STAFF REPORT

City of Ormond Beach
Department of Planning

DATE: March 3, 2009

SUBJECT: Land Development Code Amendments: Chapter 3, Article II, Section 3-18, Surface Water Runoff Control

APPLICANT: Administrative

NUMBER: LDC 09-09

PROJECT PLANNER: Ray Hudson, Civil Engineer

INTRODUCTION:

This is a request to amend Chapter 3, Article II, Section 3-18, Surface Water Runoff Control, of the Land Development Code (LDC) to update, clarify and expand the requirements for preparing and executing the Storm Water Management Plans, including new language for Low Impact Development.

BACKGROUND:

In November 2008, City Planning staff provided the Planning Board a list of amendments that staff would be working to achieve. Several of the amendments related to the City stormwater requirements. The amendment attached in Exhibit 1 seek to improve the existing stormwater section by clarifying submittal and review processes, providing exemption standards, reviewing the standards for lesser development in the Downtown area and providing standards for Low Impact Development.

ANALYSIS:

The general revisions to this Section were performed to update, clarify and expand the requirements for preparing and executing the Storm Water Management Plan (SWMP) required for all projects subject to the City of Ormond Beach's Land Development Code. In addition to the general revisions, the following new or expanded items were added to the Section:

1. Outline detail requirements for requesting exemption from SWMP requirements for single family residential developments in existing subdivisions with approved SWMP.
2. Outline detail requirements for requesting waiver of SWMP requirements for single family residential developments not in existing subdivisions with approved SWMP and for lesser redevelopments in the Downtown Overlay District.

3. Expand the storm water management design standards for lesser developments to accept certain manufactured storm water treatment structures in the Downtown Overlay District.
4. Expand the storm water management design standards for standard developments to encourage the use of drainage systems which are based on Low Impact Development (LID) principles.

The goal of the amendments is to make the process of applying and permitting for storm water more efficient and understandable. Another goal was to add the low impact development techniques for stormwater management.

CONCLUSION:

There are certain criteria that must be evaluated before adoption of an amendment according to the Land Development Code (LDC), the Planning Board must consider the following criteria when making their recommendation.

1. **The proposed development conforms to the standards and requirements of this Code and will not create undue crowding beyond the conditions normally permitted in the zoning district, or adversely affect the public health, safety, welfare or quality of life.**

   The proposed Land Development Code amendment will not create undue crowding beyond the conditions normally permitted in the zoning district, or adversely affect the public health, safety, welfare or quality of life. The purpose of the amendments is to better improve the regulations and provide regulatory processes for stormwater management.

2. **The proposed development is consistent with the Comprehensive Plan.**

   The proposed Land Development Code amendments are consistent with the Comprehensive Plan. Objective 2.1 of the Future Land Use Element of the Comprehensive Plan discussed the need to update Land Development Code regulations.

3. **The proposed development will not adversely impact environmentally sensitive lands or natural resources, including but not limited to waterbodies, wetlands, xeric communities, wildlife habitats, endangered or threatened plants and animal species or species of special concern, wellfields, and individual wells.**

   The proposed Land Development Code amendment will not have adverse impact on environmentally sensitive lands.

4. **The proposed use will not substantially or permanently depreciate the value of surrounding property; create a nuisance; or deprive adjoining properties of adequate light and air; create excessive noise, odor, glare, or visual impacts on the neighborhood and adjoining properties.**

The proposed Land Development Code amendments will have no adverse effect on surrounding property; create a nuisance; or deprive adjoining properties of adequate light and air; create excessive noise, odor, glare or visual impacts on adjoining properties.

5. There are adequate public facilities to serve the development, including but not limited to roads, sidewalks, bike paths, potable water, wastewater treatment, drainage, fire and police safety, parks and recreation facilities, schools, and playgrounds.

The proposed Land Development Code amendments are not applicable to public facilities.

6. Ingress and egress to the property and traffic patterns are designed to protect and promote motorized vehicle and pedestrian/bicycle safety and convenience, allow for desirable traffic flow and control, and provide adequate access in case of fire or catastrophe. This finding shall be based on a traffic report where available, prepared by a qualified traffic consultant, engineer or planner which details the anticipated or projected effect of the project on adjacent roads and the impact on public safety.

There is no development proposed for this amendment. The application pertains to a Land Development Code change.

7. The proposed development is functional in the use of space and aesthetically acceptable.

There is no development proposed for this amendment. The application pertains to a Land Development Code change.

8. The proposed development provides for the safety of occupants and visitors.

There is no development proposed for this amendment. The application pertains to a Land Development Code change.

9. The proposed use of materials and architectural features will not adversely impact the neighborhood and aesthetics of the area.

There is no development proposed for this amendment. The application pertains to a Land Development Code change.

10. The testimony provided at public hearings.

There has not been a public hearing at this time. The comments from the Planning Board meeting will be incorporated into the City Commission packet.

RECOMMENDATION:

It is recommended that the Planning Board **APPROVE** the amendments as shown in Exhibit "A" to amend Chapter 3, Article II, Section 3-18, Surface Water Runoff Control, of the Land Development Code (LDC) to update, clarify and expand the requirements for preparing and executing the Storm Water Management Plans, including new language for Low Impact Development.

EXHIBIT 1 – Proposed LDC Amendments

SECTION 3-18: SURFACE WATER RUNOFF CONTROL

A. **Findings of Fact.** Uncontrolled drainage and development of land has a significant adverse impact upon the health, safety and welfare of the community, more specifically:

1. Surface water runoff carries pollutants into receiving water bodies, degrading water quality. Increases in nutrients such as phosphorus and nitrogen, accelerates eutrophication of receiving waters, adversely affecting flora and fauna;

2. Improperly channeling water increases the velocity of runoff, thereby increasing erosion; and construction requiring the alteration of natural topography and removal of vegetation increases erosion. Siltation of water bodies resulting from increased erosion decreases their capacity to hold and transport water, interferes with navigation, and harms flora and fauna. Impervious surfaces increase the volume and rate of surface water runoff, allowing less water to percolate into the soil and thereby decreasing groundwater recharge;

3. Improperly managed surface water runoff increases the incidence of flooding and the level of floods which occur, thereby destroying property and causing loss of life; and interferes with the maintenance of optimum salinity in estuarine areas; and economic losses result from these adverse impacts on community waters.

B. **Objectives.** In order to protect, maintain, and enhance the immediate and long-term health, safety and general welfare of the citizens of the City, this Section has the following objectives:

1. To encourage productive and enjoyable harmony between humanity and nature; and to protect, restore, and maintain the chemical, physical and biological integrity of community waters;

2. To prevent individuals, business organizations and governments from causing harm to the community by activities which adversely affect water resources;

3. To encourage the construction of drainage systems which aesthetically and functionally approximate natural systems; and to encourage the protection of natural systems and the use of them in ways which do not impair their beneficial functions;

4. To encourage the use of drainage systems which minimize the consumption of electrical energy or petroleum fuels to move water, remove pollutants, or maintain the system; and to minimize the transport of pollutants to community waters;

5. To maintain or restore groundwater levels; and to protect, maintain or restore natural salinity levels in estuary areas and to prevent and reduce salt water intrusion in freshwater areas;

6. To minimize erosion and sedimentation; and to discourage drainage of wetlands;

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7. To prevent damage from flooding, while recognizing that natural fluctuations in water levels are beneficial; to protect, restore, and maintain the habitat of fish and wildlife; and minimize the production of nuisance and disease vectoring mosquitoes; and

8. To ensure the attainment of these objectives by requiring the approval and implementation of surface water management plans for all activities which may have a significant impact upon community waters.

C. **Applicability and Surface Water Management Plan Required**

1. Unless exempted pursuant to Paragraphs C2 and C3, or waived pursuant to Paragraphs C4 – C6 below, a Surface Water Management Plan (SWMP) prepared by a Florida registered Civil Engineer must be submitted and approved before:

   a. A plat or replat is recorded or land is subdivided; or

   b. An existing drainage system is altered, rerouted, deepened, widened, enlarged or obstructed; or

   c. Development activities, including any of the following, are commenced:

      (1) Clearing and/or draining of land as an adjunct to construction; or

      (2) Clearing and/or draining of non-agricultural land for agricultural purposes; or

      (3) Converting agricultural lands to non-agricultural uses; or

      (4) Changing the use of land and/or the construction of a structure or a change in the size of one (1) or more structures; or

      (5) Altering the shoreline or bank of any surface water body; or

      (6) Filling of depressional areas; or

      (7) Any activity which may result in the lowering of the water table; or

      (8) Any activity regulated by the SPRC

2. An exemption from the SWMP requirements may be obtained for certain projects, including but not limited to:

   a. The construction of single-family or duplex residential structures and their accessory structures (such as fences, storage sheds and septic tanks) in an existing subdivision, which has in place a SWMP approved in accordance with the provisions of this Section;

   b. Bona fide agricultural pursuits, including forestry, which do not involve the artificial drainage of land; and

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a. The construction of single-family or duplex residential structures and their accessory structures (such as fences, storage sheds and septic tanks) in an existing subdivision, which has in place a Surface Water Management Plan approved in accordance with the provisions of this Section;¶
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c. Any maintenance, alteration, use or improvement of an existing structure which does not change or affect the quality, rate, volume or location of surface water discharge.

3. The request for SWMP exemption must include the following:

a. A completed application form.

b. Three (3) copies of the approved subdivision lot grading plan.

4. A waiver of the SWMP requirements may be obtained for certain projects, including but not limited to:

a. The development of one (1) single-family or duplex residential construction not in an existing subdivision with an approved SWMP, where such construction does not substantially change or affect the quality, rate, volume or location of surface water discharge;

b. Maintenance work performed on existing mosquito control drainage canals for the purpose of protecting the public health, safety and welfare;

c. Maintenance work performed on public utility or transportation systems, provided such maintenance work does not alter the purpose and intent of the drainage system as constructed;

d. Developments having impervious surfaces of less than one thousand (1,000) square feet in area;

e. Redevelopment in the Downtown Overlay District with maximum 4,000 square feet of new impervious surfaces. The applicant must provide reasonable assurance that adjacent or nearby properties not owned or controlled by the applicant will not be adversely affected by drainage or flooding. The applicant must also provide reasonable assurance that there will not be a violation of the state Surface Water Quality Standard (Chapter 62-302 F.A.C.).

5. The request for SWMP waiver must include the following:

a. A completed application form.

b. Three (3) copies of a current topographical survey of the existing site showing all existing structures (if any), contour lines at 1 foot intervals extending to a minimum one contour beyond the property lines, on-site elevations and off-site elevations at least 10 feet beyond the property lines;

c. Three (3) copies of the proposed lot grading plan showing the proposed development conditions, proposed structures, proposed elevations and contour lines at 1 foot intervals. There must be sufficient elevation shots and flow arrows to indicate the intended drainage pattern.

d. One (1) copy of any supporting documentation.

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6. The City Engineer may grant such a waiver if the applicant demonstrates the development is not likely to:

   a. Significantly increase or decrease the rate or volume of surface water runoff; or

   b. Have any significant adverse impact on a wetland, watercourse, or waterbody; or

   c. Significantly contribute to the degradation of water quality.

7. The following types of development shall not be eligible to receive a SWMP waiver:

   a. Shopping centers;

   b. Industrial or commercial facilities outside the Downtown Overlay District;

   c. Subdivisions;

   d. Impervious surfaces greater than one thousand (1,000) square feet in area; and

   e. New Impervious surfaces greater than 4,000 square feet in area for redevelopment in the Downtown Overlay District.

8. Where a Surface Water Management Plan is required, submit minimum four (4) copies of all required data for single family residential development and minimum nine (9) copies for non-residential or subdivision. The data submitted must include the following:

   a. A current topographical survey of the existing site prepared by a Florida registered Land Surveyor showing all existing structures (if any), contour lines at 1 foot intervals extending to minimum one contour beyond the property lines, on-site elevations and off-site elevations at least 50 feet beyond the property lines;

   b. A proposed lot grading plan prepared by a Florida registered Civil Engineer showing the proposed development conditions, proposed structures, proposed on-site retention/detention area and proposed elevations and contour lines at 1 foot intervals. There must be sufficient elevation shots and flow arrows to indicate the intended drainage pattern.

   c. A proposed Surface Water Management Plan prepared by a Florida registered Civil Engineer in accordance with this Section of the Land Development Code.

9. This Section shall not be construed to prevent the doing of any act necessary to prevent any material harm to or the destruction of any real or personal property as a result of a present emergency including, but not limited to, fire and hazards resulting from violent storms or hurricanes or when the property is in imminent peril and obtaining a permit prior to such act is impractical. A report of any such emergency action taken shall be made to the City Engineer by the owner or person in control of the property on which the emergency

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action was taken as soon as practicable, but no more than ten (10) days following such action. Remedial action may be required by the City Engineer, subject to appeal to the City Commission in the event of dispute.

D. **Procedures and Fees**

1. **Exemption or Waiver Requests**

a. Any person requesting a SWMP exemption or waiver, as outlined in Sections 18C2 to 18C6 above, shall submit the required application to the City Building Department (or the SPRC as applicable) for review by the City Engineer.

b. Within fifteen (15) working days after submission of the completed application, the City Engineer shall notify the applicant that the request has been approved or denied and whether a Surface Water Management Plan must be submitted by the applicant.

c. Approval of exemption or waiver does not relieve the applicant of obtaining Building Permit and/or Engineering Permit for the proposed work, the responsibility to control erosion and flooding and to comply with all other applicable standards, rules and ordinances of the City of Ormond Beach.

d. A review fee will be collected at the time of submission of all applications and will reflect the cost of administering and managing the review and permitting processes. Such fees shall be as stated in Chapter 1, Article IV.

2. **Standard Single Family or Duplex Residential Developments**

a. Within fifteen (15) working days after submission of a completed SWMP, the City Engineer shall approve, with or without specified conditions or modifications, or reject the plan and shall notify the applicant accordingly. If the City Engineer has not rendered a decision within fifteen (15) working days after plan submission, then the applicant shall be informed of the status of the review process and anticipated completion date. If the plan is rejected or modified, the City Engineer shall provide to the applicant the basis for such action.

b. A review fee will be collected at the time of submission of all applications and will reflect the cost of administering and managing the review and permitting processes. Such fees shall be as stated in Chapter 1, Article IV.

c. The applicant shall call the City Engineer's office for scheduling the following inspections 48 hours prior to the initiation of any site construction activity:

(1) **Initial Inspection:** Prior to the approval of the SWMP;

(2) **Erosion Control Inspection:** As necessary to ensure effective control of erosion and sedimentation prior to the start of grading activities;

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(3) **Bury Inspection:** Prior to burial of any underground drainage structure;

(4) **Final Grading Inspection:** Prior to placement of sod; and

(5) **Final Inspection:** When all work, including installation of all storm drainage structures, have been completed.

d. The City Engineer shall inspect the work and shall either approve it or notify the applicant in writing in what respects there has been a failure to comply with the requirements of the approved SWMP. Any portion of the work which does not comply shall be promptly corrected by the applicant or the applicant will be subject to the penalty provisions of Subsection K.

e. An aggrieved applicant may appeal any final decision or determination of the City Engineer under this Section to the City Commission. The appeal shall be filed in writing in the office of the City Clerk within twenty (20) days of the date of official transmittal of the final decision or determination to the applicant, shall state clearly the grounds on which the appeal is based, and shall be processed in the manner prescribed for hearing administrative appeals.

3. **Standard Non-Residential and Subdivision Developments**

a. Any person submitting a Non-Residential or Subdivision SWMP, as outlined in Sections 18C7 and 18C8 above, shall submit the required application to the City Planning Department for review by the Site Plan Review Committee (SPRC) in accordance with Chapter 4, Articles I and II.

b. A review fee will be collected at the time of submission of all applications and will reflect the cost of administering and managing the review process. Such fees shall be as stated in Chapter 1, Article IV.

c. The Surface Water Management Plan shall not be approved unless it clearly indicates that the proposed development will meet the performance standards described in Subsection F, except where off-site management is granted pursuant to Subsection I.

E. Contents of Surface Water Management Plan

1. It is the responsibility of the applicant to include in the Surface Water Management Plan sufficient information for the City Engineer to evaluate the environmental characteristics of the affected areas, the potential and predicted impacts of the proposed activities on surface waters and on the area wide drainage system and the effectiveness and acceptability of those measures proposed by the applicant for reducing any adverse impacts. The Surface Water Management Plan shall contain maps, charts, graphs, tables, photographs, narrative descriptions and explanations and citations to

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supporting references, as appropriate to communicate the information required by this Article.

2. The Surface Water Management Plan shall contain the names, addresses and telephone numbers of the owner and the developer. In addition, the legal description of the property shall be provided, and its location with reference to such landmarks as major water bodies, adjoining roads, railroads, subdivisions or towns shall be clearly identified by a map.

3. The existing environmental and hydrologic conditions of the site and of receiving waters and wetlands shall be described in detail, including the following:

   a. The direction, flow rate, and volume of surface water runoff under existing conditions and, to the extent practicable, predevelopment conditions.

   b. The location of areas on the site where surface water collects or percolates into the ground and site-specific percolation rates as established by a testing lab.

   c. A description of all watercourses, water bodies and wetlands on or adjacent to the site or into which surface waters flow and any other existing drainage features. Information regarding their water quality and the current water quality classification, if any, given them by the FDEP shall be included. The wetlands description shall include whether it is herbaceous or forested, fresh or saltwater, and the dominant plant species in each stratum.

   d. Groundwater levels, including seasonal fluctuations as per standard geotechnical practices.

   e. Location of floodplains, floodplain classifications and elevations.

   f. Vegetation.

   g. Topography.

   h. Soils.

4. Proposed alteration of the site shall be described in detail, including:

   a. Changes in topography;

   b. Areas where vegetation will be cleared or otherwise disturbed;

   c. Areas that will be covered with an impervious surface and a description of the surfacing material;

   d. The size and location of any buildings or other structures; and

   e. Site plans are to include cross-sections, typical details, and rights-of-way, cut and fill calculations.

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5. All components of the drainage system and any measure for the detention, retention, or infiltration of water or for the protection of water quality shall be described in detail, including:

   a. The channel, direction, flow rate, volume and quality of surface water that will be conveyed from the site, with a comparison to existing conditions and, to the extent practicable, predevelopment conditions;

   b. Detention and retention areas, including plans for the discharge of contained water, maintenance plans, and predictions of water quality in those areas;

   c. Areas of the site to be used or reserved for percolating, including a prediction of the impact on groundwater quality;

   d. A plan for the control of erosion and sedimentation which describes in detail the type and location of control measures, the stage of development at which they will be put into place or used, and provisions for their maintenance;

   e. Any other information which the applicant or the City Engineer believes is reasonably necessary for an evaluation of the proposed development.

6. Low-Impact Development Sites.

   a. Integrated management practices identified on a map and corresponding design details in accordance with current low-impact development design manuals.

   b. Hydrologic computations to determine low-impact development stormwater requirements in accordance with the low-impact development design manuals specified in Section H herein.

   c. Hydrologic evaluation and design details for supplemental conventional stormwater management facilities in the event that integrated management practices alone cannot meet site stormwater management requirements.

   d. Identification of all storm drainage easements needed to establish locations of integrated management practices.

F. **Performance Standards.** Surface water management plans must demonstrate that the proposed development or activity has been planned and designed and will be constructed and maintained to meet each of the following standards:

   1. Maintain the natural hydrodynamic characteristics of the watershed;

   2. Protect or restore the quantity and quality of ground and surface waters;

   3. Ensure that erosion by wind or water, during and after development, is minimized;

   4. Protect groundwater levels;

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5. Protect the beneficial functioning of wetlands as areas for the natural storage of surface waters and the chemical reduction and assimilation of pollutants consistent with Section 3-1.10;

6. Prevent increased flooding and damage that result from improper location, construction and design of structures in areas which are presently subject to an unacceptable danger of flooding and demonstrate compliance to Section 7.03;

7. Prevent or reverse salt water intrusion;

8. Protect the natural fluctuating levels of salinity in estuarine areas; and

9. Minimize injury to flora and fauna and adverse impacts to fish and wildlife habitat;

10. Otherwise further the objectives of this Article;

11. Provide shoreline and wetland buffers as required in this Article; and

12. Maintain or improve infiltration, frequency and volume of discharges, and groundwater recharge.

G. **General Design Standards.** Surface water management plans must demonstrate that the proposed development or activity has been planned and designed and will be constructed and maintained to meet the general design standards of this Section.

1. Channeling runoff directly into water bodies shall be prohibited. Runoff shall be routed through swales and other stormwater systems designed to increase time of concentration, decrease velocity, increase infiltration, allow suspended solids to settle, and remove pollutants.

2. Natural watercourses shall not be dredged, cleared of vegetation, deepened, widened, straightened, stabilized or otherwise altered. Water shall be retained or detained before it enters any natural watercourse in order to preserve the natural hydrodynamics of the watercourse and to prevent siltation or other pollution.

3. The area of land disturbed by development shall be as small as practicable. Those areas which are not disturbed shall be protected by an adequate barrier from construction activity. Whenever possible, natural vegetation shall be retained and protected or xeriscaping used.

4. No grading, cutting and filling shall be commenced until erosion and sedimentation control devices have been installed between the disturbed area and water bodies, watercourses and wetlands and in accordance with the construction plans.

5. Land which has been cleared for development and upon which construction has not commenced shall be protected from erosion by appropriate techniques

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designed, at a minimum, to re-vegetate the area and designed in accordance with the plan for control of erosion and sedimentation.

6. Sediment shall be retained on the site of the development.

7. Wetlands and other water bodies shall not be used as primary sediment traps during development.

8. Erosion and sedimentation facilities shall receive regular maintenance to ensure that they continue to function properly.

9. Vegetated buffer strips shall be created or, where practicable, retained in their natural state along the banks of all watercourses, water bodies or wetlands. The width of the buffer shall be consistent with this Article and shall be sufficient to prevent erosion, trap the sediment in overland runoff, provide access to the waterbody and allow for periodic flooding without damage to structures.

10. Artificial watercourses shall be designed taking into consideration the soil type, so that the velocity of flow is low enough to prevent erosion.

11. Any intermittent watercourse that is not lined with asphalt, concrete or other impervious surface and set amid its natural condition shall be vegetated consistent with those standards established in this subsection.

12. Retention and detention ponds shall be used to retain and detain the increased and accelerated runoff which the development generates. Water shall be released from detention ponds into watercourses or wetlands at a rate and in a manner approximating the natural flow which would have occurred before development.

13. Although the use of wetlands for storing and purifying water is encouraged, care must be taken not to overload their capacity, thereby harming the wetlands and transitional vegetation. Purifying can be employed as a secondary means of stormwater treatment and should not be construed as the primary means of water quality treatment. Wetlands shall not be damaged by the construction of detention ponds except as permitted under the Wetlands Protection section of this Article.

14. Where possible, natural vegetation shall be used as a component of stormwater management and drainage design. The water table shall not be manipulated so as to endanger natural vegetation beneficial to water quality unless natural vegetation can be replanted and survive with a lowered water table condition.

15. Stormwater runoff shall be consistent with Best Management Practices (such as The Florida Development Manual published by DEP) prior to discharge into natural or artificial drainage systems. Best Management Practice or combination of practices shall be determined by the City Engineer as the most

effective, practical means of managing runoff and preventing or reducing the amount of pollution generated by the project to a level compatible with Florida water quality standards, as set forth in Chapter 62, Florida Administrative Code or as otherwise established by the State or this Code.

16. Runoff computations shall be based on the most critical factor including, but not limited to, rainfall duration, distribution, soil moisture conditions and conform to acceptable engineering practices using rainfall data and other local information available for the affected area.

17. No site alteration shall cause siltation of wetlands, pollution or impair the filtering capabilities of wetlands.

18. No site alteration shall allow water to become a health hazard or contribute to the breeding of mosquitoes.

19. All site alteration activities shall provide for such water retention and settling structures and flow attenuation devices as may be necessary to ensure that the standards and requirements of this Article are met.

20. The design of water retention or detention structures and flow attenuation devices shall be subject to the approval of the City Engineer; detention structures shall be designed to release runoff to the downstream drainage system over a period of time so as not to exceed the capacity of the existing downstream system.

21. The banks of detention and retention areas shall slope at a gentle grade into the water as a safeguard against drowning, personal injury or other accidents, to encourage the growth of vegetation and to allow the alternate flooding and exposure of areas along the shore as water levels periodically rise and fall.

22. The use of drainage facilities and vegetated buffer zones as open space, recreation and conservation areas shall be encouraged.

23. The surface water management plan may include the use of street curbs and gutters and open ditches as transportation arteries for the stormwater, provided that the length and grade of the street are not too great, thereby permitting the accumulation of excessive amounts of water in the street proper; culverts shall be used at all points where open ditches occur at street or driveway crossings; underground storm sewers shall be used if the area to be drained is too large for normal-sized drainage ditches; the decision in this respect shall be made by the City Engineer.

24. Runoff shall be treated to remove oil and floatable solids before discharge from the site in a manner approved by the City Engineer.

25. The design of stormwater management systems shall minimize or eliminate larval mosquito production. Wet retention/detention systems require a minimum pond depth between the normal water depth and pond bottom to be

eight feet (8'). Dry retention/detention systems require low water table, permeable soils with the bottom elevation at least one foot (1') above seasonal high water table. Intermittent wet/dry systems shall use minnow reservoirs where practical.

H. **Specific Design Standards.** Surface water management plans must demonstrate that the proposed development or activity has been planned and designed and will be constructed and maintained to meet the specific design standards of this Section.

1. **Lowering of the Water Table.** For the temporary lowering of the water table during the course of constructing detention and retention facilities and for the purpose of permanently protecting road construction it is presumed that such activities do not conflict with the objectives of this Section if all of the following are met:

   a. The development site is not in an area known to the City, based on data collected and interpreted by the US Geological Survey, the St. Johns River Water Management District, the Volusia City-County Water Supply Cooperative, the City Engineer or other qualified professionals, as being important to the recharge of, or to prevention of discharge from, the Floridan aquifer.

   b. The proposed temporary and permanent lowering of the water table shall be over no more than fifteen percent (15%) percent of the surface area of the site to a depth of five feet (5'), said depth being measured at the overflow elevations of the retention area(s).

   c. If ditches, underdrains or similar devices are used to lower the water table, the lateral volumetric effect will be calculated, and the volume required for retention shall be increased by that volume.

   d. The high water table may be permanently lowered up to two feet (2') below the undisturbed ground in the vicinity of roads for the purpose of protecting the subbase and base of the roadway or for the purpose of preventing mosquito breeding in the roadside swales. However, no adverse impacts shall occur to adjacent wetlands except for those arterial roads serving the overriding public interest and as permitted under Wetlands Protection.

   e. The lowering of the water table will, in the professional opinion of the City Engineer, have no adverse impact on the wetlands as defined in this Article. The City Engineer's decision shall be based, in part, on documentation presented by the applicant regarding determination of such impacts as made by a qualified biologist experienced in wetlands ecology.

   f. The lowering of the water table will not, in the professional opinion of the City Engineer, increase surface water flows to the detriment of neighboring lands.

2. **Lesser Developments.** The following shall apply for a proposed development which consists of no more than five thousand (5,000) square feet of

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a. The volume of retention to be provided shall be equivalent to one inch (1.0") of runoff over the entire project area, including both pervious and impervious areas.¶
b. For those soil or groundwater table conditions which do not permit the percolation of this volume of water within seventy-two (72) hours following the storm event, the City Engineer may approve detention with an acceptable filtration system in lieu of retention.¶
3. **Standard Development.** The following shall apply for a proposed development which consists of more than five thousand (5,000) square feet of impervious area and/or which is proposed for a parcel of record, under single ownership, which is one (1) acre or more in total size:¶
a. **Total Retention.** All detention/retention facilities must have a positive discharge except as approved by the City Engineer. If total retention is allowed, the basin must recover to its design low water stage within seventy-two (72) hours. To provide the City with assurances, a double ring infiltrometer test must be performed at the same elevation as the bottom of the basin and a safety factor of four (4) shall be applied to the design.¶
b. **Detention Basin Design Criteria** ¶
<#>**General Design Methodologies.** The design method used for detention basin design shall be determined by the area of the project size and all contributing areas in accordance with: SCS Method: Type II Florida Modified Distributions.¶
<#>**Detention Basin Design Analysis.** The development construction pl ... [20]

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impervious area and which is proposed for a parcel of record which is less than one (1) acre in total size;

a. All post-development runoff, not otherwise treated on site, must be treated in dry retention basins having maximum 4:1 side slopes and with seasonal high water table located one (1) foot minimum below the bottom of the basin;

b. The total volume of runoff to be treated shall be equivalent to one (1) inch of runoff over the entire project area, including both pervious and impervious areas;

c. The volume of retained runoff must percolate into the soil within seventy-two (72) hours following the storm event (basin recovery) with a Factor of Safety of 2 applied to the soil permeability;

d. The retention basin must be provided with a skimmer controlled overflow or control structure to discharge the pre-development stormwater runoff, at a rate not to exceed the pre-development flow. The discharge must be provided with a defined drainage path, in accordance with the requirements for "Off-site Drainage Facilities" outlined in Section 3-18I;

e. For those soil or groundwater table conditions which do not permit the percolation of the total volume of retained water within seventy-two (72) hours following the storm event, the City Engineer may approve detention with an acceptable skimmer controlled orifice discharge system in lieu of retention;

f. Manufactured sediment & oil separators for parking lots and roadways may be substituted for dry retention/detention basins in the Downtown Overlay District, with the approval of the City Engineer.

3. **Standard Development.** The following shall apply for a proposed development which consists of more than five thousand (5,000) square feet of impervious area and/or which is proposed for a parcel of record, under single ownership, which is one (1) acre or more in total size:

a. Detention/Retention Design Criteria

(1) General Design Methodologies. The design method used for detention/retention basin design shall be determined by the area of the project size and all contributing areas in accordance with: SCS Method: Type II Florida Modified Distributions.

(2) Detention/Retention Basin Design Analysis. The development construction plans must be accompanied by a complete detention/retention analysis showing:

(a) Overall drainage layouts, including all on-site and off-site drainage areas contributing to the basin

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<#>General Design Methodologies. The design method used for detention/retention basin design shall be determined by the area of the project size and all contributing areas in accordance with: SCS Method: Type II Florida Modified Distributions.¶
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(b) Calculations showing inflow, discharge, storage capacity, minimum and maximum design water depth and detention time, capacity of the receiving system, tailwater conditions at the outlet structure.

(c) The outflow hydrograph shall reflect the varying pond discharge from the design low water to design high water.

(d) For inflow calculations the following methods shall be utilized:

(i) Twenty-five (25)year storm-developed conditions SCS Method consistent with H3b(1); and

(ii) Five (5)-year storm developed conditions Rational Method to be used for analysis of pipe system. This simulation shall be run with tailwater conditions at the 25-year storm event elevation.

(e) For outfall calculations the following methods shall be utilized:

(i) The maximum allowable outflow rate shall be based on the runoff rate for existing conditions using the twenty-five (25)-year SCS design storm.

(ii) The outflow rate shall not exceed the capacity of the downstream drainage system based on the appropriate inflow-outflow design storm for that system.

(iii) For the Subdivision Downstream Drainage System, the outflow rate shall not exceed the capacity of the downstream system based on a five- (5) year Rational design storm inflow into the detention pond.

(iv) For Major Outfalls, the outflow rate shall not exceed the capacity of the downstream system based on a 25-year SCS design storm inflow into the detention pond.

(3) **Storage Required**

(a) The storage required shall be that volume necessary to store the difference between the 25-year SCS storm developed condition runoff and the 25-year SCS storm existing-condition runoff.

(b) When downstream drainage systems will not accept runoff generated by the proposed development from the appropriate storm due to existing conditions or other special instances, the development will be required to provide a drainage system

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which will not increase flooding downstream and which will maintain the adopted level-of-service standards.

(c) Detention basins are required to draw down to their required 25-year storm runoff storage capacities in 72 hours either by percolation in the soil or by a properly sized drawdown orifice.

4. **Soil Information.** All proposed developments shall submit information regarding soil characteristics in proposed detention/retention stormwater management systems as follows:

   a. Soil borings shall be made to a depth which equals the design low water, seasonal high water table, or the pond bottom if dry.

   b. Soil types, water table elevations to be included and illustrated as a part of the detailed lake construction plans.

   c. No less than one (1) boring per acre or fraction thereof of lake water surface at design low water elevation shall be provided, or as specified by the City Engineer.

   d. If the analysis of the basin utilized infiltration to achieve either peak flow attenuation or recovery time, a permeability test shall be performed at the bottom of the proposed basin. A factor of safety of two (2) shall be used on the soil permeability for design calculations, except as specified for total retention.

5. **Total Retention Basins.**

   a. All detention/retention basins must have a skimmer controlled discharge to pass pre-development stormwater runoff, except if approved by the City Engineer for total retention of combined pre and post development runoff;

   b. If total retention is allowed, the total volume of runoff must percolate into the soil within seventy-two (72) hours with a Factor of Safety of 4 applied to the soil permeability;

   c. To provide the City with assurances, a soil permeability test must be performed at the same location and elevation as the bottom of the basin.

6. **Low Impact Development Storm Water Management (LIDSWM):**

   a. The City of Ormond Beach encourages the incorporation of LIDSWM strategies and techniques in Site Plan design to minimize the volume of and/or maximize the water quality of all post-development runoff discharges from the site by using landscaping as a drainage feature.

   b. The goal is to use decentralized source control measures to approximate the pre-development stormwater conditions. This includes, but is not limited to, structural and non-structural strategies such as reduction and/or isolation of impervious areas, retention/detention systems and infiltration/exfiltration systems.

   c. Impervious Area Reduction:

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The following strategies to reduce impervious areas on the site plan are encouraged:

(i) Prepare site specific parking generation studies which may be used to justify reduction in the Code required parking demand ratio.

(ii) Provide minimum stall dimensions, create angle parking to reduce driving lane width and create designated compact car spaces.

(iii) Provide spillover parking areas with pervious surfaces for spaces required during peak demand only.

(iv) Allow shared lots between businesses with peak demand at different times. For example, a restaurant with evenings and weekend peak parking demand could share parking with an office building with week day peak parking demand.

d. Impervious Area Disconnection:

The disconnection of relatively small impervious areas such as roofs from the primary stormwater conveyance system is encouraged to reduce runoff volume. The runoff from roof leaders may be disconnected and redirected onto a pervious surface such as a planter box or a vegetated area to potentially reduce the primary runoff volume and filtering out pollutants.

e. Infiltration/Exfiltration Systems:

(i) These basins, trenches or beds are designed to capture a stormwater runoff volume, hold this volume and infiltrate it into the ground over a period of seventy two (72) hours maximum.

(ii) Surface infiltration and subterranean exfiltration systems are permitted for a maximum of 80% of the post-development stormwater runoff where the systems are located in Class A soil and the seasonal high water table is located one (1) foot minimum below the bottom of the systems. The remaining 20% must be stored in a retention/detention basin hydraulically connected to the infiltration/exfiltration systems.

(iii) These systems require pretreatment of the stormwater with a sump and skimmer controlled inlet, or equivalent, to minimize system failure by plugging.

f. **Incorporation by reference.**

The following documents are incorporated by reference:

(i) Low-Impact Development Design Strategies: An Integrated Design Approach, United, States Environmental Protection

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Agency, Office of Water, EPA 841-B-00-003 dated June 1999 and subsequent modifications and updates thereof.

(ii) Low-Impact Development Hydrologic Analysis, United States Environmental Protection Agency, Office of Water, EPA 841-B-00-002 dated June 1999 and subsequent modifications and updates thereof.

7. **Storm Drainage System Materials**. The following materials shall be used for all storm drainage systems:

a. Pipe used in the construction of storm drainage systems shall be reinforced concrete pipe (RCP), high density polyethylene pipe (HDPE) or polyvinyl chloride pipe (PVC) conforming to standard specifications as currently adopted by the FDOT at the time of permitting for the system.

b. Catch basins, inlets and manholes shall be either masonry or reinforced concrete with cast iron frame and grating or cover, conforming to standard specifications as currently adopted by the FDOT at the time of permitting for the system.

c. Storm sewers or culverts used within areas to be maintained by the City shall be a minimum size of fifteen inches (15") round or fifteen-inch (15") elliptical equivalent.

d. Outlet structures are required on all ponds. All outlet structures shall be permanent concrete overflow weir or concrete outlet control structures. No sodded weirs or other non-permanent overflows shall be allowed.

e. As otherwise stipulated in Chapter 3, Article V.

8. **Retention/Detention Areas**

a. Retention areas are prohibited in front or side corner yards except when such areas are no more than two feet (2') deep and are appropriately landscaped or when designed as an aesthetically pleasing lake area that will not be temporarily dry.

b. All retention/detention areas shall be landscaped in accordance with Article VIII of this Code, to include trees, and irrigated to the satisfaction of the Landscape Architect so as to buffer views of dry ponds and to provide appropriate littoral zone planting in wet retention ponds.

c. Side slopes, above the mean high waterline, and the area up to two feet (2') beyond the top of the bank shall be sodded and landscaped and provided with an irrigation system in accordance with Chapter 3, Article I of this Code. Natural vegetation, wetland species or xeriscaping materials may be used and maintained as approved by the Landscape Architect.

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a. Pipe used in the construction of storm drainage systems shall be reinforced concrete, aluminum or bituminous coated corrugated metal pipe and pipe arch or corrugated polyethylene pipe conforming to standard specifications as currently adopted by the FDOT at the time of permitting for the system. ¶
b. Catch basins, inlets and manholes shall be either masonry or reinforced concrete Class B finished with cast iron frame and grating or cover, conforming to standard specifications therefor as currently adopted by the FDOT at the time of permitting for the system.¶
c. Storm sewers or culverts shall be a minimum size of fifteen inches (15") in diameter.¶
d. As otherwise stipulated in Chapter 3, Article V.¶
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d. Sideslopes are not to be steeper than a maximum of 4:1 (Horizontal: Vertical) and shall be used on all man-made basins. Sideslopes of 4:1 or flatter shall be designed from a point two feet (2') below the design normal water elevation to the top of bank. Sideslopes steeper than 4:1 may be approved by the City Engineer provided permanent bank stabilization and fencing is constructed. Steeper sideslopes to a maximum of 2:1 may be used from a point two feet (2') below the design normal water elevation to the pond bottom.

e. Backslopes to basin areas are not to be steeper than 3:1 (Horizontal: Vertical) unless otherwise approved by the City Engineer and shall be constructed with permanent bank stabilization. Sodding alone may not be adequate on steeper slopes and may require geotextile erosion matting if required by the City Engineer.

f. Fencing shall be required if the minimum side slope criteria were not followed and if in the opinion of the City Engineer the retention/detention area represents a potential danger to the public safety.

g. Other than portions that are sodded or perimeter area landscaping, retention/detention areas shall not be used to meet minimum landscape requirements.

h. Water elevation must be controlled by a drainage structure which contains a bleed down orifice sized to control off-site discharge in accordance with City design requirements.

i. Wet detention ponds shall be designed such that the minimum depth of the permanent pool is eight feet (8') and maximum depth is twelve feet (12') as measured from the control orifice (normal water level) to the pond bottom.

j. The top of wet detention ponds shall be designed with a minimum 8 ft. wide maintenance access berm all around and with a minimum 12 inch freeboard above the design high water level.

k. The top of dry retention ponds shall be designed with a minimum 3 ft. wide maintenance berm all around and with a minimum 6 inch freeboard above the design high water level.

9 **Drainage Ditches.** All drainage ditches shall be designed to at least meet the following criteria:

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a. All ditches shall be sized using accepted engineering practices. In all cases sufficient engineering data giving the drainage area, velocity, and depth of flow is to be included in the drainage analysis.

b. Unless unstable or highly erosive soil conditions indicate a lower design velocity desirable or unless erosion protection is provided, the maximum allowable velocity of water in a ditch shall be two feet (2') per second.

c. Ditch grades shall be the minimum required to provide for design flow.

d. All ditches shall be constructed with permanent bank stabilization. Sodding alone may not be adequate on steeper slopes and may require geotextile erosion matting if required by the City Engineer.

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I. Off-Site Drainage Facilities

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J. Maintenance

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K. Enforcement and Violation

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The following documents are incorporated by reference:¶

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<#>Low-Impact Development Design Strategies: An Integrated Design Approach, United,States Environmental Protection Agency, Office of Water, EPA 841-B-00-003 dated June 1999 and subsequent modifications and updates thereof. ¶

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<#>Low-Impact Development Hydrologic Analysis, United States Environmental Protection Agency, Office of Water, EPA 841-B-00-002 dated June 1999 and subsequent modifications and updates thereof¶

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The following development activities are exempt from the Surface Water Management Plan requirement:

a. The construction of single-family or duplex residential structures and their accessory structures (such as fences, storage sheds and septic tanks) in an existing subdivision, which has in place a Surface Water Management Plan approved in accordance with the provisions of this Section;

b. The development of one (1) single-family or duplex residential construction not in an existing subdivision, where such construction does not change or affect the quality, rate, volume or location of surface water discharge;

c. Bona fide agricultural pursuits, including forestry, which do not involve the artificial drainage of land; and

d. Any maintenance, alteration, use or improvement of an existing structure which does not change or affect the quality, rate, volume or location of surface water discharge.

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This Section shall not be construed to prevent the doing of any act necessary to prevent any material harm to or the destruction of any real or personal property as a result of a present emergency including, but not limited to, fire and hazards resulting from violent storms or hurricanes or when the property is in imminent peril and obtaining a permit prior to such act is impractical. A report of any such emergency action taken shall be made to the City Engineer by the owner or person in control of the property on which the emergency action was taken as soon as practicable, but no more than ten (10) days following such action. Remedial action may be required by the City Engineer, subject to appeal to the City Commission in the event of dispute.

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A waiver of the Surface Water Management Plan requirement for projects which involve, but are not limited to, maintenance work performed on existing mosquito control drainage canals for the purpose of protecting the public health, safety and welfare; maintenance work on public utility or transportation systems, provided such maintenance work does not alter the purpose and intent of the drainage system as constructed; or developments having impervious surfaces of less than one thousand (1,000) square feet in area, may be obtained by submitting an application therefor on forms supplied by the City Engineer. The application shall contain:

a. The names, addresses and telephone numbers of the developer and owner; and

b. A description and a drawing of the proposed development; and

c. The location of the development; and

d. A sketch of the proposed development that shows all existing structures and existing spot elevations of natural ground. Additional ground contours and other information may be required by the City Engineer to reasonably evaluate the proposed development.

e. The City Engineer may grant such a waiver if the application demonstrates the development is not likely to:

Significantly increase or decrease the rate or volume of surface water runoff; or

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Have any significant adverse impact on a wetland, watercourse, or waterbody; or

Significantly contribute to the degradation of water quality.

f. The following types of development shall not be eligible to receive such a waiver:

Shopping centers;

Industrial or commercial facilities;

Subdivisions; and

Impervious surfaces greater than one thousand (1,000) square feet in area.

1. Any person planning a development requiring a surface water management plan shall submit such plan or an application for waiver to the City Engineer. Within fifteen (15) working days after submission of the completed waiver application, the City Engineer shall notify the applicant that the waiver has been approved or denied and whether a Surface Water Management Plan must be submitted by the applicant.

2. A permit fee will be collected at the time the Surface Water Management Plan or the application for waiver is submitted and will reflect the cost of administering and managing the permitting process. Such fee shall be as stated in Chapter 1, Article IV.

3. Within fifteen (15) working days after submission of the completed water management plan, the City Engineer shall approve, with or without specified conditions or modifications, or reject the plan and shall notify the applicant accordingly. If the City Engineer has not rendered a decision within fifteen (15) days after plan submission, then the applicant shall be informed of the status of the review process and the anticipated completion date. If the plan is rejected or modified, the City Engineer shall provide to the applicant the basis for such action.

4. The Surface Water Management Plan shall not be approved unless it clearly indicates that the proposed development will meet the performance standards described in Subsection F, except where off-site management is granted pursuant to Subsection I.

5. The applicant shall arrange with the City Engineer for scheduling the following inspections prior to the initiation of any site construction activity:

   a. Initial Inspection: Prior to approval of the Surface Water Management Plan;

   b. Bury Inspection: Prior to burial of any underground drainage structure;

   c. Erosion Control Inspection: As necessary to ensure effective control of erosion and sedimentation; and

   d. Finish Inspection: When all work, including installation of all drainage facilities, has been completed.

   The City Engineer shall inspect the work and shall either approve it or notify the applicant in writing in what respects there has been a failure to comply with the requirements of the approved Surface Water Management Plan. Any portion of the work which does not comply shall be promptly corrected by the applicant or the applicant will be subject to the penalty provisions of Subsection J.

6. An aggrieved applicant may appeal any final decision or determination of the City Engineer under this Section to the City Commission. The appeal shall be filed in writing in the office of the City Clerk within twenty (20) days of the date of official transmittal of the final decision or determination to the applicant, shall state clearly the grounds on which the appeal is based, and shall be processed in the manner prescribed for hearing administrative appeals.

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1. **Exemption or Waiver Requests**

a. Any person requesting a SWMP exemption or waiver, as outlined in Articles 18C2 to 18C6 shall submit the required application to the City Building Department for review by the City Engineer.

b. Within fifteen (15) working days after submission of the completed application, the City Engineer shall notify the applicant that the request has been approved or denied and whether a Surface Water Management Plan must be submitted by the applicant.

c. Approval of exemption or waiver does not relieve the applicant of obtaining Building Permit and/or Engineering Permit for the proposed work, the responsibility to control erosion and flooding and to comply with all other applicable standards, rules and ordinances of the City of Ormond Beach.

A review fee will be collected at the time of submission of all applications and will reflect the cost of administering and managing the review and permitting processes. Such fees shall be as stated in Chapter 1, Article IV.

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a.

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a. Any person submitting a Non-Residential or Subdivision SWMP, as outlined in Articles 18C7 and 18C8, shall submit the required application to the City Planning Department for review by the Site Plan Review Committee (SPRC) in accordance with Chapter 4, Articles I and II.

b. A review fee will be collected at the time of submission of all applications and will reflect the cost of administering and managing the review process. Such fees shall be as stated in Chapter 1, Article IV.

The Surface Water Management Plan shall not be approved unless it clearly indicates that the proposed development will meet the performance standards described in Subsection F, except where off-site management is granted pursuant to Subsection I.

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2. **Lesser Developments.** The following shall apply for a proposed development which consists of no more than five thousand (5,000) square feet of impervious area and which is proposed for a parcel of record which is less than one (1) acre in total size:

   a. The volume of retention to be provided shall be equivalent to one inch (1.0”) of runoff over the entire project area, including both pervious and impervious areas.

   b. For those soil or groundwater table conditions which do not permit the percolation of this volume of water within seventy-two (72) hours following

the storm event, the City Engineer may approve detention with an acceptable filtration system in lieu of retention.

3. **Standard Development.** The following shall apply for a proposed development which consists of more than five thousand (5,000) square feet of impervious area and/or which is proposed for a parcel of record, under single ownership, which is one (1) acre or more in total size:

   a. **Total Retention.** All detention/retention facilities must have a positive discharge except as approved by the City Engineer. If total retention is allowed, the basin must recover to its design low water stage within seventy-two (72) hours. To provide the City with assurances, a double ring infiltrometer test must be performed at the same elevation as the bottom of the basin and a safety factor of four (4) shall be applied to the design.

   b. **Detention Basin Design Criteria**

      General Design Methodologies. The design method used for detention basin design shall be determined by the area of the project size and all contributing areas in accordance with: SCS Method: Type II Florida Modified Distributions.

      Detention Basin Design Analysis. The development construction plans must be accompanied by a complete detention analysis showing:

   (a) Overall drainage layout including all drainage areas contributing to the detention basin.

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(a) Soil borings shall be made to a depth which equals the design low water, seasonal high water table, or the pond bottom if dry.

(b) Soil types, water table elevations to be included and illustrated as a part of the detailed lake construction plans.

(c) No less than one (1) boring per acre or fraction thereof of lake water surface at design low water elevation shall be provided, or as specified by the City Engineer.

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(d) If the analysis of the basin utilized infiltration to achieve either peak flow attenuation or recovery time, a double ring infiltrometer test shall be performed at the bottom of the proposed basin. A safety factor of two (2) shall be used for design calculations.

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either shall be safety

(d) .If the analysis of the basin utilized infiltration to achieve peak flow attenuation or recovery time, a permeability test performed at the bottom of the proposed basin. A factor of of two (2) shall be used on the soil permeability for design calculations, except as specified for total retention.

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All detention/retention basins must have a skimmer controlled discharge to pass pre-development stormwater runoff, except if approved by the City Engineer for total retention of combined pre and post development runoff;

If total retention is allowed, the total volume of runoff must percolate into the soil within seventy-two (72) hours with a Factor of Safety of 4 applied to the soil permeability;

To provide the City with assurances, a soil permeability test must be performed at the same location and elevation as the bottom of the basin.

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