Stormwater Quality Control:

1. Direct runoff to a BMP: The site shall be designed to direct runoff from areas disturbed during construction to one or more of the following storm water management practices. These practices are listed in Table 2 of this regulation:

    a. Extended conveyance facilities that slow the rate of storm water runoff: filter and biodegrade pollutants in storm water; promote infiltration and evapotranspiration of storm water; and discharge the controlled runoff to a water resource.

    b. Extended detention facilities that detain storm water; settle or filter particulate pollutants; and release the controlled storm water to a water resource.

    c. Infiltration facilities that retain storm water; promote settling, filtering, and biodegradation of pollutants; and infiltrate all captured storm water into the ground based on the findings of the soil engineering report prepared for the site.

    d. Other BMPs may be approved by the City Engineer if the applicant demonstrates that they satisfactorily meet the objectives of this regulation.

2. Criteria Applying to all stormwater management practices: Practices chosen must be sized to treat the water quality volume (WQv) and to ensure compliance with Ohio Water Quality Standards (OAC Chapter 3745—I).

    a. The WQv shall be equal to the volume of runoff from a 0.75 inch rainfall event and shall be determined according to one of the following methods:

        (1) Through a site hydrologic study approved by the City Engineer that uses continuous hydrologic simulation; site-specific hydrologic parameters, including impervious area, soil infiltration characteristics, slope, and surface routing characteristics; proposed best management practices controlling the amount and/or timing of runoff from the site; and local long-term hourly records, or

        (2) Using the following equation:

            WQv = C*P*A/12

            where terms have the following meanings:

            WQv = water quality volume in acrefeet
            C runoff coefficient appropriate for storms less than 1 in.
            P= 0.75 inch precipitation depth
            A= area draining into the storm water practice, in acres.

    Runoff coefficients required by the Ohio Environmental Protection Agency (Ohio EPA) for use in determining the water quality volume are listed in Table 1.

Table 1: Runoff Coefficients Based on the Type of Land Use

Land Use	Runoff Coefficient
Industrial & Commercial	0.8
High Density Residential (>8 dwellings/acre)	0.5
Medium Density Residential (4 to 8 dwellings/acre)	0.4
Low Density Residential (<4 dwellings/acre)	0.3
Open Space and Recreational Areas	0.2
Where land use will be mixed, the runoff coefficient should be calculated using a weighted average.	

b. An additional volume equal to 20% of the WQv shall be incorporated into the storm water practice for sediment storage.

c. Storm water quality management practices shall be designed such that the drain time is long enough to provide treatment and protect against downstream bank erosion, but short enough to provide storage available for successive rainfall events as defined in Table 2.

Table 2: Draw Down Times for Storm Water Management Practices

Best Management Paractice	Drainage time of WQv
Infiltration	24-48 Hours
Extended Conveyance (Vegetated Swales, Filter Strips)	*
Extended Detention	
-Extended Dry Detention	48 Hours
-Wet Detention Basins**	24 Hours
-Constructed Wetlands (above permanent pool)	24 Hours
-Media Filtration, Bioretention	40 Hours
* Size to pass a hydrograph with a volume equal to the WQv, a duration of 2 hours, and peak rainfall intensity of 1 inch/hour at a depth of no more than 3 inches.	
** Provide both a permanent pool and an extended volume above the permanent pool, each sized with at least 0.75*WQv	

d. Each practice shall be designed to facilitate sediment removal, vegetation management, debris control, and other maintenance activities defined in the Inspection and Maintenance Agreement for the site.

3. Additional Criteria for Extended Detention Facilities:

a. The outlet shall be designed to release the bottom 50 percent of the water quality volume in no less than 2/3 of the drain time. A valve shall be provided to drain any permanent pool volume for removal of accumulated sediments. The outlet shall be designed to minimize clogging, vandalism, and maintenance.

b. The basin design shall incorporate the following features to maximize multiple uses, aesthetics, safety, and maintainability:

(1) Basin side slopes above the permanent pool shall have a run to rise ratio of 4:1 or flatter.

(2) The perimeter of all permanent pool areas deeper than 4 feet shall be surrounded by an aquatic bench that extends at least 8 feet and no more than 15 feet outward from the normal water edge. The portion of the aquatic bench closest to the shoreline shall have an average depth of 16 inches below the permanent pool to promote the growth of aquatic vegetation. The remainder of the aquatic bench shall be no more than 15 inches below the permanent pool to minimize drowning risk to individuals who accidentally or intentionally enter the basin, and to limit growth of dense vegetation in a manner that allows waves and mosquito predators to pass through the vegetation. The maximum slope of the aquatic bench shall be 10' (H) to 1' (V). The aquatic bench shall be planted with hearty plants comparable to wetland vegetation that are able to withstand prolonged inundation.

(3) A forebay designed to allow larger sediment particles to settle shall be placed at basin inlets. The forebay volume shall be equal to approximately 10% of the water quality volume (WQv).

4. Additional criteria applying to extended conveyance facilities

a. Swales and filter strips shall be lined with fine, turf-forming, water-resistant grasses to slow and filter flows. Maximum depth of flow shall be no greater than three inches.

b. Concentrated runoff shall be converted to sheet flow before entering an extended conveyance facility.

5. Additional criteria applying to infiltration facilities

a. Infiltration facilities shall only be allowed if the soils of the facility fall within hydrologic soil groups A or B, and if the seasonal high water table and any underlying bedrock are at least six feet below the final grade elevation.

b. All runoff directed into an infiltration basin must first flow through an extended conveyance facility to remove coarser sediments that could cause a loss of infiltration capacity.

c. During construction, all runoff from disturbed areas of the site shall be diverted away from the proposed infiltration basin site. No construction equipment shall be allowed within the infiltration basin site to avoid soil compaction.

6. Alternative post-construction BMP's: The applicant may request approval from the City Engineer for the use of alternative structural post-construction BMP's if the applicant shows, to the satisfaction of the City Engineer and with prior written approval from Ohio EPA, that these BMP's are equivalent in pollutant removal and runoff flow/volume reduction effectiveness to those listed in Table 2.