CHAPTER 1050
COMPREHENSIVE STORMWATER MANAGEMENT

1050.01 PURPOSE AND SCOPE

(a) The purpose of this regulation is to establish technically feasible and economically reasonable stormwater management standards to achieve a level of stormwater quality and quantity control that will minimize damage to property and degradation of water resources and will promote and maintain the health, safety, and welfare of the citizens of the City of Avon:

(b) This regulation requires owners who develop or re-develop their property within the City of Avon to:

(1) Control stormwater runoff from their property and ensure that all stormwater control measures(SCMs) are properly designed, constructed, and maintained.

(2) Reduce water quality impacts to receiving water resources that may be caused by new development or redevelopment activities.

(3) Control the volume, rate, and quality of stormwater runoff originating from their property so that surface water and ground water are protected and flooding and erosion potential are not increased.

(4) Minimize the need to construct, repair, and replace subsurface storm drain systems.

(5) Preserve natural infiltration and ground water recharge, and maintain subsurface flow that replenishes water resources, except in slippage prone soils.

(6) Incorporate stormwater quality and quantity controls into site planning and design at the earliest possible stage in the development process.

(7) Reduce the expense of remedial projects needed to address problems caused by inadequate stormwater management.

(8) Maximize use of SCMs that serve multiple purposes including, but not limited to, flood control, erosion control, fire protection, water quality protection, recreation, and habitat preservation.

(9) Design sites to minimize the number of stream crossings and the width of associated disturbance in order to minimize the City of Avon's future expenses related to the maintenance and repair of stream crossings.

(10) Maintain, promote, and re-establish conditions necessary for naturally occurring stream processes that assimilate pollutants, attenuate flood flows, and provide a healthy water resource.

(c) This regulation shall apply to all parcels used or being developed, either wholly or partially, for new or relocated projects involving highways and roads; subdivisions or larger common plans of development; industrial, commercial, institutional, or residential projects; building activities on farms; redevelopment activities; grading; and all other uses that are not specifically exempted in Section 1050.01.

(d) Public entities, including the State of Ohio, Lorain County, and the City of Avon shall comply with this regulation for roadway projects initiated after March 10, 2006 and, to the maximum extent practicable, for projects initiated before that time.

(e) This regulation does not apply to activities regulated by, and in compliance with, the Ohio Agricultural Sediment Pollution Abatement Rules.

(f) This regulation does not require a Comprehensive Stormwater Management Plan for linear construction projects, such as pipeline or utility line installation, that do not result in the installation of impervious surface as determined by the City Engineer. Such projects must be designed to minimize the number of stream crossings and the width of disturbance. Linear construction projects must comply with the requirements of Chapter 1052 - Erosion and Sediment Control.

(g) This regulation does not apply to construction or re-construction of stand-alone single family dwellings when the parcel is not part of an overall subdivision or is part of a subdivision that is in existence as of the adoption of this ordinance, unless otherwise required by the City Engineer.

1050.02 DEFINITIONS

For the purpose of this regulation, the following terms shall have the meaning herein indicated:

a. ACRE: A measurement of area equaling 43,560 square feet.

b. AS-BUILT SURVEY: A survey shown on a plan or drawing prepared by a Registered Professional Surveyor indicating the actual dimensions, elevations, and locations of any structures, underground utilities, swales, detention facilities, and sewage treatment facilities after construction has been completed.

c. CITY ENGINEER: The City Engineer shall mean the City's Engineer, its Consulting Engineer or Engineering Firm, any Engineer or Engineering Firm hired by the City to perform work for the City on any given project or any designee of one of the above, e.g., a City Building Inspector designated to perform stormwater inspections.

d. CLEAN WATER ACT: 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. Referred to as the Federal Water Pollution Control Act or the Federal Water Pollution Control Act Amendments of 1972.

e. COMMUNITY: The City of Avon, its designated representatives, boards, or commissions.

f. COMPREHENSIVE STORMWATER MANAGEMENT PLAN: The written document and plans meeting the requirements of this regulation that sets forth the plans and practices to minimize stormwater runoff from a development area, to safely convey or temporarily store and release post-development runoff at an allowable rate to minimize flooding and stream bank erosion, and to protect or improve stormwater quality and stream channels.

g. CRITICAL STORM: A storm that is determined by calculating the percentage increase in volume of runoff by a proposed development area for the 1 year 24 hour event. The critical storm is used to calculate the maximum allowable stormwater discharge rate from a developed site.

h. DEVELOPMENT AREA: A parcel or contiguous parcels owned by one person or persons, or operated as one development unit, and used or being developed for commercial, industrial, residential, institutional, or other construction or alteration that changes runoff characteristics.

i. DEVELOPMENT DRAINAGE AREA: A combination of each hydraulically unique watershed with individual outlet points on the development area.

j. DISTURBED AREA: An area of land subject to erosion due to the removal of vegetative cover and/or soil disturbing activities.

k. DRAINAGE: The removal of excess surface water or groundwater from land by surface or subsurface drains.

l. EROSION: The process by which the land surface is worn away by the action of wind, water, ice, gravity, or any combination of those forces.

m. EXTENDED DETENTION FACILITY: An SCM that replaces and/or enhances traditional detention facilities by releasing the runoff collected during the storm event to improve stormwater quality over at least 24 to 48 hours, retarding flow and allowing pollutants to settle within the facility.

n. FINAL STABILIZATION: All soil disturbing activities at the site have been completed and a uniform perennial vegetative cover with a density of at least 80% coverage for the area has been established or equivalent stabilization practices, such as the use of mulches or geotextiles, have been employed.

o. GRADING: The process in which the topography of the land is altered to a new slope.

p. GREEN INFRASTRUCTURE: Wet weather management approaches and technologies that utilize, enhance or mimic the natural hydrologic cycle processes of infiltration, evapotranspiration and reuse.

q. HYDROLOGIC UNIT CODE: A cataloging system developed by the United States Geological Survey and the Natural Resource Conservation Service to identify watersheds in the United States.

r. IMPERVIOUS COVER: Any surface that cannot effectively absorb or infiltrate water. This may include roads, streets, parking lots, rooftops, sidewalks, and other areas not covered by vegetation.

s. INFILTRATION CONTROL MEASURE: An SCM that does not discharge to a water resource during the stormwater quality event, requiring collected runoff to either infiltrate into the groundwater and/or be consumed by evapotranspiration, thereby retaining stormwater pollutants in the facility.

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

u. MAXIMUM EXTENT PRACTICABLE: The level of pollutant reduction that operators of small municipal separate storm sewer systems regulated under 40 C.F.R. Parts 9, 122, 123, and 124, referred to as NPDES Stormwater Phase II, must meet.

v. MUNICIPAL SEPARATE STORM SEWER SYSTEM(MS4): 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:

i: Owned or operated by the federal government, state, municipality, township, county, district, or other public body (created by or pursuant to state or federal law) including a 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 Clean Water Act that discharges into water resources; and
ii: Designed or used for collecting or conveying solely stormwater,
iii: Which is not a combined sewer, and
iv: Which is not a part of a publicly owned treatment works.

w. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES): A regulatory program in the Federal Clean Water Act that prohibits the discharge of pollutants into surface waters of the United States without a permit.

x. NONSTRUCTURAL STORMWATER CONTROL MEASURE(SCM): Any technique that uses natural processes and features to prevent or reduce the discharge of pollutants to water resources and control stormwater volume and rate.

y. OWNER or OPERATOR: Any party associated with a construction project that meets either of the following two criteria:

i: The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or
ii: The party has day-to-day operational control of those activities at a project which are necessary to ensure compliance with A Stormwater Pollution Prevention Plan (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.)

z. ORDINARY HIGH WATER MARK: The line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

aa. POST-DEVELOPMENT: The conditions that exist following the completion of soil disturbing activity in terms of topography, vegetation, land use, and the rate, volume, quality, or direction of stormwater runoff.

bb. PRE-CONSTRUCTION MEETING: Meeting prior to construction between all parties associated with the construction of the project including government agencies, contractors and owners to review agency requirements and plans as submitted and approved.

cc. PRE-DEVELOPMENT: The conditions that exist prior to the initiation of soil disturbing activity in terms of topography, vegetation, land use, and the rate, volume, quality, or direction of stormwater runoff.

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

ee. RAINWATER AND LAND DEVELOPMENT MANUAL: Ohio's standards for stormwater management, land development, and urban stream protection. The most current edition of these standards shall be used with this regulation.

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

gg. RIPARIAN AREA: Land adjacent to any brook, creek, river, or stream having a defined bed and bank that, if appropriately sized, helps to stabilize stream banks, limit erosion, reduce flood size flows, and/or filter and settle out runoff pollutants, or performs other functions consistent with the purposes of this regulation.

hh. RIPARIAN AND WETLAND SETBACK: The real property adjacent to a water resource on which soil disturbing activities are limited, all as defined by Chapter 1051 Establishment of

Riparian Zones.

ii. RUNOFF: The portion of rainfall, melted snow, or irrigation water that flows across the ground surface and is eventually returned to water resources.

jj. SEDIMENT: The soils or other surface materials that can be transported or deposited by the action of wind, water, ice, or gravity as a product of erosion.

kk. SEDIMENTATION: The deposition of sediment in water resources.

ll. SITE OWNER or OPERATOR: Any individual, corporation, firm, trust, commission, board, public or private partnership, joint venture, agency, unincorporated association, municipal corporation, county or state agency, the federal government, other legal entity, or an agent thereof that is responsible for the overall construction site.

mm. SOIL DISTURBING ACTIVITY: Clearing, grading, excavating, filling, or other alteration of the earth's surface where natural or human made ground cover is destroyed and that may result in, or contribute to, increased stormwater quantity and/or decreased stormwater quality.

nn. STABILIZATION: The use of SCMs that reduce or prevent soil erosion by stormwater runoff, trench dewatering, wind, ice, gravity, or a combination thereof.

oo. STORMWATER: Defined at 40 CFR 122.26(b)(13) and means stormwater runoff, snow melt runoff and surface runoff and drainage.

pp. STORMWATER CONTROL MEASURE (SCM);. Schedule of activities, prohibitions of practices, operation and maintenance procedures, treatment requirements, and other management practices (both structural and non-structural)to prevent or reduce the pollution of water resources and to control stormwater volume and rate. This includes practices to control runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. For guidance, please see U.S. EPA's National Menu of SCMs at http://water.epa.gov/polwaste/npdes/swbmp/index.cfm.

qq. STORMWATER CONTROL MEASURE (SCM): Any constructed facility, structure, or device that prevents or reduces the discharge of pollutants to water resources and controls stormwater volume and rate.

rr. SURFACE WATER OF THE STATE (also WATER RESOURCE): Any stream, lake, reservoir, marsh, wetland, or other waterway situated wholly or partly within the boundaries of the state, except those private waters which do not combine or affect a junction with surface water. Waters defined as sewerage systems, treatment works or disposal systems in Section 6111.01 of the Ohio Revised Code are not included.

ss. TOTAL MAXIMUM DAILY LOAD (TMDL): The sum of the existing and/or projected point source, nonpoint source, and background loads for a pollutant to a specified watershed, water body, or water body segment. A TMDL sets and allocates the maximum amount of a pollutant that may be introduced into the water and still ensures attainment and maintenance of water quality standards.

tt. WATER QUALITY VOLUME: "Water Quality Volume (WQv)" means the volume of stormwater runoff which must be captured and treated prior to discharge from the developed site after construction is complete. WQv 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.

uu. WATER RESOURCE (also SURFACE WATER OF THE STATE): Any stream, lake, reservoir, pond, marsh, wetland, or waterway situated wholly or partly within the boundaries of the state, except those private waters which do not combine or affect a junction with surface water. Waters defined as sewerage systems, treatment works or disposal systems in Section 6111.01 of the Ohio Revised Code are not included

vv. WATER RESOURCE CROSSING: Any bridge, box, arch, culvert, truss, or other type of structure intended to convey people, animals, vehicles, or materials from one side of a watercourse to another. This does not include private, non-commercial footbridges or pole mounted aerial electric or telecommunication lines, nor does it include below grade utility lines.

ww. WATERSHED: The total drainage area contributing stormwater runoff to a single point.

xx. WETLAND: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, and similar areas (40 CFR 232, as amended).

yy. WETLAND CONSULTANT: Individuals competent in the areas of botany, hydric soils and wetland hydrology that provide professional services or advise, and meet the education and professional experience requirements as required by the Society of Professional Wetland Scientists.

1050.03 DISCLAIMER OF LIABILITY

(a) Compliance with the provisions of this regulation shall not relieve any person from responsibility for damage to any person otherwise imposed by law. The provisions of this regulation are promulgated to promote the health, safety, and welfare of the public and are not designed for the benefit of any individual or any particular parcel of property.

(b) By approving a Comprehensive Stormwater Management Plan under this regulation, the City of Avon does not accept responsibility for the design, installation, and operation and maintenance of SCMs.

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

(d) No Release from Other Requirements. No condition of this permit shall release the applicant from any responsibility or requirements under other Federal, State, or local environmental Chapters. If requirements vary, the most restrictive requirements shall prevail.

(e) Proceeding with Activity. Soil-disturbing activities regulated under this Chapter shall not begin until all necessary State and Federal permits and appropriate approvals of the Comprehensive Stormwater Management Plans have been granted to the site owner/applicant.

(f) Performance Responsibility. The applicant is responsible for carrying out all provisions of the approved Comprehensive SWM plan and for meeting all the standards and requirements of this Chapter.

1050.04 CONFLICTS, SEVERABILITY, NUISANCES & RESPONSIBILITY

(a) Where this regulation is in conflict with other provisions of law or ordinance, the most restrictive provisions, as determined by the City Engineer, shall prevail.

(b) If any clause, Section, or provision of this regulation is declared invalid or unconstitutional by a court of competent jurisdiction, the validity of the remainder shall not be affected thereby.

(c) This regulation shall not be construed as authorizing any person to maintain a nuisance on their property, and compliance with the provisions of this regulation shall not be a defense in any action to abate such a nuisance.

(d) Failure of the City of Avon to observe or recognize hazardous or unsightly conditions or to recommend corrective measures shall not relieve the site owner from the responsibility for the condition or damage resulting there from, and shall not result in the City of Avon, its officers, employees, or agents being responsible for any condition or damage resulting there from.

1050.05 DEVELOPMENT OF COMPREHENSIVE STORMWATER MANAGEMENT PLANS

(a) This regulation requires that a Comprehensive Stormwater Management Plan be developed and implemented for all commercial and industrial site development and all soil disturbing activities disturbing one (1) or more acres of total land, or less than one (1) acre if part of a larger common plan of development or sale disturbing one (1) or more acres of total land, and on which any regulated activity of Section 1050.01(c) is proposed. See 1050.01 (e), (f) and (g) for exempted activities. The City Engineer reserves the right to require a comprehensive stormwater management plan on sites disturbing less than 1 acre.

(b) The City of Avon shall administer this regulation, shall be responsible for determination of compliance with this regulation, and shall issue notices and orders as may be necessary. The City of Avon may consult with other technical experts in reviewing the Comprehensive Stormwater Management Plan.

(c) Any residential homes under construction within a residential subdivisions that contain a CSWM Plan shall conform to the CSWM Plan or as deemed necessary by the City Engineer.

1050.06 APPLICATION PROCEDURES

(a) Pre-Application Meeting. The applicant is encouraged to schedule a meeting with the City Engineer or his or her designated representative to:

(1) Discuss the proposed project;

(2) Review the requirements of this Chapter;

(3) Identify unique aspects of the project that must be addressed during the review process;

(4) Establish a preliminary review and approval schedule.

(5) It is encouraged that this meeting occurs with the Planning Commission pre-application meeting as listed in Section1244.06.

(6) Currently, the application for the CSWM is the current Planning Commission Application Form that can be picked up by the Planning Commission Clerk.

(b) Comprehensive Stormwater Management Plan. The applicant shall submit two sets of a CSWM Plan and the applicable fees as set forth in Section 1050.17 to the City Planning Office in

conjunction with the submittal of the final plat (see Section 1244.10 for final plat submission requirements). This Plan shall meet the requirements of Section 1050.08 and Section 1050.09, and show the property boundaries (proposed if necessary), setbacks, dedicated open space, public roads, water resources, stormwater control facilities, easements, and blocks in sufficient detail and engineering analysis to allow the City Engineer to determine if the site is laid out in a manner that meets the intent of this Chapter and if the proposed SCMs are capable of controlling runoff from the site in compliance with this Chapter. This plan shall be approved by the City Engineer prior to issuance of any building permits.

(c) Review and Comment. The City Engineer shall review the plans submitted, and shall approve or return for revisions with comments and recommendations for revisions. A plan rejected because of deficiencies shall receive a narrative report stating specific problems and the procedures for filing a revised plan.

(d) Approval Necessary. Land-clearing and soil-disturbing activities shall not begin, and building permits shall not be issued without an approved CSWM Plan and deposits necessary as set forth in Section 1050.17 except as approved by the City Engineer.

(e) Valid for Two Years. Approvals issued in accordance with this Chapter shall remain valid for two years from the date of approval.

1050.07 COMPLIANCE WITH STATE AND FEDERAL REGULATIONS

Approvals issued in accordance with this regulation do not relieve the applicant of responsibility for obtaining all other necessary permits and/or approvals from other federal, state, and/or county agencies. If requirements vary, the most restrictive shall prevail. These permits may include, but are not limited to, those listed below. Applicants are required to show proof of compliance with these regulations before the City of Avon will issue a building permit.

(a) Ohio Environmental Protection Agency (Ohio EPA) National Pollutant Discharge Elimination System (NPDES) Permits authorizing stormwater discharges associated with construction activity or the most current version thereof: Proof of compliance with these requirements shall be the applicant's Notice of Intent (NOI) number from Ohio EPA, a copy of the Ohio EPA Director's Authorization Letter for the NPDES Permit, or a letter from the site owner certifying and explaining why the NPDES Permit is not applicable.

(b) Section 401 of the Clean Water Act: Proof of compliance shall be a copy of the Ohio EPA Water Quality Certification application tracking number, public notice, project approval, or a letter from the site owner certifying that a qualified professional has surveyed the site and determined that Section 401 of the Clean Water Act is not applicable. Wetlands, and other waters of the United States, shall be delineated by protocols accepted by the U.S. Army Corps of Engineers at the time of application of this regulation.

(c) Ohio EPA Isolated Wetland Permit: Proof of compliance shall be a copy of Ohio EPA's Isolated Wetland Permit application tracking number, public notice, project approval, or a letter from the site owner certifying that a qualified professional has surveyed the site and determined that Ohio EPA's Isolated Wetlands Permit is not applicable. Isolated wetlands shall be delineated by protocols accepted by the U.S. Army Corps of Engineers at the time of application of this regulation.

(d) Section 404 of the Clean Water Act: If an Individual Permit is required for the development project, proof of compliance shall be a copy of the U.S. Army Corps of Engineers Individual Permit application, public notice, or project approval. If an Individual Permit is not required, the

site owner shall submit proof of compliance with the U.S. Army Corps of Engineer's Nationwide Permit Program. This shall include one of the following:

(1) A letter from the site owner certifying that a qualified professional has surveyed the site and determined that Section 404 of the Clean Water Act is not applicable.

(2) A site plan showing that any proposed fill of waters of the United States conforms to the general and special conditions specified in the applicable Nationwide Permit. Wetlands, and other waters of the United States, shall be delineated by protocols accepted by the U.S. Army Corps of Engineers at the time of application of this regulation.

(e) Ohio Dam Safety Law: Proof of compliance shall be a copy of the ODNR Division of Soil and Water Resources permit application tracking number, a copy of the project approval letter from the ODNR Division of Soil and Water Resources, or a letter from the site owner certifying and explaining why the Ohio Dam Safety Law is not applicable.

1050.08 COMPREHENSIVE STORMWATER MANAGEMENT PLANS

(a) Comprehensive Stormwater Management Plan Required: The applicant shall develop a Comprehensive Stormwater Management Plan describing how the quantity and quality of stormwater will be managed after construction is completed for every discharge from the site and/or into a water resource or small municipal separate storm sewer system (MS4). The Plan will illustrate the type, location, and dimensions of every structural and non-structural SCM incorporated into the site design, and the rationale for their selection. The rationale must address how these SCMs will address flooding within the site as well as flooding that may be caused by the development upstream and downstream of the site. The rationale will also describe how the SCMs minimize impacts to the physical, chemical, and biological characteristics of on-site and downstream water resources and, if necessary, correct current degradation of water resources that is occurring or take measures to prevent predictable degradation of water resources.

(b) Preparation by Professional Engineer: The Comprehensive Stormwater Management Plan shall be prepared by a Registered Professional Engineer registered in the State of Ohio and include supporting calculations, plan sheets, and design details. To the extent necessary, as determined by the City Engineer, a site survey shall be performed by a Registered Professional Surveyor registered in the State of Ohio to establish boundary lines, measurements, or land surfaces.

(c) Community Procedures: The City Engineer shall prepare and maintain procedures providing specific criteria and guidance to be followed when designing the stormwater management system for the site. These procedures may be updated from time to time, at the discretion of the City Engineer based on improvements in engineering, science, monitoring, and local maintenance experience. The City Engineer shall make the final determination of whether the practices proposed in the Comprehensive Stormwater Management Plan meet the requirements of this regulation. The City Engineer may also maintain a list of acceptable SCMs that meet the criteria of this regulation to be used in the City of Avon.

(d) Contents of Comprehensive Stormwater Management Plan: The Comprehensive Stormwater Management Plan shall contain an application, narrative report, construction site plan sheets, a long-term Inspection and Maintenance Agreement, and a site description with the following information provided:

(1) Site description:

A. A description of the nature and type of the construction activity (e.g. 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 description of prior land uses at the site.

D. An estimate of the impervious area and percent of imperviousness created by the soil-disturbing activity at the beginning and at the conclusion of the project.

E. Existing data describing the soils throughout the site, including the soil map units, series, complexes, association, hydrologic soil group, porosity, infiltration characteristics, depth to groundwater, depth to bedrock, and any impermeable layers.

F. If available, the quality of any known pollutant discharge from the site such as that which may result from previous contamination caused by prior land uses.

The location and name of the immediate water resource(s) and the first subsequent water resource(s) and larger receiving waters i.e. French Creek, Black River and Lake Erie.

G. The aerial (plan view) extent and description of water resources at or near the site that will be disturbed or will receive discharges from the project.

H. If applicable, identify the point of discharge to a municipal separate storm sewer system and the location where that municipal separate storm sewer system ultimately discharges to a stream, lake, or wetland. The location and name of the immediate receiving stream or surface water(s) and the first subsequent receiving water(s) and the aerial 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 undisturbed areas of the project.

I. TMDLs applicable for the watershed that the construction site is located in has to demonstrate that the appropriate SCMs have been selected to address the TMDLs for that watershed. The TMDL information for all watersheds in the State of Ohio can be found on the Ohio EPA Nonpoint Source Pollution Control Program Website.

J. For each SCM, identify the drainage area, percent impervious cover within the drainage area, runoff coefficient for water quality volume, peak discharge, and the time of concentration for each sub-watershed per Appendix 1 of Ohio's stormwater manual, *Rainwater and Land Development*. Identify the SCM surface area, discharge and dewatering time, outlet type and dimensions. Each SCM shall be designated with an individual identification number.

K. Describe the current condition of water resources including the vertical stability of stream channels and indications of channel incision that may be responsible for current or future sources of high sediment loading or loss of channel stability.

L. An implementation schedule which describes the sequence of major soil-disturbing operations (i.e., grubbing, excavating, grading, utilities and infrastructure installation) and the implementation of erosion and sediment

controls to be employed during each operation of the sequence. The SWP3 shall clearly describe for each major construction activity (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).

M. 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.

N. Location and description of any stormwater discharges associated with dedicated asphalt and dedicated concrete plants associated with the development area and the best management practices to address pollutants in these stormwater discharges.

(2) Site map showing:

A. Limits of soil-disturbing activity of the site, including off-site spoil and borrow areas.

B. Soil map units for the entire site, including locations of unstable or highly erodible soils.

C. Existing and proposed one-foot (1') contours. This must include a delineation of drainage watersheds expected before, during, and after major grading activities as well as the size of each drainage watershed in acres.

D. Water resource locations including springs, wetlands, streams, lakes, water wells, and associated setbacks on or within 200 feet of the site, including the boundaries of wetlands or streams and first subsequent named receiving water(s) the applicant intends to fill or relocate for which the applicant is seeking approval from the Army Corps of Engineers and/or Ohio EPA. Concerning wetlands on neighboring properties, the only wetlands that need to be shown are previously delineated wetlands on neighboring properties within 200 feet of the site;

E. Existing and planned locations of buildings, roads, parking facilities, and utilities.

F. The location of any in-stream activities including stream crossings.

G. 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.

H. Sediment ponds, including their sediment settling volume and contributing drainage area. When drainage areas are predicted to change throughout active construction (e.g., when temporary diversions are utilized), applicable sediment storage zone and dewatering zone volumes shall be designed for the largest anticipated drainage area, and dewatering orifices shall be designed for the smallest anticipated drainage area.

I. The location of designated stoned construction entrances where the vehicles will ingress and egress the construction site.

(3) Contact information: Company name and contact information as well as contact name, addresses, and phone numbers for the following:

A. The Professional Engineer who prepared the Comprehensive Stormwater Management Plan.

B. The site owner.

(4) Phase, if applicable, of the overall development plan.

(5) List of sub-lot numbers if project is a subdivision.

(6) Ohio EPA NPDES Construction General Permit Facility Permit Number and other applicable state and federal permit numbers, if available, or status of various permitting requirements if final approvals have not been received.

(7) Location, including complete site address and sub-lot number if applicable.

(8) Location of any easements or other restrictions placed on the use of the property.

(9) A site plan sheet showing:

A. The location of each proposed post-construction SCM.

B. The geographic coordinates of the site AND each proposed SCM in North American Datum Ohio State Plan North.

It is preferred that the entire site be shown on one plan sheet to allow a complete view of the site during plan review. If a smaller scale is used to accomplish this, separate sheets providing an enlarged view of areas on individual sheets should also be provided.

(10) An Inspection and Maintenance Agreement. The Inspection and Maintenance Agreement required for SCMs under this regulation shall be a standalone document between the City of Avon and the applicant and shall contain the following information and provisions:

A. The location of each SCM, including those practices permitted to be located in, or within 50 feet of, water resources, and identification of the drainage area served by each SCM.

B. A schedule for regular maintenance for each aspect of the stormwater management system and description of routine and non-routine maintenance tasks to ensure continued performance of the system as is detailed in the approved Comprehensive Stormwater Management Plan. This schedule may include additional standards, as required by the City of Avon Engineer, to ensure continued performance of SCMs permitted to be located in, or within 50 feet of, water resources.

C. The location and documentation of all access and maintenance blocks and/or easements on the property.

D. Identification of the landowner(s), organization, or municipality responsible for long-term maintenance, including repairs, of the SCMs.

E. The landowner(s), organization, or municipality shall maintain SCMs in accordance with this regulation.

F. The City of Avon has the authority to enter upon the property to conduct inspections as necessary with prior notification of the property owner, unless deemed as an emergency by the City Engineer to verify that the SCMs are being maintained and operated in accordance with this regulation.

G. The City of Avon shall maintain public records of the results of site inspections, shall inform the landowner(s), organization, or municipality responsible for maintenance of the inspection results, and shall specifically indicate any corrective actions required to bring the SCMs into proper working condition.

H. If the City of Avon notifies the landowner(s), organization, or municipality responsible for maintenance of the maintenance problems that require correction, the specific corrective actions shall be taken within a reasonable time frame as determined by the City of Avon.

I. The City of Avon is authorized to enter upon the property and to perform the corrective actions identified in the inspection report if the landowner(s), organization, or municipality responsible for maintenance does not make the required corrections in the specified time period. The City of Avon shall be reimbursed by the landowner(s), organization, or municipality responsible for maintenance for all expenses incurred within 10 days of receipt of invoice from the City of Avon.

J. The method of funding long-term maintenance and inspections of all SCMs. As part of the Inspection and Maintenance Agreement, all private SCM owners shall set up a fund from which regular maintenance will be drawn from as stated in the sub-divider's signed agreement between the developer and the City.

K. A release of the City of Avon from all damages, accidents, casualties, occurrences, or claims that might arise or be asserted against the City of Avon from the construction, presence, existence, or maintenance of the SCMs.

L. Alteration or termination of these stipulations is prohibited. The applicant must provide a draft of this Inspection and Maintenance Agreement as part of the Comprehensive Stormwater Management Plan submittal. Once a draft is approved, a recorded copy of the Agreement must be submitted to the City of Avon to receive final inspection approval of the site.

M. Annual Inspection. There will be an annual inspection of all SCMs indicated in the CSWM. A SCM, in this case, shall be considered all stormwater facilities used for the purpose of water quality as decided upon by the City Engineer. Examples of SCMs requiring annual inspections are wet ponds, dry ponds, sand filters, bio-swales, and constructed wetlands. The City Engineer may require inspections to be performed more regularly if deemed necessary.

1. The landowner(s) or organization shall use a stormwater certified person (e.g., P.E., CESSWI, CPESC), as approved by the City Engineer, for annual stormwater inspections.

2. The Stormwater Inspector shall use the inspection form located in Appendix A attached to Ordinance 17-12, "Annual Stormwater SCM Inspection Form".

3. It is deemed a violation of this Section if the City does not receive the annual inspection report before August 1 of each year. In such an event, the City has the authority to enter upon the property to conduct any inspections as necessary to verify that the SCMs are being operated and maintained in accordance with this Chapter and charge the responsible party accordingly. Any accounts that are over 30 days delinquent may be certified to the County Auditor, who shall then place the same on the tax duplicate of the County, with interest as allowed by law, to be collected as taxes are collected.

N. Annual Report. Following the annual inspection, the landowner(s) or organization shall submit an annual stormwater report to the City Engineer. This report shall contain the following:

1. The annual inspection form by a stormwater certified person;

2. Listing of all corrective actions coming from the annual inspection listed as either high priority or normal priority;

3. Records of all regular maintenance performed throughout the year;

4. Records of normal priority corrective actions from the previous year;
5. Contact information of party submitting report.

6. The City shall maintain public records of these annual stormwater reports for a period of five years.

7. The City Engineer, or his designated appointee, will inspect all SCMs every five years to ensure the integrity of the annual inspections.

O. Corrective Actions. Corrective actions created by the annual inspection report shall be listed as either high priority or normal priority.

1. High priority items shall be corrected within three months of the date of the inspection report unless allowed further time by the City Engineer. The certified Stormwater Inspector shall submit a letter to the City Engineer when any high priority item is completed so that the City Engineer can personally inspect.

2. Normal priority items shall be corrected before the next annual inspection and will be listed in the next annual stormwater report.

3. The City is authorized to enter upon the property and to perform the corrective actions identified in the inspection report if the landowner(s)

or organization responsible for maintenance does not make the required corrections in the specified time period. In addition to any other penalty provided for in this Chapter, the City shall be reimbursed by the landowner(s) or organization responsible for maintenance for all expenses incurred within ten days of receipt of invoice from the City.

(11) Calculations required: The applicant shall submit calculations for projected stormwater runoff flows, volumes, and timing into and through all SCMs for flood control, channel protection, water quality, and the condition of the habitat, stability, and incision of each water resource and its floodplain, as required in Section 1050.09 of this regulation. These submittals shall be completed for both pre- and post-development land use conditions and shall include the underlying assumptions and hydrologic and hydraulic methods and parameters used for these calculations. The applicant shall also include critical storm determination and demonstrate that the runoff from offsite areas have been considered in the calculations.

(12) List of all contractors and subcontractors before construction: Prior to construction or before the pre-construction meeting, provide the list of all contractors and subcontractors names, addresses, and phones involved with the implementation of the Comprehensive Stormwater Management Plan including a written document containing signatures of all parties as proof of acknowledgment that they have reviewed and understand the requirements and responsibilities of the Comprehensive Stormwater Management Plan.

(13) Existing and proposed drainage patterns: The location and description of existing and proposed drainage patterns and SCMs, including any related SCMs beyond the development area and the larger common development area.

(14) For each SCM to be employed on the development area, include the following:

A. Location and size, including detail drawings, maintenance requirements during and after construction, and design calculations, all where applicable.

B. Final site conditions including stormwater inlets and permanent nonstructural and structural SCMs. Details of SCMs shall be drawn to scale and shall show volumes and sizes of contributing drainage areas.

C. Any other structural and/or non-structural SCMs necessary to meet the design criteria in this regulation and any supplemental information requested by the City Engineer.

1050.09 PERFORMANCE STANDARDS

(a) Stormwater Design General Information. No person shall develop any real property or connect or cause to be connected any building or other structure, either directly or indirectly, with a drain for the removal of surface, roof, ground or other water to be discharged into a ditch, swale, waterway, stream or an existing storm drainage system for such real property, without complying with the performance standards and paying the charges set forth in this chapter.

(b) General: The stormwater system, including SCMs for storage, treatment and control, and conveyance facilities, shall be designed to prevent structure flooding during the 100-year, 24-hour storm event; to maintain predevelopment runoff patterns, flows, and volumes; and to meet the following criteria:

(1) Integrated practices that address degradation of water resources. The SCMs shall function as an integrated system that controls flooding and minimizes the degradation of the physical, biological, and chemical integrity of the water resources receiving stormwater discharges from the site. Acceptable practices shall:

A. Not disturb riparian areas, unless the disturbance is intended to support a watercourse restoration project and comply with Chapter 1051 Establishment of Riparian Zones.

B. Maintain predevelopment hydrology and groundwater recharge on as much of the site as practicable.

C. Only install new impervious surfaces and compact soils where necessary to support the future land use.

D. Compensate for increased runoff volumes caused by new impervious surfaces and soil compaction by reducing stormwater peak flows to less than predevelopment levels.

E. Be designed according to the methodology included in the most current edition of *Rainwater and Land Development* or another design manual acceptable for use by the City of Avon and Ohio EPA.

SCMs that meet the criteria in this regulation, and additional criteria required by the City Engineer, shall comply with this regulation.

(2) Practices designed for final use: SCMs shall be designed to achieve the stormwater management objectives of this regulation, to be compatible with the proposed post-construction use of the site, to protect the public health, safety, and welfare, and to function safely with routine maintenance.

(3) Stormwater management for all lots: Areas developed for a subdivision, as defined in Chapter 1246, shall provide stormwater management and water quality controls for the development of all subdivided lots. This shall include provisions for lot grading and drainage that prevent structure flooding during the 100-year, 24-hour storm; and maintain, to the extent practicable, the pre-development runoff patterns, volumes, and peaks from each lot.

(4) Stormwater facilities in water resources: SCMs and related activities shall not be constructed in water resources unless the applicant shows proof of compliance with all appropriate permits from the Ohio EPA, the U.S. Army Corps, and other applicable federal, state, and local agencies as required in Section 1050.07 of this regulation, and the activity is in compliance with Chapter 1052 - Erosion and Sediment Control and Chapter 1051 - Establishment of Riparian Zones, all as determined by the City Engineer.

(5) Stormwater facilities in the floodplain: Stormwater facilities constructed, manufactured or otherwise, that provide treatment of the water quality volume (see Table 3, Section 1050.09), detention, retention, and/or infiltration, and all related activities, shall not be constructed in any special flood hazard area, as defined in Chapter 1464 – Flood Damage Prevention.

(6) Stormwater ponds and surface conveyance channels: All stormwater pond and surface conveyance designs must provide a minimum of one (1) foot freeboard above the projected peak stage within the facility during the 100 year, 24 hour storm. When designing stormwater ponds and conveyance channels, the applicant shall consider public safety as a design factor and alternative designs must be implemented where site limitations would preclude a safe design.

(7) Exemption: The site where soil-disturbing activities are conducted shall be exempt from the requirements of Section 1050.09 if it can be shown to the satisfaction of the City Engineer that the site is part of a larger common plan of development where the stormwater management requirements for the site are provided by one or more existing SCMs, or if the stormwater management requirements for the site are provided by practices defined in a regional or local stormwater management plan approved by the City Engineer.

(8) Maintenance: All SCMs shall be maintained in accordance with Inspection and Maintenance Agreements approved by the City Engineer as detailed in Section 1050.08.

(9) Agreements with Sub-dividers or Developers. A sub-divider or developer shall be required to construct an on-site SCM for the purposes of water quality and water retention approved by the City Engineer. The combination of stormwater quality and quantity requirements for two or more developments may be placed into one detention basin to be located at a strategic site given that a separate agreement with all parties is developed. The City shall enter into an agreement with the sub-divider or developer, to be approved by Council, containing the following conditions:

A. The sub-divider of a major subdivision shall require the formation of a homeowners' association, which shall assume responsibility for all maintenance, upkeep, repair, replacement and management of the SCM. In other developments, the sub-divider or developer shall make provisions acceptable to the City for maintenance of the SCM area as stated in Section1050.10. Blocks and/or easements shall be granted to the City for access to and maintenance of the stormwater management area.

B. If more than one development is to use a single SCM, a separate association of all members using that SCM shall be formed. This association will be held responsible for all future maintenance and repairs of the SCM as stated in this Chapter.

C. The sub-divider or developer shall be exempt from the application of this Section only if authorized by the City Engineer.

D. Where a sub-divider or developer is exempt from the provisions of this Section, that sub-divider or developer shall comply with and pay fees in accordance with this Chapter, governing subdivisions and development prior to the effective date of this Section.

E. All SCMs will be placed within blocks and/or easements to allow City access (See Section 1050.11).

(10) Preservation of Existing Natural Drainage. Practices that preserve and/or improve the existing natural drainage shall be used to the maximum extent practicable. Such practices may include minimizing site grading and compaction; protecting and/or restoring water

resources, riparian areas, and 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 and grubbing practices; and maintaining un-concentrated stormwater runoff to and through these areas. Post-construction stormwater practices shall provide perpetual management of runoff quality and quantity so that a receiving stream's physical, chemical and biological characteristics are protected and ecological functions are maintained.

(11) Preservation of Wetland Hydrology: Concentrated stormwater runoff from SCMs to wetlands shall be converted to diffuse flow before the runoff enters wetland(s) in order to protect the natural hydrology, hydro period, and wetland flora. The flow shall be released such that no erosion occurs down slope. Practices such as level spreaders, vegetative buffers, infiltration basins, conservation of forest covers, and the preservation of intermittent streams, depressions, and drainage corridors may be used to maintain the wetland hydrology.

If the applicant proposes to discharge to natural wetlands, a hydrological analysis shall be performed to demonstrate that the proposed discharge matches the pre-development hydro periods and hydrodynamics.

(c) Stormwater Conveyance Design Criteria: All SCMs shall be designed to convey stormwater to allow for the maximum removal of pollutants and reduction in flow velocities. This shall include but not be limited to:

(1) Stream/storm sewer discharge. The stormwater facility (storm sewer main or natural watercourse) that will convey the discharge from the site shall be analyzed to determine if it is capable of conveying the additional storm sewer discharge from the site of a 100-year/24-hour storm. If the designated outlet is not capable of conveying the discharge from the site during the 100-year/24-hour storm, then additional storage must be placed onsite to store the additional volume for a period of 36 hours.

(2) Surface Water Protection: The City Engineer may allow modification to streams, rivers, lakes, wetlands or other surface waters only if the applicant shows proof of compliance with all appropriate permits from the Ohio EPA, the U.S. Army Corps, and other applicable federal, state, and local agencies as required in Section 1050.07 of this regulation, and the activity is in compliance with Chapter 1052 Erosion and Sediment Control and Chapter 1051 Establishment of Riparian Zones all as determined by the City Engineer. At a minimum, stream relocation designs must show how the project will minimize changes to the vertical stability, floodplain form, channel form, and habitat of upstream and downstream channels on and off the property. Relocation of a major ditch needs to comply with Section 1050.151 with the approval of the City Engineer. Roadside ditch enclosure must be in compliance with Section 1050.151. Relocation of minor ditches must show that all affected drainage flowing into that ditch has been accommodated as approved by the City Engineer and complies with Section 1050.153.

(3) Off-site stormwater discharges: Off-site stormwater runoff that discharges to or across the applicant's development site shall be conveyed through the stormwater conveyance system planned for the development site at its existing peak flow rates during each design storm. Off-site flows shall be diverted around stormwater quality control facilities or, if this is not possible, the stormwater quality control facility shall be sized to treat the off-site flow. Comprehensive Stormwater Management Plans will not be approved until it is demonstrated to the satisfaction of the City Engineer that off-site runoff will be adequately conveyed through the development site in a manner that does not exacerbate

upstream or downstream flooding and erosion.

(4) Sheet flow. The site shall be graded in a manner that maintains sheet flow over as large an area as possible. The maximum area of sheet flow shall be determined based on the slope, the uniformity of site grading, and the use of easements or other legally-binding mechanisms that prohibit re-grading and/or the placement of structures within sheet flow areas. Flow shall be directed into an open channel, storm sewer, or other SCM from areas too long and/or too large to maintain sheet flow, all as determined by the City Engineer.

(5) Open channels: Unless otherwise allowed by the City Engineer, drainage tributary to SCMs shall be provided by an open channel with landscaped banks and designed to carry the 10 - year, 24 - hour stormwater runoff from upstream contributory areas.

(6) Drainage systems: Open drainage systems shall be preferred on all new development sites to convey stormwater where feasible. Storm sewer systems shall be allowed only when the site cannot be developed at densities allowed under City of Avon zoning or where the use of an open drainage system affects public health or safety, all as determined by the City Engineer. The following criteria shall be used to design storm sewer systems when necessary:

A. Storm sewer design flow shall be based on the Rational Method. Storm sewers shall be designed such that they do not surcharge from runoff caused by the 10 - year, 24 - hour storm, and that the hydraulic grade line of the storm sewer stays below the gutter flow line of the overlying roadway, or below the top of drainage structures outside the roadway or 18 inches below proposed basement elevations if structures are not serviced by a sump pump, whichever is more restrictive during a 25 - year, 24 - hour storm. The system shall be designed to meet these requirements when conveying the flows from the contributing area within the proposed development and existing flows from offsite areas that are upstream from the development. These calculations will be reviewed and approved by the City Engineer prior to design acceptance. Rainfall data shall be obtained from the latest volume of the NOAA Rainfall ATLAS 14 or per Table 1. Runoff coefficients shall be per Table 2.

Table 1 - Rainfall per Storm Frequency	
24 Hour Storm (year)	**Rainfall (in.)**
2 (50% storm)	2.44
5 (20% storm)	3.06
10 (10% storm)	3.55
25 (4% storm)	4.35
50 (2% storm)	5.08
100 (1% storm)	5.92

Table 2.
Rational Method Runoff Coefficients (C) for City of Avon

		Runoff Coefficients for Hydrologic Soil Groups			
Cover Description		A	B	C	D
Cultivated agricultural land		0.17	0.3	0.43	0.50
Pasture or range land continuous grazing		0.08	0.16	0.36	0.47
Meadow protected from grazing		0.06	0.13	0.30	0.43
Woods		0.05	0.10	0.29	0.41
Woods/grass combination (orchard, tree farm, etc.)		0.07	0.14	0.33	0.45
Lawns, parks, golf courses, cemeteries, etc.		0.08	0.16	0.36	0.47
Paved streets, parking lots, roofs, driveways, etc.		0.96	0.96	0.96	0.96
Gravel areas		0.40	0.59	0.69	0.74
Residential Areas					
Average lot size & Average % Impervious Area					
⅛ acre or less	65	0.41	0.59	0.72	0.77
¼ acre	38	0.16	0.37	0.54	0.64
⅓ acre	30	0.12	0.32	0.50	0.61
½ acre	25	0.09	0.29	0.47	0.59
1 acre	20	0.06	0.26	0.45	0.57
2 acres	12	0.05	0.23	0.41	0.50
Dirt or graded areas		0.41	0.61	0.74	0.83

B. Rainfall intensity will be calculated using the equation $i = a/(t+b)^{\wedge}c$

Where:

i = Rainfall intensity (in./hour)

t = Time of concentration (minutes)

Refer to Ohio Department of Transportation's *Location & Design Manual, Volume 2* (or latest edition) *Drainage Design*, Figure 1101-2 for Rainfall Intensity Constants (a, b & c)The maximum slope allowable shall be a slope that produces no less than 2.5-fps and no more than a 10-fps velocity within the pipe barrel under design flow conditions.

D. In areas where foundation (footer) drains are connected to the storm sewer by gravity connections, the hydraulic grade line for the 25 yr 24 hr storm, shall be 18 inches below the planned basement elevations. The planned basement elevations shall be clearly shown in the profile view of the storm sewer system. In areas where foundation (footer) drains are connected to the storm sewer via a pumping system, the hydraulic grade line for the 25 yr 24 hr storm shall be one (1) foot below the highest elevation to which the foundation (footer) drain outflow is pumped prior to the outflow flowing by gravity to the receiving storm sewer. Identify sump pump invert at the wall in the plans.

E. The minimum inside diameter of pipe to be used in public storm sewer systems is 12 inches.

F. All stormwater conveyance systems shall be designed taking into consideration the tailwater of the receiving facility or water resource. The tailwater elevation used shall be based on the design storm frequency. The hydraulic grade line for the storm sewer system shall be computed with consideration for the energy losses associated with entrance into and exit from the system, friction through the system, and turbulence in the individual manholes, catch basins, and junctions within the system. The following sources may be used to determine tailwater elevations:

I. Previous studies on file with the City.
II. FEMA Flood Insurance Rate Maps.
III. Calculations prepared by a Registered Professional Engineer.

G. Catch basin design spread calculations shall be submitted to the City Engineer for review to determine catch basin spacing and sizing. At a minimum, there shall be at least one total clear lane during a 25 year, 24 hour storm.

H. The inverts of all curb inlets, manholes, yard inlets, and other structures shall be formed and channelized to minimize the incidence of quiescent standing water where mosquitoes may breed. Exception: Any structure capturing runoff directly from a roadway shall have a minimum 12 inch sump to help reduce sediment from reaching the storm sewer pipe system.

I. Headwalls shall be required at all storm sewer inlets or outlets to and from open channels or lakes.

J. Outlets discharging into an open-water conveyance structure shall have an invert at a minimum of three inches above the average water depth during the snow-melt season.

K. The flood elevation for a 100 year, 24 hour storm must be a minimum of ten feet away horizontally from the perimeter of any homes within the new subdivision, nor cause any home flooding to adjacent neighboring properties, and shall be at least two feet below the finished grade elevation of any livable structure.

L. All storm sewer outlets from a subdivision must flow either into a public storm sewer, stream of the State, or a major ditch unless authorized by the City Engineer.

M. The maximum distance for sheet flow shall be 300 feet before entering a stormwater control measure. Except, that the maximum overland drainage area tributary to the storm structure shall be no greater than 1.5 acres.

(7) Water Resource Crossings. The following criteria shall be used to design structures that cross a water resource in the City of Avon:

A. Water resource crossings other than bridges shall be designed to convey the stream's flow for the minimum 100-year, 24-hour storm or as indicated by the City Engineer. The maximum allowed headwater for such a storm shall be 12 inches below pavement crown elevation. Water crossings carrying receiving waters located near upstream City borders shall convey no more flow than currently designed to carry unless directed by the City Engineer.

B. Bridges, open bottom arch or spans are the preferred crossing technique and shall be considered in the planning phase of the development. Bridges and open spans should be considered for all State Scenic Rivers, coldwater habitat, exceptional warmwater habitat, seasonal salmonid habitat streams, and Class III headwater streams. The footers or piers for these bridges and open spans shall not be constructed below the ordinary high water mark, unless piers are situated outside of the ordinary high water mark stream channel.

C. If a culvert or other closed bottom crossing is used, twenty-five (25) percent of the cross-sectional area or a minimum of 1 foot of box culverts and pipe arches must be embedded below the channel bed, with this cross-sectional area not calculated in the capacity of the crossing. The conduit or conveyance must to be sized to carry the 100 - year storm under these conditions.

D. The minimum inside diameter of pipes to be used for crossings shall be 12 inches.

E. The maximum slope allowable shall be a slope that produces no more than a 10-fps velocity within the culvert barrel under design flow conditions. Erosion protection and/or energy dissipaters shall be required to properly control entrance and outlet velocities.

F. All culvert installations shall be designed with consideration for the tailwater of the receiving facility or water resource. The tailwater elevation used shall be based on the design storm frequency.

G. Headwalls shall be required at all culvert inlets or outlets to and from open channels or lakes.

H. Streams with a drainage area of 5 square miles or larger shall incorporate floodplain culverts at the bankfull elevation to restrict head loss differences across the crossing so as to cause no rise in the 100-year storm event.

I. Bridges shall be designed such that the hydraulic profile through a bridge shall be one-foot below the bottom chord of the bridge for either the 100-year, 24-hour

storm, or the 100-year flood elevation as determined by FEMA, whichever is more restrictive.

(8) Overland flooding: Overland flood routing paths shall be used to convey stormwater runoff from the 100 year, 24 hour storm event to an adequate receiving water resource or SCM such that the runoff is contained within the drainage easement for the flood routing path and does not cause flooding of buildings or related structures. The peak 100 year water surface elevation along flood routing paths shall be at least two feet below the finished grade elevation of all structures. When designing the flood routing paths, the conveyance capacity of the site's storm sewers shall be taken into consideration.

(9) Compensatory flood storage mitigation: In order to preserve floodplain storage volumes and thereby avoid increases in water surface elevations, any filling within floodplains approved by the City of Avon must be compensated per Chapter 1464.25.

(10) Velocity dissipation: Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall to provide non-erosive flow velocity from the structure to a water resource so that the natural physical and biological characteristics and functions of the water resource are maintained and protected.

(d) Stormwater Quality Control:

(1) Direct runoff to a SCM: The site shall be designed to direct runoff to one or more of the following SCMs. These practices are listed in Table 3 of this regulation and shall be designed to meet the following general performance standards:

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

B. Infiltration facilities that retain stormwater; promote settling, filtering, and biodegradation of pollutants; and infiltrate captured stormwater into the ground. The City Engineer may require a soil engineering report to be prepared for the site to demonstrate that any proposed infiltration facilities meet these performance standards.

C. For sites disturbing less than five (5) acres, but greater than one (1) acre and not part of a common plan of development or sale, where 5 or more acres are disturbed, the City Engineer may approve other SCMs if the applicant demonstrates to the City Engineer's satisfaction that these SCMs meet the objectives of this regulation.

D. For sites disturbing five (5) or more acres, or less than five (5) acres but part of a larger common plan of development or sale which will disturb five (5) or more acres, the City Engineer may approve other SCMs if the applicant demonstrates to the City Engineer's satisfaction that these SCMs meet the objectives of this regulation as stated in Section 1050.09(d)(6), and has prior written approval from the Ohio EPA.

E. For sites with less than one acre of disturbed land and not part of a common plan of development, stormwater quality measures are not required to be implemented. The stormwater quantity controls in Section 1050.09(e) shall apply.

F. For the construction of new roads and roadway improvement projects by public entities (i.e. the state, counties, townships, cities, or villages), the City Engineer may approve SCMs not included in Table 4 of this regulation, but must show compliance with the current version of the Ohio Departments of Transportations "Location and Design Manual, Volume Two Drainage Design".

(2) Criteria applying to all SCMs: Practices chosen must be sized to treat the water quality volume (WQv) and to ensure compliance with Ohio Water Quality Standards (OAC Chapter 3745-1). Water quality volume (WQv) orifices smaller than 3-inches in diameter shall incorporate design features that minimize the risk of clogging (e.g., reverse-flow pipe, downturned inlet elbow, perforated tee assembly buried in stone, etc.).

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

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

2. Using the following equation: $WQ_V = C*P*A/12$

where terms have the following meanings:

WQ_V = water quality volume in acre-feet
C = runoff coefficient appropriate for storms less than 1 in.
P = 0.75 inch precipitation depth
A = area draining into the, in acres.

Runoff coefficients required by the Ohio Environmental Protection Agency (Ohio EPA) for use in determining the water quality volume can be determined using the list in Table 3 or using the following equation to calculate the runoff coefficient:

$C = 0.858i^3 - 0.78i^2 + 0.774i + 0.04$, where:
i = fraction of the drainage area that is impervious

Table 3: Runoff Coefficients Based on the Type of Land Use

Land Use	Runoff Coefficient
Industrial & Commercial	0.8
High Density Residential (>8 dwellings/acre)	0.5
Medium Density Residential (4 to 8 dwellings/acre)	0.4
Low Density Residential (<4 dwellings/acre)	0.3
Open Space and Recreational Areas	0.2
Where land use will be mixed, the runoff coefficient should be calculated using a weighted average. For example, if 60% of the contributing drainage area to the stormwater 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)	

B. An additional volume equal to 20% of the WQv shall be incorporated into the SCM for sediment storage. This volume shall be incorporated into the sections

of SCMs where pollutants will accumulate.

C. Each individual SCM must be sized to treat the WQv associated with its entire contributing drainage area. Exceptions to this may be granted by the City Engineer and/or the OEPA on a case-by-case basis.

D. SCMs for quality shall be designed such that the drain time is long enough to provide treatment and protect against downstream bank erosion, but short enough to provide storage available for successive rainfall events as defined in Table 4.

E. All wet or dry extended stormwater detention facilities shall have a forebay and micropool as per the *Rainwater and Land Development Manual*.

Table 4: Draw Down Times for SCMs

Stormwater Control Measure	**Drain Time of WQv**
Infiltration Basin or Trench*	24 - 48 hours
Permeable Pavement – Extended Detention	24 hours
Permeable Pavement – Infiltration*	48 hours
Extended Detention Facilities	
▪ Dry Extended Detention Basins**	48 hours
▪ Wet Extended Detention Basins +	48 hours
▪ Pocket Wetland^	24 hours
▪ Constructed Wetlands (above permanent pool) #	24 hours
▪ Bioretention Area/Cell***	24 hours
▪ Sand and other Media Filtration	24 hours

*Practices designed to fully infiltrate the WQv shall empty within 48 hours to provide storage for subsequent storm events.
** The use of a forebay and micro pool is required on all dry extended detention basins. Each is to be sized at a minimum 10% of the WQv.
+Provide both a permanent pool and an extended detention volume above the permanent pool, each sized with at least $0.75*WQ_{v}$.
^Pocket wetland must have a wet pool equal to the WQv, with 25% of the WQv in a pool and 75% in marshes. The EDv above the permanent pool must be equal to the WQv.
Extended detention shall be provided for the full WQv above the permanent water pool.
***The surface ponding area shall completely empty within 24 hours so that there is no standing water.
Shorter drawdown times are acceptable as long as design criteria in *Rainwater and Land Development* have been met. This includes grassed linear bioretention, which was previously titled enhanced water quality swale.

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

G. The seasonal high groundwater elevation is the normal water line or normal elevation of saturation.

(3) Additional criteria applying to infiltration facilities.

A. Infiltration facilities shall only be allowed if the soils of the facility have an infiltration rate between 0.5 in./hr. and 4.0 in./hr. (or deemed acceptable by the City Engineer)), if the seasonal high water table is at least three (3) feet below the final grade elevation, and any underlying bedrock is at least six feet below the final grade elevation. Infiltration trenches should be designed to meet all criteria in the current edition of the *Ohio Rainwater and Land Development Manual*.

B. All runoff directed into an infiltration facility must first flow through a pretreatment practice such as a grass channel or filter strip to remove coarser sediments that could cause a loss of infiltration capacity.

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

(4) Additional criteria applying to extended conveyance facilities.

A. Facilities designed according to the extended conveyance detention design drain time shall:

1. Not be located in areas where the depth to bedrock and/or seasonal high water table is less than 3 feet below the final grade elevation.

2. Only be allowed where the underlying soil consists of hydrologic soil group (HSG) A or B, unless the underlying soil is replaced by at least a 2.5 foot deep layer of soil amendment with a permeability equivalent to a HSG A or B soil and an under drain system is provided.

B. Concentrated runoff shall be converted to sheet flow, or a diffuse flow using a plunge pool, flow diffuser or level spreader, before entering an extended conveyance facility.

(5) Additional criteria for extended detention facilities:

A. The outlet shall be designed to not release more than the first half of the water quality volume in less than 1/3rd of the drain time. If elevations allow, a valve shall be provided to drain any permanent pool volume for removal of accumulated sediments. The outlet shall be designed to minimize clogging, vandalism, maintenance, and promote the capture of floatable pollutants.

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

1. Basin side slopes above the permanent pool shall have a run to rise ratio of 3:1 or flatter.

2. The perimeter of all permanent pool areas deeper than 4 feet shall be surrounded by an aquatic bench that extends at least 8 feet and no more than 15 feet outward from the normal water edge. The 8 feet wide portion of the aquatic bench closest to the shoreline shall have an average depth of 6 inches below the permanent pool to promote the growth of aquatic vegetation. The remainder of the aquatic bench shall be no more than 15 inches below the permanent pool to minimize drowning risk to individuals who accidentally or intentionally enter the basin, and to limit growth of dense vegetation in a manner that allows waves and mosquito predators to pass through the vegetation. The maximum slope of the aquatic bench shall be 10 (H) to 1 (V). The aquatic bench shall be planted with hardy native species of plants comparable to wetland vegetation that are able to withstand prolonged inundation. The use of invasive plant species is prohibited.

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

Owner: The owner may request approval from the City Engineer for the use of alternative structural post-construction SCMs if the owner shows to the satisfaction of the City Engineer that these SCMs are equivalent in pollutant removal and runoff flow/volume reduction effectiveness to those listed in Table 3. If the site disturbs more than five (5) acres, or less than five (5) acres but is part of a larger common plan of development or sale which will disturb five (5) or more acres, prior approval from the Ohio EPA and City of Avon as necessary. To demonstrate the equivalency, the owner must show:

A. The alternative SCM has a minimum total suspended solid (TSS) removal efficiency of 80%, using the Level II Technology Acceptance Reciprocity Partnership (TARP) testing protocol.

B. The water quality volume discharge rate from the selected SCM is reduced to prevent stream bed erosion, unless there will be negligible hydrologic impact to the receiving surface water of the State. The discharge rate from the SCM will have negligible impacts if the applicant can demonstrate one of the following conditions:

1. The entire water quality volume is recharged to groundwater.

2. The development will create less than one acre of impervious surface.

3. The development project is a redevelopment project with an ultra-urban setting, such as a downtown area, or on a site where 100 percent of the project area is already impervious surface and the stormwater discharge is directed into an existing storm sewer system.

4. The stormwater drainage system of the development discharges directly into a large river of fourth order or greater or to a lake, and where the development area is less than 5% of the water area upstream of the development site, unless a TMDL has identified water quality problems in the receiving surface water of the State.

(e) Stormwater Quantity Control: The Comprehensive Stormwater Management Plan shall describe how the proposed SCMs are designed to meet the following requirements for stormwater quantity control for each watershed in the development:

(1) The peak discharge rate of runoff from the Critical Storm and all more frequent storms occurring under post-development conditions shall not exceed the peak discharge rate of runoff from a 1 year, 24 hour storm occurring on the same development drainage area under pre-development conditions, or have a maximum allowable discharge of 0.25 cubic foot per second per acre of developed land.

(2) Developers or sub-dividers shall include in their preliminary plans a local watershed study to determine the impact from the development or subdivision caused by stormwater onto the lands adjoining or downstream from the area to be developed, to assure that said lands shall not be adversely affected by the proposed development or subdivision.

(3) Storms of less frequent occurrence (longer return periods) than the Critical Storm, up to the 100 year, 24 hour storm shall have peak runoff discharge rates no greater than the peak runoff rates from equivalent size storms under pre-development conditions. The 1, 2, 5, 10, 25, 50, and 100 year storms shall be considered in designing a facility to meet this requirement.

(4) The Critical Storm for each specific development drainage area shall be determined as follows:

A. Determine, using a curve number-based hydrologic method, or other hydrologic method approved by the City Engineer, the total volume (acre-feet) of runoff from a 1 year, 24 hour storm occurring on the development drainage area before and after development. These calculations shall meet the following standards:

1. Calculations shall include the lot coverage assumptions used for full build out as proposed.

2. Calculations shall be based on the entire contributing watershed to the development area.

3. Drainage area maps shall include area, curve numbers, time of concentration. Time of concentration shall also show the flow path and separation in flow type.

4. Rainfall data shall be obtained from the latest volume of the NOAA Rainfall ATLAS 14 or per Table 1.

5. Temporal Distribution – Use the SCS Type II rainfall distribution for all design events. Include lot coverage assumptions used for full build out of the proposed condition.

6. Curve numbers for the pre-development condition must reflect the average type of land use over the past 10 years and not only the current land use. Curve Numbers shall conform to the National Engineering Handbook Table 9-1.

i. Post-development Curve Numbers - All areas that are altered by construction practices shall use post-construction Hydraulic Soil Groups from *Rainwater and Land Development*.

Time of Concentration- Use velocity based methods from (TR-55 NRCS USDA Urban Hydrology in Small Watersheds, 1986) to estimate travel time (Tt) for overland (sheet) flow, shallow concentrated flow and channel flow.

7. The volume reduction provided by permeable pavement, bioretention, or other SCMs may be subtracted from the post development stormwater volume. Volume reductions for these practices may be demonstrated using methods outlined in *Rainwater and Land Development* or a hydrologic model acceptable to the City Engineer.

8. To account for future post-construction improvements to the site, calculations shall assume an impervious surface such as asphalt or

concrete for all parking areas and driveways, regardless of the surface proposed in the site description, except in instances of engineered permeable pavement systems.

B. From the volume determined in Section 1050.09(e)(4)A, determine the percent increase in volume of runoff due to development. Using the percentage, select the 24-hour Critical Storm from Table 4.

Table 5: 24-Hour Critical Storm

If the Percentage of Increase in Volume of Runoff is:		**The Critical Storm will be:**
Equal to or Greater Than:	and Less Than:	
----	10	1 year
10	20	2 year
20	50	5 year
50	100	10 year
100	250	25 year
250	500	50 year
500	---	100 year
For example, if the percent increase between the pre- and post-development runoff volume for a 1-year storm is 35%, the Critical Storm is a 5-year storm. The peak discharge rate of runoff for all storms up to this frequency shall be controlled so as not to exceed the peak discharge rate from the 1-year frequency storm under pre-development conditions in the development drainage area. The post-development runoff from all less frequent storms need only be controlled to meet pre-development peak discharge rates for each of those same storms.		

C. For sites with less than one acre of disturbed land and not part of a common plan of development:

1. If the post-developed flow for the critical storm is less than 110% of the pre-developed critical storm flow, no stormwater quantity measures need to be implemented.

2. If the post-developed flow for the critical storm is equal to or greater than 110% of the pre-developed critical storm, stormwater quantity measures need to be implemented so that the post-developed critical storm flow is less than the pre-developed critical storm flow.

(f) Stormwater Management on Redevelopment Projects: Comprehensive Stormwater Management Plans for redevelopment projects shall reduce existing site impervious areas by at least 20 percent. A one-for-one credit towards the 20 percent net reduction of impervious area can be obtained through the use of pervious pavement and/or green roofs.

(1) Where site conditions prevent the reduction of impervious area, SCMs shall be implemented to provide to treat at least 20 percent of the WQv.

(2) When a combination of impervious area reduction and stormwater quality control facilities are used, ensure a 20 percent net reduction of the site impervious area, provide for treatment of at least 20 percent of the WQv, or a combination of the two.

(3) Where projects are a combination of new development and redevelopment, the total water quality volume required to be treated shall be calculated by a weighted average based on acreage, with the new development at 100 percent water quality volume and redevelopment at 20 percent.

(4) Where conditions prevent impervious area reduction or on-site stormwater management for redevelopment projects, practical alternatives as detailed in Section 1050.10 may be approved by the City Engineer.

1050.10 ALTERNATIVE ACTIONS

(a) When the City of Avon determines that site constraints compromise the intent of this regulation, off-site alternatives may be used that result in an improvement of water quality and a reduction of stormwater quantity. Such alternatives shall meet the following standards:

(1) Shall achieve the same level of stormwater quantity and quality control that would be achieved by the on-site controls required under this regulation.

(2) Implemented in the same Hydrologic Unit Code (HUC) 12 watershed unit as the proposed development project.

(3) The mitigation ratio of the water quality volume is 1.5 to 1 or the water quality volume at the point of retrofit, whichever is greater.

(4) An inspection and maintenance agreement as described in Section 1050.08(d)(10) is established to ensure operations and treatment in perpetuity.

(5) Obtain prior written approval from Ohio EPA.

(b) Alternative actions may include, but are not limited to the following. All alternative actions shall be approved by the City Engineer:

(1) Fees, in an amount specified by the City of Avon to be applied to community-wide SCMs.

(2) Implementation of off-site SCMs and/or the retrofit of an existing practice to increase quality and quantity control.

(3) Stream, floodplain, or wetland restoration.

(4) Acquisition or conservation easements on protected open space significantly contributing to stormwater control such as wetland complexes.

(c) Site Reductions. Another way for a developer or land owner to reduce the stormwater controls needed for a site is to reduce the amount of impervious area.

(1) Options such as pervious pavement, rain gardens, cisterns, or green roofs (along with other methods) need to be discussed with the City Engineer for approval and amount of

reduction given.

(2) The developer can reduce the amount of stormwater quantity retained given the installation of applicable site reduction devices. There will be a maximum of 50% reduction depending on the approval of the City Engineer.

1050.11 BLOCKS AND/OR EASEMENTS

Access to SCMs as required by the City Engineer for inspections and maintenance shall be secured by blocks and/or easements in the event that they are not performed by the owner, homeowner's association, or other private party. The following conditions shall apply to all blocks and/or easements:

(a) Blocks and/or easements shall be included in the Inspection and Maintenance Agreement submitted with the Comprehensive Stormwater Management Plan.

(b) Blocks and/or easements shall be approved by the City of Avon prior to approval of a final plat and shall be recorded with the Lorain County Auditor and on all property deeds.

(c) Unless otherwise required by the City Engineer, access blocks and/or easements between a public right-of-way and all SCMs shall be no less than 20 feet wide. The blocks and/or easements shall also incorporate the entire practice plus an additional 20 foot wide band around the perimeter of the SCM.

(d) The blocks and/or easements shall be graded and/or stabilized as necessary to allow maintenance equipment to access and manipulate around and within each facility, as defined in the Inspection and Maintenance Agreement for the site.

(e) Blocks and/or easements to structural SCMs shall be restricted against the construction therein of buildings, fences, walls, and other structures that may obstruct the free flow of stormwater and the passage of inspectors and maintenance equipment; and against the changing of final grade from that described by the final grading plan approved by the City of Avon. Any re-grading and/or obstruction placed within a maintenance blocks and/or easements may be removed by the City of Avon at the property owners' expense. Grading and/or obstructions that is/are removed may not be returned to original condition or configurations if determined by the City to be an obstruction to the operation and maintenance of the stormwater facility.

1050.12 MAINTENANCE AND FINAL INSPECTION APPROVAL

To receive final inspection and acceptance of any project, or portion thereof, the following must be completed and provided to the City Engineer:

(a) Final stabilization must be achieved and all permanent SCMs must be installed and made functional, as determined by the City Engineer and per the approved Comprehensive Stormwater Management Plan.

(b) An As-Built Certification, including As-Built Survey and Inspection, must be sealed, signed and dated by a Professional Engineer and a Professional Surveyor with a statement certifying that the SCMs, as designed and installed, meet the requirements of the Comprehensive Stormwater Management Plan approved by the City Engineer. In evaluating this certification, the City Engineer may require the submission of a new set of stormwater practice calculations if he/she determines that the design was altered significantly from the approved Comprehensive Stormwater Management Plan. The As-Built Survey must provide the location, dimensions, and bearing of such practices and include the entity responsible for long-term maintenance as detailed

in the Inspection and Maintenance Agreement.

(c) A copy of the complete and recorded Inspection and Maintenance Agreement as specified in Section 1050.08.D.10 must be provided to the City Engineer.

(d) Notice of Termination. Once all development is finished on the site, the NPDES permit holder shall file for a notice of termination within 60 days.

1050.13 ON-GOING INSPECTIONS

In complying with the obligations as set forth in its Municipal Separate Storm Sewer System (MS4) permit with the Ohio EPA, the City shall inspect SCMs periodically. The responsible party for the site will also perform inspections based on Section 1050.08(d)(10)M. Upon finding a malfunction or other need for maintenance, the City shall provide written notification to the responsible party, as detailed in the Inspection and Maintenance Agreement, of the need for maintenance. Upon notification, the responsible party shall have a reasonable time frame as determined by the City Engineer to make repairs or submit a plan with detailed actions. Should repairs not be made within the agreed upon time, or a plan approved by the City Engineer for these repairs, the City may undertake the necessary repairs and assess the responsible party.

1050.14 MISCELLANEOUS STORMWATER

(a) Sump Pumps.

(1) Sump pump requirements.

A. Residential homes with basements.

1. A primary sump pump is required for all homes that have basements.

B. Residential homes with no basement but with a crawl space.

1. A primary sump pump is required except for the following:

i. If the footer tile around the crawl space can flow by gravity to an approved storm outlet, the sump pump requirement may be waived if approved by the City Engineer. A yard inlet with a grate to allow for the discharge of potential surcharge must be connected to the storm connection between the home and the approved storm outlet. A sump pump is still highly recommended for this situation.

C. Residential homes with no basement or crawl space.

1. A primary sump pump is not required.

i. If there is a footer tile around the slab, then a gravity line must be run to an approved storm outlet. A yard inlet with a grate to allow for the discharge of potential surcharge must be connected to the storm connection between the home and the approved storm outlet.

ii. If this is not able to be installed, then a sump pump may be required by the City Engineer.

D. An external sump pump is required, but, an internal sump pump will be accepted. If an internal sump pump is installed, all requirements in Section 1050.14(a) must be followed.

E. No water-driven sump pumps are allowed for either the primary sump pump or secondary sump pump.

F. Battery back-up required. In addition to the required sump pump as indicated in this section, an auxiliary battery back-up pump is required. The battery back-up pump shall discharge separately from the required sump pump, directly to an area above grade. The discharge shall terminate a minimum of five feet beyond the foundation wall. Insect control at the point of termination shall be provided by a flap, screens, or other approved methods.

1. Buildings equipped with an additional emergency power source may have an additional standard electric backup sump pump.

(2) Discharge; Primary Sump Pump.

A. The primary sump pump may discharge to either the storm sewer lateral connecting into the storm sewer main line or a road side ditch with approval of the City Engineer.

B. The primary sump pump may also discharge to daylight if there is no stormwater conveyance method in which the storm sewer lateral can flow to by gravity:

1. If discharging to daylight, the sump pump discharge must be outside of five feet from the home but within ten feet of the home and must discharge onto the lawn.

2. The sump pump may not discharge onto the driveway or other impervious surface.

(3) Secondary sump pump.

A. Battery back-up required. In addition to the required sump pump as stipulated in Section 1050.14(a)(1), an auxiliary battery back-up pump is required as indicated below. The battery back-up pump shall discharge separately from the required sump pump. Insect control at the point of termination shall be provided by a flap, screens, or other approved methods.

1. Buildings equipped with an additional emergency power source may have an additional standard electric backup sump pump.

B. The secondary sump pump can be either an external or internal sump pump and must discharge to daylight. A secondary sump pump is recommended for all homes, but required for those homes in a floodway, 100 year floodplain, or a 500 year floodplain.

1. The secondary sump pump discharge must be outside of five feet from the home but within ten feet of the home and must discharge onto the lawn.

2. The secondary sump pump may not discharge onto the driveway or other non-impervious surface without later discharging onto pervious area in which the flow may infiltrate into the ground water system before entering the city stormwater conveyance system.

(4) Sizing. Inaccurate sizing of the sump pump and the sump pit are a major cause for sump pump failure during flooding conditions. The sizing will be based on the area in which the footer tile drains into the sump crock, which is typically the basement and/or crawl space area. Below in Table 6 are the recommendations for sizing:

Table 6: Sizing Criteria

Basement and crawl space (s.f.)	Minimum Pump Size	Minimum Pump Flow Rate	Minimum Pit Size **	Number of Pumps
< 2,500 s.f.	1/2 hp	72 gpm	24 inches dia x 30 inches deep	1
>2,500 s.f.	1/2 hp	72 gpm	24 inches dia x 30 inches deep*	2

* For a house with the basement/crawl space > 2,500 square feet, a dual sump pump system must be put into place. The two sump pump systems will be placed at opposite corners of the house unless approved by the City Engineer.

** If the 24 inch dia x 30 inch deep sump pit is not available, then two 18 inches x 22 inches sump pits may be used with an equalization pipe connecting the two.

(b) Site Discharge. No property may discharge stormwater onto a neighboring property unless a stormwater easement is in place or allowed by the City Engineer.

(1) An upstream property may discharge water to a downstream property owner as long as the area of discharge is natural and undisturbed. This upstream property may be maintained, but it cannot be altered to increase the flow downstream.

(2) A downstream property may create a vegetated or natural buffer which impedes the natural flow of water from an upstream property.

(3) Any SCM or water detention facility used for either a commercial or industrial property or a residential subdivision must have the effluent of the SCM or water detention facility flow into either a stream of the State or a major ditch unless authorized by the City Engineer.

(c) Storm Sewer System Damage. No property owner/contractor shall cause damage to the existing storm sewer conveyance system through:

(1) Disposal of items that create permanent or temporary blockage of the storm sewer conveyance system.

(2) Physically deform the existing system.

(d) Multi-User Private Storm Sewer Maintenance. When there is a private yard drain (a.k.a. there is no water from the City right-of-way draining to it) which drains multiple properties, then maintenance and financial responsibility of that drain and the subsequent drainage pipe is the responsibility of all property owners that drain into the outflow pipe. If there is a disagreement concerning the property owners that are responsible then the following needs to occur:

(1) The drainage line needs to be televised to see what structures are tied into the outflow pipe. The City Engineer, upon receiving this information, will decide what properties drain to the participating drainage structures. The City is not responsible for ensuring that responsible property owners participate financially.

(e) Landscaping.

(1) Any and all residents and commercial or industrial businesses must complete a permit prior to any landscaping design being performed on their property. This includes the design of any landscaping mounds or vegetation that will affect the drainage of the property. If there is a question, please contact the City Engineer. This permit shall be picked up at the Building Department at Avon City Hall. There is no fee for this permit.

(2) Any landscapers performing work within the City must be registered with the Building Department.

(3) Prior to performing work on a property within the City, it is suggested that the landscaping company pick up a copy of the approved final grade topography map (for residences) or approved site plan (for any commercial or industrial businesses).

(4) The landscaping company must conform with the drainage concept as depicted on the approved final grade topography map or approved site plan. Revisions to the approved plan are subject to the review and approval of the City Engineer.

(5) Violations of any of these provisions shall be subject to the penalties set forth in Section 1050.99, below.

(f) Landscaping Within a Floodplain.

(1) Any landscaper performing landscaping which results in a grade change (raising or lowering of the existing ground) must submit a Floodplain Landscaping Permit. This permit shall be picked up at the Building Department at Avon City Hall.

(2) Any landscapers performing work within the City must be registered with the Building Department.

(3) Prior to performing work on a property within the City, it is required that the landscaping company pick up a copy of the approved final grade topography map (for residences) or approved site plan (for any commercial or industrial businesses).

(4) The landscaping company must conform with the drainage concept as depicted on the approved final grade topography map or approved site plan. Revisions to the approved plan are subject to the review and approval of the City Engineer.

(5) After the work is finished, a new final grade must be performed at the expense of the resident/contractor. The initial fee is paid for through the permit fee. If multiple final grade inspections occur, further fees may be assessed.

(6) Any work within a Floodplain or floodway must follow the permitting process as described in Chapter 1464 Flood Damage Prevention.

(7) Violations of any of these provisions shall be subject to the penalties set forth in Section 1050.99, below.

1050.15 DRAINAGE DITCHES AND WATERCOURSES.

(a) Riparian Setbacks.

See Chapter 1051 Establishment of Riparian Zones for ordinance requirements and definitions.

1050.151 MAINTENANCE/PROPERTY DAMAGE.

(a) All major ditches or streams of the State, whether located within public or private property, shall be under the control of the Mayor or his or her designated agent.

(b) In cleaning, repairing and performing other maintenance work on the major ditches or streams of the State, the Mayor or his or her designated agent, whose duty is to perform such maintenance work, may go upon the adjoining or abutting lands within the area necessary for the proper operation of the required machinery, tools, motor vehicles, conveyances or other equipment. The area necessary shall be within the riparian setback or as deemed necessary to perform the needed work. If, in the course of the work, it is necessary to damage or temporarily remove fences, poles, wire lines or other objects which are not obstructing the waterway, then the cost of repairing or replacing such fences, poles, wire lines or other objects shall be the responsibility of the City unless said objects are within the riparian setback.

(c) Any major ditch or stream of the State as depicted on the Master River and Ditch Location Map shall be maintained by the City. Any minor ditch or swale must be maintained by the property owners flowing into it. Any ditch maintenance to be performed by the City will be at the determination of the City Engineer or based on a Ditch Maintenance Schedule as developed by the Service Director.

(d) If the City, for the purposes of general welfare or safety of the citizens of the City deems it necessary for a minor ditch or swale to be cleaned or maintained, the City has the authority to mandate to the residents flowing into that minor ditch or swale to perform maintenance on said waterway. If maintenance is not performed, the City has the right to perform these actions and access to any property owners flowing into this waterway for the costs of maintenance.

(e) No major ditch shall be deepened or widen without the approval of the City Engineer. No stream of the State shall be deepened or widened with the approval of the City Engineer and the Federal/State governing body of that waterway.

1050.152 DRAINAGE AND FILLING OF LOTS OR LAND.

(a) The City shall have the authority to maintain, keep and repair ditches, watercourses and drainage improvements, together with any facilities and appurtenances necessary and proper therefore.

(b) The City may drain, by artificial means, at the expense of the City, any lot or land within the City upon which water, at any time, accumulates and becomes stagnant, in a way prejudicial to the public health, convenience or welfare by reason of not having a natural drainage or because the lot or land cannot be drained by natural channels.

(c) The City shall have the authority to fill or drain any lot or land within its limits upon which water, at any time, becomes stagnant; to remove all putrid substances from any lot; and to remove any

object from culverts, cover drains or private property, laid in any ditch, watercourse or drainage improvement, which obstructs the water naturally flowing therein, causing it to flow back or become stagnant in a way prejudicial to the health, comfort or convenience of any citizens of the neighborhood. If the culvert or drains are of insufficient capacity, the City may make them of such capacity as is reasonably necessary to accommodate the flow at all times.

1050.153 PRIVATE WATERWAYS.

(a) Any waterway on private property that does not convey public water as deemed by the City Engineer or is not named on the City of Avon Master River and Ditch Location Map must be maintained by the property owner and is considered a private waterway (ditch or swale). If the waterway lies between multiple properties, the expense to maintain the waterway shall be shared by all property owners which flow into said waterway.

(b) If the maintenance of the waterway is deemed to become a nuisance and has not been properly maintained by the property owners then the City may enter the property to perform maintenance on the waterway and assess the property owners the cost of the maintenance.

(c) Any private waterway may be relocated by a property owner as long as the relocated waterway continues to maintain the existing drainage and the relocation is approved by the City Engineer.

1050.154 INGRESS AND EGRESS.

(a) The City shall have the authority to maintain, repair, deepen, widen or clean any and all ditches, watercourses and drainage improvements within the City that either convey public water or have been deemed a nuisance, and such authority shall include the right of ingress to and egress from the ditch, watercourse or drainage improvement. Any existing waters of the State shall need prior approval and authorization from the Federal or State agency governing that waterway before changing the profile of said waterway. Prior to entry upon any property for purposes set forth in this chapter, the City shall provide 15 days notice to the owner of such property of its intent to enter, and shall use its best effort to cooperate with the owner in accomplishing its purpose unless it is deemed an emergency by the City.

(b) No person shall interfere with, prohibit or obstruct the City or its agents in the exercise of this right.

1050.155 AVAILABILITY OF FUNDING.

The City's right and responsibility in maintaining, repairing, deepening, widening and cleaning all ditches, watercourses and drainage improvements shall be dependent upon the availability of funds for this purpose and the appropriation of such funds therefore by Council.

1050.156 DRAINAGE DITCH ENCLOSURE.

(a) For all development of undeveloped property, where the stormwater drainage discharges into a drainage ditch that is located within City rights-of-way, the developer shall be required to enclose the ditch in accordance with a plan approved by the City Engineer. This plan shall take into account the upstream drainage area flowing into the existing drainage ditch.

(b) The installation of sidewalks on developed or undeveloped lands shall include, where necessary, the installation of a storm sewer. The cost, as set forth in subsection (c) hereof, shall be included

in the assessment for the sidewalk to be charged against the abutting property owner.

(c) The pipe shall be sized to carry at full-flow capacity the upstream drainage area for a 25 year, 24 hour storm event unless a smaller storm (10 year, 24 hour storm) is deemed acceptable by the City Engineer. If a smaller storm is deemed acceptable, provisions for additional stormwater storage may be needed. Calculations will be submitted and approved by the City Engineer.

(d) The cost of the pipe, up to 12 inches, and for bedding, backfill, yard drains and restoration material, shall be charged to the residential property owner. If a larger pipe is required, the additional cost shall be paid by the City. Costs paid by the City herein will be charged to Fund 271.

(e) All costs for storm sewers, regardless of size, within or servicing residential subdivisions or commercial or industrial developments shall be charged to the sub-divider or developer and included in the sub-divider's or developer's agreement.

(f) Property owners installing or replacing a driveway over a stormwater drainage ditch within City rights-of-way shall meet City specifications and pay all costs for the installation of the storm sewer and an inspection fee.

(g) Section 1050.156 may be exempted if the property owner/developer can show just cause at the approval of the City Engineer.

1050.157 OBSTRUCTING DITCHES OR SEWERS PROHIBITED.

No person shall deposit or cause to be deposited into any open or uncovered ditch, swale, drain, sewer, or other water conveyance feature within the City, any dirt, brush or other substance and thereby cause the obstruction or partial obstruction of the same.

1050.16 DEVELOPMENT WITHIN A FLOODPLAIN OR FLOODWAY.

See Chapter 1464 – Flood Damage Prevention for ordinance requirements and definitions.

1050.17 FEES

(a) The Comprehensive Stormwater Management Plan review, filing, and inspection fees are part of a complete submittal and are required to be submitted to the City of Avon before the review process begins. The schedule of fees shall be posted at the applicable City offices. Until all applicable fees, charges and expenses have been paid in full, no action shall be taken on any application or appeal. See Section 210.01(f) for all fees and deposits pertaining to plan review, including engineering fees incurred during plan review. All required fees and deposits shall be met upon final review and approval of all building and Comprehensive Stormwater Management Plans, and prior to the commencing of earth-disturbing activities.

(b) STORMWATER DRAINAGE IMPROVEMENT FUND.

(1) This fund pertains to the following types of improvement:

A. Any residential, commercial, or industrial subdivisions.

B. Individual commercial or industrial sites.

C. Individual home residential that is not within a residential subdivision.

(2) There shall be a charge imposed per gross acre of area to be disturbed based on either the final plat or as deemed acceptable by the City Engineer for properties that will not have a final plat.

(3) The charge shall be six hundred, fifty dollars ($650.00) per acre of disturbed land.

(4) Fees will be paid to the building department specified in Section 1050.17(a) above.

(5) Annual Adjustment of Fees. The stormwater detention fees referred to in this section are based upon current construction costs, and in order that these fees be kept current, the Finance Director shall adjust them yearly beginning in 2013 by multiplying them by the first Cleveland Construction Cost Index figure published in July, and every year thereafter, divided by 10,115.67, which is the current Engineering News Record construction cost of Cleveland.

(6) The charge provided for in this section shall be placed in a special fund entitled the Stormwater Drainage Improvement Fund No. 273 and shall be used only for the improvement, maintenance (including equipment) and analysis of storm drainage systems in the City.

(c) STORMWATER DETENTION FEE.

(1) Land Developed Defined. As used in this section, "land developed" means all new residential, commercial and industrial development and excludes renovation without expansion or replacement of previously existing structures.

(2) On land which has been previously developed, the stormwater detention fee shall be charged for expansions of or additions to existing structures and construction of any additional structures, except on lots in R-1 and R-2 residential subdivisions and on three or fewer acres of land in R-1 and R-2 residential uses. The fee shall be computed as follows:

A. Total square feet of area improved, graded or altered from its existing state, divided by 43,560 times the fee per acre as provided in division (d) hereof.

(3) Adoption of City-Wide Stormwater Detention Plan. The City-Wide Stormwater Detention Plan prepared by Zwick and Associates, Consulting Engineers, dated March 26, 1993, and any further amendments thereto, are hereby adopted.

(4) There is hereby established a stormwater detention fee to be charged upon the total acreage of each lot or parcel of land developed within the City by any person, firm, corporation, public agency, partnership or association, as set forth in division (g) hereof.

(5) Computation of Total Acreage. For the purpose of computation of the applicable fee, the total acreage shall include new streets, walks, drives and parking areas, but shall exclude the portion of land located in previously existing City rights-of-way.

(6) Deposit of Funds; Use.

A. The City-wide stormwater detention fee shall be paid to Stormwater Detention Fund No. 272, established by Resolution R-33-92, passed July 13, 1992, and shall be used to pay the costs related to the development and maintenance of a City-wide stormwater detention system, such costs to include planning,

engineering, property acquisition, legal expenses, construction, maintenance, repair and improvement of the system and all tributaries constituting the drainage system of the City.

B. The Finance Director is hereby authorized to transfer the amount of twenty-five thousand dollars ($25,000) from the General Fund to Drainage Fund No. 271 for the fiscal year 1995 to provide funding for the cleaning of drainage ditches.

C. Commencing with fiscal year 1996, and each fiscal year thereafter, the first twenty-five thousand dollars ($25,000) of payments received into the Stormwater Detention Fund No. 272 from stormwater detention fees, if available, shall be deposited into the Drainage Fund No. 271.

(7) Payment of Fees. The City-wide stormwater detention fee shall be paid prior to construction of improvements in a major subdivision or development requiring a developer's agreement and prior to the issuance of any building permit.

(8) Annual Adjustment of Fees. The stormwater detention fees referred to in this section are based upon current construction costs, and in order that these fees be kept current, the Finance Director shall adjust them yearly by multiplying them by the first Cleveland Construction Cost Index figure published after the effective date of this section, and every year thereafter, divided by 5,621.86, which is the current Engineering News Record construction cost of Cleveland.

(9) If a SCM is required, the City will set off the stormwater detention fee established in this section hereof by an amount equal to the estimated increased construction costs, including the cost of the additional land area to such sub-divider or developer, for the construction of the SCM. The cost shall be approved by the City Engineer, and his or her determination shall be final. The maximum set off shall not exceed the then-current stormwater detention fee.

1050.18 INSTALLATION OF WATER QUALITY SCMs

The applicant shall not direct runoff through any water quality structures or portions thereof that would be degraded by construction site sediment until the entire area tributary to the structure has reached final stabilization as determined by the City Engineer. This shall occur after the completion of the final grade at the site, after all of the utilities are installed, and the site is subsequently stabilized with vegetation or other appropriate methods. The developer must provide documentation acceptable to the City Engineer to demonstrate that the site is completely stabilized. Upon this proof of compliance, the water quality structure(s) must be completed and placed into service within 30 days unless an extension is granted by the City Engineer. Upon completion of installation of these practices, all disturbed areas and/or exposed soils caused by the installation of these practices must be stabilized within two days.

1050.19 ENFORCEMENT

(a) All development sites are subject to inspections by the City-authorized agent(s) under the direction of the City Engineer to ensure compliance with the approved Site Development Plan or SWP3.

(b) The written inspection report prepared by the City and approved by the City Engineer shall be distributed to the permittee, the contractor if applicable, and the professional engineer of record.

(c) If it is found that the operations are being conducted in violation of this Chapter and is considered a major violation (per the City Engineer), a stop-work order may be issued by the City until the identified violations cease. See Section 1050.991, below.

(d) Following the issuance of a stop-work order, the City shall determine if and when the development may proceed. Any determination by the City pursuant to this Section is a final order for purposes of judicial review.

(e) Any other violations shall be handled in the following manner:

(1) A letter from the office of the City Engineer to the violator.

(2) A secondary inspection performed of the site.

(3) If compliance has not been achieved, a second letter from the Law Director shall be submitted to the violator.

(4) A tertiary inspection will be performed of the site.

(5) If compliance has not been completed, then a summons and complaint will be issued to the violator.

1050.20 VIOLATIONS

No person shall violate or cause or knowingly permit to be violated any of the provisions of this regulation, or fail to comply with any of such provisions or with any lawful requirements of any public authority made pursuant to this regulation, or knowingly use or cause or permit the use of any lands in violation of this regulation or in violation of any permit granted under this regulation. The timeline for corrective actions that do not present an immediate threat to the public health, safety or welfare shall be determined by the City Engineer.

1050.99 PENALTY

(a) Any person, firm, entity, or corporation who violates or fails to comply with any of the provisions of Sections 1050.156 or 1050.157 is guilty of a misdemeanor of the first degree and shall be fined not more than one thousand dollars ($1,000) or imprisoned not more than six months, or both, for each offense. A separate offense shall be deemed committed each day during or on which a violation occurs or continues.

(b) Any person, firm, entity, or corporation who violates or fails to comply with any provision of Sections 1050.05, 1050.06 or 1050.09 is guilty of a misdemeanor of the second degree and shall be subject to a maximum fine of seven hundred fifty dollars ($750.00) and imprisonment for up to 90 days or both per violation. A separate offense shall be deemed committed each day during or on which a violation occurs or continues. The violator shall also pay for the cost of all repairs needed for the stormwater conveyance system to function at expected capacity.

(c) Any person, firm, entity, or corporation who violates or fails to comply with any provisions of Section 1050.12 is guilty of a misdemeanor of the third degree and shall be subject to a maximum fine of five hundred dollars ($500.00) and imprisonment for up to 60 days or both per violation. A separate offense shall be deemed committed each day during or on which a violation or noncompliance occurs or continues.

(d) Any person, firm, entity or corporation, including but not limited to the owner of the property, his agents and assigns, occupant, property manager, and any contractor or subcontractor who violates

or fails to comply with any provision of Section 1050.07, 1050.08(d)(10)K-N, 1050.09(b)(9), 1050.11, 1050.14, 1050.151, 1050.153, 1050.154, 1050.17 and 1050.18 of this Chapter is guilty of a misdemeanor of the fourth degree and shall be subject to a maximum fine of two hundred fifty dollars ($250.00) and imprisonment for up to 30 days, or both, for each offense. A separate offense shall be deemed committed each day during or on which a violation or noncompliance occurs or continues.

(e) Any person, firm, entity or corporation; including but not limited to, the owner of the property, his agents and assigns, occupant, property manager, and any contractor or subcontractor who violates or fails to comply with any provision of this Chapter for which no specific penalty is listed, is guilty of a minor misdemeanor and shall be subject to a maximum fine of one hundred fifty dollars ($150.00) for each offense. A separate offense shall be deemed committed each day during or on which a violation or noncompliance occurs or continues.

(f) The City may recover all attorneys' fees, court costs, and other expenses associated with enforcement of this Chapter, including sampling and monitoring expenses.

(g) The penalties and/or remedies listed in this Chapter are not exclusive of any other penalties and/or remedies available under any applicable Federal or State laws, and it is within the discretion of the City to seek cumulative penalties and/or remedies.

(h) If a company or individual continually violates Sections of this Chapter (minimum of three separate occasions), in addition to all other penalties provided herein, the City has the right to revoke the contractor registration for an indefinite amount of time. At a time, no later than two years following the revoking of the contractor registration, may the company or individual appeal to the City for the renewal of the contractor registration. The City Engineer must approve of the renewal if it is revoked through this Chapter.

(i) In addition to the enforcement processes and penalties provided in this Section, any condition caused or permitted to exist in violation of any of the provisions of this Chapter are considered a threat to public health, safety, and welfare, and are declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, in a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance.

1050.991 STOP-WORK ORDER.

(a) It shall be unlawful for any person to violate any provision, or fail to comply with any of the requirements of this Chapter. If a person has violated or continues to violate the provisions of this Chapter, the Stormwater Manager, through the Law Department, may petition for a preliminary or permanent injunction restraining the person from activities which would create further violations, or compelling the person to perform abatement or remediation of the violation.

(b) Issuance of Stop-Work Order. Upon notice from the City and/or its authorized agent that work is being done contrary to this Chapter, such work shall immediately stop. Such notice shall be in writing and shall be given to the applicant, and shall state the conditions under which such work may resume; provided, however, in instances where immediate action is deemed necessary for the public safety or the public interest, the City and/or its authorized agent may require that work be stopped upon verbal order pending issuance of the written order.

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

(1) If the earth-disturbing activity involves a subdivision, the applicable penalties (including fines) provided for in the subdivision Chapters of the City shall apply.

(2) The City Engineer and/or his or her authorized agent, on behalf of the City, may enter the

site and make any modifications necessary to correct the situation(s) involving excessive erosion or sedimentation, and place the cost of such corrective actions on the tax duplicate of the developer/owner.

(3) The City Engineer and/or his or her authorized agent, on behalf of the City, may request the legal representative of the City to seek an injunction or other appropriate relief to abate excessive erosion or sedimentation and secure compliance with this Chapter. In granting such relief the court may order the construction of sediment control improvements and/or the implementation of other control measures and/or fines as identified in Section 1050.99 or any other relief the court determines.

(4) After the issuance of a stop work order provided for below, but before the imposition of any fines, the applicant shall have the opportunity to request a meeting with the Law Director and the City Engineer to show because why work should not be stopped.

(5) Following the issuance of a stop-work order, the City shall determine if and when the development may proceed. Any determination by the City pursuant to this Section is a final order for purpose of judicial review.

(d) The imposition of any other penalties provided herein shall not preclude the City instituting an appropriate action or proceeding in a Court of proper jurisdiction to prevent an unlawful development, or to restrain, correct, or abate a violation, or to require compliance with the provisions of this Chapter or other applicable laws, ordinances, rules, or Chapters, or the orders of the City.