

STORMWATER DESIGN MANUAL

For



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Prepared by:



**JOBES
HENDERSON &
ASSOCIATES INC.**

CIVIL ENGINEERING & LAND SURVEYING

This Stormwater Design Manual is hereby approved

Daniel L. Rupp

Mayor

10/5/05

Date

J. Penox

Street Superintendent

10-5-05

Date

Jane Bruner

Utilities Director

10/5/05

Date

John W. Gruff

Chief, Division of Building & Zoning

10/4/05

Date

James S. Roberts

City Engineer

10/5/05

Date

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PURPOSE

The Stormwater Design Manual is not a text of hydrology or hydraulic design. It assumes that the user has an understanding of hydrology and hydraulic engineering. It does not provide uniform solutions to all drainage problems. Stormwater system design presents an opportunity for the creative and innovative design engineer. The engineer should not be restricted to standardized designs or procedures, nor should the City insist on rigid adherence to a standard set of design specifications. As reflected in the design manual, the emphasis should be on performance.

It is the City's responsibility to manage stormwater through the review of engineering designs and maintenance of public systems. In order to do this the City must establish design standards to provide adequate design for stormwater systems and to insure maintenance of the system. This manual is to provide awareness to the designer of new development in the City of Heath of acceptable local design standards. It is a supplement to standard design procedures. This manual is meant to be a guideline for development in the City and as a supplement to the **City of Heath Development Regulations** and the **City of Heath Construction and Materials Specifications (CMS)**. The City understands that not all projects will conform to these standards and may require unique solutions suited to the individual site. These situations should be addressed early in the planning stages of the development. The latest edition of the **City Zoning Ordinances, Development Regulations**, and **CMS** shall be followed.

References to SCS TR-55 are from the Soil Conservation Service Technical Release No. 55 "Urban Hydrology For Small Watersheds" (Second Edition June 1986)

POLICY

It is the policy of the City of Heath that the discharge from a developed site during a **25 year storm** shall not exceed the discharge during a **2 year storm** for the undeveloped site or at the capacity of the downstream outlet, whichever is smaller. In addition, all upstream discharges to the site shall be accommodated on and through the site at the rate existing at the time of development for all storms up to and including the **100 year storm**.

The primary exception to this policy would be based on the location of the project within its drainage basin. Heath has two major water ways, South Fork Licking River and Ramp Creek. Projects located in the lower portions of the drainage basins that discharge directly into either of these may have modified flow control needs. A master drainage plan was developed for Heath in 2001. It is recommended that the designer of a new development meet with the City's representatives regarding this issue prior to initiation. All designs will conform to NPDES and City Subdivision Standards.

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Chapter 1 HYDROLOGIC METHOD

The first step in designing the stormwater system is in determining the amount of stormwater that must be dealt with. Many different methods are available to calculate stormwater flows. These methods range from simple calculations to complex computer modeling. The following methods are acceptable to the City of Heath.

1.1 Rational Method

Designs for drainage systems, including offsite drainage, less than 200 acres shall be based on the Rational Method. The Rational Method calculates flow as follows

$$Q=CiA$$

Where

- Q = Peak rate of runoff (cfs)
- C = Runoff Coefficient
- i = Rainfall intensity for the time of concentration (in/hr).
- A = Drainage area (acres)

Acceptable C values are:

| | |
|---------------------------------|------|
| Paved Areas..... | 0.9 |
| Single Family Residential | 0.7 |
| Multi-family Residential..... | 0.8 |
| Commercial | 0.85 |
| Industrial..... | 0.75 |
| Open Spaces or Grass | 0.35 |
| Cultivated or Woods | 0.4 |

If the runoff coefficient varies over a sub area, a composite coefficient can be calculated as an average, weighted by area of the various runoff coefficients.

Intensity for the Rational Method shall be calculated using the Federal Highway Administration Hydraulic Engineering Circular No. 12. This method offers the following equation for converting I-D-F points to an equation:

$$i = \frac{a}{(t + b)^c}$$

| Intensity Zone | Frequency (Years) | Constant "a" | Constant "b" | Constant "c" |
|----------------|-------------------|--------------|--------------|--------------|
| C | 2 | 64.387 | 14.300 | 0.896 |
| | 5 | 184.940 | 21.699 | 1.075 |
| | 10 | 83.828 | 12.500 | 0.887 |
| | 25 | 58.733 | 7.400 | 0.771 |
| | 50 | 79.945 | 9.300 | 0.818 |
| | 100 | 196.039 | 16.300 | 0.978 |

1.2 Technical Release No. 55

For drainage areas, including offsite drainage, over 200 acres, the methods of SCS TR-55 shall be used to determine the peak rate of runoff. For the purposes of SCS TR-55 the following information shall be used where site-specific information is not available.

Rainfall shall be based on Type II storm
Soils shall be Group C
Minimum Time of Concentration shall be 10 minutes
Acceptable CN values shall be

| | |
|---------------------------------|----------------------------------|
| Paved Areas..... | 98 |
| Single Family Residential | 77-90 (submit supporting calcs.) |
| Multi-family Residential..... | 80-90 (submit supporting calcs.) |
| Commercial | 94 |
| Industrial..... | 91 |
| Open Spaces or Grass | 79 |
| Cultivated or Woods | 77 |

Weighted CN values based on the area in each classification shall be calculated and used.

1.3 Alternate Hydrologic Methods

Alternate hydrologic methods, such as SWMM programs, may be used to determine peak flows with the approval of the City Engineer. The design engineer shall submit all documentation necessary for the review and approval of alternate methods.

Chapter 2 RAINFALL

2.1 Design Storms

Stormwater management facilities will be designed based on a SCS Type II storm with a duration of 24 hours and the following return periods:

| | |
|--------------------------------|-----------------------|
| Streets and Gutters | 5 year storm |
| Storm Sewers | |
| Just full capacity | 2 year storm |
| Hydraulic grade line | 5 year storm |
| Culverts | |
| Driveway | 10 year storm |
| Major Channel | 25 year storm |
| Flood Hazard Area..... | 100 year storm |
| Open Channels | |
| Road Side Ditches | 10 year storm |
| Outside Flood Hazard Area..... | 25 year flowing full |
| Flood Routing Path | 100 year flowing full |
| Flood Hazard Area..... | 100 year flowing full |

The 24-hour storms for various frequencies, as defined by SCS TR-55, shall be as follows

| | |
|---------------|------------|
| 1 year | 2.3 inches |
| 2 year | 2.7 inches |
| 5 year | 3.2 inches |
| 10 year..... | 3.8 inches |
| 25 year..... | 4.6 inches |
| 50 year..... | 5.4 inches |
| 100 year..... | 6.1 inches |

Flood Hazard Areas, Flood Boundaries and Floodways shall be determined based on the latest Federal Emergency Management Agency (FEMA) Map for the City of Heath.

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S = watercourse slope (ft/ft)

Once the velocity is known, the time of concentration is calculated as

$$T_c = \frac{L}{60V}$$

Where T_c = Time of Concentration (min)
 L = Reach Length (ft)
 V = Velocity (ft/s)

3.3 Open Channel Flow

Water that accumulates in channels, swales, gutters and storm sewers becomes open channel flow. The time of concentration for this flow can be determined by using the Manning's Equation to determine the velocity as follows

$$V = \frac{1.486}{n} R^{\frac{2}{3}} \sqrt{S}$$

Where V = average velocity (ft/s)
 N = Manning's roughness coefficient
 R = hydraulic radius (ft)
 S = channel slope (ft/ft)

Once the velocity is known, the time of concentration is calculated as

$$T_c = \frac{L}{60V}$$

Where T_c = Time of Concentration (min)
 L = Reach Length (ft)
 V = Velocity (ft/s)

3.4 Offsite Drainage

Off-site areas that currently drain to the site will be provided with a suitable drainage outlet and provisions shall be made to extend the stormwater system to adjacent properties. Offsite drainage from undeveloped land may, under existing conditions, have a high time of concentration due to overland and shallow concentrated flows. As this property develops, flow will become channelized through swales and storm sewers and the time of concentration will decrease. For this reason, the time of concentration for offsite drainage shall be estimated using a velocity of 3 feet/second as follows:

$$T_c = 10 + \frac{L}{180}$$

Where T_c = Time of Concentration (min)
 L = Reach Length from the farthest point of the offsite drainage to onsite storm system (ft)

The minimum time of concentration shall be 10 minutes.

No storage volume for off-site flow is required. Instead these flows will be routed through the stormwater system at the predevelopment rate for all storms using the above time of concentration. The developer may provide storage volume if necessary to reduce flows from the on-site and off-site areas to meet capacity restrictions downstream.

Stormwater for property in the City of Heath that discharges into the system of another jurisdiction shall be designed to meet the requirements of the City of Heath or the other jurisdiction, whichever is more stringent.

3.5 Minimum Time of Concentration

The minimum time of concentration shall be 10 minutes.

3.6 Alternate Calculations

There may be cases where site conditions warrant more detailed evaluations of the time of concentration. This may occur due to an upstream drainage system or the presence of streams, wetlands or other hydraulic conditions. In these cases the engineer shall submit to the City Engineer time of concentration calculations and any background documentation for review and approval.

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Chapter 4 STREETS AND INLETS

The street system provides a path for the stormwater to reach the stormwater system. Pavement, gutters and inlets must be designed with the movement of stormwater in mind. In order to provide for the movement of stormwater and to minimize flooding, streets shall be designed in accordance with the following standards.

4.1 Street design

For street and inlet design the design storm is the **5-year** rainfall. After initially designing the streets and inlets for the design storm, a check shall be made to ensure that the 10 and 100-year rainfalls do not exceed the maximum depth of flow.

4.2 Final Design

All streets shall be provided with standard curb and gutter except as specified in the Subdivision Regulations and City of Heath CMS. The minimum gutter slope shall be **1.0%** and the Manning's "n" value shall be 0.015. Curb underdrains shall be provided. All underdrains shall be connected to the stormwater system.

Areas without curb and gutter shall have adequate drainage systems to remove stormwater and prevent roadway flooding. Side ditch swales shall be designed to meet the standards of open channels and shall have a minimum bottom slope of 1.0%. Underdrains shall be provided at the pavement shoulder. These underdrains shall be connected to the stormwater system or daylighted to the side ditch if adequate depth is available.

On privately maintained roads, "v" shaped pavement with a center storm drainage system may be used. Underdrains connected to the stormwater system will be provided along the centerline where street grades are less than **1.5%**. Catch basin spacing shall comply with the requirements for inlet location and spacing. Catch basins in this addition shall have finger drains.

Cul-de-sacs, eyebrows, and other special pavement sections shall be designed to provide adequate drainage. Pavement slopes shall be increased to provide a minimum gutter slope of 0.5% in the longer gutter section. Islands shall be designed to slope to the outside gutter.

4.3 Inlet Location and Spacing

Curb Inlets shall be provided upstream of radius turns, at all pavement sag points, at the low points of street intersections and at points of maximum pavement encroachment. Runoff will not be allowed to enter the intersection. The maximum curb inlet spacing shall be **350 feet**. A double inlet shall be used in sag points.

Consideration must be given to the location of proposed curb ramps. Curb inlets shall be located upstream from the curb ramp. Curb inlets shall be located on the property line whenever possible to avoid conflicts with driveways and other utilities.

4.4 Flood Routing

Streets shall provide the primary flood routing path for storms that exceed the design storm of the drainage system. Streets shall be graded to provide a flood routing path capable of conveying the

residual of the 100 year storm to a suitable outlet, or if runoff control is required, to the control facility.

The major storm runoff is to be routed through the drainage system to determine if the combined capacity of the routing path and storm sewer is sufficient to maintain surface flows within permissible limits. The capacity of the conduit at any given point is assumed to be the same for the major storm as for the initial design storm for preliminary design purposes. If the major storm runoff exceeds the combined capacity of the street and storm sewer drainage system, revision in the major drainage design is required.

Depth of flow shall not exceed the top of curb for the **5-year** design storm. In addition, the **100-year** water surface elevations shall not exceed **10-inch** depth above the curb for local and collector streets and shall not exceed **6-inch** depth at crown for arterial streets. In order for the depth of flow not to exceed the specified limits, especially for the 100-year rainfall, an open channel to storm sewer system may be required to convey some of the flow to a major channel. In determining the required capacity of surface channels and the storm sewer system, the street storm inlets and conduit provided shall be assumed to be carrying not more than one-half their design capacity.

Routing of the major storm at culvert locations shall be at low areas of sags of vertical curves of streets. Elevations for the design of the street shall be such to permit the major storm to flow across the street and to prevent damage to any existing or proposed building structure. Routing shall be continuous from one development to the next.

Where a major drainage way is located outside a street right-of-way, easements shall be provided and a grading plan shall be submitted with detailed engineering plan submission. The grading plan shall include elevations along the routing path and other elevations necessary to show that the major storm is contained within the planned area.

4.5 Spread Calculations

The following are maximum spread of the 5-year rainfall design storm onto the pavement:

For two-lane streets, maximum spread is 6 feet from the face of the curb.

For four-lane streets, maximum spread is 8 feet from the face of the curb.

The more restrictive condition for either maximum street spread or depth of flow shall control.

When requested by the City Engineer, spread calculations shall be submitted.

4.6 Inlet Specifications

Inlets shall be designed to meet the standards of the City of Heath and/or the Ohio Department of Transportation.

Precast concrete modular units shall be in accordance with the applicable standard construction drawing or as approved by the City Engineer. Precast bases shall be placed on a foundation as noted on the standard drawings and CMS, a minimum of 3-inches of compacted sand, or as approved by the City Engineer. The compacted foundation shall be leveled to provide a uniform support for the entire area of the base.

All joints between modules shall be in conformance with ASTM C443, 706.10 or 706.11.

Pipe entrances to the precast modular sections shall be in accordance with 706.15 or neatly grouted in place.

All lift holes and other openings in the structure shall be thoroughly and neatly grouted with cement mortar or other suitable material approved by the City Engineer, after all pipes are placed into the structures.

Frames, grates and castings shall be in accordance with the applicable standard construction drawing and CMS or as approved by the City Engineer and shall be set in a mortar bed at the locations and elevations specified. Curb inlet castings which have grate bars parallel to traffic flow will not be accepted. All openings within pavement areas shall be bicycle safe. All castings shall be stamped "Drains to River".

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Chapter 5 STORM SEWERS

While streets provide the initial collection of stormwater, storm sewers convey the stormwater to the outlet. Storm sewers shall be designed to adequately convey the design storm within the pipe system and minimize the surface ponding of water at inlets.

Storm sewer sizing shall be based on the just full capacity for a **2-year** frequency rainfall. After initial sizing, a hydraulic grade line (HGL) check shall be made for a **5-year** frequency rainfall. If the check shows water flowing out of the system, then the system needs to be revised to contain the rainfall.

5.1 Design Criteria

Storm sewers shall be designed to receive stormwater from the entire tributary area. The minimum cover for storm sewers crossing streets with curb and gutter shall be 24-inches from the subgrade, but shall be concrete encased where the cover is less than thirty inches. Storm sewers outside the pavement but inside the right-of-way shall have 24-inches of cover. All other storm sewers shall have a minimum of two feet of cover. If this cover cannot be maintained, concrete encasement will be required. Trench backfill shall be as per the requirements of the City of Heath.

The minimum storm sewer size is 12-inches for all mainline storm sewers and 12-inches for storm laterals. All new storm sewers shall be constructed of concrete pipe or HDPE pipe meeting the requirements of ODOT 706.02 or 707.33 respectively. Alternate materials may be approved by the City Engineer under special design conditions. Storm sewers shall be sized using the Manning's equation:

$$V = \frac{1.486}{n} R^{\frac{2}{3}} \sqrt{S}$$

Where V = average velocity (ft/s)
 n = Manning's roughness coefficient=0.013
 R = hydraulic radius (ft)
 S = channel slope (ft/ft)

The following numbers should be used for the manning "n" value.

| | |
|------------------------------|-------|
| Concrete pipe..... | 0.013 |
| HDPE smooth lined Pipe | 0.012 |

The storm sewer shall be designed to insure self-cleaning. The minimum velocity shall be 3 fps. The maximum velocity shall be 15 fps. The size of the sewer must be adequate for flowing full, based on the design storm.

The main pipe, if over 24-inches, in a sewer system will be required to be separated from all inlets unless a special design is submitted for approval. The flow line of pipes should be set such that the crown of the pipes, at junctions, are at the same elevation; if the outlet elevation permits, the crown of the outlet pipe may be lower. The flow line elevations of sewers should be set to avoid using concrete encasement.

A minimum separation of 18-inches shall be maintained between the storm sewer and all water and sanitary sewer lines. A 12-inch separation shall be maintained between the storm sewer and all other buried utilities. It is the responsibility of the designer to locate all buried utilities to the best of their ability.

5.2 Manholes and Catch Basins

Manholes and catch basins shall be designed to meet the standards of the City of Heath and/or the Ohio Department of Transportation. All structures must be sealed inside and out.

Precast concrete modular units shall be in accordance with the applicable standard drawing or as approved by the City Engineer. Precast bases shall be placed on a foundation as noted on the standard drawings, a minimum of 3-inches of compacted sand, or as approved by the City Engineer. The compacted foundation shall be leveled to provide a uniform support for the entire area of the base.

All joints between modules shall be in conformance with ASTM C443, 706.10 or 706.11 per the CMS.

Pipe entrances to the precast modular sections shall be in accordance with 706.15 or neatly grouted in place per the CMS.

All lift holes and other openings in the structure shall be thoroughly and neatly grouted with cement mortar or other suitable material approved by the City Engineer, after all pipes are placed into the structures.

Frames, grates and castings shall be in accordance with the applicable standard drawing or as approved by the City Engineer and shall be set in a mortar bed at the locations and elevations specified per the CMS.

Manholes shall be located at points in the storm sewer where the following occur:

1. Junctions of Pipes
2. Change in Direction
3. Change in Slope
4. Change in Pipe Size
5. Change in Pipe Material
6. End of Pipe Run
7. Maximum Spacing of 350 feet

Where drainage is needed, the manhole will be equipped with a grate top or a catch basin will be substituted. Catch basins and manholes located in paved areas where there are no curb underdrains shall be provided with a minimum of 10 feet each direction of underdrain upstream of the storm sewer to remove subsurface drainage.

All Catch basins shall be as per ODOT Standard Drawings and installed as per item 604 of the ODOT Construction and Materials Specifications.

Catch basins will be located outside of the pavement at points where drainage is collected. Catch basins located in paved areas or in the right-of-way will be equipped with a heavy-duty grate and frame suitable for the application.

5.3 Yard Drains

Yard drains meeting the standards of the City of Heath may be used at locations approved by the City Engineer.

5.4 Roof Drains

All new curb and gutter construction will include the provision for a drain outlet for each property through the curb to the gutter. Where roof pipe leaders are present in replacement sections of curbing, provisions shall be made in the new curbing to accommodate those leaders. Roof drains may discharge to drainage swales where sufficient depth is available. New roof drain connections to the gutter shall be core drilled.

Roof drains, foundation drains and other clean water connections to the sanitary sewer system are prohibited in the City of Heath.

5.5 Field Tiles

Field tiles encountered during construction shall be connected to the stormwater management system.

5.6 Headwalls

Storm sewers that discharge to surface waters shall be provided with a suitable concrete **full height** headwall meeting the requirements of The City of Heath and ODOT Standard Drawings. The invert of the storm sewer shall be set no lower than **6-inches** above the bottom of the channel. In flood hazard areas, the invert at the headwall shall be set no lower than **6-inches** above the 100 year water level.

Channel erosion control shall be provided at the outlet of all storm sewers. Rock channel protection shall meet the requirements of ODOT 601; size and length of protection shall be in accordance with The ODOT Location & Design Manual Volume 2 – Drainage Design.

5.7 Easements

Storm sewers outside the public right-of-way shall be provided with an easement for maintenance and repair. A specifically located and described, 20-foot minimum width access easement shall be required from the maintenance easement to the nearest public right-of-way. Maintenance and access easements are to be kept free of obstructions. Additional easements may be required for storm sewers that are located in the public right-of-way if necessary to provide room for maintenance and repair activities.

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Chapter 6 **CULVERTS**

All prefabricated structures including concrete pipe, prefabricated box culverts, etc., shall be considered culverts. Culverts under driveways shall be designed for the **10-year** storm. All other culverts, except culverts that cross a major channel or are located in the floodplain of a major channel shall be designed for the **25-year** storm. Culverts that cross a major channel or are located in the floodplain of a major channel shall be designed for the **100-year** storm. Final design shall indicate headwater elevations for the design storm and 100-year rainfall for all culverts except culverts under driveways, crossing a major channel, or located in the floodplain of a major channel.

6.1 Design Criteria

Single span culverts, including concrete box or slab top, should always be considered in lieu of multiple cell pipe culverts when they are the only structures that will meet the physical requirements introduced by rigid headwater controls. A culvert should be located along the flowline of the ditch or swale that it is draining.

The plan for each culvert shall have the drainage area in acres and the estimated runoff or design discharge in cubic feet per second shown.

The culvert inlet flow line elevation should be set such that it will be deep enough to provide an adequate outlet for future storm sewer improvements upstream.

Culverts shall be sized utilizing orifice and weir flow equations where applicable for individual site conditions and storm frequencies. Inlet and outlet control nomographs for evaluation of culvert hydraulics may also be utilized to evaluate culvert hydraulics.

Culverts shall be designed for the design storm with a maximum allowable headwater elevation of:

1. 18 inches below top of curb
2. 12 inches below edge of pavement
3. 1.5 times pipe diameter
4. 2' below any existing or proposed building first floor elevation.
5. Diameter or rise plus 4 feet or 2D, whichever is lower, in deep ravines.

Culverts except for driveway culverts shall maintain a headwater of no more than 2D or the edge of pavement for the 100-year storm. There shall be no increase in the 100-year headwater in a FEMA designated floodway.

The acceptable Manning's "n" value shall be

| | |
|--------------------------------|--------------|
| Box Culvert..... | 0.011 |
| Slab Top Culvert..... | 0.03 to 0.05 |
| Reinforced Concrete Pipe | 0.013 |

Entrance Loss Coefficient acceptable for design shall be

| | |
|---------------------------|------------|
| Box Culvert and Slab..... | 0.2 to 0.5 |
| Concrete Pipe | 0.2 |

The minimum cover desired is 30 inches to pavement subgrade. The maximum cover shall be determined based on the supporting strength of the conduit. The structural design criteria for culverts will be the same as that required by the Ohio Department of Transportation.

6.2 Pipe Standards

All culverts shall be constructed of concrete pipe meeting the requirements of ODOT 706.02, 706.03, 706.04, or 706.05. The City Engineer, under special design conditions, may approve alternate materials.

6.3 Drainage Structures

Open culverts will not generally contain manholes, surface inlets or catch basins. Special design considerations such as site topography or maintenance considerations may require that drainage or access structures be included in the design, with the approval of the City Engineer. These structures shall meet the same requirements as structures used in the storm system.

6.4 Headwalls and End Treatments

Headwalls or other approved end treatments will be required for all culverts. At a minimum, a full height headwall, with or without wings, will be installed. Half height headwalls may be approved on a case-by-case basis. All headwalls must be sealed with an approved sealer.

Energy dissipators and erosion protection shall be required when the velocity of the flow from the culvert exceeds the allowable velocity. The maximum allowable outlet velocity is

| | |
|-------------------------|-------------|
| Bare Earth Channel..... | 6 fps |
| Rock Protection..... | 18 fps |
| Stilling Basin..... | Over 18 fps |

6.5 Channel Protections and Erosion Control

Channel erosion control shall be provided at the outlet of all culverts and at the inlet wingwalls of full height headwalls. Rock channel protection shall meet the requirements of ODOT 601; size and length of protection shall be in accordance with The ODOT Location & Design Manual Volume 2 – Drainage Design.

Chapter 7 OPEN CHANNELS

Open channels may be naturally occurring small streams or man made ditches and swales. Their purpose is to carry large amounts of water away from property to the final discharge at the stream, river or lake. Open channels shall be designed to insure the passage of major storms without damage to local property.

7.1 Enclosure of Open Channels

In general, open channels are not permitted by the City of Heath. If site conditions are such that open channels would be beneficial, the City Engineer must be notified. In no case will open channels be allowed without prior permission from the City Engineer. It must also be noted that the requirements of OEPA and the US Army Corps of Engineers must be complied with on all open channel issues.

Roadside ditches shall be designed for the **10-year** storm. All other open channels, except major channels as defined herein, shall be designed for the **25-year** storm. Major channels shall be designed for the **100-year** storm.

Final design shall indicate water surface elevations for the design storm. In addition, the 100-year flood profile and 100-year flood area shall be shown for all open channels.

The recommended minimum channel bottom slope shall be 0.50 percent for paved or lined channels and 1.00 percent for grass or sod lined channels.

7.2 Design Criteria

Open channel flow may be evaluated utilizing Manning’s equation.

$$V = \frac{1.486}{n} R^{\frac{2}{3}} \sqrt{S}$$

Where V = average velocity (ft/s)
 n = Manning’s roughness coefficient=0.013
 R = hydraulic radius (ft)
 S = channel slope (ft/ft)

Acceptable Manning’s “n” shall be:

| | |
|-----------------------------|---------------|
| Sod or Jute Mat Lining..... | 0.05 |
| Paved Lining | 0.015 |
| Rock Protection..... | 0.08 |
| Existing Lining | 0.025 to 0.20 |

Site-specific conditions, such as culverts, floodplains, or stormwater management systems, may require more detailed evaluation.

Storm drainage ditches and channels shall be designed to protect against erosion under high water conditions. The allowable design storm velocities for all new ditches shall be as follows:

- 3.0 fps with seeding
- 5.0 fps with sod or jute mat lining
- Over 5 fps requires special lining

The allowable velocities in existing channels shall be determined by the ability of the channel to handle the flow satisfactorily.

The side slope of stormwater drainage ditches and channels shall be designed to insure maintenance. The maximum side slopes shall be:

| | |
|----------------------|-----|
| Seeded Soil | 3:1 |
| Concrete Paved | 2:1 |
| Rock | 2:1 |

7.3 Easements

Access to storm drainage ditches and channels shall be by means of maintenance easements. Such maintenance easements shall be not less than the width of the ditch at the top of the bank plus twenty feet each side, measured horizontally, from the top of banks. A specifically located and described, **20-foot** minimum width access easement shall be required from the maintenance easement to the nearest public right-of-way. Maintenance and access easements are to be kept free of obstructions.

Surface water collector swales within rear yard and side yard areas of residential subdivisions and on all non-residential parcels draining more that 5 acres shall be constructed within a drainage easement possessing a minimum width of twenty feet. For residential properties the drainage swale should be generally constructed approximately in the middle of the easement.

Maintenance responsibilities will be determined and so stated in the easement or on the Final Plat. **In general, the City will not be responsible for these facilities.**

Chapter 8 DETENTION OR RETENTION & WATER QUALITY

In developed and developing urban and suburban areas, several means for controlling stormwater runoff can be used. The following types of storage facilities may be considered for detention: rooftops, parking lots, underground tanks and surface basins or ponds.

8.1 Parking Lot Storage

Parking lot storage is surface storage where shallow ponding is designed for specific graded areas of the parking lot. Controlled release features are incorporated in the surface drainage system of the parking lot.

Parking lot storage is a convenient multi-use structural control method where impervious parking lots are planned. Design features include small ponding areas with controlled release by orifice plates or pipe-size and slope, and increased curb heights. Ponding areas in parking or traffic areas shall be designed for a **maximum potential depth of nine (9) inches**. Flood routing or overflow must occur after the maximum depth is reached. The major disadvantage is the inconvenience to users during the ponding function. This inconvenience can be minimized with proper design consideration. Clogging of the flow control device and icy conditions during cold weather are maintenance problems. Parking lot design and construction grades are critical factors. This method is intended to control the runoff directly from the parking area, and is usually not appropriate for storing large runoff volumes.

8.2 Tank Storage

Tank storage is an underground tank or chamber, either prefabricated or constructed in place, which has a special controlled release feature. This method is most applicable where land area is very valuable, such as in industrial and commercial areas. Construction costs and operating costs, which may include pumps, makes this method relatively expensive. Storage trenches, a variation on the basic tank storage, are rock-filled underground storage tanks. The storage is provided within the void between the rock material.

8.3 Surface Basins or Ponds, Wet Ponds, or Retention Basins

Wet ponds are permanent ponds where additional storage capacity is provided above the normal water level and special features for controlled release are included. Historically, wet ponds have proven extremely effective in abating increased runoff and channel erosion from urbanized areas. They are a major Soil Conservation land treatment practice.

Some problems often encountered with wet ponds are: site reservation (land requirements), permanent easements, complexity of design and construction and maintenance problems. Because of large land requirements, and the necessity of maintaining a permanent pool of water, wet ponds have a broader application for in-stream control where large watershed areas are involved compared to their use as on site facilities for small urban areas. However, the recreational and aesthetic benefits of permanent wet ponds may justify certain on-site applications. If this option is selected, it will be the responsibility of the Developer to construct and maintain the system with public safety measures in place.

Due to siltation, maintenance, and safety problems created by such basins, **no** wet basins shall be permitted for the purposes of retention of storm water, in a single family or multi-family development.

Wet basins will be considered in the development of Industrial and Commercial developments but may not be closer than 500' to any residential areas and be fenced.

Side slopes for a Retention Facility shall be 4:1 Maximum – below permanent storage and 6:1 Maximum – above permanent storage.

Rock Channel Protection, Type D, must be placed at the normal water elevation, around the entire perimeter of the basin, five feet wide, centered on the normal water elevation.

8.4 Dry Basins or Detention Basin

Dry basins are surface storage created by constructing a typical excavated or embankment basin. There is no normal pool level and a specific controlled release feature is included to control the rate of discharge.

Dry basins are the most widely used method of stormwater management. The soil permeability and water storage potential are not as important with dry basins as with wet basins. Therefore, dry basins have the greatest potential for broad applications. They can be utilized in small developments because they can be designed and constructed as small structures. Dry basins are often less costly than wet ponds because they do not require extensive design and construction considerations. They can be designed for multi-use purposes such as recreation and parks.

Detention basin invert ditches with slopes less than 1% shall be provided, from the inlet to the outlet of all structures, and shall be paved. Such ditches shall be in accordance with the paved gutters as detailed in the ODOT Standard Drawing.

Detention basin bottoms shall be sloped to drain, such slopes shall be sufficient to mitigate against “flat spots” developing due to construction errors and soil conditions; or, such bottoms shall be paved. The absolute minimum transverse slope for the bottoms of such facilities shall be 1% and 2.0% is the recommended transverse slope.

Debris-Control and/or animal guard structures may be required in some detention situations and should be considered as an essential part of design. The procedure recommended for use is Hydraulic Engineering Circular No. 9, available from the Superintendent of Documents, U.S. Government Printing Office.

Proof Surveys shall be performed by the Developer, Contractor, or other entity constructing the stormwater drainage facilities, in order to demonstrate conclusively that the facilities are constructed to the elevations, slopes, grades, and sizes shown on the reviewed plans on file with the City. Such surveys shall be conducted by a registered Professional Surveyor, shall employ standard survey techniques, and shall produce original field notes which shall be furnished to the City for review and record purposes. Reduction of notes, and any plotting necessary to make the notes interpretable, shall be by the surveyor performing the proof survey. Proof surveys shall be in addition to, and separate from, other construction surveys which may be conducted by the City or its agent. All discrepancies revealed in the as-constructed facilities by the proof survey shall be rectified by the Developer, Contractor, or other entity constructing the storm water drainage facilities, and the proof survey re-performed, in order to demonstrate conformance.

8.5 Access and Maintenance Easements

Specific, dedicated easement rights shall be required, in order to provide necessary access to all stormwater facilities. Generally, a maintenance easement of 20 foot minimum width, in addition to the size of the stormwater facility when flooded, is required, from the easement at, alongside, or around the stormwater facility, to the nearest public right-of-way.

The 20 foot minimum width outside the flooded facility must be on a slope no steeper than 10:1.

The detention/retention facilities, unless otherwise agreed upon by the City of Heath, shall be owned and maintained by the owner of the development, homeowners association, or condominium owners association. The owner/developer is responsible to maintain the storm drainage system in such a way as to not reduce the capacity of the system. If the owner/developer does not maintain the drainage system, the approved plans will become void and the City will plug the system at the outlet.

8.6 Water Quality Requirements

All stormwater facilities (detention, retention, storm sewer, etc.) shall meet the requirements of The Ohio EPA NPDES Permit No. OHC000002 for Water Quality. Maintenance of the Water Quality Facilities shall be the responsibility of the Owner/Developer or Home Owners/Condominium Association.

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Chapter 9 STORMWATER POLLUTION PREVENTION

Construction activities required as part of land development necessitate the removal of natural ground cover, creating the potential for erosion to occur. Erosion, and the movement of the soil off the site and into the stormwater control system, can lead to water quality impacts. Excessive soil in the stormwater system can also cause the system to malfunction or require excessive maintenance to keep the system operational. Proper erosion control techniques can minimize the loss of soil on the site.

9.1 Policy

The policy of the City of Heath is that no person shall cause or allow earth-disturbing on a development prior to submittal and approval of a Stormwater Pollution Prevention Plan (SWPPP). In addition, should the proposed project fall under the jurisdiction of the Ohio Epa NPDES Permit No. OHC000002, the developer shall prepare and submit an OEPA Notification of Intent (NOI). A copy of the approved NOI shall be submitted to the City of Heath prior to commencement of construction activities. Approval of the SWPPP by the City of Heath does not constitute approval by the OEPA.

9.2 Design Criteria

Permanent control provisions shall be coordinated with the temporary erosion control to the extent possible to assure economical, effective and continuous erosion control throughout the construction and post-construction period.

Perimeter control and other sediment trapping measures shall be installed to stop the movement of sedimentation off the site. Such controls will include: stabilized construction entrances, straw bale dams and fabric fencing, temporary sediment traps, sediment basins and diversions. Storm drains, both on and off the site, shall be protected from sedimentation. Stormwater retention or detention facilities shall not be used as sedimentation traps without the approval of the City Engineer. If such facilities are used as a sedimentation trap or sedimentation basin, the facility shall be thoroughly cleaned of all sedimentation and returned to full design capacity prior to the release of the construction bond.

Construction shall be scheduled to minimize the amount of area disturbed at any one time. Disturbed areas that are at finish grade shall be permanently seeded within seven days. Other areas of disturbed soil shall be rough graded to provide drainage and temporarily seeded if they are to remain dormant for more than 30 days.

Slope protection shall be provided by use of temporary and permanent diversion dikes, vegetative cover and slope drains. Concentrated stormwater flows shall not be allowed to flow down cut or fill slopes without proper slope stabilization.

Concentrated stormwater runoff leaving a development site shall be outletted to an open channel, storm sewer inlet or culvert which is capable of receiving the discharge. Runoff velocities shall be controlled to prevent erosion.

Appropriate measures shall be taken to minimize or eliminate wastes and unused building materials and all pollutants from being carried from the site by runoff. Proper storage, handling and use of all potentially polluting substances shall be employed.

Public and private roadways shall be kept cleared of accumulated sediment. Provisions for proper dust control may be required as deemed necessary.

Where construction crosses a stream or channel, a temporary stream crossing will be needed.

Erosion Control design shall meet the requirements of the City of Heath Standard Drawings and Standard Notes.

9.3 Maintenance During Construction

All disturbed areas that are exposed to precipitation, structural control measures and locations of vehicle entrance and exit shall be inspected at least once every seven days and within twenty-four hours of a storm event greater than 0.5 inches. Inspection shall be continued until all disturbed areas are stabilized; structural controls are removed or converted to stormwater management facilities. Corrective action will be taken for all noted deficiencies. Such actions shall be initiated within 24-hours of inspection notification.

Sediment deposits shall be removed from straw bale and filter fence barriers upon reaching approximately one-half the height of the barrier at its lowest point or causes a silt fence to bulge and should be deposited at a controlled fill area.

Sediment deposits shall be removed from diversion channels, dikes, outlet channels and stabilized areas after every rainfall. Any area damaged by erosion shall be repaired and reseeded within 24-hours or as soon as the soil dries sufficiently to allow work to proceed.

Temporary stream crossings shall be inspected after every rainfall and at least weekly for assessment of damage due to stormwater flows or construction equipment. Necessary repairs shall be made within 24-hours or as soon as the soil dries sufficiently to allow work to proceed.

The City maintains the right to inspect any site of land disturbance at any reasonable time and to require compliance with regulations and soil erosion control plan.

Chapter 10 DESIGN SUBMISSION

10.1 Plans

Preliminary Plan and Construction Plan contents shall be as per the pertinent sections of the **City of Heath Development Regulations**.

10.2 Calculations

Appropriate calculations to document and justify the engineering design of the project shall be submitted for review. The calculations shall be stamped by the Design Engineer. A partial list of calculations is given below. All of these calculations may not apply to every project.

- Spread Calculations-Indicating the gutter capacity of streets and amount of pavement flooded (if requested)
- Grate Calculations-Indicating the capacity of inlet grates to handle storms (if requested)
- Storm Sewer Design Calculations-Indicating drainage to and capacity of storm sewers (required)
- Culvert Design Data Sheet Calculations-Indicating drainage to and capacity of culverts (required)
- Channel Calculations-Indicating drainage to and capacity of all channels (required for new or as requested)
- Storage Calculations-Indicating the amount of storage required and amount provided (required)
- Orifice Calculations-Indicating sizing (required)
- Weir Calculations-Indicating sizing (required)
- Time of Concentration Calculations-Documenting existing and design time of concentration (if requested)
- C and CN Calculations-Documenting existing and design C and CN values (if requested)
- Downstream Capacity Calculations-Verifying capacity of downstream systems (required)
- Other Calculations
- Construction Sedimentation Water Quality Calculations (OEPA NPDES)
- Post-Construction Water Quality (OEPA NPDES)

10.3 Cost

The Developer will reimburse the City for all expenses related to the review of the submitted plan and inspection of construction.

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Appendix B – Ohio EPA NPDES Permit No. OHC000002

Page 1 of 36
Ohio EPA Permit No.: OHC000002
Effective Date: April 21, 2003
Expiration Date: April 20, 2008

OHIO ENVIRONMENTAL PROTECTION AGENCY

**AUTHORIZATION FOR STORM WATER DISCHARGES ASSOCIATED
WITH CONSTRUCTION ACTIVITY UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM**

In compliance with the provisions of the federal Water Pollution Control Act, as amended (33 U.S.C. Section 1251 et. seq. hereafter referred to as "the Act") and the Ohio Water Pollution Control Act [Ohio Revised Code ("ORC") Chapter 6111], dischargers of storm water from sites where construction activity is being conducted, as defined in Part I.B of this permit, are authorized by the Ohio Environmental Protection Agency, hereafter referred to as "Ohio EPA," to discharge from the outfalls at the sites and to the receiving surface waters of the state identified in their Notice of Intent ("NOI") application form on file with Ohio EPA in accordance with the conditions specified in Parts I through VII of this permit.

This permit is conditioned upon payment of applicable fees, submittal of a complete NOI application form and written approval of coverage from the director of Ohio EPA in accordance with Ohio Administrative Code ("OAC") Rule 3745-38-06.

Original signed by Christopher Jones

Christopher Jones
Director

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PART VII. DEFINITIONS

PART I. COVERAGE UNDER THIS PERMIT

A. Permit Area.

This permit covers the entire State of Ohio.

B. Eligibility.

1. Construction activities covered. Except for storm water discharges identified under Part I.B.2, this permit may cover all new and existing discharges composed entirely of storm water discharges associated with construction activity that enter surface waters of the state or a storm drain leading to surface waters of the state.

For the purposes of this permit, construction activities include any clearing, grading, excavating, grubbing and/or filling activities that disturb the threshold acreage described in the next paragraph. Discharges from trench dewatering are also covered by this permit as long as the dewatering activity is carried out in accordance with the practices outlined in Part III.G.2.g.iv of this permit.

Prior to March 10, 2003, only construction activities disturbing five or more acres of total land were required to obtain NPDES construction storm water permit coverage. On and after March 10, 2003, construction activities disturbing one or more acres of total land will be eligible for coverage under this permit. The threshold acreage includes the entire area disturbed in the larger common plan of development or sale.

This permit also authorizes storm water discharges from support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) provided:

- a. The support activity is directly related to a construction site that is required to have NPDES permit coverage for discharges of storm water associated with construction activity;
- b. The support activity is not a commercial operation serving multiple unrelated construction projects and does not operate beyond the completion of the construction activity at the site it supports;
- c. Appropriate controls and measures are identified in a storm water pollution prevention plan (SWP3) covering the discharges from the support activity; and
- d. The support activity is on or contiguous with the property defined in the NOI;

Part I.B

2. Limitations on coverage. The following storm water discharges associated with construction activity are not covered by this permit:
 - a. Storm water discharges that originate from the site after construction activities have been completed, including any temporary support activity, and the site has achieved final stabilization. Industrial post-construction storm water discharges may need to be covered by an NPDES permit;
 - b. Storm water discharges associated with construction activity that the director has shown to be or may reasonably expect to be contributing to a violation of a water quality standard; and
 - c. Storm water discharges authorized by an individual NPDES permit or another NPDES general permit;

3. Waivers. After March 10, 2003, sites whose larger common plan of development or sale have at least one, but less than five acres of land disturbance, which would otherwise require permit coverage for storm water discharges associated with construction activities, may request that the director waive their permit requirement. Entities wishing to request such a waiver must certify in writing that the construction activity meets one of the two the waiver conditions:
 - a. **Rainfall erosivity waiver.** For a construction site to qualify for the rainfall erosivity waiver, the cumulative rainfall erosivity over the project duration must be five or less and the site must be stabilized with at least a 70 percent vegetative cover or other permanent, non-erosive cover. The rainfall erosivity must be calculated according to the method in U.S. EPA Fact Sheet 3.1 Construction Rainfall Erosivity Waiver dated January 2001. If it is determined that a construction activity will take place during a time period where the rainfall erosivity factor is less than five, a written waiver certification must be submitted to Ohio EPA at least 21 days before construction activity is scheduled to begin. If the construction activity will extend beyond the dates specified in the waiver certification, the operator must either: (a) recalculate the waiver using the original start date with the new ending date (if the R factor is still less than five, a new waiver certification must be submitted) or (b) submit an NOI application form and fee for coverage under this general permit at least seven days prior to the end of the waiver period (see Attachment A); or

Part I.B.3

- b. **TMDL (Total Maximum Daily Load) waiver.** Storm water controls are not needed based on a TMDL approved or established by U.S. EPA that addresses the pollutant(s) of concern or, for non-impaired waters that do not require TMDLs, an equivalent analysis that determines allocations for small construction sites for the pollutant(s) of concern or that determines that such allocations are not needed to protect water quality based on consideration of existing in-stream concentrations, expected growth in pollutant contributions from all sources, and a margin of safety. The pollutant(s) of concern include sediment or a parameter that addresses sediment (such as total suspended solids, turbidity or siltation) and any other pollutant that has been identified as a cause of impairment of any water body that will receive a discharge from the construction activity. The operator must certify to the director of Ohio EPA that the construction activity will take place, and storm water discharges will occur, within the drainage area addressed by the TMDL or equivalent analysis. A written waiver certification must be submitted to Ohio EPA at least 21 days before the construction activity is scheduled to begin.
4. Prohibition on non-storm water discharges. All discharges covered by this permit must be composed entirely of storm water with the exception of the following: discharges from fire fighting activities; fire hydrant flushings; potable water sources including waterline flushings; irrigation drainage; lawn watering; routine external building washdown which does not use detergents; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; springs; uncontaminated ground water from trench or well point dewatering and foundation or footing drains where flows are not contaminated with process materials such as solvents. Dewatering activities must be done in compliance with Part III.G.2.g.iv of this permit. Discharges of material other than storm water or the authorized non-storm water discharges listed above must comply with an individual NPDES permit or an alternative NPDES general permit issued for the discharge.

Except for flows from fire fighting activities, sources of non-storm water listed above that are combined with storm water discharges associated with construction activity must be identified in the SWP3. The SWP3 must identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.

Part I.B

5. Spills and unintended releases (Releases in excess of Reportable Quantities). This permit does not relieve the permittee of the reporting requirements of 40 CFR Part 117 and 40 CFR Part 302. In the event of a spill or other unintended release, the discharge of hazardous substances in the storm water discharge(s) from a construction site must be minimized in accordance with the applicable storm water pollution prevention plan for the construction activity and in no case, during any 24-hour period, may the discharge(s) contain a hazardous substance equal to or in excess of reportable quantities.

40 CFR Part 117 sets forth a determination of the reportable quantity for each substance designated as hazardous in 40 CFR Part 116. The regulation applies to quantities of designated substances equal to or greater than the reportable quantities, when discharged to surface waters of the state. 40 CFR Part 302 designates under section 102(a) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, those substances in the statutes referred to in section 101(14), identifies reportable quantities for these substances and sets forth the notification requirements for releases of these substances. This regulation also sets forth reportable quantities for hazardous substances designated under section 311(b)(2)(A) of the Clean Water Act (CWA).

C. Requiring an individual NPDES permit or an alternative NPDES general permit.

1. The director may require an alternative permit. The director may require any operator eligible for this permit to apply for and obtain either an individual NPDES permit or coverage under an alternative NPDES general permit in accordance with OAC Rule 3745-38-04. Any interested person may petition the director to take action under this paragraph.

The director will send written notification that an alternative NPDES permit is required. This notice shall include a brief statement of the reasons for this decision, an application form and a statement setting a deadline for the operator to file the application. If an operator fails to submit an application in a timely manner as required by the director under this paragraph, then coverage, if in effect, under this permit is automatically terminated at the end of the day specified for application submittal.

Part I.C

2. Operators may request an individual NPDES permit. Any owner or operator eligible for this permit may request to be excluded from the coverage of this permit by applying for an individual permit. The owner or operator shall submit an individual application with reasons supporting the request to the director in accordance with the requirements of 40 CFR 122.26. If the reasons adequately support the request, the director shall grant it by issuing an individual NPDES permit.
3. When an individual NPDES permit is issued to an owner or operator otherwise subject to this permit or the owner or operator is approved for coverage under an alternative NPDES general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the effective date of the individual permit or the date of approval for coverage under the alternative general permit, whichever the case may be.

D. Permit requirements when portions of a site are sold

If an operator obtains a permit for a development, and then the operator (permittee) sells off lots or parcels within that development, permit coverage must be continued on those lots until a Notice of Termination (NOT) in accordance with Part IV.B is submitted. For developments which require the use of centralized sediment and erosion controls (i.e., controls that address storm water runoff from one or more lots) for which the conveyance of permit coverage for a portion of the development will either prevent or impair the implementation of the controls and therefore jeopardize compliance with the terms and conditions of this permit, the permittee will be required to maintain responsibility for the implementation of those controls. For developments where this is not the case, it is the permittee's responsibility to temporarily stabilize all lots sold to individual lot owners unless an exception is approved in accordance with Part III.G.4. In cases where permit coverage for individual lot(s) will be conveyed, the permittee shall inform the individual lot owner of the obligations under this permit and ensure that the Individual Lot NOI application is submitted to Ohio EPA.

Part I

E. Authorization

1. Obtaining authorization to discharge. Operators that discharge storm water associated with construction activity must submit an NOI application form in accordance with the requirements of Part II of this permit to obtain authorization to discharge under this general permit. As required under OAC Rule 3745-38-06(E), the director, in response to the NOI submission, shall notify the applicant in writing that he/she has been granted general permit coverage to discharge storm water associated with construction activity under the terms and conditions of this permit or that the applicant must apply for an individual NPDES permit or coverage under an alternate general NPDES permit as described in Part I.C.1.
2. No release from other requirements. No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations. Other permit requirements commonly associated with construction activities include, but are not limited to, section 401 water quality certifications, isolated wetland permits, permits to install sanitary sewers or other devices that discharge or convey polluted water, permits to install drinking water lines, single lot sanitary system permits and disturbance of land which was used to operate a solid or hazardous waste facility (i.e., coverage under this NPDES general permit does not satisfy the requirements of OAC Rule 3745-27-13 or ORC Section 3734.02(H)). This permit does not relieve the permittee of other responsibilities associated with construction activities such as contacting the Ohio Department of Natural Resources, Division of Water, to ensure proper well installation and abandonment of wells.

Part II. NOTICE OF INTENT REQUIREMENTS

A. Deadlines for notification.

Initial coverage: Operators who intend to obtain initial coverage for a storm water discharge associated with construction activity under this general permit must submit a complete and accurate NOI application form and appropriate fee at least 21 days prior to the commencement of construction activity. If more than one operator, as defined in Part VII of this general permit, will be engaged at a site, each operator shall seek coverage under this general permit. Where one operator has already submitted an NOI prior to other operator(s) being identified, the additional operator shall request modification of coverage to become a co-permittee. In such instances, the co-permittees shall be covered under the same facility permit number. No additional permit fee is required.

Part II.A

Individual lot transfer of coverage: Operators must each submit an individual lot notice of intent (Individual Lot NOI) application form (no fee required) to Ohio EPA at least seven days prior to the date that they intend to accept responsibility for permit requirements for their portion of the original permitted development from the previous permittee. The original permittee may submit an Individual Lot NOT at the time the Individual Lot NOI is submitted. Transfer of permit coverage is not granted until an approval letter from the director of Ohio EPA is received by the applicant.

B. Failure to notify.

Operators who fail to notify the director of their intent to be covered and who discharge pollutants to surface waters of the state without an NPDES permit are in violation of ORC Chapter 6111. In such instances, Ohio EPA may bring an enforcement action for any discharges of storm water associated with construction activity.

C. Where to submit an NOI.

Operators seeking coverage under this permit must submit a signed NOI form, provided by Ohio EPA, to the address found in the associated instructions.

D. Additional notification.

The permittee shall make NOIs and SWP3s available upon request of the director of Ohio EPA, local agencies approving sediment and erosion control plans, grading plans or storm water management plans, local governmental officials, or operators of municipal separate storm sewer systems (MS4s) receiving drainage from the permitted site. Each operator that discharges to an NPDES permitted MS4 shall provide a copy of its Ohio EPA NOI submission to the MS4 in accordance with the MS4's requirements, if applicable.

E. Renotification.

Upon renewal of this general permit, the permittee is required to notify the director of his intent to be covered by the general permit renewal. Permittees covered under the previous NPDES general permit for storm water discharges associated with construction activity (NPDES permit number OHR100000) shall have continuing coverage under this permit. The permittees covered under OHR100000 shall submit a letter within 90 days of receipt of written notification by Ohio EPA expressing their intent that coverage be continued. There is no fee associated with these letters of intent for continued coverage. Permit coverage will be terminated after the 90-day period if the letter is not received by Ohio EPA. Ohio EPA will provide instructions on the contents of the letter and where it is to be sent within the notification letter.

PART III. STORM WATER POLLUTION PREVENTION PLAN (SWP3)

A. Storm Water Pollution Prevention Plans.

A SWP3 shall be developed for each site covered by this permit. For a multi-phase construction project, a separate NOI shall be submitted when a separate SWP3 will be prepared for subsequent phases. SWP3s shall be prepared in accordance with sound engineering and/or conservation practices by a professional experienced in the design and implementation of standard erosion and sediment controls and storm water management practices addressing all phases of construction. The SWP3 shall identify potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges associated with construction activities. In addition, the SWP3 shall describe and ensure the implementation of best management practices (BMPs) that reduce the pollutants in storm water discharges during construction and pollutants associated with post-construction activities to ensure compliance with ORC Section 6111.04, OAC Chapter 3745-1 and the terms and conditions of this permit.

B. Timing

A SWP3 shall be completed prior to the timely submittal of an NOI and updated in accordance with Part III.D. Upon request and good cause shown, the director may waive the requirement to have a SWP3 completed at the time of NOI submission. If a waiver has been granted, the SWP3 must be completed prior to the initiation of construction activities. The SWP3 must be implemented upon initiation of construction activities.

Permittees continuing coverage from the previous generation of this permit (OHR100000) that have initiated construction activity prior to the receipt of written notification from Ohio EPA to submit a letter of intent to continue coverage, as required in Part II.E, are not required to update their SWP3 as a result of this renewal (OHC000002). All permittees developing sites with coverage under OHR100000 that seek continuation of coverage do not need to update the post-construction section of their SWP3 as required in Part III.G.2.e of this permit.

C. SWP3 Signature and Review.

1. Plan Signature and Retention On Site. The SWP3 shall be signed in accordance with Part V.G. and retained on site during working hours.
2. Plan Availability
 - a. On-site: The plan shall be made available immediately upon request of the director or his authorized representative during working hours. A copy of the NOI and letter granting permit coverage under this general permit also shall be made available at the site.

Part III.C.2

- b. By written request: The permittee must provide a copy of the SWP3 within 10 days upon written request of any of the following:
 - i. The director or the director's authorized representative;
 - ii. A local agency approving sediment and erosion plans, grading plans or storm water management plans; or
 - iii. In the case of a storm water discharge associated with construction activity which discharges through a municipal separate storm sewer system with an NPDES permit, to the operator of the system.
 - c. To the public: All NOIs, general permit approval for coverage letters, and SWP3s are considered reports that shall be available to the public in accordance with the Ohio Public Records law. The permittee shall make documents available to the public upon request or provide a copy at public expense, at cost, in a timely manner. However, the permittee may claim to Ohio EPA any portion of an SWP3 as confidential in accordance with Ohio law.
3. Plan Revision. The director or authorized representative, may notify the permittee at any time that the SWP3 does not meet one or more of the minimum requirements of this part. Within 10 days after such notification from the director, (or as otherwise provided in the notification) or authorized representative, the permittee shall make the required changes to the SWP3 and, if requested, shall submit to Ohio EPA the revised SWP3 or a written certification that the requested changes have been made.

D. Amendments

The permittee shall amend the SWP3 whenever there is a change in design, construction, operation or maintenance, which has a significant effect on the potential for the discharge of pollutants to surface waters of the state or if the SWP3 proves to be ineffective in achieving the general objectives of controlling pollutants in storm water discharges associated with construction activity. Amendments to the SWP3 may be reviewed by Ohio EPA in the same manner as Part III.C.

Part III

E. Duty to inform contractors and subcontractors

The permittee shall inform all contractors and subcontractors not otherwise defined as “operators” in Part VII of this general permit, who will be involved in the implementation of the SWP3, of the terms and conditions of this general permit. The permittee shall maintain a written document containing the signatures of all contractors and subcontractors involved in the implementation of the SWP3 as proof acknowledging that they reviewed and understand the conditions and responsibilities of the SWP3. The written document shall be created and signatures shall be obtained prior to commencement of work on the construction site.

F. Total Maximum Daily Load (TMDL) allocations

If a TMDL is approved for any waterbody into which the permittee’s site discharges and requires specific BMPs for construction sites, the director may require the permittee to revise his/her SWP3.

G. SWP3 Requirements

Operations that discharge storm water from construction activities are subject to the following requirements and the SWP3 shall include the following items:

1. Site description. Each SWP3 shall provide:
 - a. A description of the nature and type of the construction activity (e.g., low density residential, shopping mall, highway, etc.);
 - b. 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);
 - c. A calculation of the runoff coefficients for both the pre-construction and post construction site conditions;
 - d. An estimate of the impervious area and percent imperviousness created by the construction activity;
 - e. Existing data describing the soil and, if available, the quality of any discharge from the site;
 - f. A description of prior land uses at the site;

Part III.G.1

- g. 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 storm water management practices or facilities to be employed during each operation of the sequence;
- h. The name and/or location of the immediate receiving stream or surface water(s) and the first subsequent named receiving water(s) and the areal extent and description of wetlands or other special aquatic sites at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project;
- i. For subdivided developments where the SWP3 does not call for a 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.

This does not remove the responsibility to designate specific erosion and sediment control practices in the SWP3 for critical areas such as steep slopes, stream banks, drainage ways and riparian zones.

- j. Location and description of any storm water discharges associated with dedicated asphalt and dedicated concrete plants covered by this permit and the best management practices to address pollutants in these storm water discharges;
- k. A copy of the permit requirements (attaching a copy of this permit is acceptable); and
- l. Site map showing:
 - i. Limits of earth-disturbing activity of the site including associated off-site borrow or spoil areas that are not addressed by a separate NOI and associated SWP3;
 - ii. Soils types should be depicted for all areas of the site, including locations of unstable or highly erodible soils;
 - iii. Existing and proposed contours. A delineation of drainage watersheds expected during and after major grading activities as well as the size of each drainage watershed, in acres;

Part III.G.1.I

- iv. Surface water locations including springs, wetlands, streams, lakes, water wells, etc., on or within 200 feet of the site, including the boundaries of wetlands or stream channels and first subsequent named receiving water(s) the permittee intends to fill or relocate for which the permittee is seeking approval from the Army Corps of Engineers and/or Ohio EPA;
 - v. Existing and planned locations of buildings, roads, parking facilities and utilities;
 - vi. The location of all erosion and sediment control practices, including the location of areas likely to require temporary stabilization during the course of site development;
 - vii. Sediment and storm water management basins noting their sediment settling volume and contributing drainage area;
 - viii. Permanent storm water management practices to be used to control pollutants in storm water after construction operations have been completed.
 - ix. Areas designated for the storage or disposal of solid, sanitary and toxic wastes, including dumpster areas, areas designated for cement truck washout, and vehicle fueling;
 - x. The location of designated construction entrances where the vehicles will access the construction site;
 - xi. The location of any in-stream activities including stream crossings;
2. Controls. The SWP3 must contain a description of the controls appropriate for each construction operation covered by this permit and the operator(s) must implement such controls. The SWP3 must clearly describe for each major construction activity identified in Part III.G.1.g: (a) appropriate control measures and the general timing (or sequence) during the construction process that the measures will be implemented; and (b) which contractor is responsible for implementation (e.g., contractor A will clear land and install perimeter controls and contractor B will maintain perimeter controls until final stabilization). Ohio EPA recommends that the erosion, sediment, and storm water management practices used to satisfy the conditions of this permit, should meet the standards and specifications in the current edition of Ohio's Rainwater and Land Development (see definitions) manual or other standards acceptable to Ohio EPA. The controls shall include the following minimum components:

Part III.G.2

- a. **Non-Structural Preservation Methods.** The SWP3 must make use of practices which preserve the existing natural condition as much as feasible. Such practices may include: preserving riparian areas adjacent to surface waters of the state, preserving existing vegetation and vegetative buffer strips, phasing of construction operations in order to minimize the amount of disturbed land at any one time and designation of tree preservation areas or other protective clearing or grubbing practices. The recommended buffer that operators should leave undisturbed along a surface water of the state is 25 feet as measured from the ordinary high water mark of the surface water.

- b. **Erosion Control Practices.** The SWP3 must make use of erosion controls that are capable of providing cover over disturbed soils unless an exception is approved in accordance with Part III.G.4. A description of control practices designed to restabilize disturbed areas after grading or construction shall be included in the SWP3. The SWP3 must provide specifications for stabilization of all disturbed areas of the site and provide guidance as to which method of stabilization will be employed for any time of the year. Such practices may include: temporary seeding, permanent seeding, mulching, matting, sod stabilization, vegetative buffer strips, phasing of construction operations, use of construction entrances and the use of alternative ground cover.

- i. **Stabilization.** Disturbed areas must be stabilized as specified in the following tables below. Permanent and temporary stabilization are defined in Part VII.

Table 1: Permanent Stabilization

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

Part III.G.2.b.i

Table 2: 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 two days of the most recent disturbance if the area will remain idle for more than 21 days |
| For all construction activities, any disturbed areas that will be dormant for more than 21 days but less than one year, and not within 50 feet of a stream | Within seven days of the most recent disturbance within the area For residential subdivisions, disturbed areas must be stabilized at least seven days prior to transfer of permit coverage for the individual lot(s). |
| Disturbed areas that will be idle over winter | Prior to the onset of winter weather |

Where vegetative stabilization techniques may cause structural instability or are otherwise unobtainable, alternative stabilization techniques must be employed.

- ii. **Permanent stabilization of conveyance channels.** Operators shall undertake special measures to stabilize channels and outfalls and prevent erosive flows. Measures may include seeding, dormant seeding (as defined in the 1996 edition of the Rainwater and Land Development manual), mulching, erosion control matting, sodding, riprap, natural channel design with bioengineering techniques or rock check dams.
- c. **Runoff Control Practices.** The SWP3 shall incorporate measures which control the flow of runoff from disturbed areas so as to prevent erosion from occurring. Such practices may include rock check dams, pipe slope drains, diversions to direct flow away from exposed soils and protective grading practices. These practices shall divert runoff away from disturbed areas and steep slopes where practicable.
- d. **Sediment Control Practices.** The plan shall include a description of structural practices that shall store runoff allowing sediments to settle and/or divert flows away from exposed soils or otherwise limit runoff from exposed areas. Structural practices shall be used to control erosion and trap sediment from a site remaining disturbed for more than 14 days. Such practices may include, among others: sediment settling ponds, silt fences, earth diversion dikes or channels which direct runoff to a sediment settling pond and storm drain inlet protection. All sediment control practices must be capable of ponding runoff in order to be considered functional. Earth diversion dikes or channels alone are not considered a sediment control practice unless those are used in conjunction with a sediment settling pond.

Part III.G.2.d

The SWP3 must contain detail drawings for all structural practices.

- i. Timing. Sediment control structures shall be functional throughout the course of earth disturbing activity. Sediment basins and perimeter sediment barriers shall be implemented prior to grading and within seven days from the start of grubbing. They shall continue to function until the up slope development area is restabilized. As construction progresses and the topography is altered, appropriate controls must be constructed or existing controls altered to address the changing drainage patterns.
- ii. Sediment settling ponds. Concentrated storm water runoff and runoff from drainage areas, which exceed the design capacity of silt fence or inlet protection, shall pass through a sediment settling pond. For common drainage locations that serve an area with 10 or more acres disturbed at one time, a temporary (or permanent) sediment settling pond must be provided until final stabilization of the site. The permittee may request approval from Ohio EPA to use alternative controls if it can demonstrate the alternative controls are equivalent in effectiveness to a sediment settling pond. It is recommended for drainage locations serving less than 10 acres, smaller sediment basins and/or sediment traps should be used.

The sediment settling pond shall be sized to provide at least 67 cubic yards of storage per acre of total contributing drainage area. When determining the total contributing drainage area, off-site areas and areas which remain undisturbed by construction activity must be included unless runoff from these areas is diverted away from the sediment settling pond and is not co-mingled with sediment-laden runoff. The depth of the sediment settling pond must be less than or equal to five feet. The configuration between inlets and the outlet of the basin must provide at least two units of length for each one unit of width (> 2:1 length:width ratio). Sediment must be removed from the sediment settling pond when the design capacity has been reduced by 40 percent (This is typically reached when sediment occupies one-half of the basin depth). When designing sediment settling ponds, the permittee must consider public safety, especially as it relates to children, as a design factor for the sediment basin and alternative sediment controls must be used where site limitations would preclude a safe design. The use of a combination of sediment and erosion control measures in order to achieve maximum pollutant removal is encouraged.

Part III.G.2.d

- iii. Silt Fence and Diversions. Sheet flow runoff from denuded areas shall be intercepted by silt fence or diversions to protect adjacent properties and water resources from sediment transported via sheet flow. Where intended to provide sediment control, silt fence shall be placed on a level contour. This permit does not preclude the use of other sediment barriers designed to control sheet flow runoff. The relationship between the maximum drainage area to silt fence for a particular slope range is shown in the table below.

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

Storm water diversion practices shall be used to keep runoff away from disturbed areas and steep slopes where practicable. Such devices, which include swales, dikes or berms, may receive storm water runoff from areas up to 10 acres.

- iv. Inlet Protection. Other erosion and sediment control practices shall minimize sediment laden water entering active storm drain systems, unless the storm drain system drains to a sediment settling pond.
- v. Stream Protection. If construction activities disturb areas adjacent to streams, structural practices shall be designed and implemented on site to protect all adjacent streams from the impacts of sediment runoff. No structural sediment controls (e.g., the installation of silt fence or a sediment settling pond in-stream) shall be used in a stream. For all construction activities immediately adjacent to surface waters of the state, it is recommended that a setback of at least 25-feet, as measured from the ordinary high water mark of the surface water, be maintained in its natural state as a permanent buffer. Where impacts within this setback area are unavoidable due to the nature of the construction activity (e.g., stream crossings for roads or utilities), the project shall be designed such that the number of stream crossings and the width of the disturbance within the setback area are minimized.
- vi. Modifying Controls. If periodic inspections or other information indicates a control has been used inappropriately or incorrectly, the permittee must replace or modify the control for site conditions.

Part III.G.2

- e. **Post-Construction Storm Water Management Requirements.** So that receiving stream's physical, chemical, and biological characteristics are protected and stream functions are maintained, post-construction storm water practices shall provide perpetual management of runoff quality and quantity. To meet the post-construction requirements of this permit, the SWP3 must contain a description of the post-construction BMPs that will be installed during construction for the site and the rationale for their selection. The rationale must address the anticipated impacts on the channel and floodplain morphology, hydrology, and water quality.

Detail drawings and maintenance plans must be provided for all post-construction BMPs. Maintenance plans shall be provided by the permittee to the post-construction operator of the site (including homeowner associations) upon completion of construction activities (prior to termination of permit coverage). For sites located within a community with a regulated municipal separate storm sewer system (MS4), the permittee, land owner, or other entity with legal control of the property may be required to develop and implement a maintenance plan to comply with the requirements of the MS4. Maintenance plans must ensure that pollutants collected within structural post-construction practices, be disposed of in accordance with local, state, and federal regulations. Permittees, except for those regulated under the small MS4 program, are not responsible under this permit for operation and maintenance of post-construction practices once coverage under this permit is terminated.

This permit does not preclude the use of innovation or experimental post-construction storm water management technologies. However, the director may require discharges from such structures to be monitored to ensure compliance with Part III.G.2.e of this permit. The installation of structural controls in certain scenarios may also require a separate permit under section 404 of the CWA. Permittees are only responsible for the installation and maintenance of storm water management measures prior to final stabilization of the site and are not responsible for maintenance after storm water discharges associated with construction activity have been eliminated from the site. However, post-construction storm water BMPs that discharge pollutants from point sources once construction is completed, may in themselves, need authorization under a separate NPDES permit.

Linear construction projects, (e.g., pipeline or utility line installation), which do not result in the installation of impervious surface, are not required to comply with the conditions of Part III.G.2.e of this permit. However, linear construction projects must be designed to minimize the number of stream crossings and the width of disturbance.

Part III.G.2.e

Large Construction Activities. For all large construction activities (involving the disturbance of five or more acres of land or will disturb less than five acres, but is a part of a larger common plan of development or sale which will disturb five or more acres of land), the post construction BMP(s) chosen must be able to detain storm water runoff for protection of the stream channels, stream erosion control, and improved water quality. Structural (designed) post-construction storm water treatment practices shall be incorporated into the permanent drainage system for the site. The BMP(s) chosen must be sized to treat the water quality volume (WQ_v) and ensure compliance with Ohio's Water Quality Standards in OAC Chapter 3745-1. The WQ_v shall be equivalent to the volume of runoff from a 0.75-inch rainfall and shall be determined according to one of the two following methods:

- i. Through a site hydrologic study approved by the local municipal permitting authority that uses continuous hydrologic simulation and local long-term hourly precipitation records or
- ii. Using the following equation:

$$WQ_v = C * P * A / 12$$

where:

WQ_v = water quality volume in acre-feet

C = runoff coefficient appropriate for storms less than 1 inch
(see Table 1)

P = 0.75 inch precipitation depth

A = area draining into the BMP in acres

Table 1
Runoff Coefficients Based on the Type of Land Use

| Land Use | Runoff Coefficient |
|----------------------------------------------------|--------------------|
| Industrial & Commercial | 0.8 |
| High Density Residential (>8 dwellings/acre) | 0.5 |
| Medium Density Residential (4 to 8 dwellings/acre) | 0.4 |
| Low Density Residential (<4 dwellings/acre) | 0.3 |
| Open Space and Recreational Areas | 0.2 |

Where the land use will be mixed, the runoff coefficient should be calculated using a weighted average. For example, if 60% of the contributing drainage area to the storm water treatment structure is Low Density Residential, 30% is High Density Residential, and 10% is Open Space, the runoff coefficient is calculated as follows $(0.6)(0.3) + (0.3)(0.5) + (0.1)(0.2) = 0.35$.

Part III.G.2.e

An additional volume equal to 20 percent of the WQ_v shall be incorporated into the BMP for sediment storage and/or reduced infiltration capacity. Ohio EPA recommends that BMPs be designed according to the methodology included in the Rainwater and Land Development manual or in another design manual acceptable for use by Ohio EPA.

BMPs shall be designed such that the drain time is long enough to provide treatment, but short enough to provide storage available for successive rainfall events as described in Table 2 below.

Table 2
Target Draw Down (Drain) Times for Structural
Post-Construction Treatment Control Practices

| Best Management Practice | Drain Time of WQ_v |
|---------------------------------------------|----------------------|
| Infiltration | 24 - 48 hours |
| Vegetated Swale and Filter Strip | 24 hours |
| Extended Detention Basin (Dry Basins) | 48 hours |
| Retention Basins (Wet Basins)* | 24 hours |
| Constructed Wetlands (above permanent pool) | 24 hours |
| Media Filtration, Bioretention | 40 hours |

* Provide both a permanent pool and an extended detention volume above the permanent pool, each sized at $0.75 * WQ_v$

The permittee may request approval from Ohio EPA to use alternative structural post-construction BMPs if the permittee can demonstrate that the alternative BMPs are equivalent in effectiveness to those listed in Table 2 above. Construction activities shall be exempt from this condition if it can be demonstrated that the WQ_v is provided within an existing structural post-construction BMP that is part of a larger common plan of development or if structural post-construction BMPs are addressed in a regional or local storm water management plan. Public entities (i.e., the state, counties, townships, cities, or villages) shall comply with the post-construction storm water management requirements of Part III.G.2.e for roadway construction projects initiated after March 10, 2006 and where practicable for projects initiated as of the effective date of this permit and thereafter.

For redevelopment projects (i.e., developments on previously developed property), post-construction practices shall either ensure a 20 percent net reduction of the site impervious area, provide for treatment of at least 20 percent of the WQ_v , or a combination of the two.

Part III.G.2.e

Small Construction Activities. For all small land disturbance activities (which disturb one or more, but less than five acres of land and is not a part of a larger common plan of development or sale which will disturb five or more acres of land), a description of measures that will be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed must be included in the SWP3. Structural measures should be placed on upland soils to the degree attainable.

- i. Such practices may include, but are not limited to: storm water detention structures (including wet basins); storm water retention structures; flow attenuation by use of open vegetated swales and natural depressions; infiltration of runoff onsite; and sequential systems (which combine several practices). The SWP3 shall include an explanation of the technical basis used to select the practices to control pollution where flows exceed pre-development levels.
 - ii. Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel to provide non-erosive flow velocity from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g., no significant changes in the hydrological regime of the receiving water).
- f. **Surface Water Protection.** If the project site contains any streams, rivers, lakes, wetlands or other surface waters, certain construction activities at the site may be regulated under the CWA and/or state isolated wetland permit requirements. Sections 404 and 401 of the Act regulate the discharge of dredged or fill material into surface waters and the impacts of such activities on water quality, respectively. Construction activities in surface waters which may be subject to CWA regulation and/or state isolated wetland permit requirements include, but are not limited to: sewer line crossings, grading, backfilling or culverting streams, filling wetlands, road and utility line construction, bridge installation and installation of flow control structures. If the project contains streams, rivers, lakes or wetlands or possible wetlands, the permittee must contact the appropriate U.S. Army Corps of Engineers District Office. (CAUTION: Any area of seasonally wet hydric soil is a potential wetland - please consult the Soil Survey and list of hydric soils for your County, available at your county's Soil and Water Conservation District. If you have any questions about Section 401 water quality certification, please contact the Ohio Environmental Protection Agency, Section 401 Coordinator.)

Part III.G.2.f

U.S. Army Corps of Engineers (Section 404 regulation):
Huntington, WV District (304) 529-5210 (Muskingum, Hocking and Scioto River Basin)
Buffalo, NY District (716) 879-4329 (Lake Erie Basin)
Pittsburgh, PA District (412) 395-7152 (Mahoning River Basin)
Louisville, KY District (502) 315-6678 (Little & Great Miami River Basin)

Ohio Environmental Protection Agency (Section 401 regulation):
Columbus, OH (614) 644-2001 (all of Ohio)

g. Other controls.

- i. **Non-Sediment Pollutant Controls.** No solid (other than sediment) or liquid waste, including building materials, shall be discharged in storm water runoff. The permittee must implement all necessary BMPs to prevent the discharge of non-sediment pollutants to the drainage system of the site or surface waters of the state. Under no circumstance shall concrete trucks wash out directly into a drainage channel, storm sewer or surface waters of the state. No exposure of storm water to waste materials is recommended.
- ii. **Off-site traffic.** Off-site vehicle tracking of sediments and dust generation shall be minimized.
- iii. **Compliance with other requirements.** The SWP3 shall be consistent with applicable State and/or local waste disposal, sanitary sewer or septic system regulations, including provisions prohibiting waste disposal by open burning and shall provide for the proper disposal of contaminated soils to the extent these are located within the permitted area.
- iv. **Trench and ground water control.** There shall be no turbid discharges to surface waters of the state resulting from dewatering activities. If trench or ground water contains sediment, it must pass through a sediment settling pond or other equally effective sediment control device, prior to being discharged from the construction site. Alternatively, sediment may be removed by settling in place or by dewatering into a sump pit, filter bag or comparable practice. Ground water dewatering which does not contain sediment or other pollutants is not required to be treated prior to discharge. However, care must be taken when discharging ground water to ensure that it does not become pollutant-laden by traversing over disturbed soils or other pollutant sources.

Part III.G.2

- h. **Maintenance.** All temporary and permanent control practices shall be maintained and repaired as needed to ensure continued performance of their intended function. All sediment control practices must be maintained in a functional condition until all up slope areas they control are permanently stabilized. The SWP3 shall be designed to minimize maintenance requirements. The applicant shall provide a description of maintenance procedures needed to ensure the continued performance of control practices.

- i. **Inspections.** At a minimum, procedures in an SWP3 shall provide that all controls on the site are inspected at least once every seven calendar days and within 24 hours after any storm event greater than one-half inch of rain per 24 hour period. The permittee shall assign qualified inspection personnel (those with knowledge and experience in the installation and maintenance of sediment and erosion controls) to conduct these inspections to ensure that the control practices are functional and to evaluate whether the SWP3 is adequate and properly implemented in accordance with the schedule proposed in Part III.G.1.g of this permit or whether additional control measures are required. Disturbed areas and areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the SWP3 shall be observed to ensure that those are operating correctly. Discharge locations shall be inspected to ascertain whether erosion and sediment control measures are effective in preventing significant impacts to the receiving waters. Locations where vehicles enter or exit the site shall be inspected for evidence of off-site vehicle tracking.

The permittee shall maintain for three years following the submittal of a notice of termination form, a record summarizing the results of the inspection, names(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the SWP3 and a certification as to whether the facility is in compliance with the SWP3 and the permit and identify any incidents of non-compliance. The record and certification shall be signed in accordance with Part V.G. of this permit.

- i. **When practices require repair or maintenance.** If the 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 days of the inspection. Sediment settling ponds must be repaired or maintained within 10 days of the inspection.

PART IV. NOTICE OF TERMINATION REQUIREMENTS

A. Failure to notify.

The terms and conditions of this permit shall remain in effect until a signed Notice of Termination (NOT) form is submitted. Failure to submit an NOT constitutes a violation of this permit and may affect the ability of the permittee to obtain general permit coverage in the future.

B. When to submit an NOT

1. Permittees wishing to terminate coverage under this permit must submit an NOT form in accordance with Part V.G. of this permit. Compliance with this permit is required until an NOT form is submitted. The permittee's authorization to discharge under this permit terminates at midnight of the day the NOT form is submitted.
2. All permittees must submit an NOT form within 45 days of completing all permitted land disturbance activities. Enforcement actions may be taken if a permittee submits an NOT form without meeting one or more of the following conditions:
 - a. Final stabilization (see definition in Part VII) has been achieved on all portions of the site for which the permittee is responsible (including, if applicable, returning agricultural land to its pre-construction agricultural use);
 - b. Another operator(s) has assumed control over all areas of the site that have not been finally stabilized;
 - c. For residential construction only, temporary stabilization has been completed and the lot, which includes a home, has been transferred to the homeowner. (Note: individual lots without housing which are sold by the developer must undergo final stabilization prior to termination of permit coverage.); or
 - d. An exception has been granted under Part III.G.4.

C. How to submit an NOT

Permittees must use Ohio EPA's approved NOT form. The form must be completed and mailed according to the instructions and signed in accordance with Part V.G of this permit.

PART V. STANDARD PERMIT CONDITIONS.

A. Duty to comply.

1. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of ORC Chapter 6111. and is grounds for enforcement action.
2. Ohio law imposes penalties and fines for persons who knowingly make false statements or knowingly swear or affirm the truth of a false statement previously made.

B. Continuation of an expired general permit.

An expired general permit continues in force and effect until a new general permit is issued.

C. Need to halt or reduce activity not a defense.

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to mitigate.

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Duty to provide information.

The permittee shall furnish to the director, within 10 days of written request, any information which the director may request to determine compliance with this permit. The permittee shall also furnish to the director upon request copies of records required to be kept by this permit.

F. Other information.

When the permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in the NOI, SWP3, NOT or in any other report to the director, he or she shall promptly submit such facts or information.

Part V

G. Signatory requirements.

All NOIs, NOTs, SWP3s, reports, certifications or information either submitted to the director or that this permit requires to be maintained by the permittee, shall be signed.

1. These items shall be signed as follows:
 - a. For a corporation: By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:
 - i. A president, secretary, treasurer or vice-president of the corporation in charge of a principal business function or any other person who performs similar policy or decision-making functions for the corporation; or
 - ii. The manager of one or more manufacturing, production or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
 - b. For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or
 - c. For a municipality, State, Federal or other public agency: By either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes (1) the chief executive officer of the agency or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of U.S. EPA).
2. All reports required by the permits and other information requested by the director shall be signed by a person described in Part V.G.1 of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

Part V.G.2

- a. The authorization is made in writing by a person described in Part V.G.1 of this permit and submitted to the director;
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator of a well or well field, superintendent, position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
 - c. The written authorization is submitted to the director.
3. Changes to authorization. If an authorization under Part V.G.2 of this permit is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part V.G.2 of this permit must be submitted to the director prior to or together with any reports, information or applications to be signed by an authorized representative.

H. Certification.

Any person signing documents under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

I. Oil and hazardous substance liability.

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities or penalties to which the permittee is or may be subject under section 311 of the CWA or 40 CFR Part 112. 40 CFR Part 112 establishes procedures, methods and equipment and other requirements for equipment to prevent the discharge of oil from non-transportation-related onshore and offshore facilities into or upon the navigable surface waters of the State or adjoining shorelines.

Part V

J. Property rights.

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

K. Severability.

The provisions of this permit are severable and if any provision of this permit or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

L. Transfers.

Ohio NPDES general permit coverage is transferable. Ohio EPA must be notified in writing sixty days prior to any proposed transfer of coverage under an Ohio NPDES general permit. The transferee must inform Ohio EPA it will assume the responsibilities of the original permittee transferor.

M. Environmental laws.

No condition of this permit shall release the permittee from any responsibility or requirements under other environmental statutes or regulations.

N. Proper operation and maintenance.

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of SWP3s. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.

O. Inspection and entry.

The permittee shall allow the director or an authorized representative of Ohio EPA, upon the presentation of credentials and other documents as may be required by law, to:

Part V.O

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and
3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment).

PART VI. REOPENER CLAUSE

- A. If there is evidence indicating potential or realized impacts on water quality due to any storm water discharge associated with construction activity covered by this permit, the permittee of such discharge may be required to obtain coverage under an individual permit or an alternative general permit in accordance with Part I.C of this permit or the permit may be modified to include different limitations and/or requirements.
- B. Permit modification or revocation will be conducted according to ORC Chapter 6111.

PART VII. DEFINITIONS

- A. “Act” means Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483, Pub. L. 97-117 and Pub. L. 100-4, 33 U.S.C. 1251 et. seq.
- B. “Best management practices (BMPs)” means schedules of activities, prohibitions of practices, maintenance procedures and other management practices (both structural and non-structural) to prevent or reduce the pollution of surface waters of the state. BMP's also include treatment requirements, operating procedures and practices to control plant and/or construction site runoff, spillage or leaks, sludge or waste disposal or drainage from raw material storage.
- C. “Commencement of construction” means the initial disturbance of soils associated with clearing, grubbing, grading, placement of fill or excavating activities or other construction activities.
- D. “Concentrated storm water runoff” means any storm water runoff which flows through a drainage pipe, ditch, diversion or other discrete conveyance channel.
- E. “Director” means the director of the Ohio Environmental Protection Agency.

Part VII

- F. “Discharge” means the addition of any pollutant to the surface waters of the state from a point source.
- G. “Disturbance” means any clearing, grading, excavating, filling, or other alteration of land surface where natural or man-made cover is destroyed in a manner that exposes the underlying soils.
- H. “Final stabilization” means that either:
1. All soil disturbing activities at the site are complete and a uniform perennial vegetative cover (e.g., evenly distributed, without large bare areas) with a density of at least 70 percent cover for the area has been established on all unpaved areas and areas not covered by permanent structures or equivalent stabilization measures (such as the use of mulches, rip-rap, gabions or geotextiles) have been employed. In addition, all temporary erosion and sediment control practices are removed and disposed of and all trapped sediment is permanently stabilized to prevent further erosion; or
 2. For individual lots in residential construction by either:
 - a. The homebuilder completing final stabilization as specified above or
 - b. The homebuilder establishing temporary stabilization including perimeter controls for an individual lot prior to occupation of the home by the homeowner and informing the homeowner of the need for and benefits of, final stabilization. (Homeowners typically have an incentive to put in the landscaping functionally equivalent to final stabilization as quick as possible to keep mud out of their homes and off sidewalks and driveways.); or
 3. For construction projects on land used for agricultural purposes (e.g., pipelines across crop or range land), final stabilization may be accomplished by returning the disturbed land to its pre-construction agricultural use. Areas disturbed that were previously used for agricultural activities, such as buffer strips immediately adjacent to surface waters of the state and which are not being returned to their pre-construction agricultural use, must meet the final stabilization criteria in (1) or (2) above.
- I. “Individual Lot NOI” means a Notice of Intent for an individual lot to be covered by this permit (see parts I and II of this permit).
- J. “Larger common plan of development or sale”- means a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under one plan.

Part VII

- K. "MS4" means municipal separate storm sewer system which means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains) that are:
1. Owned or operated by the federal government, state, municipality, township, county, district(s) or other public body (created by or pursuant to state or federal law) including special district under state law such as a sewer district, flood control district or drainage districts or similar entity or a designated and approved management agency under section 208 of the act that discharges into surface waters of the state; and
 2. Designed or used for collecting or conveying solely storm water,
 3. Which is not a combined sewer and
 4. Which is not a part of a publicly owned treatment works.
- L. "National Pollutant Discharge Elimination System (NPDES)" means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits and enforcing pretreatment requirements, under sections 307, 402, 318 and 405 of the CWA. The term includes an "approved program."
- M. "NOI" means notice of intent to be covered by this permit.
- N. "NOT" means notice of termination.
- O. "Operator" means any party associated with a construction project that meets either of the following two criteria:
1. The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or
 2. The party has day-to-day operational control of those activities at a project which are necessary to ensure compliance with an SWP3 for the site or other permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the SWP3 or comply with other permit conditions).

As set forth in Part II.A, there can be more than one operator at a site and under these circumstances, the operators shall be co-permittees.

- P. "Owner or operator" means the owner or operator of any "facility or activity" subject to regulation under the NPDES program.

Part VII

- Q. “Permanent stabilization” means the establishment of permanent vegetation, decorative landscape mulching, matting, sod, rip rap and landscaping techniques to provide permanent erosion control on areas where construction operations are complete or where no further disturbance is expected for at least one year.
- R. “Percent imperviousness” means the impervious area created divided by the total area of the project site.
- S. “Point source” means any discernible, confined and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or the floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.
- T. “Rainwater and Land Development” is a manual describing construction and post-construction best management practices and associated specifications. A copy of the manual may be obtained by contacting the Ohio Department of Natural Resources, Division of Soil & Water Conservation.
- U. “Riparian area” means the transition area between flowing water and terrestrial (land) ecosystems composed of trees, shrubs and surrounding vegetation which serve to stabilize erodible soil, improve both surface and ground water quality, increase stream shading and enhance wildlife habitat.
- V. “Runoff coefficient” means the fraction of total rainfall that will appear at the conveyance as runoff.
- W. “Sediment settling pond” means a sediment trap, sediment basin or permanent basin that has been temporarily modified for sediment control, as described in the latest edition of the Rainwater and Land Development manual.
- X. “State isolated wetland permit requirements” means the requirements set forth in Sections 6111.02 through 6111.029 of the ORC.
- Y. “Storm water” means storm water runoff, snow melt and surface runoff and drainage.
- Z. “Surface waters of the state” or “water bodies” means all streams, lakes, reservoirs, ponds, marshes, wetlands or other waterways which are situated wholly or partially within the boundaries of the state, except those private waters which do not combine or effect a junction with natural surface or underground waters. Waters defined as sewerage systems, treatment works or disposal systems in Section 6111.01 of the ORC are not included.

Part VII

- AA. “SWP3” means storm water pollution prevention plan.
- BB. “Temporary stabilization” means the establishment of temporary vegetation, mulching, geotextiles, sod, preservation of existing vegetation and other techniques capable of quickly establishing cover over disturbed areas to provide erosion control between construction operations.
- CC. “Water Quality Volume (WQ_v)” means the volume of storm water runoff which must be captured and treated prior to discharge from the developed site after construction is complete. WQ_v is based on the expected runoff generated by the mean storm precipitation volume from post-construction site conditions at which rapidly diminishing returns in the number of runoff events captured begins to occur.