

CHAPTER 1226
EROSION CONTROL, SEDIMENT ABATEMENT
AND STORMWATER MANAGEMENT

SECTION 1226.01 DEFINITIONS

All words used in this Ordinance shall have their customary meanings as defined in *Webster's New World Dictionary* and/or *Rainwater and Land Development*¹, except those specifically defined in this Section.

(a) Allowable Rate: The rate at which stormwater flows are permitted to be discharged from a development site.

(b) Applicant: The owner and/or developer of a property applying for approval for a new development or redevelopment site.

(c) Approval Authority: An official, organization, or group designated to review and approve/disapprove all plan and calculation submittals for new development and redevelopment sites, including Storm Water Pollution Prevention Plans (SWP3).

(d) Authorized Agent: A City official, organization, or group of designated representatives to provide technical guidance in the development, implementation and enforcement of these regulations and to review and approve/disapprove all plans and calculation submittals for new development and redevelopment sites.

(e) Buffer: A designated transition area around water resources or wetlands that is left in a natural, usually vegetated, state so as to protect the water resources or wetlands from runoff pollution. Construction activities in this area are restricted or prohibited.

(f) Critical Storm: A storm which is calculated by means of the percentage increase in volume of runoff by a proposed earth disturbing activity or development area. The critical storm shall be controlled both to be equal to or less than the pre-development peak runoff rate for a twenty-four (24) hour one year frequency storm and is used to calculate the maximum allowable stormwater discharge rate from a site.

(g) Cut: an excavation; the difference between a point on the original grade and a designated point of lower elevation on the final grade.

(h) Detention basin: A dry impoundment area created by constructing an embankment, excavating a pit, or both, for the purpose of temporarily storing stormwater so that stormwater flows are released at a rate equal to or less than the pre-development peak rate, until the basin is dry.

(i) Detention facility: A detention basin or alternative structure designed to temporarily store stormwater runoff and gradually release the stored water at a controlled rate, until the facility is dry.

¹ Rainwater and Land Development: Ohio's Standards for Stormwater Management, Land Development and Urban Stream Protection. Second Edition, 1996. Ohio Department of Natural Resources, as amended.

(j) Development Area: Any contiguous area owned by one person or operated as one development unit included within the scope of these regulations, upon which earth-disturbing activities are planned or underway.

(k) Earth-Disturbing Activity: Any grading, excavation, filling, or other alteration of the earth's surface where natural or man-made ground cover is destroyed and which may result in or contribute to erosion and sediment pollution except that such term shall not apply to agricultural activities.

(l) Erosion: The wearing away of soils by the action of water and/or wind.

(m) Fill: Any act by which earth, sand, gravel, rock or any other material is placed, pushed, dumped, pulled, transported or moved to a new location above the natural surface of the ground or on top of the stripped surface and shall include the resulting grade conditions; the difference in elevation between a point on the original ground and a designated point of higher elevation on the final grade.

(n) Home Septic Treatment System (HSTS): A residential underground system in which waste matter is treated through bacterial action.

(o) Illicit connection: Any man made conveyance, other than the municipal separate storm sewer system (MS4) connecting an illicit discharge directly to the MS4.

(p) Illicit discharge: Any discharge that is not composed entirely of stormwater except discharges authorized by a state or federal NPDES permit and those described in Section 1226.04(b).

(q) Impervious area: Any land area covered by buildings, pavement or other materials that prevent stormwater from penetrating the soil.

(r) Infiltration basin: An impoundment area created by constructing an embankment, excavating a pit, or both, for the purpose of temporarily storing stormwater until such time as stormwater infiltrates into the ground until the basin is dry.

(s) Infiltration facility: An infiltration basin or alternative structure designed to temporarily store stormwater runoff until it gradually infiltrates into the ground and the facility is dry.

(t) Major waterways: A waterway with a tributary drainage area in excess of four (4) square miles and/or studied by FEMA.

(u) Minor waterways: A waterway with a tributary drainage area of one (1) square mile or less and/or studied by FEMA.

(v) Municipal separate storm sewer system (MS4): All stormwater conveyances and structural controls including, but not limited to municipal streets, catch basins, manholes, dry wells (outside the Wellfield Protection area), curbs, gutters, ditches, storm drains, storm sewer pipes, drive pipes, bridges, culverts, man-made channels, natural channels, detention basins, retention basins and infiltration basins, overflow weirs, orifice plates and other similar facilities

owned by the City of Bellbrook, which are designed or used for collecting or conveying stormwater, which is not a combined sewer and not part of a publicly owned treatment works.

(w) New development: Construction activities on a vacant parcel of land for the use of new buildings and public/private infrastructure, including but not limited to roadways, sidewalks and utilities, parking lots, etc.

(x) Non-structural controls: Stormwater runoff control and treatment techniques that use natural measures to control runoff and/or reduce pollution levels. These controls do not require extensive construction efforts and [dø] promote runoff control and/or pollutant reduction by eliminating the runoff and/or pollutant source. Examples include, but are not limited to, minimizing impervious area, buffer strips along streams, and preserving natural vegetation.

(y) Parcel: Any legally described piece of land created by a partition, subdivision, deed or other instrument recorded with the appropriate entity or agency.

(z) Peak Rate of Runoff: The maximum rate of runoff for any twenty-four (24) hour storm of a given frequency.

(aa) Pre-Development Conditions: Site conditions as they existed prior to the proposed alterations and/or earth disturbing activities.

(bb) Re-development: Demolitions and/or construction activities on a used parcel of land for the use of new/expanded buildings and public/private infrastructure, including but not limited to roadways, sidewalks, utilities and parking lots., etc.

(cc) Retention Basin: A wet impoundment area created by constructing an embankment, excavating a pit, or both, for the purpose of temporarily storing stormwater so that stormwater flows are released at a rate equal to or less than the pre-development peak rate, until the water level is lowered to the normal pool elevation.

(dd) Retention Facility: A retention basin or alternative structure designed to temporarily hold stormwater runoff and gradually release the stormwater at a controlled release rate until the water reaches a normal pool elevation.

(ee) Secondary waterway: A waterway with a tributary drainage area of between one (1) and four (4) square miles and/or studied by FEMA.

(ff) Sediment: Materials, such as soils, which are deposited by water or wind through erosion.

(gg) Sediment Basin: An impoundment area usually created by constructing a barrier, dam or other facility to reduce the velocity of water in order to settle and retain sediment.

(hh) Sedimentation: The process through which materials, such as soils, are formed and deposited.

(ii) Site Development Plan (SDP): The written document and/or set of plans meeting the requirements of this Ordinance that provides information on the location of the area proposed for

development, the site in relation to its general surroundings, and existing characteristics of the site, including limits of earth disturbing activities.

(jj) Steep Slope: A slope over fifteen percent (15%) grade, which is characterized by increased runoff, erosion and sediment hazards.

(kk) Stop-work order: An order issued which requires that all work on the site must cease except work associated with bringing the site into compliance with the approved SDP, SMP and/or SWP3.

(ll) Stormwater Management Plan (SMP): The document meeting the requirements of this Ordinance that sets forth the plans and practices to be used to minimize stormwater runoff from a site and to safely convey or temporarily store and release post-development stormwater runoff at an allowable rate to minimize flooding and erosion.

(mm) Storm Water Pollution Prevention Plan (SWP3): The document required by the Ohio EPA for compliance with its NPDES Construction Activity General Permit #OHC000003 and NPDES Industrial Storm Water General Permit #OHR000005. The SWP3 requirements of the NPDES Construction Activity General Permit are also required as part of the SMP as described above and in this Ordinance.

(nn) Storm Frequency: The average period of time in years within which a storm of a given duration and intensity can be expected to be equaled or exceeded.

(oo) Stormwater: Any water flow created by a storm event that collects and runs off a site such as rain runoff, snow melt runoff, ice melt runoff or flooding. Stormwater can exist as surface drainage/runoff via overland flows, subsurface drainage/runoff through storm sewer pipes or open channel flow through natural or man-made drainage channels.

(pp) Structural controls: Any man-made facility, structure, or device that is constructed to provide temporary storage and/or treatment of stormwater runoff. Examples include, but are not limited to detention basins, infiltration basins, retention basins, rock check dams, swales, and constructed wetlands.

(qq) Swale: A low lying stretch of vegetated land which gathers and carries surface water.

(rr) Temporary vegetation: Short term vegetative cover such as oats, rye, or wheat, or other grasses used to stabilize the soil surface until final grading and installation of permanent vegetation.

(ss) Watercourse: Any natural or artificial waterway including, but not limited to, streams, rivers, creeks, ditches, channels, canals, conduits, culverts, drains, waterways, gullies, ravines, or washes in which waters flow in a definite direction or course either continuously or intermittently and including any area adjacent thereto which is subject to inundation by reason of overflow of flood waters.

SECTION 1226.02 INTENT AND SCOPE

(a) The intent of this Ordinance is to protect the land and water resources of the City of Bellbrook by establishing standards to achieve a level of soil erosion and stormwater control that will minimize and abate degradation of land and water resources and damage to public and private property resulting from earth disturbing activities. In addition, this regulation further intends to:

- (1) Assure that those involved in earth-disturbing activities minimize both soil erosion and the volume and rate of stormwater runoff from their sites;
- (2) Preserve to the extent practicable the natural drainage characteristics of the site and minimize the need to construct, repair, and replace enclosed, subsurface storm drain systems;
- (3) Assure that stormwater controls are incorporated into site planning and design at the earliest possible stage and that all stormwater management practices are properly designed, constructed, and maintained;
- (4) Prevent unnecessary stripping of vegetation and loss of soil and to promptly re-vegetate and stabilize the site following earth disturbing activities;
- (5) Reduce the need for costly maintenance and repairs to roads, embankments, ditches, water resources, and wetlands, through the design and use of stormwater management practices;
- (6) Encourage the construction of stormwater management practices that serve multiple purposes such as flood control, erosion control, fire protection, water quality protection, recreation, and habitat preservation; and
- (7) Preserve to the maximum extent practicable natural infiltration and groundwater recharge.

(b) Any person or persons proposing to develop or redevelop land within the City of Bellbrook for any of the uses listed in Section 1226.02(c) shall design, develop, and submit a Site Development Plan (SDP) as described in Section 1226.05. Said plan will be evaluated to determine the potential for erosion, runoff, and sedimentation impacts that may result from such development activities and the need for submission of a Stormwater Management Plan (SMP) described in Section 1226.06, Appendix A, Earth Disturbing Activity Performance Standards and Appendix B, Stormwater Management Plan (SMP) Requirements to minimize these impacts. Once approved by city officials and construction commences, said developer shall implement the SDP and/ or the SMP.

(c) This Ordinance shall apply to both the development and redevelopment of land proposed for the following:

- (1) Residential, institutional, commercial, office, and industrial purposes, including subdivision and land development proposals for non-agricultural uses in rural areas;
- (2) Recreational facilities, non-agricultural water impoundments and waterway

construction or improvement;

- (3) Public infrastructure uses, including transportation and utilities; and
 - (4) Any earth disturbing activity within critical and sensitive natural areas, including floodways, floodplains, highly erodible lands (HEL) and wetlands.
- (d) This Ordinance does not apply to earth disturbing activities associated with agricultural activities.
- (e) No earth disturbing activity subject to regulation under this Ordinance shall be undertaken for any land proposed for development or redevelopment for uses specified under Section 1226.02(c) without an approved Site Development Plan (SDP) as required under Section 1226.05, and, if appropriate, a Stormwater Management Plan (SMP) as required under Section 1226.06, Appendix A, Earth Disturbing Activity Performance Standards and Appendix B, Stormwater Management Plan (SMP) Requirements.
- (f) Final approval of a proposed development or redevelopment shall not be given unless:
- (1) A determination is made by the City of Bellbrook and/or its authorized agent(s) based on submission of a SDP as detailed in Section 1226.05 that the proposed earth disturbing activity will not cause accelerated runoff, erosion, and/or sediment impacts harmful to the quality of off-site lands and waters, or
 - (2) A SMP as detailed in Section 1226.06, Appendix A, Earth Disturbing Activity Performance Standards and Appendix B, Stormwater Management Plan (SMP) Requirements has been approved by the City of Bellbrook based on the recommendation of its authorized agent(s) that determines that the proposed earth disturbing activity will not cause accelerated runoff, erosion, and/or sediment impacts harmful to the quality of off-site lands and waters.
- (g) Any person or persons seeking approval for an earth disturbing activity listed below shall prepare a SMP as described in Section 1226.06, Appendix A, Earth Disturbing Activity Performance Standards and Appendix B, Stormwater Management Plan (SMP) Requirements of this Ordinance:
- (1) Activities that require the extension of public utilities (roadways, water mains, sanitary sewer mains, storm sewers, etc.);
 - (2) Activities that will modify an existing and/or approved drainage way, drainage structure, and/or drainage easement; and
 - (3) Activities that will channelize, straighten, and/or modify a watercourse within the identified 100 year floodplain (studied and unstudied).
- (h) Any person or persons seeking approval to construct a structure shall be exempted from preparing a SDP and a SMP provided they meet all of the following:
- (1) Construction takes place on one parcel;

- (2) The earth disturbing activity does not affect more than one acre of the development site at a time;
- (3) Is not located within 100 feet of a sensitive natural area as described in Section 1226.02(c)(4);
- (4) Earth disturbing activities will not adversely affect other adjacent properties or impacts to existing stormwater facilities including, but not limited to the general existing site drainage pattern(s), drainage structure, drainage tiles, drainage easements, storm sewers, detention facilities, retention facilities, infiltration facilities, drainage swales, watercourses, etc.;
- (5) One or both of the following:
 - (A) Specifications are obtained and followed for controlling potential off-site stormwater and erosion impacts from small lot building sites set forth by the City of Bellbrook and/or its authorized agent(s); and/or
 - (B) The parcel is part of an overall development plan which has received approval of a SMP and the developer certifies that they will comply with said Plan.
- (i) Exemption under Section 1226.02(h) does not exempt any person or persons from other provisions of this Ordinance or liability from their activities.
- (j) **Schedule of Fees.** The City of Bellbrook shall establish a schedule of fees, charges, expenses, and collection procedure for same and other matters pertaining to these regulations. Until all applicable fees, charges and expenses have been paid in full, no action shall be taken on any application or appeal.

The following fees are required under the Erosion Control, Sediment Abatement and Stormwater Management Regulations:

Fill, grade and excavation permit fee	\$100 plus \$10 per acre
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- (k) The provisions of the Ohio Environmental Protection Agency (OEPA) National Pollutant Discharge Elimination System (NPDES) Construction Activity General Permit are hereby incorporated by reference in its entirety.

SECTION 1226.03 ILLICIT DISCHARGE DETECTION AND ELIMINATION

- (a) **Illicit discharges.**
 - (1) No person(s) shall place, cause to be placed or maintain any material in the MS4 which enters, obstructs or pollutes the flow in any part thereof;
 - (2) No person(s) shall erect any structure over any part of the MS4 so as to interfere with its flow, maintenance or cleaning;

(3) No person(s) shall uncover, make any connections with or opening into, use, alter, or disturb any part of the MS4 without obtaining written approval from the City of Bellbrook and/or its authorized agent(s);

(4) No person(s) shall install, cause to be installed, or maintain any illicit connection to the MS4;

(5) No person(s) shall cause any illicit discharge to the MS4;

(6) No person(s) may discharge, spill or dump sewage, industrial wastes, other wastes, or any substances or materials which are not entirely composed of stormwater into any water body or into the MS4 or streets, driveways, sidewalks, parking lots or other areas that drain into the MS4, except those discharges enumerated in Section 1226.03(b); and

(7) No person(s) causing or contributing to the occurrence of the above prohibitions shall fail to take all reasonable actions to prevent the contamination /damage to the MS4;

(b) **Non-prohibited discharges.** Unless an individual discharge is identified by the City of Bellbrook and/or its authorized agent(s) as a significant source of stormwater contamination the following non-stormwater discharges are not prohibited by this ordinance to enter the MS4:

(1) Potable water line flushing;

(2) Landscape irrigation;

(3) Diverted stream flows;

(4) Rising ground waters;

(5) Rising flood waters;

(6) Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20) to separate storm sewers;

(7) Uncontaminated pumped ground water;

(8) Discharges from potable water sources;

(9) Foundation drains;

(10) Air conditioning condensation;

(11) Irrigation water;

(12) Springs;

(13) Uncontaminated water from sump pumps;

- (14) Footing drains;
- (15) Lawn watering;
- (16) Non-commercial washing of vehicles or equipment;
- (17) Flows from riparian habitats and wetlands;
- (18) De-chlorinated swimming pool discharges;
- (19) Street wash waters;
- (20) Discharges or flows from emergency fire fighting and emergency response activities;
- (21) Unanticipated utility repairs or failures of potable water systems; and
- (22) Discharges from a properly operating HSTS.

(c) **Outfalls identified.** All known direct outfalls into receiving water bodies and off lot home septic treatment systems (HSTS) which discharge into a MS4 shall be identified on a map, depicting the location and the receiving waters within the City of Bellbrook. New outfalls shall be added to the map and database as they are constructed. All catch basins shall be clearly marked to prohibit illicit discharges into the MS4. New catch basins shall be marked within thirty (30) days after the city takes ownership of a storm sewer system. The outfall map is on file in the City of Bellbrook Administrative Offices.

(d) **Procedure for complaints, elimination and enforcement of illicit discharges.**

(1) **Complaints.**

Existing procedures for all types of property complaints, including stormwater, are based on the City of Bellbrook Codified Ordinances, Chapter 1450, Property Maintenance Code.

(A) Complaints of illicit discharges would be taken verbally by telephone or online via the city's website, www.cityofbellbrook.org:

(B) Complaints are logged in and referred to the appropriate city department or regulatory agency; and

(C) Complaints are investigated in a timely manner based on the complaint's severity by city officials, regulatory agency investigators or by the offender.

(2) **Elimination.**

In the event that an illicit discharge is found, the procedure for elimination is as follows:

(A) Immediate dispatch of Service Department personnel to site;

- (B) Isolation of discharge;
- (C) Track discharge to source;
- (D) Institute temporary measures to halt discharge;
- (E) Investigation and/or testing by contractor as determined by circumstances in the field and per state requirements;
- (F) Institute permanent measures to eliminate discharge;
- (G) Final action, which could consist of storm sewer or outfall repair, as needed.

(3) **Enforcement and Penalties.**

- (A) If the offender is known, contact is established verbally or in writing to advise them of the nature of the violation, alternatives for proper disposal. A copy of city ordinances is also provided;
- (B) Routine monitoring of the site continues for a pre-determined time to ensure that no further dumping occurs; and
- (C) In repeated cases of illicit discharges, please refer to Section 1226.08, Violations and Penalties, (b)(1).

(e) **Officials Notified.** Any person(s) witnessing violation(s) to this ordinance should contact the Bellbrook Service Department during normal business hours. After office hours, individuals should contact the Bellbrook Police Department, who will notify appropriate departments and agencies to halt the violation(s) and/or begin the above procedure(s).

SECTION 1226.04 EARTH DISTURBING CONSTRUCTION ACTIVITY PERFORMANCE STANDARDS

(a) **Erosion and Sediment Kept on Site.** Erosion and sedimentation caused by accelerated wind or stormwater runoff over the site due to earth disturbing activities shall be stabilized and confined to be within the boundaries of the development site to the maximum extent practicable.

(b) **Discharge of Untreated Stormwater.** To the maximum extent practicable, the site shall not discharge untreated stormwater directly into a receiving body of water during or after construction activities.

(c) **Structural and Nonstructural Best Management Practices.**

- (1) Nonstructural stormwater management practices shall be used to the maximum extent practicable. Such practices may include, but not be limited to, preserving riparian areas, preserving existing vegetation and vegetative buffer strips, phasing of construction, and designation of tree preservation areas;
- (2) Nonstructural and structural stormwater management practices shall be designed

in accordance with requirements and standards specified in this Ordinance and/or by the authorized agent(s);

(3) Structural stormwater management practices shall be placed in easements and recorded on the property deeds on which they are located and shall be approved by the City of Bellbrook and/or its authorized agent(s);

(4) Structural stormwater management practices shall be designed to treat a water quality volume calculated for the site based on a 0.75 inch rainfall (first flush) and designed to outlet over a designated drawdown time per type of structural stormwater management practice; and

(5) The water quality volume structural stormwater management practices should be considered in the design of stormwater detention, retention and infiltration facilities to the maximum extent practicable.

(d) **Stream and Wetland Riparian Buffers.** The site owner and/or applicant shall leave an undisturbed riparian buffer on both sides of and/or surrounding water resources, except for crossings and other riparian areas and wetland impacts approved by the City of Bellbrook, its authorized agent(s) and all other authorities having jurisdiction, if applicable. Buffer width will be a minimum of twenty-five (25) feet and the City of Bellbrook and/or its authorized agent(s) may increase the widths required based upon floodplain, topography, vegetative cover, canopy cover, and soil types, etc., if deemed necessary.

(e) **Channel Protection.** To protect stream channels from degradation, a specific channel protection criteria shall be provided as prescribed in the latest edition of *Rainwater and Land Development, ODOT Location and Design Manual* and as determined by the City of Bellbrook and/or its authorized agent(s).

(f) **Temporary Stabilization of Disturbed Areas and Soil Stockpiles, Sediment Control Structures.** See Appendix A, Earth Disturbing Activity Performance Standards for detail.

(g) **Protection of Adjacent Properties/Public Right of Ways.** Properties, public rights-of-way, and thoroughfares within the City of Bellbrook adjacent to the site of an earth disturbing activity, either within or outside the City of Bellbrook, shall be protected from sediment deposition at all times. This may be accomplished by preserving a well-vegetated buffer at the perimeter of the site, by installing perimeter controls such as sediment barriers, filters, dikes, sediment basins, or by a combination of such measures. If said measures fail during the course of construction activities, the owner/developer shall cease all work and restore said measures to good working order within seven (7) days. Restoration of areas within fifty (50) feet of a stream shall be restored within two (2) days.

(h) **Stabilization of Waterways and Outlets.** All on-site stormwater conveyance channels shall be designed and constructed to withstand the expected velocity of flow without erosion. Permanent methods adequate to prevent erosion shall also be provided at the outlet of all pipes and drainage channels. All storm conveyance channels shall be designed in accordance with the following criteria:

(1) Major Waterways: The channel shall be designed for the 100 year storm;

- (2) Secondary Waterways: The channel shall be designed for the 50 year storm;
- (3) Minor Waterways: The channel shall be designed for the 25 year storm; and
- (4) All storm conveyance channels shall be designed to protect all structures from the 100 year storm.

(i) **Storm Sewer Inlet Protection.** All storm sewer inlets shall be protected so that sediment laden water will not enter the conveyance system without first being filtered or otherwise treated to remove sediment. All inlet protection devices shall be inspected, maintained and repaired weekly and after all major storm events by the owner/developer as needed to ensure proper working order throughout the course of construction activities.

(k) **Working In or Crossing Watercourses.**

(1) All activities shall be kept out of watercourses to the maximum extent possible. Where in-channel work is necessary, precautions shall be taken to stabilize the work area during construction to minimize erosion. The channel (including bed and banks) shall be restored to its original cross-section and all disturbed areas stabilized immediately after in-channel work is completed; and

(2) Where a watercourse will be crossed regularly during construction, a temporary stream crossing shall be provided by using clean materials meeting the requirements of the City of Bellbrook and/or its authorized agent(s) and the U.S. Army Corps of Engineers, used for the shortest period practical, removed following site construction, and restored as described in Section (1) above.

(l) **Maintenance and Removal of Temporary Measures.**

(1) All temporary erosion and sediment control practices shall be maintained and repaired to assure continued performance; and

(2) All temporary erosion and sediment control measures shall be removed within thirty (30) days after final site stabilization is achieved or after the temporary measures are no longer needed. Trapped sediment and other disturbed soil areas resulting from the removal of temporary measures shall have the final grade re-established and be permanently stabilized to prevent further erosion and sedimentation.

(m) **Maintenance of Permanent Measures.** All permanent erosion and sediment control practices shall be maintained and repaired to ensure continual performance, inspected to ensure proper installation and long term functionality. If a defect is found, the control measure shall be repaired or replaced as deemed by City officials and/or its authorized agent(s) within seven (7) days after final site stabilization is achieved.

(n) **Control of Construction Site Debris and Wastes.** All owners, applicants, contractors and developers shall control and remove wastes such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste on construction sites and shall keep streets and gutters clear of all sediment and debris from the site throughout the duration of construction activities.

(1) **Use, Safety, and Maintenance of Stormwater Practices.**

(A) Stormwater management practices shall be designed for the ultimate permanent use of the site and function safely and with minimal maintenance; and

(B) If an inspection reveals that a control practice is in need of repair or maintenance, with the exception of a sediment settling pond, it must be repaired or maintained within three (3) days of the inspection or notification to the owner, whichever is later. Sediment settling ponds must be repaired or maintained within ten (10) days of the inspection.

(2) **Inspection of Stormwater Controls** (See Section 1226.07(d) for specific requirements).

(A) All controls on the site shall be inspected at least once every seven calendar days and within twenty-four (24) hours after any storm event greater than one-half inch (0.50") of rain per twenty-four (24) hour period;

(B) The site owner and/or applicant shall assign inspection personnel experienced in the installation and maintenance of erosion and runoff controls to conduct these inspections to ensure that all stormwater control practices are functional, that all provisions of the SMP and this regulation are being met, and whether additional control measures are required;

(C) On- and off-site discharge locations shall be inspected to ascertain whether erosion and sediment control measures are effective in preventing significant impacts to the receiving waters; and

(D) Detailed records of inspections of the stormwater controls and overall erosion condition of the site shall be maintained for up to three (3) years following the final stabilization of the site.

(o) **Accessibility and Easements** (See Section 1226.07 (f) for specific requirements). All permanent stormwater management measures shall have easements sufficient to cover the facility and to provide access for inspection and maintenance.

(p) **Status of Standards.** The standards identified in this Section are general guidelines. Each application shall be reviewed on a case by case basis and some may require additional and more stringent requirements, while others may have individual requirements waived by the authorized agent.

(q) **Complaints.** The City of Bellbrook or its authorized agent(s) shall investigate any complaint related to earth disturbing activities covered by this Ordinance.

SECTION 1226.05 SITE DEVELOPMENT PLAN

(a) Any person seeking approval of land development proposals for use types listed in Section 1226.02(c) shall develop and submit a Site Development Plan as detailed in Section 1226.05(c).

(b) The applicant is encouraged to have a pre-submission meeting with the City of Bellbrook and its authorized agent(s). Submission of two (2) sets of the SDP and other supporting data required by this regulation to the City of Bellbrook and its authorized agent(s) completes the applicant's responsibilities and initiates the review process.

(c) **Site Development Plan Requirements.**

(1) Each applicant shall provide information that details the location of the area proposed for development, the site in relation to its general surroundings, predevelopment site conditions, existing characteristics of the site, and the extent of proposed earth disturbing activities. At a minimum the Plan shall include the following elements:

(A) General location map that shows the area proposed for development and pertinent adjacent areas and features;

(B) A description of the nature and type of the earth disturbing/construction activity (e.g. residential, commercial, highway, etc.) ;

(C) A photocopy of the appropriate soil survey sheet found in the USDA Soil Survey of Greene County with location of site identified;

(D) A Site Plan Map that shows the location of existing features and proposed improvements on the site including:

(i) For sites with relief less than fifty (50) feet, the scale provided shall be 1" = 60'; for sites with greater than fifty (50) feet relief, the scale provided shall be 1" = 40';

(ii) Total area of the site and the area of the site that is expected to be disturbed (i.e. grubbing, clearing, excavation, filling or grading, including off-site borrow areas);

(iii) Surface water locations, including springs, wetlands, streams, lakes, water wells, etc., on or within two hundred (200) feet of the site, including the boundaries of wetlands or stream channels and first subsequent named receiving water(s) the applicant intends to fill or relocate for which the applicant is seeking approval from the Army Corps of Engineers and/or Ohio EPA;

(iv) The general directions of surface water flow over the one hundred 100 year floodplain, the limits of the one hundred 100 year floodplain and the floodway; and

(v) All improvements, including buildings, retaining walls, sidewalks, streets, parking lots, driveways, utilities and stormwater basins, drainage impoundments, channels and outlets, etc.

(E) An estimate of the impervious area and percent imperviousness created by the earth disturbing activity.

(d) **Site Development Plan Submission, Review and Action.**

- (1) Submission of a Site Development Plan (SDP) by an applicant seeking approval initiates the review process;
- (2) The City of Bellbrook's authorized agent(s) shall review the Site Development Plan (SDP) and conduct a site inspection of the proposed site;
- (3) Review of the Site Development Plan (SDP) shall commence within seven (7) working days after receipt of the submittal;
- (4) Following its review the authorized agent(s) shall:
 - (A) Approve the Site Development Plan (SDP); or
 - (B) Conditionally approve the Site Development Plan (SDP) pending additional information and/or the incorporation of required changes; and/or
 - (C) Require the submission of a Stormwater Management Plan (SMP) based on written findings of the authorized agent(s).

SECTION 1226.06 STORMWATER MANAGEMENT PLAN (SMP) REQUIREMENTS

- (a) Stormwater Management Plans (SMPs) are intended to provide information on all soil erosion, sediment and runoff control activities and Best Management Practices (BMPs) to be used and incorporated on the site both during and after site development. This information includes, but is not limited to, site grading, stormwater management facilities and practices, erosion, sediment and runoff control information, maintenance plans, and other measures that focus on managing the effects of earth disturbing activities that occur as a result of site development.
- (b) Each SMP shall provide site designs that meet the Earth Disturbing Construction Activity Performance Standards presented in Section 1226.04 and in **Appendix A**, Earth Disturbing Activity Performance Standards and **Appendix B**, Stormwater Management Plan (SMP) Requirements which provide practical treatment for both water quality and quantity of stormwater from the site as appropriate.
- (c) In general, SMPs need to address:
 - (1) **Erosion and Sediment Control.** Provides measures to ensure that earth disturbing activities at the site during and after development will be managed in a manner that will not result in increased erosion and sedimentation from the site nor result in negative impacts to water quality and that meet the Earth Disturbing Construction Activity Performance Standards specified in Section 1226.04, in **Appendix A**, Earth Disturbing Activity Performance Standards and in Appendix B, Stormwater Management Plan (SMP) Requirements; and
 - (2) **Runoff Control.** Providing measures to ensure that the **rate** of surface water

runoff from the development site during and after construction will mimic the pre-development conditions and that meet the Performance Standards specified in Section 1226.04, in Appendix A, Earth Disturbing Activity Performance Standards and in Appendix B, Stormwater Management Plan (SMP) Requirements.

(d) If a SMP is required under Section 1226.02(b), (e) and (g) or Section 1226.05(d)(4)(C), such Plan shall specifically include all the detail requirements found in **Appendix B**, Stormwater Management Plan Requirements.

(e) **Stormwater Management Plan Administration**

(1) **Submission.** The applicant is encouraged to have a pre-submission meeting with the City of Bellbrook and its authorized agent(s). Submission of ten (10) sets of the SMP and other supporting data required by this regulation to the City of Bellbrook and its authorized agent(s) completes the applicant's responsibilities and initiates the review process.

(2) **Review.** Upon submission of the SMP, the City of Bellbrook and its authorized agent(s) shall complete a review of the SMP provided that the applicant has submitted all information required. The SMP shall be reviewed by the City of Bellbrook and/or its authorized agent(s) to:

(A) Verify background information furnished by the applicant and evaluate the proposed development in relation to existing site conditions; and

(B) Assess the SMP in relation to the Performance Standards and requirements of this Ordinance.

(3) **Action.** Action by the City of Bellbrook and/or the authorized agent(s) approving or disapproving the SMP is a final order for purposes of judicial review. Once the SMP has been approved by City staff and/or its authorized agent(s) and the City of Bellbrook City Council and/or the Planning Board shall within thirty (30) days either:

(A) Approve the SMP as submitted by the applicant; or

(B) Conditionally approve the SMP and require the submission of additional and/or revised information by the applicant, in order to fully meet the intent and standards of this Ordinance. Revisions to conditionally approved SMPs shall be prepared and submitted by the applicant to the City of Bellbrook for final review to ensure that the plan requirements have been fully met; or

(C) Disapprove the SMP.

(i) Upon disapproval of the SMP, the applicant shall be required to contact the City of Bellbrook and/or its authorized agent(s) within thirty (30) days of denial to discuss the status of the project;

(ii) If the project does not proceed, the applicant shall pay all related fees incurred by the city to date within thirty (30) days of the disapproval

and the project file shall be closed. If the project does proceed, the applicant shall schedule a review meeting with the City of Bellbrook and/or its authorized agent(s) to discuss how the SMP should change to fit the requirements and standards of this Ordinance.

(D) Once approval of the SMP has been obtained and the payment of all fees related to the SMP have been deposited with the City Finance Office, the Soil Erosion and Sedimentation Permit may be issued.

SECTION 1226.07 CONSTRUCTION AND POST CONSTRUCTION REQUIREMENTS

(a) **Proceeding with Activity.** Soil-disturbing activities regulated under this Ordinance shall not begin until all necessary city, state and federal permits and appropriate approvals of SDP and/or SMP have been granted to the site owner/developer.

(b) **Performance Responsibility.** The applicant is responsible for carrying out all provisions of the approved SDP and/or SMP and for meeting all the standards and requirements of this Ordinance.

(c) **Enforcement.**

(1) All development sites are subject to inspections by the City of Bellbrook and/or its authorized agent(s) to ensure compliance with the approved SDP and/or SMP;

(2) After each inspection a status report shall be prepared and placed on file at the City offices or with its authorized agent(s);

(3) If it is found that the operations are being conducted in violation of the approved SDP and SMP, a stop-work order may be issued until the identified violations cease and are corrected. If the applicant ceases all work and vacates the site, the entire site shall be stabilized and inspected by the City of Bellbrook and/or its authorized agent(s) to determine that adequate stabilization is achieved;

(4) After the issuance of a stop-work order provided for in Section 1226.07(c) (3) above, but before the imposition of any fines, the applicant shall have the opportunity to request a meeting with the City of Bellbrook and/or its authorized agent(s) to show cause why work should not be stopped. A meeting shall be scheduled at the time that a request for such a meeting is made to the City of Bellbrook; and

(5) Following the issuance of a stop-work order, the City of Bellbrook and/or authorized agent(s) shall determine if and when the development may proceed. Any determination by the authorized agent(s) pursuant to this section is a final order for purposes of judicial review.

(d) **Internal Inspections of Construction Sites**

(1) For sites under construction, all structural and erosion controls on the site shall be inspected by either the builder, developer or their authorized agent(s) or the City of Bellbrook or its authorized agent(s) at least once every seven (7) calendar days and

within twenty-four (24) hours after any storm event greater than one-half inch (0.50”) of rain per twenty-four (24) hour period. The site owner and/or applicant shall assign qualified inspection personnel experienced in the installation and maintenance of erosion and runoff controls to conduct these inspections to ensure that all stormwater control practices are functional, that all provisions of the SMP and this regulation are being met, and whether additional control measures are required;

(2) If the City of Bellbrook or its authorized agent(s) deems, via inspections, that stormwater control practices are not functional, the site owner may be required to install additional erosion and runoff controls and/or cease work until the stormwater control practices are functional and the city approves the modifications.

(e) **Post Construction Inspections and Ownership and Maintenance of Stormwater Structural Facilities**

(1) The City of Bellbrook or its authorized agent(s) shall inform the site owner of their responsibility for the performance of post construction inspections of the stormwater facility and site until the site owner transfers ownership to a Home Owners Association, Condominium Association, individual property owner or other entity. In the event of a subdivision, each parcel sold shall require continued membership in the Homeowners Association or Condo Association until dissolved, at which time the individual property owner(s) shall be responsible for the ownership and maintenance of a stormwater management facility and site.

(2) City officials shall provide the site owner with a Stormwater Facilities Operations and Maintenance Inspection Checklist which shall suffice as an inspection and maintenance agreement. Inspections shall occur monthly and/or after major storm events in excess of one half inch (0.50”) of rain per 24 hour period and annually. The completed checklist shall document inspection results, including the dates of inspection(s), name and qualifications of the inspector and all monthly, emergency and annual maintenance actions taken as a result of such inspection(s). The results of the monthly inspection as noted on the checklist shall be provided to the City of Bellbrook Administrative Office within fifteen (15) days of the inspection. The annual inspection may be completed in any month of the year which will become the annual anniversary inspection month for the site. The results of the annual inspection as noted on the checklist shall be provided to the City of Bellbrook Administrative Office no later than sixty (60) days following the annual inspection date;

(3) Maintenance actions or repairs undertaken on the structure itself shall be described on the checklist and completed within three (3) days from the date of inspection and repairs to the site shall be described on the checklist and completed within seven (7) days from the date of inspection. In the event of more complex periodic maintenance required for retention ponds and/or infiltration ponds, these alterations shall be designed by a professional engineer and submitted to the City of Bellbrook and/or its authorized agent(s) for review and approval to ensure that the volume and capacity of the structure remains intact;

(4) Monthly and annual inspection(s) and maintenance of structural stormwater facilities shall be binding on all current and subsequent owners and tenants of the land served by the stormwater management facilities. The property owner shall grant

permission to the City of Bellbrook and or its authorized agent(s), to enter the property in an emergency and to abate such emergency conditions as necessary to the proper functioning of the structure and to ensure the health, safety and welfare of the residents. There is no obligation to the City of Bellbrook to maintain the structural facility;

(5) The owner/developer shall submit four (4) sets of as-built drawings of all stormwater management facilities and improvements to the City of Bellbrook. City officials shall be notified by the site owner no less than thirty (30) days in advance of a transfer of a structural facility and site and provide the name of the responsible party, the effective date and address of record of the new owner.

(f) **Drainage Easements:**

(1) All stormwater management facility easements shall be shown and noted on the final plat and a reference shall be made to the entity or individual(s) responsible for its maintenance;

(2) Unless otherwise required by the authorized agent(s) drainage easements shall have a width no less than the following:

(A) A storm sewer easement minimum width shall be twelve (12) feet or as determined by the total of the outside diameter of the pipe, plus three (3) feet, plus one (1) foot of width for every one (1) foot of depth over the top of the pipe;

(B) A conveyance channel easement minimum width shall be determined by the total top width of the channel plus five (5) feet on each side of the channel;

(C) A detention, retention and/or infiltration basin easement minimum width shall be determined by the total top width of the structure, plus the width of any section of berm constructed in fill, plus ten (10) feet on each side of the structure; and

(D) Where an underground type of detention, retention and/or infiltration system is used, the easement minimum width shall be determined by the total of the outside to outside width of the structure, plus three (3) feet, plus one (1) foot of width for every one (1) foot of depth from the bottom of the structure.

(3) Those lots that contain and/or are crossed by a drainage easement shall have the following language stated on the plat:

“Any lot area reserved for drainage purposes, shall at all times be kept free of any obstructions to the flow of water. No improvements, structures or modifications within the identified drainage easement area will be allowed without the approval of the City Engineer. Maintenance of the drainage easement area, stormwater management control facility(ies), site and drainage areas shall be the responsibility of the individual owner(s) of the lot or Home Owners or Condominium Association, whichever is applicable, on which these facilities and/or drainage areas are located.”

SECTION 1226.08 VIOLATIONS AND PENALTIES

(a) **Violations.** Any violation of this ordinance constitutes a public nuisance. No person shall violate or cause or knowingly permit to be violated any of the provisions of this Ordinance, or fail to comply with any of its provisions or with any lawful requirements of any public authority made pursuant to it, or knowingly use or cause or permit the use of any lands in violation of this Ordinance or in violation of any approval permit granted under this Ordinance.

(b) **Penalties**

(1) Whoever violates or fails to comply with any of the provisions of this chapter is guilty of a misdemeanor of the fourth degree for each offense. A separate offense shall be deemed to be committed each day during or on which a violation occurs or continues. Nothing herein contained shall prevent the City officials and/or its authorized agent(s) from taking such other lawful action as necessary to prevent or remedy any violation;

(2) Upon verbal or written notice to the site operator or property owner from the City of Bellbrook and/or its authorized agents that the on-site erosion control methods are not functional, city officials and/or their designees, may enter the site to correct and/or abate such conditions involving erosion and sedimentation and invoice the site operator or the property owner for actual costs incurred. This may be done prior to the issuance of a stop work order; and

(3) Upon notice from the City of Bellbrook and/or its authorized agent(s), that work is being done contrary to this Ordinance, and where applicable, the approved stormwater management plan (SMP), such work shall immediately stop. Such notice shall be in writing and shall be given to the applicant, and shall state the conditions under which such work may resume; provided, however, in instances where immediate action is deemed necessary for the public safety or the public interest, the City of Bellbrook's authorized agent may require that work be stopped upon verbal order pending issuance of the written order. A stop work order remains in effect until lifted by the City of Bellbrook and/or its authorized agent(s).

(c) **Penalties Subsequent To Issuance Of Stop-Work Order.**

(1) Subsequent to the issuance of a stop-work order, one or more of the following penalties may be imposed:

(A) All non-compliant earth disturbing activities are subject to applicable penalties (including fines) of the City of Bellbrook;

(B) The authorized agent(s), on behalf of the City of Bellbrook may enter the site and make any modifications necessary to correct the situation(s) involving excessive erosion or sedimentation, and invoice the owner for actual costs incurred;

(C) The authorized agent(s) may request the legal representative of the City of Bellbrook to seek an injunction or other appropriate relief to abate excessive erosion or sedimentation and secure compliance with this Ordinance. In granting such relief, the court may order the construction of sediment control

improvements and/or the implementation of other control measures and/or fines or any other relief the court determines. The owner shall be invoiced for actual costs received by the city.

(2) The imposition of any other penalties provided herein shall not preclude the City of Bellbrook, by or through its Law Director or Special Counsel and/or any of its 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, ordinances, rules, or regulations, or the orders of the authorized agent(s).

(d) **Performance Liability.** No provision of this Ordinance shall limit, increase or otherwise affect the liabilities of the applicant nor impose any liability upon the City of Bellbrook not otherwise imposed by law.

(e) **No Release from Other Requirements.** No condition of this permit shall release the applicant from any responsibility or requirements under other federal, state, or local environmental regulations. If requirements vary, the most restrictive requirement shall prevail.

(f) **Effective Date and Validity.** This Ordinance shall take effect from and after the earliest period allowed by law. If any section, subsection, paragraph, clause, phrase, or provision of this Ordinance is adjudged invalid or held unconstitutional, such a decision shall not affect or void any of the remaining portions of this Ordinance.

APPENDIX A: EARTH DISTURBING ACTIVITY PERFORMANCE STANDARDS

All earth disturbing activities requiring a Stormwater Management Plan (SMP) shall provide the following criteria, which is also required as part of the contents of the Ohio EPA *Storm Water Pollution Prevention Plan (SWP3)* for the NPDES Construction Activity General Permit. This *SWP3* may be submitted to the City of Bellbrook as developed for the Ohio EPA, in conjunction with any additional requirements listed herein. The contents of the *SWP3* shall be provided on a site plan, and are not limited to the following:

(a) **Site Description and Site Map.**

(1) A site map shall be provided:

(A) For site features and contours with relief less than fifty (50) feet, the scale provided shall be no less than 1" = 60';

(B) For site features with relief greater than fifty (50) feet, the scale provided shall be no less than 1" = 40';

(C) For sites with slopes in excess of fifteen (15) percent, the contour interval may be reduced to ensure a readable set of plans;

(2) Prior land uses at the site, including the location of all existing buildings, roads, parking facilities and utilities;

(3) Proposed nature and type of construction activities, including the location of all proposed buildings, roads, parking facilities and utilities;

(4) Extent of disturbance activity, including:

(A) Any on-site storage and disposal areas;

(B) Location of designated construction entrances;

(C) Any in-stream crossing activities;

(D) Any associated off-site staging, borrow or spoil areas;

(E) Any areas used for the mixing or storage of compounds such as fertilizers, lime, asphalt or concrete; and

(F) Any designated areas for solid, sanitary or toxic wastes; cement truck washout; and vehicle fueling and maintenance.

(5) Name(s) and location(s) of the initial and subsequent surface water bodies, including springs, wetlands, streams, lakes, water wells, etc. on or within two hundred (200) feet of the site receiving stormwater discharges from and/or through the site. The boundaries and description of wetlands, stream channels or other special aquatic sites and first subsequent named receiving water(s), which will be disturbed, filled or relocated as

part of the activities, especially those for which the applicant is seeking approval from the U.S. Army Corps of Engineers and/or Ohio EPA;

- (6) Delineation of the existing and proposed on-site drainage watersheds prior to, during and after major grading activities based on the existing and proposed site contours, including the size of each drainage watershed in acres;
- (7) Delineation of the existing off-site drainage watersheds contributing stormwater runoff to the site, based on the existing contours, including the size of [the] each drainage watershed in acres;
- (8) Data describing the soils, both within the on-site and off-site drainage watersheds, including soil types and limits for both pre-construction and post-construction conditions and soil borings depicting the locations of unstable and/or highly erodible soils;
- (9) Calculation of the impervious and pervious areas in square feet or acres and in percent of the total area(s) for both pre-construction and post-construction on-site conditions and contributing off-site conditions;
- (10) Calculation of the runoff coefficients and curve numbers for both the pre-construction and post-construction on-site conditions and contributing off-site conditions;
- (11) Calculation and location of stormwater discharges associated from both pre-construction and post-construction on-site conditions and contributing off-site conditions;
- (12) Location, extent and maintenance schedule of all erosion and sediment control practices, including temporary areas requiring stabilization during the construction activities;
- (13) Location, extent and design calculations and maintenance schedule for all sediment and stormwater management basins;
- (14) Location extent, design calculations and maintenance schedule for all permanent stormwater management practices used for pollutant control after construction has been completed;
- (15) An implementation schedule which describes the sequence of major construction operations (i.e., grubbing, excavating, grading, utilities and infrastructure installation) and the implementation of erosion, sediment and stormwater management practices or facilities to be employed during each operation of the sequence; and
- (16) A copy of the site's approved NPDES construction stormwater general permit.

(b) **Erosion and Sediment Controls.**

(1) **Non-Structural Best Management Practices.**

- (A) Describe what efforts have been made to preserve the natural riparian setback adjacent to streams or other water bodies;

(B) Describe what efforts have been made to phase construction activities in order to minimize the amount of land disturbance at one time; and

(C) Indicate on the plans which portion of the site will remain undisturbed throughout the construction activities.

(2) **Structural Best Management Practices.**

(A) Show the location, describe the type and provide details on the structural erosion control practices to be installed and implemented after clearing and grubbing, during major earthwork activities and after construction; and

(B) Show the location, describe and provide details on the types of structural stabilization measures to accommodate the site for all seasons as well as the measures to be installed and implemented after clearing and grubbing, during major earthwork activities and after construction.

(3) **Cut and Fill Slopes.**

(A) Cut and fill slopes shall be designed, constructed and stabilized in a manner, which will minimize erosion. Consideration should be given to the length and steepness of the slope, the soil type, upslope drainage area, groundwater conditions and other applicable factors; and

(B) If excessive erosion takes place after final grading, additional slope stabilizing measures by the owner, developer or builder will be required to be installed until the problem is corrected. The following guidelines should be followed in developing an adequate design:

(i) Roughened soil surfaces are generally preferred to smooth surfaces on slopes;

(ii) Diversions should be constructed at the top of long steep slopes, which have significant drainage areas above the slope. Diversions or terraces may also be used to reduce slope length;

(iii) Stormwater diversion practices shall be used to keep runoff away from disturbed areas and steep slopes. Such devices, which include swales, dikes or berms, may receive stormwater runoff from areas up to 10 acres;

(iv) Concentrated stormwater shall not be allowed to flow down cut or fill slopes unless contained within an adequate channel, flume or slope drain structure; and

(v) Wherever a slope face crosses a water seepage plane, which endangers the stability of the slope, adequate drainage or other protection shall be provided.

(4) **Temporary Stabilization of Disturbed Areas and Soil Stockpiles.**

(A) Show the location, describe the type and provide details of the temporary erosion control to be applied to the site;

(B) Application practices include vegetative establishment, mulching and the early application of gravel base on areas to be paved. Soil stabilization measures should be appropriate for the season, site conditions and estimated duration of use;

(C) Topsoil removed shall be stored on site and shall be stabilized with quick growing plants or other means, so that it is protected from wind and water erosion;

(D) Topsoil shall be maintained in a usable condition for sustaining vegetation and reused on the site; and

(E) A temporary vegetative cover shall be established on disturbed areas as specified in Table 1 below:

Table 1: Temporary Stabilization.

Area requiring temporary stabilization	Time frame to apply erosion controls
Any disturbed areas within 50 feet of a stream and not at final grade	Within 2 days of the most recent disturbance if that area will remain idle for more than 14 days
For all construction activities, any disturbed area, including soil stockpiles, that will be dormant for more than 14 days but less than one year and not within 50 feet of a stream	Within 7 days of the most recent disturbance within the area For residential subdivisions, disturbed areas must be stabilized at least 7 days prior to transfer of permit coverage for the individual lot(s)
Disturbed areas that will be idle over winter	Prior to onset of winter weather

(5) **Permanent Stabilization of the Site.**

(A) Show the location, describe the type and provide details of the permanent erosion control to be applied;

(B) Permanent vegetation shall not be considered established until a ground cover is achieved which is mature enough to control soil erosion and will survive severe weather conditions as determined by the City of Bellbrook and/or its authorized agent(s); and

(C) A permanent vegetative cover shall be established on disturbed areas as specified in Table 2 below:

Table 2: Permanent Stabilization.

Area requiring permanent stabilization	Time frame to apply erosion controls
Any area that will lie dormant for one year or more	Within 7 days of the most recent disturbance
Any area at final grade and within 50 feet of a stream	Within 2 days of reaching final grade within that area
Any other areas at final grade	Within 7 days of reaching final grade within that area

(6) **Sediment Control Structures.**

(A) Sediment control structures shall be used to control erosion and trap sediment on a site remaining disturbed for more than fourteen (14) days. Such structures may include, but are not limited to, silt fences, storm drain inlet protection, sediment basins and diversions or channels, which direct runoff to a sediment basin;

(B) Stormwater runoff from the site shall pass through a sediment basin or other suitable sediment trapping facility before discharge to a receiving water body;

(C) Sediment control structures shall be constructed prior to grading and within seven (7) days from the start of grubbing and be made functional before upslope earth disturbing activities take place. Earthen structures such as dams, dikes and diversions shall be seeded and mulched as soon as the installation is complete;

(D) Sediment control structures shall be functional throughout the course of earth disturbing activity and until the site is stabilized with permanent vegetation;

(E) **Sediment Settling Ponds.**

(i) Sediment settling ponds are required for all drainage areas of ten (10) or more acres of land disturbed at one time. Sediment settling ponds are also required when the design capacity of the silt fence or other inlet protection devices has been exceeded;

(ii) The authorized agent(s) may require sediment basins or traps for smaller disturbed areas where deemed necessary;

(iii) Show the location, describe the type and provide design calculations and details of the of the sediment settling pond(s) or alternative structures;

(iv) The following are the minimum design requirements for a sediment settling pond:

- (a) A pond depth of less than five (5) feet;
 - (b) A minimum storage volume of sixty-seven (67) cubic yards of water for each acre of contributing drainage area;
 - (c) The length to width ratio of the pond is a minimum of 2:1;
 - (d) An appropriately designed outlet device; and
 - (e) Consider the site end users and observe public safety during construction.
- (v) All sediment settling ponds must be capable of ponding runoff in order to be considered functional; and
- (vi) Sediment settling ponds shall be cleaned out once the collected silt in the pond reaches forty (40) percent of the pond's capacity (approximately one-half of the pond depth).

(F) Silt Fence.

- (i) Sheet flow runoff, not high velocity stormwater flow, from the site shall be intercepted by silt fence or diversions;
- (ii) Silt fence shall be placed on a level contour and shall be capable of temporarily ponding runoff; and
- (iii) The relationship between the maximum drainage area to silt fence for a particular slope range is shown in Table 3 below:

Table 3: Maximum Drainage Area to Silt Fence.

Maximum drainage area (in acres) to 100 linear feet of silt fence	Range of slope for a particular drainage area (percent)
0.5	<2%
0.25	≥ 2% but < 20%
0.125	≥ 20% but < 50%

(G) Inlet Protection.

- (i) Install inlet protection devices at all field drain inlets and/or street curb inlet drains; and
- (ii) Inlet protection of existing downstream facilities shall become mandatory where sediment settling ponds will not be implemented.

(H) **Stream Protection.**

(i) Measures to minimize the number of stream crossings, the width of the disturbance and the duration of the construction within the limits of the stream shall be designed and implemented for all construction activities either on the stream bank, within the channel or as part of a stream crossing;

(ii) Non-erodible materials and/or temporary structures shall be used conforming to the requirements of the City of Bellbrook and/or its authorized agent(s) and the U. S. Army Corps of Engineers; and

(iii) The installation of structural sediment controls in-stream is prohibited.

(7) **Post-Construction Stormwater Management.**

(A) For all **large** earth-disturbing activities (five or more acres or less than five acres, but part of a larger common plan of development or sale which will disturb five or more acres), a description of post construction BMP(s) chosen, the design calculations indicating the detained and treated water quality volume (WQv) equivalent to the volume of runoff from a 0.75-inch rainfall, and plan details shall be provided;

(B) For all **small** earth-disturbing activities (one or more, but less than five acres and not part of a larger common plan of development or sale which will disturb five or more acres of land), a description of post-construction BMP(s) chosen, the design calculations indicating the detained and treated water quality volume (WQv) equivalent to the volume of runoff from a 0.75-inch rainfall, and plan details shall be provided;

(C) For subdivided developments (less than one acre and not part of a larger common plan of development or sale which disturb one or more acres of land) where there is no centralized sediment control capable of controlling multiple individual lots, a detail drawing of a typical individual lot showing standard individual lot erosion and sediment control practices shall be provided meeting the above requirements to the maximum extent practicable;

(D) Show the location, describe the type and provide details of the post-construction stormwater BMPs to be installed to manage stormwater runoff once construction of the site has been completed;

(E) Show the structural post-construction BMPs used for sediment storage. In the case of a reduced infiltration capacity due to its use during construction, a sediment storage pond shall be required to have the water quality volume (WQv) increased by an additional twenty (20) percent;

(F) On-site pre-existing drainage basins and/or BMPs receiving stormwater drainage from the improvement shall be modified to properly treat the WQv for contributing stormwater flows from the improvements;

(G) Alternative BMPs may be proposed for the improvement, but will require pre-approval by the City of Bellbrook and/or its authorized agent(s) prior to finalizing the project plans. Supporting documentation such as detailed calculations, BMP details and long-term maintenance documentation will require review;

(H) The draw down (drain) times for the following proposed structural post-construction BMPs are shown in Table 4 below:

Table 4: Target Draw Down (Drain) Times for Structural Post-Construction BMPs.

Best Management Practice (BMP)	Drain Time of WQv
Infiltration	24 – 48 hours
Extended Detention Basin (Dry Basins)	48 hours
Retention Basins (Wet Basins)	24 hours
Constructed Wetlands (above permanent pool)	24 hours
Media Filtration, Bio-retention	24 hours

(I) A long term maintenance plan and agreement must be developed and provided to the post-construction site operator with a copy forwarded to the City of Bellbrook; and

(J) A long term maintenance agreement must be provided to the City of Bellbrook and implemented.

(8) Non-Sediment Pollutant Controls.

(A) Handling of Toxic and Hazardous Wastes.

(i) Toxic and hazardous wastes shall be removed from the property in proper containers at an appropriate waste facility;

(ii) Where applicable, recycling of used and/or unused hazardous wastes is desired, but shall be done at an appropriate waste recycling center;

(iii) No toxic or hazardous wastes shall be disposed in any storm facilities, septic tanks or by burying, burning or mixing wastes; and

(iv) All storage containers for these types of materials shall be covered and leak proof.

(B) Construction and Demolition Debris.

- (i) All construction and demolition debris shall be disposed in an Ohio EPA approved C&DD landfill; and
- (ii) Materials containing asbestos shall comply with air pollution regulations and shall be disposed properly.

(C) Spill Prevention and Containment.

- (i) A spill prevention control plan, including counter measures shall be developed and incorporated into the plans;
- (ii) All contaminated soils must be treated and/or disposed in Ohio EPA approved solid waste management facilities or hazardous waste treatment, storage or disposal facilities;
- (iii) All spills less than twenty-five (25) gallons shall be contained and cleaned up immediately and the City of Bellbrook Fire Department shall be contacted;
- (iv) All spills in excess of twenty-five (25) gallons shall be contained to the maximum extent possible and the City of Bellbrook Fire Department and Ohio EPA contacted immediately.

(D) Open Burning.

Open burning of materials on the construction site is not permitted.

APPENDIX B: STORMWATER MANAGEMENT PLAN (SMP) REQUIREMENTS

The criteria contained in this document is required for all Stormwater Management Plans (SMPs) submitted to the City of Bellbrook for land development or re-development as specified under Chapter 1226, Section 1226.02(c):

- (a) The minimum elements required in the Site Development Plan (SDP) described in Section 1226.05(c) (1) (A-E);
- (b) The minimum elements required in the Storm Water Pollution Prevention Plan (SWP3) described in Appendix A;
- (c) Copies of pertinent Notices of Intent (NOI), permits, public notices and letters of authorization must be included with SMP submissions. These may include, but are not limited to, Ohio EPA NPDES Permits authorizing stormwater discharges associated with construction activity, Ohio EPA Phase II Storm Water Permits, Section 401 and 404 Clean Water Act Permits, Ohio EPA Isolated Wetland Permit, and Ohio Dam Safety Law Permits;
- (d) **The design of stormwater controls for storage volume and runoff rate** shall conform to the following :
 - (1) All proposed land uses and developments, which increase the runoff rate and/or volume, shall be required to control the rate of runoff discharging from the site;
 - (2) The United States Department of Agriculture, Conservation Engineering Division of the Natural Resources Conservation Service, "Urban Hydrology for Small Watersheds," Technical Release No. 55, June 1986 or the most current edition, shall be the method used by the applicant to determine the change in runoff rate and volume for the proposed development; and
 - (3) To determine the type and amount of runoff control required for the site, the applicant shall provide a comprehensive drainage area map that accurately shows the pre-development and post-development site conditions, including but not limited to:
 - (A) Existing and proposed topography;
 - (B) Soil types;
 - (C) Drainage and sub-drainage areas for both on-site and any contributing off-site drainage and sub-drainage areas;
 - (D) The hydraulically longest time of concentration pathways used:
 - (i) The maximum length of overland flow for sites with varying or steep topography shall be one hundred (100) feet;
 - (ii) Use of a maximum length of overland flow in excess of one hundred (100) feet but less than three hundred (300) feet must be clearly documented and accurate for the site conditions presented; and

(iii) Only the actual reasonable length of overland flow shall be accepted.

(E) Existing and proposed storm sewer structures;

(F) Existing and proposed man-made features, such as roads, buildings, other public amenities, etc., contributing to impervious areas;

(G) Existing and proposed natural features, such as wooded areas, open spaces, etc., contributing to pervious areas;

(H) Determine the percent increase in runoff volume in inches for a one-year frequency, twenty-four (24) hour storm occurring on the developed area for both pre-development and post-development conditions;

(I) Determine the critical year storm frequency for which runoff volume and rate control will be required for the site;

Percentage Increase Equal To or Greater Than (percent)	Percentage Increase Less Than (percent)	Critical Year Storm Frequency (years)
-	10	1
10	20	2
20	50	5
50	100	10
100	250	25
250	500	50
500	-	100

(J) Control the rate of runoff from the post-development storms of a frequency between the one year storm to the critical year storm so as to be equal to or less than the rate of runoff from the pre-development one-year frequency, twenty-four (24) hour storm;

(K) Control the rate of runoff from the post-development storms of a frequency above the critical year storm to the one hundred (100) year storm so as to be equal to or less than the rate of runoff from the corresponding pre-development storm frequency, twenty-four (24) hour storm;

(L) Control the rate of runoff from all off-site contributing drainage areas traveling through the site to the pre-development runoff rate;

(M) Provide a detention, infiltration and/or retention facility, including an outlet control structure to accommodate the storage of the runoff volume and the

control of the runoff rates to the allowable peak discharges from the site for all frequency, twenty-four (24) hour storms up to the one hundred (100) year storm;

(N) Provide the pre-development and post-development hydrographs and stage, storage and discharge tables developed for each frequency, twenty-four (24) hour storm;

(O) Provide an emergency overflow structure for flows exceeding the one hundred (100) year frequency, twenty-four (24) hour storm;

(P) Provide one (1) foot of freeboard as a factor of safety for the design of all water storage facilities; and

(Q) Provide animal and child protection devices on the outlet structure of the detention basin.

(e) **Stormwater Control Facilities.** All stormwater control facilities shall be contained within the proposed development. Exceptions to requiring permanent on-site runoff control may be considered by the City of Bellbrook, the Planning Board and/or its authorized agent(s), provided the applicant can prove that:

(1) The intent and standards of this Ordinance for runoff control can be best achieved by the utilization of off-site stormwater control facilities;

(2) Runoff from the site can be conveyed to off-site stormwater facilities in a manner and by means, which satisfy or surpass the standards of this Ordinance; and

(3) The applicant has ownership or the right to use the off-site facility in question.

(f) **The design of stormwater quality volume controls** shall conform to the following:

(1) All proposed land uses and developments, which disturbs more than one acre of land shall design a BMP to detain and treat a water quality volume (WQv) equivalent to the volume of runoff from a 0.75-inch rainfall;

(2) The following equation shall be used to calculate the required water quality volume:

$$WQv = (P * A * Cq)/12$$

Where:

WQv = Water quality volume (acre-feet)

P = Precipitation (0.75 inches)

A = Contributing drainage area (acres)

$Cq = 0.858i^3 - 0.78i^2 + 0.774i + 0.04$

i = Impervious area divided by the total area;

(3) Draw-down time for design of the water quality volume controls shall be as listed in Appendix A, (7) Post Construction Stormwater Management, Table 4;

(4) Permitted BMPs for use are as follows:

(A) Infiltration:

- (i) Trenches;
- (ii) Basins; and
- (iii) Retention;

(B) Detention and Settling:

- (i) Wet Pond;
- (ii) Constructed Wetlands; and
- (iii) Extended Detention Basin;

(C) Bio-filtration:

- (i) Vegetated Buffer Strip;
- (ii) Bioretention; and

(D) Filtration:

Media Filter.

(5) Provide BMP details, detailed design calculations and a long-term maintenance plan for each type of BMP proposed for the development; and

(6) Alternative BMPs may be proposed for the improvement, but will require pre-approval by the City of Bellbrook and/or its authorized agent(s) prior to finalizing project plans. Supporting documentation such as detailed calculations, BMP details and long-term maintenance documentation are also required for review.

(g) **The design of a storm sewer system** shall conform to the following:

(1) All street curb and gutters, closed pipes, manholes, culvert and open channels/drainage ways used to collect and convey water through a site shall be classified as a storm sewer system;

(2) The Rational Formula shall be used to calculate flows for the storm sewer system and is as follows:

$$q = ciA$$

Where:

q = Flow rate (cubic feet per second (cfs))

c = Runoff coefficient (0.90 for impervious and 0.4 for pervious)

i = Intensity of rainfall (inches per hour (in/hr)) as determined by charts 1101-2 and 1101-3 of ODOT's Location and Design Manual Volume #2

A = Tributary area (acres);

- (3) Storm sewer systems shall be designed for the ten (10) year storm with a hydraulic grade line check of the system based on the twenty-five (25) year storm;
- (4) Spread and by-pass calculations shall be provided for all roadway catch basin designs to ensure that the maximum width of flow in the street is less than half a lane width for the two (2) year storm for residential streets and the five (5) year storm for thoroughfares;
- (5) Provide a comprehensive drainage area map that accurately shows the pre-development and post development site conditions, including, but not limited to:
 - (A) Existing and proposed topography;
 - (B) Drainage and sub-drainage areas for both on-site and any contributing off-site drainage and sub-drainage areas;
 - (C) The hydraulically longest time of concentration pathways used; the minimum time of concentration to the first catch basin shall be ten (10) minutes;
 - (D) Existing and proposed storm sewer structures;
 - (E) Existing and proposed man-made features, such as roads, buildings, other public amenities, etc., contributing to impervious areas; and
 - (F) Existing and proposed natural features, such as wooded areas, open spaces, etc., contributing to pervious areas;
- (6) The minimum requirements for **a closed storm sewer design** shall conform to the following:
 - (A) The minimum size pipe shall be twelve (12) inches;
 - (B) The minimum depth of cover over the pipe shall be eighteen (18) inches;
 - (C) Maximum manhole spacing shall be no more than three hundred (300) feet; and
 - (D) Outlet pipe erosion protection shall be required if the velocities of flow in the receiving channel or stream exceed four (4) feet per second for soil conditions or six (6) feet per second for grass conditions. If the exit velocities exceed the allowable velocities, an energy dissipation device such as a manhole or heavy rock channel protection may be required; and

(7) The minimum requirements for an **open channel/drainage system design** shall conform to the following:

- (A) The minimum centerline radius of constructed channels shall be five (5) times the top width of the channel;
- (B) The minimum bottom width of the channel shall be two (2) feet;
- (C) The horizontal to vertical ratio of a channel side slope shall be a minimum of 3:1, or flatter;
- (D) The top of the bank shall be graded so that positive drainage is maintained from the surrounding areas to the channel and erosion is minimized;
- (E) Bank stabilization and stream bed stabilization along constructed or natural channels will be required if the channel velocities are sufficient to cause erosion; and
- (F) Stabilization methods, include, but are not limited to:
 - (i) Rock channel protection per chart 1107-1 of ODOT's Location and Design Manual Volume #2 or as deemed necessary by the City of Bellbrook or its authorized agent(s);
 - (ii) Gabions;
 - (iii) Concrete lining; or
 - (iv) Other permanent erosion control measures as approved by the City of Bellbrook and/or its authorized agent(s).

(h) **The design of major drainage systems or flood pathways** shall conform to the following:

- (1) Surface drainage flood routes shall be provided for flows in excess of the storm sewer system frequencies as noted above resulting from the one hundred (100) year storm. Surface drainage flood routes shall direct the excess flow so that a major loss of property or life is prevented; and
 - (2) Detailed calculations, plan details and the flood route shall be provided on the plans for review and approval.
- (i) The City of Bellbrook's authorized agent(s) shall approve or reject any calculation method based on its technical validity for a given situation.