

**CHAPTER 320B  
POST-CONSTRUCTION WATER QUALITY RUNOFF**

**320B.01 DEFINITIONS:** As used in this chapter, the following words and terms shall mean the following:

**BEST MANAGEMENT PRACTICE (BMP):** Any practice or combination of practices that is determined to be the most effective, practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of pollution generated by nonpoint sources of pollution to a level compatible with water quality goals. BMPs may include structural practices, conservation practices and operation and maintenance procedures.

**CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC):** A person that has subscribed to the Code of Ethics and has met the requirements established by the CPESC Council of Certified Professional In Erosion and Sediment Control, Inc. to be a Certified Professional in Erosion and Sediment Control.

**CHANNEL:** A natural stream that conveys water, or a ditch or channel excavated for the natural flow of water.

**COMMUNITY:** For purposes of this chapter "Community" shall mean the City of Berea, State of Ohio, and its designated agents and representatives.

**CONSERVATION:** The wise use and management of natural resources.

**DEVELOPMENT AREA:** Any tract, lot, or parcel of land, or combination of tracts, lots or parcels of land, which are in one ownership, or are contiguous and in diverse ownership, where earth disturbing activity is to be performed.

**DITCH:** An excavation, either dug or natural, for the purpose of drainage or irrigation, and having intermittent flow.

**EARTH DISTURBING ACTIVITY:** Any grading, excavating, filling, or other alteration of the earth's surface where natural or man-made ground cover is destroyed.

**EROSION:** The process by which the land surface is worn away by the action of water, wind, ice or gravity.

**EROSION AND SEDIMENT CONTROL:** A written and/or drawn soil erosion and sediment pollution control plan to minimize erosion and prevent off-site sedimentation throughout all earth disturbing activities on a development area.

**EROSION AND SEDIMENT CONTROL PRACTICES:** Conservation measures used to control sediment pollution and including structural practices, vegetative practices and management techniques.

**EXISTING:** In existence at the time of the passage of this ordinance and these regulations.

**FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA):** The agency with overall responsibility for administering the National Flood Insurance Program.

**GRADING:** Earth disturbing activity such as excavation, stripping, cutting, filling, stockpiling, or any combination thereof.

**GRUBBING:** Removing, clearing or scalping material such as roots, stumps or sod.

**IMPERVIOUS COVER:** Any surface that cannot effectively absorb or infiltrate water. This includes roads, streets, parking lots, rooftops, and sidewalks.

**INTERMITTENT STREAM:** A natural channel that may have some water in pools but where surface flows are non-existent or interstitial (flowing through sand and gravel in stream beds) for periods of one week or more during typical summer months.

**LARGER COMMON PLAN OF DEVELOPMENT OR SALE:** A contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under one plan.

**LANDSLIDE:** The rapid mass movement of soil and rock material downhill under the influence of gravity in which the movement of the soil mass occurs along an interior surface of sliding.

**LOCAL COUNTY SWCD:** The local county Soil and Water Conservation District.

**NATURAL RESOURCES CONSERVATION SERVICE (NRCS):** An agency of the United States Department of Agriculture, formerly known as the Soil Conservation Service (SCS).

**NPDES PERMIT:** A National Pollutant Discharge Elimination System Permit issued by Ohio EPA under the authority of the USEPA, and derived from the Federal Clean Water Act.

**OHIO EPA:** The Ohio Environmental Protection Agency.

**OUTFALL:** An area where water flows from a structure such as a conduit, storm sewer, improved channel or drain, and the area immediately beyond the structure which is impacted by the velocity of flow in the structure.

**PERSON:** Any individual, corporation, partnership, joint venture, agency, unincorporated association, municipal corporation, township, county, state agency, the federal government, or any combination thereof.

**PROFESSIONAL ENGINEER:** A person registered in the State of Ohio as a Professional Engineer, with specific education and experience in water resources engineering, acting in strict conformance with the Code of Ethics of the Ohio Board of Registration for Engineers and Surveyors.

**QUALIFIED INSPECTION PERSONNEL:** A person knowledgeable in the principals and practice of erosion and sediment controls, who possess the skills to assess all conditions at the construction site that could impact storm water quality and to assess the effectiveness of any sediment and erosion control measures selected to control the quality of storm water discharges from the construction activity.

**REDEVELOPMENT:** The demolition or removal of existing structures or land uses and construction of new ones.

**RETENTION BASIN:** A storm water management pond that maintains a permanent pool of water. These storm water management ponds include a properly engineered/designed volume dedicated to the temporary storage and slow release of runoff waters.

**RIPARIAN AREA:** Naturally vegetated land adjacent to watercourses which, if appropriately sized, helps to, limit erosion, reduce flood flows, and/or filter and settle out runoff pollutants, or which performs other functions consistent with the purposes of these regulations.

**RIPARIAN SETBACK:** Those lands within the City of Berea which are alongside streams, and which fall within the area that the City of Berea prohibits and restricts changes in land use and the building of structures.

**SEDIMENT:** Solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by wind, water, gravity or ice, and has come to rest on the earth's surface either on dry land or in a body of water.

**SEDIMENT BASIN:** A temporary Sediment Pond that releases runoff at a controlled rate. It is designed to slowly release runoff, detaining it long enough to allow most of the sediment to settle out of the water. The outlet structure is usually a designed pipe riser and barrel. The entire structure is removed after construction. Permanent storm water detention structures can be modified to function as temporary Sediment Basins.

**SEDIMENT CONTROL:** The limiting of sediment being transported by controlling erosion or detaining sediment-laden water, allowing the sediment to settle out.

**SEDIMENT POLLUTION:** A failure to use management or conservation practices to control wind or water erosion of the soil and to minimize the degradation of water resources by soil sediment in conjunction with land grading, excavating, filling, or other soil-disturbing activities on land used or being developed for commercial, industrial, residential, or other purposes.

**SEDIMENT TRAP:** A temporary sediment-settling pond having a simple spillway outlet structure stabilized with geotextile and rip rap.

**SENSITIVE AREA:** An area or water resource that requires special management because of its susceptibility to sediment pollution, or because of its importance to the well-being of the surrounding communities, region, or the state and includes, but is not limited to, the following:

1. Ponds, wetlands or small lakes with less than five acres of surface area;
2. Small streams with gradients less than ten feet per mile with average annual flows of less than 3.5 feet per second containing sand or gravel bottoms.
3. Drainage areas of a locally designated or an Ohio designated Scenic River.
4. Riparian and wetland areas.

**SETTLING POND:** A runoff detention structure, such as a Sediment Basin or Sediment Trap, which detains sediment-laden runoff, allowing sediment to settle out.

**SHEET FLOW:** Water runoff in a thin uniform layer or rills and which is of small enough quantity to be treated by sediment barriers.

**SLIP:** A landslide as defined under "Landslides."

**SLOUGHING:** A slip or downward movement of an extended layer of soil resulting from the undermining action of water or the earth disturbing activity of man.

**SOIL:** Unconsolidated erodible earth material consisting of minerals and/or organics.

**SOIL CONSERVATION SERVICE, USDA:** The federal agency now titled the "Natural Resources Conservation Service," which is an agency of the United States Department of Agriculture.

**SOIL STABILIZATION:** Vegetative or structural soil cover that controls erosion, and includes permanent and temporary seed, mulch, sod, pavement, etc.

**SOIL SURVEY:** The official soil survey produced by the Natural Resources Conservation Service, USDA in cooperation with the Division of Soil and Water Conservation, ODNR and the local Board of County Commissioners.

**STORM WATER RUNOFF:** Surface water runoff which converges and flows primarily through water conveyance features such as swales, gullies, waterways, channels or storm sewers, and which exceeds the maximum specified flow rates of filters or perimeter controls intended to control sheet flow.

**STREAM:** A body of water running or flowing on the earth's surface, or a channel with defined bed and banks in which such flow occurs. Flow may be seasonally intermittent.

**USEPA:** The United States Environmental Protection Agency.

**WATERCOURSE:** Any natural, perennial, or intermittent channel, stream, river or brook.

**WATER RESOURCES:** All streams, lakes, ponds, wetlands, water courses, waterways, drainage systems, and all other bodies or accumulations of surface water, either natural or artificial, which are situated wholly or partly within, or border upon this state, or are within its jurisdiction, except those private waters which do not combine or affect a junction with natural surface waters.

**WETLAND:** Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, and similar areas.

WETLAND SETBACK: Those lands within the City of Berea that fall within the area defined by the criteria set forth in these regulations.

**320B.02 PLAN, PURPOSE AND SCOPE.**

**(A) COMPREHENSIVE STORM WATER MANAGEMENT PLAN:** The Post-Construction Water Quality Plan developed to meet this regulation will be coordinated and combined with the Riparian and Wetland Setback Plan and the Construction Site Conservation Plan that are developed for the same site. These plans will be titled and numbered in one consecutive sequence to make a Comprehensive Storm Water Management Plan for the site. The Comprehensive Storm Water Management Plan so developed will serve as the Storm Water Pollution Prevention Plan (SWP3) required by Ohio EPA as part of the NPDES Storm Water Permit for General Construction.

**(B) PURPOSE:** The purpose and intent of this chapter are to:

1. Allow development while reducing damage to receiving water resources and drainage systems that may be caused by new development or redevelopment activities.
2. Protect and maintain the receiving stream's physical, chemical, biological characteristics and stream functions.
3. Provide perpetual management of storm water runoff quality and quantity.
4. Establish consistent technically feasible and operationally practical standards to achieve a level of storm water quantity and quality control that will minimize damage to public and private property and degradation of water resources, and will promote and maintain the health, safety, and welfare of the residents of the City of Berea.
5. Control storm water runoff resulting from soil disturbing activities.
6. Preserve, to the maximum extent practicable (MEP), the natural drainage characteristics of the building site.
7. Preserve, to the maximum extent practicable (MEP), natural infiltration and groundwater recharge, and maintain subsurface flow that replenishes water resources, wetlands, and wells.
8. Assure that storm water quality controls are incorporated into site planning and design at the earliest possible stage.
9. Reduce the need for costly treatment and mitigation for the damage to and loss of water resources that are the result of inadequate storm water quality control.

10. Reduce the long-term expense of remedial projects needed to address problems caused by inadequate storm water quality control.
11. Require the incorporation of water quality protection that encourages and promotes habitat preservation into the construction of storm water management practices.
12. Ensure that all storm water quality practices are properly designed, constructed, and maintained.

**(C) SCOPE:** This ordinance applies to development areas having new or relocated projects involving highways, underground cables, pipelines, subdivisions, industrial projects, commercial projects, building activities on farms, redevelopment of urban areas and all other land uses not specifically exempted. This ordinance does not apply to:

1. Land-disturbing activities related to producing agricultural crops or Silviculture operations regulated by the Ohio Agricultural Sediment Pollution Abatement Rules (1501: 15-3-01 to 1501: 15-3-09 of the Ohio Administrative Code) and existing at the time of passage of this regulation.
2. Strip mining operations regulated by Chapter 1513 of the Ohio Revised Code and existing at the time of passage of this regulation.
3. Surface mining operations regulated by Chapter 1514 of the Ohio Revised Code and existing at the time of passage of this regulation.
4. Construction activities that do not include the installation of any impervious surface (e.g. soccer fields), abandoned mine reclamation activities regulated by ODNR, stream and wetland restoration activities and wetland mitigation activities.
5. Linear construction projects, (e.g., pipeline or utility line installation), which do not result in the installation of impervious surface and are independent of other construction projects (not part of a larger common plan of development or sale). However, linear construction projects must be designed to minimize the number of stream crossings and the width of disturbance.
6. Transportation projects that are subject to industry specific Ohio EPA Rules are exempt from these rules.
7. It is not the role of the City of Berea to point out each and every part of the rules and how to implement them on the individual job sites. It is the project owner's responsibility to be proactive in meeting the intent, purpose and requirements of these regulations.

**320B.03      DISCLAIMER OF LIABILITY:** Neither submission of a plan under the provisions herein, nor compliance with the provisions of these regulations, shall relieve any person or entity from responsibility for damage to any person or property that is otherwise imposed by law nor shall acceptance or approval of a plan by the City impose any liability for such plan upon the City.

**320B.04 CONFLICTS, SEVERABILITY, NUISANCES & RESPONSIBILITY:**

- A. Where this ordinance imposes a greater restriction upon land than is imposed or required by other Community provisions of law, ordinance, contract or deed, the provisions of this ordinance shall prevail.
- B. If a court of competent jurisdiction declares any clause, section, or provision of these regulations invalid or unconstitutional, the validity of the remainder shall not be affected thereby.
- C. These regulations shall not be construed as authorizing any person to maintain a private or public nuisance on their property. Compliance with the provisions of this regulation shall not be a defense in any action to abate such nuisance.
- D. Failure of the City of Berea to observe or recognize hazardous or unsightly conditions or to recommend corrective measures shall not relieve the owner from the responsibility for the condition or damage resulting there from, and shall not result in the City of Berea, its officers, employees, or agents being responsible for any condition or damage resulting there from.

**320B.05 POST-CONSTRUCTION WATER QUALITY CONTROL PLAN:** In order to control Post-Construction water quality damage and damage to public and private lands, the owner of each development area shall be responsible for developing a Post-Construction Storm Water Management Plan.

- A. This plan will be combined with the Construction Site Conservation Plan and the Riparian Setback and Wetland Setback Plans that are also developed for the site.
- B. This plan will contain a description of controls appropriate for each construction operation covered by these regulations, and the operator will implement such controls in a timely manner.
- C. The BMPs used to satisfy the conditions of these regulations shall meet the standards and specifications in the current edition of the Ohio *Rain Water and Land Development* manual, ODOT Post-Construction storm water standards, or other manual that is acceptable to the City Engineer or Ohio EPA.
- D. The plan must make use of the practices that preserve the existing natural condition to the Maximum Extent Practicable (MEP).
- E. To meet the Post-Construction requirements of this regulation, the Post-Construction Water Quality Plan must contain a description of the Post-Construction Best Management Practices (BMPs) that will be installed during construction for the site and the rationale for their selection. The rationale must address the anticipated impacts on the channel and floodplain morphology, hydrology, and water quality.

- F. Structural post-construction BMPs cannot be installed within a State surface water (e.g., wetland or stream) unless it is authorized by a Clean Water Act Section 401 water quality certification and/or Clean Water Act Section 404 Permit.
- G. This plan will identify the person or entity responsible for continued maintenance of all vegetative and/or mechanical BMPs for both the construction and Post-Construction phases of the development.
- H. Long-term maintenance requirements and schedules of all BMPs for both the construction and Post-Construction phases of the development will be provided as a stand alone document to the Post-Construction operator and the Community.
- I. This plan will contain long-term maintenance inspection schedules, including the printed name and contact point of the Post-Construction landowner (e.g., president of the homeowners association, store manager, apartment complex manager, etc.).
- J. This plan will identify the person or entity financially responsible for maintaining the permanent inspection and maintenance of permanent storm water conveyance and storage structures and other conservation practices.
- K. The method of ensuring that funding will be available to conduct the long-term maintenance and inspections of all permanent storm water, soil erosion and sediment control and water quality practices will be identified.
- L. Maintenance plans must ensure that pollutants collected within structural Post-Construction practices, be disposed of in accordance with local, state, and federal regulations.
- M. Maintenance plans must include legally binding perpetual maintenance easements and agreements. Easement documents must provide for community access.
- N. The Post-Construction Plan will also contain the required information under Subsection L or M below, depending on the size of the development sites, as well as any additional information required by the City Engineer.
- O. Development Sites Smaller than Five Acres: A development site that will disturb one (1) or more, but less than five (5) acres of land and is not a part of a larger common plan of development or sale which will disturb five or more acres of land shall identify:
  - (1) Storm Water Issues: A statement as to how the decreased storm water quality that will be caused by the planned development project will be handled

- (2) Description of Measures: A description of the BMPs that will be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed.
  - (3) Upland Areas: Structural measures placed on upland areas to the degree attainable.
  - (4) Map: A map of the entire site showing the overall development.
  - (5) Riparian and/or Wetland Setback: All riparian and wetland setback areas will be identified on the plans. They will also be marked in the field prior to the start of construction.
  - (6) BMPs: Best Management Practices used in the Post-Construction Water Quality Plan may include but are not limited to:
    - (a) Permanent Storm Water Detention ponds that provide extended detention of the water volume.
    - (b) Flow attenuation by use of open vegetated swales and natural depressions
    - (c) Onsite infiltration of runoff
    - (d) Sequential systems that combine several practices
    - (e) Permanent conservation easements, preferably with the easement being held by a third party with no vested interest in ever seeing the property developed
    - (f) Natural Channel Design for drainageways
    - (g) Bioengineering in drainageways
    - (h) Recreating floodplains
    - (i) Chemical and biological filters in storm sewer inlets
    - (j) Sand Filters
    - (k) Allowing roof water from buildings to run across lawn areas to remove pollutants
    - (l) Onsite sewage disposals system replacement or conversion to sanitary sewers
    - (m) Low Impact Development Design
    - (n) Countryside Development Design meeting the criteria of the Western Reserve Resource Conservation and Development Area.
    - (o) Aquatic benches in Retention Basins and ponds.
  - (7) Technical Basis: The plans will contain a rational statement utilized to select the BMPs used to control pollution and to maintain and protect water quality.
- P. Development Sites 5 Acres or Larger: A development site that disturbs five (5) or more acres of land or will disturb less than five (5) acres, but is a part of a larger common plan of development or sale, which will disturb five (5) or more acres of land shall identify:
- (1) Storm Water Detention: The Post-Construction BMP(s) chosen must be able to detain storm water runoff for protection of the stream channels, stream erosion control, and improved water quality.

- (2) Structural BMPs: Structural (designed) Post-Construction storm water treatment practices shall be incorporated into the permanent drainage system for the site.
- (3) Properly Sized BMPs: The BMP(s) chosen must be sized to treat the water quality volume (WQ<sub>v</sub>) and ensure compliance with Ohio's Water Quality Standards in OAC Chapter 3745-1. The WQ<sub>v</sub> shall be equivalent to the volume of runoff from a 0.75-inch rainfall and shall be determined according to the following equation:

1.  $WQ_v = C * P * A / 12$  where: WQ<sub>v</sub> = water quality volume in acre-feet C = runoff coefficient appropriate for storms less than 1 inch (either using Table 1 or the following formula:  $C=0.858i - 0.78i^2 + 0.774i + 0.04$  where i=fraction of post-construction impervious area) P = 0.75 inch precipitation depth A = area draining into the BMP in acres.

**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

- (4) Where the land use will be mixed, the runoff coefficient should be calculated using a weighted average. For example, if 60% of the contributing drainage area to the storm water treatment structure is Low Density Residential, 30% is High Density Residential, and 10% is Open Space, the runoff coefficient is calculated as follows  $(0.6)(0.3) + (0.3)(0.5) + (0.1)(0.2) = 0.35$ .
- (5) An additional volume equal to 20 percent of the WQ<sub>v</sub> shall be incorporated into the BMP for sediment storage and/or reduced infiltration capacity. The BMPs will be designed according to the methodology included in the Ohio *Rainwater and Land Development* manual, ODOT Post-Construction storm water standards, or other manual that is acceptable to Ohio EPA. .

- (6) The BMPs listed in Table 2 below shall be considered standard BMPs approved for general use. However, communities with a regulated MS4 may limit the use of some of these BMPs. BMPs shall be designed such that the drain time is long enough to provide treatment, but short enough to provide storage available for successive rainfall events and avoid the creation of nuisance conditions. The outlet structure for the post-construction BMP must not discharge more than the first half of the WQv in less than one-third of the drain time.

**Table 2: Target Drain Times for Structural Post-Construction BMP's**

BMPs Suitable for Drainage Areas $\geq$ 5 acres		BMPs Suitable for Drainage Areas < 5 acres	
Best Management Practice	Drain Time	Best Management Practice	Drain Time
Dry Extended Detention Basin*	48 hours	Infiltration Basins <sup>^</sup>	24-48 hours
Wet Extended Detention Basin**	24 hours	Bioretention Cells	40 hours
Constructed Wetlands+	24 hours	Sand & Other Media Filters	40 hours
Infiltration Basins <sup>^</sup>	24-48 hours	Enhanced Water Quality Swales	24 hours
		Pocket Wetlands#	24 hours
		Vegetated Filter Strips	24 hours

\*Dry basins must include forebay and micropool each sized at 10% of the WQv

\*\*Provide both a permanent pool and an EDv above the permanent pool, each sized at 0.75 WQv

+Extended detention shall be provided for the full WQv above the permanent water pool.

<sup>^</sup>The WQv shall completely infiltrate within 48 hours so there is no standing or residual water in the BMP.

#Pocket wetlands must have a wet pool equal to the WQv, with 25% of the WQv in a pool and 75% in marshes. The EDv above the permanent pool must be equal to the WQv.

- (7) The owner may request approval from the City Engineer to use alternative structural Post-Construction BMPs if the owner can demonstrate, in a way that is acceptable to Ohio EPA rules and regulations, that the alternative BMPs are equivalent in effectiveness to those listed in Table 2 above. The use of alternative or vendor supplied Post-Construction BMPs should be limited to redevelopment projects where justification is provided that the traditional BMPs in Table 2 are technically and economically infeasible.

- (8) Construction activities shall be exempt from this condition if it can be demonstrated that the WQ<sub>v</sub> is provided within an existing structural Post-Construction BMP that is part of a larger common plan of development or sale or if structural Post-Construction BMPs are addressed in a regional or local storm water management plan. A municipally operated regional storm water BMP can be used as a post-construction BMP provided that the BMP can detain the WQ<sub>v</sub> from the entire drainage area and release it over a 24 hour period upon written permission from the Community Engineer.
- (9) For redevelopment projects (i.e., developments on previously developed property), Post-Construction practices shall either ensure a 20 percent net reduction of the site impervious area, provide for treatment of at least 20 percent of the WQ<sub>v</sub>, or a combination of the two. Where projects are a combination of new development and redevelopment, the total WQ<sub>v</sub> that must be treated shall be calculated by a weighted average based on acreage, with the new development at 100 per cent WQ<sub>v</sub> and redevelopment at 20 percent WQ<sub>v</sub>.
- (10) Site Description:
- (a) The prior land uses of the site
  - (b) The nature and type of construction activity (e.g., low density residential, shopping mall, highway, etc.)
  - (c) Total area of the site and the area of the site that is expected to be disturbed (i.e., grubbing, clearing, excavating, filling or grading, including off-site borrow, fill or spoil areas and off-site utility installation areas)
  - (d) Amount of the impervious area and percent imperviousness created by the construction activity
  - (e) Name and/or location of the immediate receiving stream or surface water(s) and the first subsequent named receiving water and the major river watersheds in which it is located.
- (11) A vicinity sketch locating:
- (a) The development area
  - (b) The larger common plan of development or sale
  - (c) All pertinent surrounding natural features within 200 feet of the development site including, but not limited to:
  - (d) Water resources such as wetlands, springs, lakes, ponds, rivers and streams (including intermittent streams with a defined bed and bank)
  - (e) Conservation Easements
  - (f) Other sensitive natural resources and areas receiving runoff from the development
- (12) The existing and proposed topography shown in the appropriate contour intervals as determined by the City Engineer (generally one-foot contours are used).

- (13) The location and description of existing and proposed drainage patterns and facilities, including any allied drainage facilities beyond the development area and the larger common plan of development or sale.
- (14) Existing and proposed watershed boundary lines, direction of flow and watershed acreage.
- (15) The person or entity responsible for continued maintenance of all permanent vegetative and/or mechanical Post-Construction water quality conservation practices (BMPs).
- (16) The location of any existing or planned riparian and/or wetland setback areas on the property.

**320B.06**

**EASEMENTS:**

- (A) Future access to all permanent vegetative and/or mechanical Post-Construction water quality conservation practices (BMPs) and other areas, as required by the City Engineer, shall be secured by means of perpetual easements.
  1. The easements shall be recorded in the name of the City of Berea and, in single-family residential developments, the homeowners association. Recorded easements must provide for city access.
  2. Such easements shall be not less than twenty-five (25) feet in width, in addition to the width of the ditch, channel, or other facility it is to serve. Further, an easement of this type shall be provided on one (1) side of the flood control or storm drainage ditch, channel, or similar-type facility.
  3. Access along the initial drainage system shall be by means of easements. Such easements shall be not less than twenty-five (25) feet in width, with a minimum ten (10) foot width on either side of the centerline.
  4. Access adjacent to storage facilities shall consist of a twenty-five (25) foot easement in the case of detention (dry) basins, and a twenty-five (25) foot easement with a twenty-five (25) foot level bench in the case of retention (wet) basins, measured from the top of the bank, and shall include the storage facility itself.
  5. Easements for the emergency flow ways shall be a minimum of twenty-five (25) feet in width, or larger if required by the City Engineer.
  6. Flood control or storm drainage easements containing underground facilities shall have a minimum width of twenty-five (25) feet.
  7. The easements shall be restricted against the planting within said easement of trees, shrubbery or plantings with woody growth characteristics, and against the construction therein of buildings, accessory buildings, fences, walls or any other obstructions to the free flow of storm water and the movement of inspectors and maintenance equipment and also restricted against the changing of final grade from that described by the grading plan.

**MAINTENANCE:**

(A) Any portion of the permanent Post-Construction water quality management systems, including on-site and off-site treatment/storage facilities that are constructed by the owner, will be continuously maintained into perpetuity.

1. Detail drawings and maintenance plans must be provided for all Post-Construction Best Management Practices (BMPs).
2. Maintenance plans must ensure that pollutants collect within structural Post-Construction BMP practices be disposed of in accordance with local, state and federal guidelines.
3. Maintenance plans shall be provided by the permittee to both the City Engineer and the Post-Construction operator of the BMP (including homeowner associations) upon completion of construction activities and prior to the City Engineer giving final approval for the completed construction.
4. Single-Family Residential Developments: A Homeowners' Association shall be created and placed in title of the affected lands and shall be continuously responsible for Post-Construction maintenance and inspections into perpetuity unless such maintenance and inspections become officially accepted by the City of Berea.
5. Multi-Family, Commercial and Industrial Developments: The plans will clearly state that the owner of the property shall be continuously responsible for Post-Construction maintenance and inspections into perpetuity unless such maintenance and inspections become officially accepted by the City of Berea.
6. Maintenance Design: Low maintenance requirements are a priority in the design and construction of all facilities. Multi-use facilities incorporating assets such as aesthetics and recreation may be incorporated into the design of the drainage facilities. All permanent drainage, soil erosion, sediment control, water quality management systems and BMPs, including on-site and off-site structures and vegetation that are constructed or planted, must be inspected and maintained into perpetuity by the responsible party designated in the plans and the requirements of this ordinance. Inspections and maintenance will be incorporated periodically throughout the year to ensure that the facilities are properly operational.

7. Perpetual Maintenance Inspections: One (1) inspection with a written report will be performed each year. The written report will be given to the City Engineer by May 1<sup>st</sup> of each and every year after the Best Management Practice (BMP) has been completed.

a) Structures that require a permit from the Ohio Division of Water: A written and stamped report from a professional engineer on the status of all structural BMPs that require a permit from the Ohio Department of Natural Resources (ODNR) Division of Water. This applies to all BMPs that require a permit either at the time of construction or fall under the jurisdiction of ODNR Division of Water at any time after construction is completed.

b) Easements: A written report from an inspector on the status of all storm water management easements for each project shall be submitted to the City Engineer by May 1<sup>st</sup> of each year into perpetuity. These reports will document if restricted plantings, fences and structures are on the easement and will identify the location of the noted easement restriction violations.

c) Best Management Practices (BMPs) that do not have a high risk for loss of life, bodily injury, or damage to structures or infrastructure related to imminent failure as determined by the City Engineer: A written and stamped report from a professional engineer, landscape architect or Certified Professional In Erosion and Sediment Control (CPESC) on the status of permanent soil erosion, sediment control, water quality management systems and the status of the related easements shall be submitted to the City Engineer by May 1<sup>st</sup> of each year into perpetuity.

d) BMPs that have a potential loss of Life: A written and stamped report covering the status of all BMPs that have a potential for loss of life, bodily injury, or damage to structures or infrastructure will be prepared by a professional engineer or other individual possessing a valid state license that authorizes them to design the same type of BMP for construction.

#### 320B.08 MINIMUM STANDARDS:

A) In order to control pollution of water resources, the owner or person responsible for the development area shall use conservation planning and practices to maintain the level of conservation established in the following standards.

- 1) Standards and Specifications: Post-Construction runoff practices used to satisfy these standards shall meet the standards and specifications in the current edition of the *Rainwater and Land Development* manual, NRCS Field Office Technical Guide for the local county, or the Ohio EPA, which ever is most stringent. The construction of new roads and roadway improvement projects by public entities shall implement Post-Construction BMPs in compliance with the current version of the Ohio Department of Transportation's Location and Design Manual, Volume Two: Drainage Design that has been accepted by Ohio EPA.

- 2) Water Quality Basins:
- a) Pool Geometry: The minimum length-to-width ratio for the pond is 3:1 (the length will be three (3) times the width).
  - b) Riser in Embankment: The riser shall be located within the embankment for purposes of maintenance access. Access to the riser will be by manholes.
  - c) Water Drains: Each retention basin shall have a drainpipe that can completely drain the pond. The drain shall have an elbow within the pond to prevent sediment deposition from plugging the drain.
  - d) Adjustable Gate Valves: Both the Water Quality and the Storm Water Management Basin drains shall have adjustable gate valves. Valves shall be located inside of the riser at a point where they will remain dry and can be operated in a safe and convenient manner. During the annual inspections the valves shall be fully opened and closed at least once, and the certifying official shall attest to this on the inspection form. To prevent vandalism, the handwheel shall be chained to a ringbolt or manhole step.
  - e) Principal Spillway: Each principal spillway shall be designed in accordance with the Natural Resources Conservation Service (NRCS) standards and specifications for the office serving the local county. Each principal spillway shall have the capacity to pass the 100 year design storm flows. The inlet or riser size for the pipe drops shall be designed so that the flow through the structure goes from weir flow control to pipe flow control without going into orifice control in the riser. The crest elevation of the primary spillway shall be no less than one foot below the emergency spillway crest. Premium joint pipe is required and a removable trash rack shall be installed at each location. Anti-seep collars shall be provided for all pipe conduits through an embankment.
  - f) Emergency Spillway: An emergency spillway shall be provided on each Water Quality and Storm Water Management basin. Emergency spillways shall convey flood flows safely past the embankment, and shall be designed in accordance with NRCS standards and specifications for the office serving the local county. Emergency spillways shall have a 100-year design storm capacity unless exempted in writing by the City of Berea.
  - g) Embankments: Each dam embankment shall be designed in accordance with the NRCS standards and specifications for the office serving the county that the project is located in. Anti-seep collars shall be provided for all pipe conduits through an embankment.
  - h) Safety Features: The primary spillway opening shall not permit access to the public and other non-maintenance personnel. The perimeter of all water pool areas that are deeper than three (3) feet shall be surrounded by benches that meet the following:

- i) A safety bench, with a maximum slope of 3%, which extends outward, on dry land, from the shoreline. This bench will be a minimum of 25 feet wide to provide for the safety of individuals and maintenance vehicles that are adjacent to the water pool. The safety bench may be landscaped, without the use of structures, to prevent access to the water pool.
- ii) Side slopes between the safety bench and the aquatic bench shall not be steeper than 3:1 (3 feet horizontal for every 1 foot vertical).
- iii) An aquatic bench that extends inward from the shoreline far enough to ensure public safety and has a maximum depth of 15 inches below the normal water surface elevations. The aquatic bench may be landscaped to prevent access to the deeper water pool. The aquatic bench may also be incorporated into the Post-Construction Water Quality Plan.
- iv) Side slopes beyond the aquatic bench and below the permanent water level shall not be steeper than 2:1 (2 feet horizontal for every 1 foot vertical).
- v) The contours of the pond will be designed and managed to eliminate drop-offs and other hazards. Side slopes getting to the pond shall not exceed 3:1 and shall terminate on a safety bench.
- i) Water Quality Basin: If a Water Quality Basin is needed and can not be incorporated into an existing or planned Detention or Retention Basin then a separate Water Quality Basin will need to be planned, designed, constructed and maintained into perpetuity.
- j) Water Quality Basins will not be constructed in any permanent or intermittent stream channel.
- k) Flexibility: These standards are general guidelines and shall not limit the right of the City Engineer to impose at any time additional and/or more stringent requirements nor shall the standards limit the right of the City Engineer to waive, in writing, individual requirements. If the City Engineer waives, in writing, individual requirements the owner will provide the City Engineer with the information and documentation required to assure Ohio EPA that the waived requirement will not degrade water quality.

**320B.081 REDEVELOPMENT PROJECTS:** Sites that have been previously developed where no Post-Construction BMPs were installed shall either ensure a 20 percent net reduction of the site impervious area, provide for treatment of at least 20 percent of the WQv, or a combination of the two. A one-for-one credit towards the 20 percent net reduction of impervious area can be obtained through the use of pervious pavement and/or green roofs. Where projects are a combination of new development and redevelopment, the total WQv that must be treated shall be calculated by a weighted average based on acreage, with new development at 100 percent and redevelopment at 20 percent WQv.

**320B.09 ALTERNATIVE ACTIONS:**

- A) Where the City Engineer determines that site constraints exist in a manner that compromises the intent of this ordinance to improve the management of storm water runoff as established in this ordinance, practical alternatives may be used to result in an improvement of water quality and/or a reduction of storm water runoff. Such alternatives must be in keeping with the intent and likely cost of those measures that would otherwise be required to meet the objectives of this section. When possible, all practical alternatives shall be implemented within the drainage area of the proposed development project.
- B) Implementation of off-site storm water management practices: The use of any off-site Post-Construction BMPs requires written approval from Ohio EPA and this approval must be received prior to design approval and/or issuance of any building permits. Practical alternatives to be considered include:
1. Retrofitting of an existing storm water management practice.
  2. Watershed or stream restoration.
  3. Fees paid in an amount specified by the Community Engineer. The Community shall apply these fees to storm water management practices that improve the existing water quality.
  4. Retrofitting of an existing storm water management practice.
- C) Use of Alternative Post-Construction BMPs: Permittees must supply written approval from Ohio EPA to use Post-Construction BMPs that have been demonstrated to be equivalent to the effectiveness of those listed in Table 2 above. Approval from Ohio EPA must be received prior to design approval and/or issuance of any building permits.
- D) Other practices approved by the Community Engineer in keeping with the intent of this section.

**320B.10 COMPLIANCE WITH OTHER RULES AND REGULATIONS:**

- (A) Ohio Dam Safety Laws: The provisions of the Ohio Dam Safety Laws shall be followed. Proof of compliance with the Ohio Dam Safety Law administered by the ODNR Division of Water shall be, but is not limited to, a copy of the ODNR Division of Water permit number or a copy of the project approval letter from the ODNR Division of Water or a letter from the site owner explaining why the Ohio Dam Safety Law is not applicable. The written proof will be provided to the City Engineer before a construction permit will be issued.
- (B) NPDES Permits: The provisions of the National Pollutant Discharge Elimination System (NPDES) Permits for construction activity, by the Ohio EPA, shall be followed. Proof of compliance shall be, but is not limited to, a copy of the Ohio EPA NPDES Permit number or a letter from the site owner

explaining why the NPDES Permit is not applicable. The written proof will be provided to the City Engineer before a construction permit will be issued.

- (C) Federal And State Wetland Permits: The provisions of the U.S. Army Corps of Engineers dredge and fill permits for federally-protected wetlands shall be followed. The provisions of Ohio EPA's Isolated Wetlands Permits shall also be followed. Wetlands and other waters of the United States shall be delineated by protocols accepted by the U.S. Army Corps of Engineers and the Ohio EPA at the time of the application of these regulations. Written proof of compliance with both permit programs will be provided to the City Engineer before a construction permit will be issued. Proof of compliance shall be, but is not limited to, the following:

A copy of the U.S. Army Corps of Engineers Individual Permit, if required for the project, showing project approval and any restrictions that apply to site activities; **or**

A site plan showing that any proposed fill of waters of the United States conforms to the general and specific conditions specified in the applicable Nationwide Permit; **or**

A letter from the site owner verifying that a qualified professional has surveyed the site and found no wetlands or other waters of the United States. Such a letter shall be noted on site plans submitted to the City of Berea.

#### **320B.11 CONSTRUCTION AND MAINTENANCE GUARANTEE:**

- (A) All permanent storm water, soil erosion, sediment control and water quality practices not specifically waived by the City of Berea shall be constructed prior to the granting of the Final Plat Approval. Upon the request of the owner, the City of Berea may defer the construction or installation of a permanent storm water, soil erosion, sediment control or water quality practice prior to the approval of the final plat where, in the City Engineer's judgment, such proper construction or installation is not immediately necessary for the protection of the public health and safety; and where the prior installation or construction of such improvement would constitute an undue hardship on the owner because in the case of new vegetation or weather conditions, or because in the case of concrete, building construction could cause cracking and excessive wear and tear on new structures. In such event, the City of Berea shall require a Security Bond, Escrow Account, Certified Check or Cash to guarantee that such deferred improvements will be properly constructed or installed within an agreed specified time, but not to exceed six (6) months after the filing of such final plat.
- (B) The owner will provide a maintenance guarantee for all permanent improvements, soil erosion, and sediment control and water quality practices. The City of Berea shall require a Security Bond, Escrow Account, Certified Check or Cash to guarantee that the planned temporary and permanent soil erosion, sediment control and water quality practices will be constructed and removed in a timely manner, as determined by the City Engineer.
1. The Guarantee: The guarantee of both performance and maintenance will be in the form of a Security Bond, Escrow Account, Verified Check or Cash. The Security Bond, Escrow Account, Verified Check or

Cash will be used by the City of Berea to complete any guaranteed construction or removal of improvements or temporary and permanent soil erosion, sediment control and water quality practices that are not adequately completed, maintained or removed by the owner in a timely manner, as determined by the City Engineer. The Security Bond, Escrow Account, Verified Check or Cash will be in the total amount of both the performance guarantee and the maintenance guarantee. Ohio municipalities and counties may require performance bonds or other guarantees for water management improvement as stated in the ORC Chapter 711.101.

- a) Security Bond, Escrow Account, Verified Check or Cash shall be deposited with the City of Berea prior to review by the City Engineer and/or its consultants to cover professional services of the City Engineer, Building Commissioner, Zoning Inspector and/or other experts required by the City Engineer, City Council, Mayor or Review Boards.
  - b) No soil disturbing activities shall be permitted until a Security Bond, Escrow Account, Verified Check or Cash has been posted to the satisfaction of the City Engineer sufficient for the City of Berea to perform the obligations otherwise to be performed by the owner or person responsible for the development area as stated in this regulation, and to allow all work to be performed as needed in the event that the owner or person responsible for the development area fails to comply with the provisions of this regulation. The Security Bond, Escrow Account, Verified Check or Cash shall be released only after all work required by this regulation has been completed to the satisfaction of the City Engineer and all permit and inspection fees required by these regulations have been paid in full.
  - c) No project subject to this regulation shall commence without the Soil Erosion and Sediment Control, and Storm Water Management, and Water Quality Plans having been approved by the City Engineer.
2. Performance Guarantee: The furnishing of a performance guarantee will be maintained in an amount of not less than 120% of the estimate approved by the City Engineer, of installation of the deferred improvements.
  3. Maintenance Guarantee: The maintenance guarantee shall be maintained for a period of not less than (two) 2 years after final acceptance of the storm water, soil erosion, sediment control, and water quality practices in an amount equal to 20% of the estimate approved by the City Engineer, of the construction and, where necessary, removal of such practices.
  4. Time Extension: The City Engineer may extend the time allowed for the installation of the improvements for which the performance guarantee has been provided with the receipt of a written request from the owner.
  5. Completion: Upon completion of the construction of improvements or temporary and/or permanent, soil erosion, sediment control, and water quality practices and the removal of the temporary soil erosion, sediment control, and water quality practices for which the performance guarantee has been provided the owner shall notify the City Engineer of this fact.

6. Inspection: The City of Berea will not release the Security Bond, Escrow Account, Verified Check or Cash guarantee until the City Engineer has inspected the site to ensure that the guaranteed item(s) have been completed and/or removed.
7. Release: The Construction Maintenance Guarantee shall not be released by the City of Berea until all temporary soil erosion and sediment control practices that are no longer needed have been removed, properly disposed of and any trapped sediment has been stabilized.

#### **320B.12 APPLICATION PROCEDURES FOR POST-CONSTRUCTION WATER QUALITY PLANS:**

- A. This plan will be combined with the Soil Erosion and Sediment Control, Storm Water Management, Riparian Setback and Wetland Setback Plans that have also been developed for the site.
- B. Plans developed by the site owners and approved by the City of Berea in accordance with this regulation do not relieve the site owner of responsibility for obtaining all other necessary permits and/or approvals from federal, state, county, and local agencies and departments. If requirements vary, the most stringent requirement shall be followed.
- C. The site owner shall submit a report from the local county soil and water conservation district, which reviews the owner's development, plans and improvement plans. The applicant or his or her designated representative will pay any costs associated with obtaining the report(s) from the local county SWCD. These reports shall address the planned development, and Soil Erosion and Sediment Control, Storm Water Management, Riparian Setback and Wetland Setback Plans and Other Sensitive Areas.
- D. Plans submitted to the City Engineer for, review and approval, shall be accompanied by other required permits and documentation relevant to the project, including but not limited to the US Army Corps Of Engineers, Ohio EPA, ODNR Division of Water and Ohio EPA NPDES Permit for Construction Activities.
- E. Five (5) sets of the plans and necessary data required by this regulation shall be submitted to the City Engineer as follows:
  - 1) Format: Text material will be on 8.5 by 11 inch paper and drawings will be on paper sized no larger than 24 inch by 36 inches.
  - 2) Construction projects: At the preliminary plan approval request the preliminary plans shall show all of the following existing and planned features: streams, water bodies, wetlands, riparian and wetland setback areas permanent BMPs, storm water management detention and retention basins. At the Improvement plan approval request.
  - 3) For general clearing projects: Thirty (30) working days prior to any soil-disturbing activities.
  - 4) Permits List: A list of all the permits that will be needed from federal, state and local agencies.
  - 5) Long-term Maintenance:

- a) The requirements and schedules of all permanent vegetative and/or mechanical Post-Construction water quality conservation BMPs.
- b) Long-term maintenance inspection schedules for all permanent vegetative and/or mechanical Post-Construction water quality conservation BMPs.
- c) The person or entity financially responsible for inspecting and maintaining all permanent vegetative and/or mechanical Post-Construction water quality conservation BMPs.
- d) The method of ensuring that funding will be available to conduct the long-term maintenance and inspections of all permanent vegetative and/or mechanical Post-Construction water quality conservation BMPs.

F. SWCD Approval:

A letter or report from the local county SWCD that states that the Soil Erosion and Sediment Control, Storm Water Management and Riparian Setback and Wetland Setback Plans all appear to meet Ohio EPA and local regulations. It should be noted that only the Ohio EPA and the local communities can state that any plans or activities meet their regulations and rules.

- G. The City Engineer shall review the plans, including the approval report from the local county SWCD, and shall approve or return these with comments and recommendations for revisions, within thirty (30) working days after receipt of the plan as described above. A plan rejected because of deficiencies shall receive a report stating specific problems and the procedures for filing a revised plan. At the time of receipt of a revised plan another thirty (30) day review period shall begin.
- H. Approved plans shall remain valid for two (2) years from the date of approval. After two (2) years the plan(s) approval automatically expires.
- I. No soil-disturbing activity shall begin before all necessary local, county, state and federal permits have been granted to the owner or operator.
- J. The City of Berea will do construction inspections until the site is stabilized as determined by the City Engineer. The construction will not be considered completed until the City Engineer has conducted the Post-Construction inspections.

**320B.13 MISCELLANEOUS**

**(A) EFFECTIVE DATE:** This ordinance and its regulations shall become effective upon their passage.

**(B) CONSULTATIONS:** In implementing these regulations the City Engineer or other City of Berea officials may consult with the local county SWCD, state and federal agencies and other technical experts as necessary. Any costs associated with such consultations may be assessed to the applicant or his or her designated representative.

**320B.99 VIOLATIONS AND PENALTIES:**

- (A) No person shall violate, or cause, or knowingly permit to be violated, any of the provisions of these regulations, or fail to comply with any such provisions or with any lawful requirements of any public authority made pursuant to these regulations, or knowingly use or cause or permit the use of any lands in violation of these regulations or in violation of any permit granted under these regulations.
- (B) Whoever violates or fails to comply with any provision of this regulation is guilty of a misdemeanor of the first degree and shall be fined no more than one thousand dollars (\$1,000.00) or imprisoned for no more than one hundred eighty (180) days, or both, for each offense. A separate offense shall be deemed committed each day during or on which a violation or noncompliance occurs or continues.
- (C) Upon notice from the City Engineer, or designated representative, that work is being performed contrary to this regulation, such work shall immediately stop. Such notice shall be in writing and shall be given to the owner or person responsible for the development area, or person performing the work, and shall state the conditions under which such work may be resumed; provided, however, in instances where immediate action is deemed necessary for public safety or the public interest, the City Engineer may require that work be stopped upon verbal order pending issuance of the written order.
- (D) The imposition of any other penalties provided herein shall not preclude the City of Berea, by or through its Law Director and/or any of his or her assistants, from instituting an appropriate action or proceeding in a Court of Proper Jurisdiction to prevent an unlawful development or to restrain, correct or abate a violation, or to require compliance with the provisions of this regulation or other applicable laws, or ordinances, rules or regulations or the orders of the City Engineer.