion of the site.
- (d) **Schedule.** An inspection and maintenance schedule shall be developed as part of the inspection and maintenance agreement to ensure proper functioning of the stormwater management facility or practice. The agreement shall also include plans for annual inspections to ensure proper performance of the facility between scheduled maintenance and shall also include remedies for the default thereof.
- (e) **Right of inspection.** The terms of the inspection and maintenance agreement shall provide for the right of entry to property by the City of Powder Springs at reasonable times and in a reasonable manner for the purpose of inspection.
- (f) **Additional enforcement by city.** In addition to enforcing the terms of the inspection and maintenance agreement, the City of Powder Springs may also enforce all provisions for ongoing inspection and maintenance contained in this article.
- (g) **Surety.** The city may require the posting of bonds or other security to guarantee performance of construction and/or maintenance obligations of this article.



**Sec. 11-36. Application Procedure.**

- (a) All applications for land development permits shall be filed with the City of Powder Springs department of community development. See article 8 of this development code.
- (b) Two copies of the stormwater management plan and the inspection maintenance agreement shall also be submitted.
- (c) The City of Powder Springs shall inform the applicant in writing of an approval or denial of a land development permit application, stormwater management plan, or an inspection and maintenance agreement. In approving or disapproving stormwater management plans, the community development director will base the decision in part on the extent to which opportunities for implementing stormwater better site design practices. After consultation with the director of public works and the applicant, the community development director may disapprove a stormwater management plan if the applicant has failed to consider non-structural stormwater management alternatives and implemented stormwater better design practice(s), where feasible.
- (d) If an application for stormwater management plan or inspection and maintenance agreement is denied, the applicant may revise any information not in compliance with this ordinance as identified by the city and resubmit the same.
- (e) Upon a finding by the city that the permit application, stormwater management plan and inspection and maintenance agreement, meet the requirements of this article, the community development director shall issue a permit for the land development project, provided all other legal requirements for issuance of such permit have been met.

**Sec. 11-37. Responsibilities after Permit Issuance.**

Upon issuance of the permit, the applicant or other responsible party conducting the land development project shall be subject to the following requirements:

- (a) The applicant shall comply with all applicable requirements of the approved plan and this ordinance and shall certify that all land clearing, construction, land development and drainage will be performed according to the approved plan;
- (b) The land development project shall be conducted only within the area specified in the approved plan;
- (c) City personnel shall have access to the site to conduct periodic inspections of the project;
- (d) No changes shall be made to an approved plan without review and written approval by the director of community development; and,

- (e) Upon completion of the project, the applicant or other responsible party shall submit the engineer's report and certificate and as-built plans required by this article.

**Sec. 11-38. Modifications for Off-Site Facilities.**

If provisions are made to manage stormwater by means of an off-site or regional facility, such off-site or regional facility shall meet the following requirements:

- (a) It shall be located on property legally dedicated for that purpose;
- (b) It shall be designed and adequately sized to provide a level of stormwater quantity and quality control equal to or greater than that which would be afforded by on-site practices;
- (c) It shall be controlled by an identified, legally-obligated entity responsible for long-term operation and maintenance of the off-site or regional stormwater facility;
- (d) On-site measures shall be implemented, where necessary, to protect upstream and downstream properties and drainage channels from the site to the off-site facility; and
- (e) A stormwater management plan shall be submitted to the City of Powder Springs that documents the adequacy of the off-site or regional facility.
- (f) To be eligible for a modification, the applicant must demonstrate to the satisfaction of the public works director that use of an off-site or regional facility will not cause any the following impacts to upstream or downstream areas:
  - 1. Increased threat of flood damage to public health, life or property;
  - 2. Deterioration of existing culverts, bridges, dams or other structures;
  - 3. Accelerated stream bank or streambed erosion or siltation;
  - 4. Degradation of in-stream biological functions or habitat; or
  - 5. Water quality impairment in violation of State water quality standards or violation of any state or federal regulations.

**[Secs. 11-39 and 11-40 Reserved].**

**Division IV. Inspections and Maintenance.**

**Sec. 11-41. Inspections.**

Inspections may include, but are not limited to: reviewing maintenance and repair records; sampling discharges, surface water, groundwater and material or water in stormwater

management facilities; and evaluating the condition of stormwater management facilities and practices. Inspections will be provided at different intervals including:

- (a) **During construction.** Periodic inspections of the construction of the stormwater management system shall be conducted by the staff of the City of Powder Springs or conducted and certified by a professional engineer who has been approved by the City of Powder Springs. Construction inspections shall utilize the approved stormwater management plan for establishing compliance.
- (b) **Ongoing.** Stormwater management facilities and practices included in a stormwater management plan that are subject to an inspection and maintenance agreement must undergo ongoing inspections to document maintenance and repair needs and ensure compliance with the requirements of the stormwater maintenance agreement, the approved stormwater management plan, and the requirements of this article.
- (c) **Other.** Other, or additional, inspection programs may be established by the City on any reasonable basis including, but not limited to, the following actions: routine inspections; random inspections; inspections based on complaints or other notice of possible violations; and joint inspections with other agencies inspecting under environmental or safety laws.
- (d) **Following completion.** A final inspection shall be required following completion and prior to release of any performance securities.

**Sec. 11-42. Documentation of Inspections.**

All inspections shall be documented by written reports containing the following information:

- (a) The date and location of the inspection;
- (b) Indication as to whether construction is in compliance with the approved stormwater management plan;
- (c) Deviations from the approved construction specifications; and
- (d) Any other deviation or violation of the conditions of the approved stormwater management plan.
- (e) The applicant shall be notified in writing of the nature of any violations found and the required corrective actions.

**Sec. 11-43. Right-of-Entry for Inspection.**

Authorized personnel of the city shall have the right to enter any property that the city has a reasonable basis to believe that a violation of this article is occurring or has occurred and to enter when necessary for abatement of a public nuisance or correction of a violation of this article.

**Sec. 11-44. Certification and As-built Plans.**

- (a) Prior to issuance of a certificate of occupancy, a professional engineer shall certify that the completed project complies with the approved stormwater management plan.
- (b) All applicants shall submit actual “as built” plans final design specifications for all stormwater management facilities and practices for once final construction is completed.

**Sec. 11-45. Records of Maintenance Activities.**

Parties responsible for operation and maintenance of a stormwater management facility shall provide all records of any maintenance and repairs to City of Powder Springs within 30 days upon written request.

**Sec. 11-46. Failure to Maintain a Stormwater Management Facility.**

In addition to other remedies generally available to the city for violations of this development code, the city may pursue the remedy specified in this section.

- (a) In the event a responsible party fails or refuses to meet the requirements of the inspection and maintenance agreement, the City of Powder Springs upon 30 calendar days written notice may correct a violation of the design standards or maintenance requirements by performing the necessary work to place the facility or practice in proper working order.
- (b) Violations that constitute an immediate danger to public health or public safety shall be cured within 24 hours of receipt of such written notice.
- (c) The City of Powder Springs may assess the owner(s) of the facility for the cost of repair work that shall be a lien on the property, and may be placed on the ad valorem tax bill for such property and collected in the ordinary manner for such taxes.

**[Secs. 11-47 to 11-50 Reserved].**