

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.