II. Water Quantity

1. For areas where the Commission is the local permitting authority, the fee schedule in **Appendix B** shall apply.

2. A development plan review by the local permitting authority is required for the following projects:

    a. Residential development or redevelopment on sites 8 acres or more, or

    b. Residential development or redevelopment on sites 5 acres or more with a density of more than 2 units per acre, or

    c. Commercial and industrial development or redevelopment on sites of one acre or more, or

    d. Road projects that result in a net increase in impervious surface area of one acre or more.

3. A plan review by the Commission is required for projects that transcend the boundaries of an adjoining community and will affect the communities' approved stormwater management plan.

4. Changes in the local communities' water quantity policies require review and approval of the Commission

5. Plans must be submitted to the local permitting authority for any proposed alteration of waterways, culvert or bridge installations or replacements in waterways. Plans must show the location of installation, diameter, length and type of culverts, proposed invert elevations, bridge details, etc. along with pertinent hydrologic computations.

6. The Commission promotes infiltration practices of the 2-year rainfall event for new development and redevelopment wherever it is practical and reasonable to do so, provided that past and existing land use practices do not have a significant potential to contaminate the stormwater runoff, the infiltration will not contaminate groundwater, the infiltration will have a regional benefit, and the soil characteristics are suitable for infiltration.

7. Landlocked depressions that presently do not have a defined outlet and do not typically overflow may be allowed a positive outlet provided the downstream impacts are addressed and the plan is approved by the local permitting authority. The project proposer shall provide this information.

8. The Commission recognizes that areas other than ponds, streams, wetlands, and lakes may be subject to storing stormwater runoff. These areas include acceptable levels of flooding within general depressions, low points, and street where structures and/or property are not damaged and any inundation that occurs is temporary in nature.

9. Unless regional storm water management facilities are available to accommodate the development, future discharge rates from new development and redevelopment shall not exceed the existing discharge rates during 2-, 10-, and 100-year storm events.

10. Flow rates in Elm, Diamond, and Rush Creek stream channels are to be maintained at pre-development flow rates for the 2-, 10-, and 100-year rainfall events by limiting the discharge rates from new development and redevelopment to equal to or less than the existing discharge rates.

11. Projects requiring review as defined in paragraphs 2., 3., and 4. above shall provide extended detention and/or runoff volume reduction to protect stream channels in the watershed.

    a. The minimum runoff volume to be controlled shall be the channel protection volume (Vcp) in acre-feet, obtained from Table 11.1 (below) by using the following methods:

$$V_{CP} = \frac{\text{Area of Site/Project in acres} \times \text{Value of R from Table 11.1, in inches}}{\text{12 inches/foot}} = \text{Volume in acre-feet}$$

    i. Determine Vcp for the new site/project with the existing impervious ratio.
    ii. Determine Vcp for the new site/project with the improved impervious ratio.
    iii. Use the difference between the two Vcp values to determine the runoff volume to be controlled.

Table 11.1 Inches of Runoff to be used in Determining Vcp

Impervious Ratio	A Soils	B Soils	C Soils	D Soils
0.00	0.03	0.18	0.22	0.17
0.05	0.07	0.23	0.28	0.22
0.10	0.11	0.29	0.34	0.28
0.15	0.16	0.36	0.40	0.33
0.20	0.21	0.43	0.47	0.39
0.25	0.28	0.50	0.54	0.45
0.30	0.35	0.58	0.61	0.51
0.35	0.43	0.67	0.68	0.58
0.40	0.53	0.76	0.76	0.65
0.45	0.63	0.85	0.84	0.71
0.50	0.74	0.96	0.93	0.79
0.55	0.86	1.07	1.02	0.86
0.60	0.99	1.18	1.11	0.93
0.65	1.13	1.30	1.20	1.01
0.70	1.29	1.44	1.30	1.09
0.75	1.46	1.58	1.41	1.17
0.80	1.64	1.72	1.52	1.26
0.85	1.84	1.88	1.63	1.35
0.90	2.06	2.05	1.75	1.44
0.95	2.30	2.23	1.87	1.54
1.00	2.57	2.42	2.00	1.63

b. Extended detention storage time is defined as the time between the center of mass of the inflow and outflow hydrographs. The minimum storage time shall be obtained from Table 11.2

Table 11.2 Required Storage Time

Site Area (acres)	Extended Detention Storage Time (hrs)
0 to 1	not required
1 to 30	24
30 to 40	36
40 +	48

c. The minimum recommended outflow orifice diameter is 3".(Alternative equivalent outflow such as V-notch weir can be used.) Lower release rates will require infiltration, filtration or alternative practices to provide control of the channel protection volume Vcp.

d. Infiltration, permanent storage or other volume reduction methods are encouraged and may be applied to reduce or eliminate the volume needed for extended detention storage.

e. Current Elm Creek standards (no. 10, above) require control of 2-year peak flows. This standard will result in 2-year peak discharges that are far less than existing conditions; therefore, sites meeting the proposed standard will not be required to demonstrate compliance with the current 2-year peak control standard.

f. Sidewalks and trails that do not exceed twelve feet (12'0") in width, are not constructed with other improvements, and have a minimum of five feet (5'0") of vegetated buffer on both sides are exempt from the channel protection volume reduction requirement. Road and driveway crossings do not disqualify the exemption.

11. The design of all major stormwater storage facilities shall attempt to accommodate the 100-year critical duration event.

13. Stormwater rate control structures and drainageways shall be placed within a drainage, utility, or flowage easement.

14. All new outlet structures must have outlet erosion control devices.

15. All submitted development plans must be in conformance with the approved local stormwater management plans