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Matrix of Draft Proposed Ordinance Provisions (with 3 Attachments)

No.	Ordinance Component	Standards Currently in “Post Construction Stormwater Management Model Ordinance” (Chester County Water Resources Authority, 2005)	Draft Proposed Ordinance Provisions
PROPOSED MANDATORY Minimum Ordinance Provisions (M1. through M22.) (Provisions at least equivalent to these would be required in all municipal ordinances)			
M1.	Applicability Thresholds	< 5,000 sq. ft.; and certain activities. (see p. 7 of Model Ordinance)	<ul style="list-style-type: none"> a. All sites with $\geq 1,000$ sq. ft of proposed impervious area must comply with all requirements and standards of the ordinance. (municipalities may use a smaller sq. ft. threshold). b. All sites with $\geq 5,000$ sq. ft. of proposed earth disturbance must comply with all requirements and standards of the ordinance. (municipalities may use a smaller sq. ft. threshold). c. All sites with 500 to 999 sq. ft. of proposed impervious area must capture and infiltrate 1-inch of runoff from the impervious area, and must meet the requirements presented in the Simplified Method for O&M plan documents and recordation (see Attachment 1). d. “Proposed impervious cover” is defined to include new, additional and replacement impervious cover.
M2.	“No Harm” Exemption Removed	N/A	If the ordinance previously allowed for exemption from the stormwater plan and design standards based on applicant’s claim that proposed project would cause “no harm” to others, or to downstream entities, such exemption must be removed prior to adoption. (See also M3.)
M3.	No Waivers from Water Quality Standard without Prior PADEP Approval	N/A, included as an option for unique or undue hardships. (see p. 9)	If the municipality desires to include provisions allowing waivers, the following language must be included: <i>“The municipality may, after consultation with PADEP, approve measures for meeting the state requirements of, and do not conflict with, state law including, but not limited to, the Clean Streams Law.” water quality requirements other than those in this Ordinance, provided that they meet the minimum requirements of, and do not conflict with, state law including, but not limited to, the Clean Streams Law.”</i>
M4.	Primary Volume, Water Quality, and Infiltration Control	a. For New Development Sites - HQ & EV Streams - no net increase in stormwater volume discharged from site for 2-yr.-24-hour storm. All others - No net increase in stormwater volume discharged from site for 1.5 inch - 24-hour storm. Step down to retain min. infiltration	a. For New Development Sites, the post-development total runoff volume must not exceed the pre-development total runoff volume for all storms equal to or less than the 2-year 24-hour storm event, where the pre-development runoff is calculated using the New Development Ground Cover Assumptions. (see M7.)

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(cont’d) M4.	(continued) Primary Volume, Water Quality, and Infiltration Control	(see p. 26). Minimum capture and treatment of at least 1 inch runoff from all impervious and disturbed areas. (Maryland method) (see p. 28) b. For Redevelopment Sites - HQ & EV Streams – same as new dev. All others – same as new dev. Step down to retain min. infiltration. Option to achieve 10% reduction in volume discharged for 2-yr. event, existing to post dev. (see p .26). Minimum capture and treatment of at least 1” runoff from all impervious and disturbed areas. (Maryland method) (see p. 28)	b. For Redevelopment Sites, the post-development total runoff volume must be no greater than the pre-development total runoff volume for all storms equal to or less than the 2-year 24-hour storm event, where the pre-development runoff is calculated using Redevelopment Ground Cover Assumptions. (see M7.)
M5.	Minimum Infiltration Volume	Infiltrate a minimum of 0.5-inch runoff from all impervious and disturbed areas to be infiltrated. (see p. 27)	Infiltrate a minimum of 1-inch of runoff from all areas disturbed by construction to protect groundwater recharge and stream baseflows.
M6.	Karst / Carbonate Geology Considerations	Evaluate site conditions, including geology, soils and groundwater conditions, to determine available opportunities for infiltration that will minimize the formation of sinkholes. (see p. 17 and p. 32)	For Municipalities with Carbonate and/or Karst Geology: Evaluate site conditions, including geology, soils and groundwater conditions, to determine available opportunities for infiltration that will minimize the formation of sinkholes.
M7.	Ground Cover Assumptions for Pre-Development Volume, Water Quality, Infiltration and Peak Rate Calculations	New Development Ground Cover Assumptions – a. For areas of the site that are wooded, pre-development volume and peak rate calculations must assume ground cover of “woods in good condition”; definition of “wooded” (see p. 22); agriculture – assume ground cover of “pasture”. b. All other areas are modeled as meadow. 100% of existing impervious area to be modeled as meadow. (see p. 22) Redevelopment Ground Cover Assumptions – a. Same as new development (see p. 22). b. Option to reduce impact is to reduce impervious area by 20%. (see p. 21)	New Development Ground Cover Assumptions – a. For areas of the site that are wooded, pre-development volume and peak rate calculations must assume ground cover of “woods in good condition”; definition of “wooded” (see p. 22 of 2005 Model Ordinance) must be included in the ordinance. b. For all other areas of the site (including all impervious areas), pre-development volume and peak rate calculations must assume ground cover of “meadow”. Redevelopment Ground Cover Assumptions – a. For areas of the site that are wooded, pre-development volume and peak rate calculations must assume ground cover of “woods in good condition”; definition of “wooded” (see p. 22 of 2005 Model Ordinance) must be included in the ordinance. b. For areas of the site that are not wooded and not impervious

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(cont'd) M7.	(continued) Ground Cover Assumptions for Pre-Development Volume, WQ, Infiltration and Peak Rate Calc.		surfaces, pre-development volume and peak rate calculations must assume ground cover of “meadow”. c. For all impervious areas of the site, pre-development volume and peak rate calculations must assume ground cover for at least 20% of impervious surface areas to be “meadow”. (Municipalities may require use of a larger percentage of impervious area – see Recommended Measure R1.)
M8.	Peak Runoff Rate – Large Storms	a. For New Development Sites - Reduce the peak rates of runoff of the 2-year through 100-year storm events to not exceed the pre-development peak rate. Where runoff volume is not met, post-development peak up through 10-year event shall meet 2-year event pre-development. >10-year through 100-year, post development peak rate not to exceed to be 90% of pre-development peak rate. (see p. 20) b. For Redevelopment Sites - One of the following: Reduce imp. area by 20%; achieve 10% reduction in volume discharged for 2-yr. event, existing to post dev.; reduce post dev. peak to 90% of pre-dev. peak, existing to post. (see p.21)	a. Reduce the peak rates of runoff of the 25-year through 100-year storm events to not exceed the pre-development peak rate. b. All pre-development peak rates must be calculated using: 1. The New Development Ground Cover Assumption for all new development sites. (see M7.) 2. The Redevelopment Ground Cover Assumption for redevelopment sites. (see M7.)
M9.	Peak Runoff Rate – Smaller Storms	a. For New Development Sites - Reduce the peak rates of runoff of the 2-year through 100-year storm events to not exceed the pre-development peak rate. Where runoff volume is not met, post-development peak up through 10-year event shall meet 2-year event pre-development. >10-year through 100-year, post development peak rate not to exceed to be 90% of pre-development peak rate. (see p. 20) b. For Redevelopment Sites - One of the following: Reduce imp. area by 20%; achieve 10% reduction in volume discharged for 2-yr. event, existing to post dev.; reduce post dev. peak to 90% of pre-dev. peak, existing to post. (see p. 21)	a. Reduce the peak rate of runoff of the 10-year storm event to not exceed the pre-development peak rate of the 2-year storm event. b. Reduce the peak rate of runoff of the 2-year and 5-year storm events to not exceed the pre-development peak rate of the 1-year storm event. c. All pre-development peak rates must be calculated using: 1. The New Development Ground Cover Assumption for all new development sites. (see M7.) 2. The Redevelopment Ground Cover Assumption for redevelopment sites. (see M7.)

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M10.	Stream Channel Erosion Protection	Attenuate runoff volume of 1-yr. 24-hour storm event for 24 hours. Release rate based on stream channel capacity. (see p. 20)	Provide \geq 24 hour attenuation of runoff from the 1-year 24 hour storm event.
M11.	Erosion and Sediment Controls	N/A, text note recommending municipalities have erosion and sedimentation pollution control ordinances (see p. 6).	Requirements (included within stormwater ordinance or inclusion of reference to other ordinance where standards are presented) for municipal review of erosion and sediment control plans and minimum municipal standards for erosion and sediment controls (if desired by the municipality). OR Requirement to obtain approval from and comply with state and conservation district erosion and sediment control requirements.
M12.	Protection of Downgradient Properties from Off-site Conveyance	<ul style="list-style-type: none"> a. There shall be no adverse impact upstream or downstream. b. Address protection issues in SWM Plan. c. Provide drainage easements. (see p. 11 & p. 19) 	<ul style="list-style-type: none"> a. Drainage easement (or other legal agreement/approval) must be obtained for conveyance of discharges onto or through adjacent properties. b. Conveyance must be designed to avoid erosion, flooding or other damage to the properties through which it is being conveyed. c. There shall be no adverse impact upstream or downstream. d. Address protection issues in SWM plan.
M13.	Prohibited Discharges and Connections	N/A, SW pollution prevention plans for certain uses. (see p. 18)	<ul style="list-style-type: none"> a. Requirement prohibiting discharge of non-stormwater discharges into stormwater facilities (see Attachment 2). b. “Dechlorinated swimming pool” water must be deleted from the list of “allowable” discharges (see Attachment 2). c. Requirement prohibiting roof drains and sump pumps from discharging into stormwater and sanitary sewer systems. d. Alterations of BMPs prohibited unless approved.
M14.	“Hot Spots” Runoff Controls	Specific structural or pollution prevention practices may be required; pretreatment prior to infiltration required; certain uses required to prepare SW pollution prevention plan per EPA Industrial Stormwater NPDES requirements. (see p. 18)	Specific structural or pollution prevention practices may be required at municipal engineer’s discretion (e.g., pretreatment prior to infiltration required; certain activities required to prepare stormwater pollution prevention plan per EPA Industrial Stormwater NPDES requirements, etc.).

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M15.	Municipal Right of Entry	N/A, per Zoning Ordinance or Subdivision and Land Development Ordinance.	a. Requirement that municipal representatives have the right but not the responsibility to enter any stormwater management facility to inspect and/or repair. b. Provision to provide an easement for access to stormwater facilities from public roadway.
M16.	Municipal Inspections during Construction	N/A	Provision stating municipality has the right, but not the responsibility, to enter and inspect all facilities during construction, including: <ul style="list-style-type: none"> a. Municipal engineer inspects all phases of construction. b. Cease and desist order option. c. Final inspection.
M17.	Long-Term Operation and Maintenance Responsibilities	Requirements included for: <ul style="list-style-type: none"> a. Preparation of long-term O&M plan for approval by municipality (p. 47). b. Designation of a specific entity responsible for implementing the O&M plan (p. 48). c. Execution and public recordation of O&M agreement between owner/operator and municipality (p. 48 & Appendix C). d. Ensure sufficient financial resources are available to cover costs of long-term O&M (p. 46 & 47). e. Others as shown in model ordinance (see p. 44). 	Requirements included for: <ul style="list-style-type: none"> a. Preparation of long-term O&M plan for approval by municipality. b. Designation of a specific entity responsible for implementing the O&M plan. c. Execution and public recordation of O&M agreement between owner/operator and municipality. d. Ensure sufficient financial resources are available to cover costs of long-term O&M. e. Long-term inspections. f. Performance guarantee.
M18.	Enforcement and Penalties	Per Zoning Ordinance or Subdivision and Land Development Ordinance.	Provision for enforcement and penalties must be included within the ordinance. Items to be included: <ul style="list-style-type: none"> a. Enforcement problems and remedies. b. Suspension and revocation. c. Penalties (fines, injunctions, etc). d. Appeals (local, courts).
M19.	References to PACD 1998 and MD 2000 Manuals Removed	N/A	All references to previous BMP and stormwater manuals must be removed and replaced with reference to the Pennsylvania Stormwater Best Management Practices Manual (December 2006).

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M20.	As-built Plans and Completion Certificate	N/A	<p>a. The applicant shall be responsible for submitting to the municipality as-built plans of all stormwater facilities included in the approved SWM Plan, and an explanation of any discrepancies with the approved plans.</p> <p>b. The as-built submission shall include a certification of completion signed and sealed by a qualified professional licensed in PA verifying that all permanent stormwater facilities have been constructed according to the approved plans and specifications. If any licensed qualified professionals contributed to the SWM Plans, then a similar licensed qualified professional must also sign the completion certificate.</p>
M21.	Calculation Methodology	Present calculation methodologies, instructions such as: prohibiting weighted averaging of runoff coefficients (see pp. 26 & 27); source of rainfall depths for design storms (NOAA ATLAS 14 or equivalent); TR-55 or TR-20 where applicable, rational method up to 20 acres; list of allowable models, manuals, etc.; antecedent conditions, etc. (see p. 21)	Present calculation methodologies, instructions such as: prohibiting weighted averaging of runoff coefficients; source of rainfall depths for design storms (e.g., NOAA ATLAS 14 or equivalent); list of allowable methods, models, manuals, etc.; antecedent conditions; rational method up to 5 acres; etc.
M22.	Approval Required Prior to Proceeding	N/A	<p>Include a statement clearly requiring municipal approval prior to proceeding with disturbance, such as: <i>“Any of the activities regulated by this [ordinance/chapter], the preliminary or final approval of subdivision and/or land development plans, or the commencement of any regulated earth disturbance activity may not proceed until the Applicant or his/her agent has received written approval of a [stormwater management plan] from the [municipality] and an adequate erosion and sediment control plan review by [municipality] and the Chester County Conservation District (if required).”</i></p>

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PROPOSED RECOMMENDED Minimum Ordinance Provisions (R1. to R11.) (Consistency with the following standards would NOT be required, but would be recommended)			
R1.	Ground Cover Assumptions for Pre-Development Volume and Peak Rate Calculations	N/A	It is strongly recommended that the following be used in place of the corresponding minimum measure listed above for Redevelopment Ground Cover Assumptions: c. For all impervious areas of the site, 1. Pre-development volume calculations must assume ground cover for at least 50% of impervious surface areas to be “meadow”. (Municipalities may require use of a larger percentage of impervious area) 2. Pre-development peak rate calculations must assume ground cover for at least 20% of impervious surface areas to be “meadow”. (Municipalities may require use of a larger percentage of impervious area.)
R2.	Listed Exemptions	Exemptions listed for certain activities. (see p. 7)	Exemptions list as presented in Attachment 3.
R3.	Long-Term Inspection Responsibilities	Municipal inspection as deemed necessary pursuant to O&M agreement (see Appendix C).	Requirements included for: a. Inspection of each stormwater facility/BMP over the life span of the feature. b. Designation of a specific entity responsible for the inspections (municipality or owner or other). c. Frequency and occurrence of the inspections. d. Documentation and/or reporting of inspection results. e. Timeframe for remedy of deficiencies found during inspection(s). f. Performance guarantee.
R4.	Required Contents of Stormwater Management (SWM) Design Plans	Contents include: site conditions, grading plan, flow pathways, computations, E&S plan, detailed mapping, schedule. (see p. 13)	Include list of required content, and components to be presented in the stormwater management (SWM) design plans and/or specific submittal requirements (i.e., site conditions, grading plan, flow pathways, computations, E&S plan, pollution control BMPs, detailed mapping, schedule, sequencing, proof of required permits, engineer block , etc.).

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R5.	Thermal Impacts Control	N/A	Require an applicant to fulfill the requirements of the “Thermal Impact Analysis” for the “PAG-02 Stormwater Discharges Associated with Construction Activities, NOI for Coverage under General or Individual Permit” if they cannot meet the volume control requirements.
R6.	Waterways and Wetlands Non-Disturbance Zone	N/A	Prohibit disturbance of existing ground cover within 50 feet of top-of-bank of all waterways and edge of wetlands, except where otherwise permitted by state or local agencies. At the municipal engineer’s discretion, the non-disturbance buffer may be reduced because of setback or other site constraints, but never to be less than 10 feet.
R7.	Design Standards for Stormwater Practices	Infiltration facilities, open vegetated channels, detention/retention basins, conveyance systems, stormwater facility landscaping; reference MD manual (see p. 30-44)	Include design standards for key BMPs such as infiltration facilities, open vegetated channels, detention/retention basins, conveyance systems, stormwater facility landscaping; reference PA BMP Manual, etc.
R8.	Fees – Plan Review and Construction Inspection	N/A	Schedule of fees (or reference to where the schedule of fees can be found if in another ordinance) for municipality review of proposed plans and construction inspections, administrative costs, etc.
R9.	Fees – Long-term Inspections / Operations & Maintenance	N/A	Schedule of fees for municipal costs associated with long-term inspections and/or maintenance/repair of completed stormwater management facilities.
R10.	Forested Riparian Buffers	N/A	Include in this ordinance or other ordinance, standards for the protection or creation of forested riparian buffers along all waterways during new development and redevelopment activities.
R11.	Additional Floodplain Management	Maintain flood carrying capacity; do not increase base flood elevations; reference floodplain standards (see p. 11)	Maintain flood carrying capacity; do not increase base flood elevations; reference floodplain standards.

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PROPOSED MANDATORY DEFINITIONS (MD1. to MD3.) (these would apply if the term is used in the ordinance)			
MD1.	Earth Disturbance Activity	N/A	A construction or other human activity which disturbs the surface of land including, but not limited to, clearing and grubbing, grading, excavations, embankments, road maintenance activities, land development, building construction, and the moving, deposition, stockpiling, or storing of soil, rock, or earth materials.
MD2.	Regulated Activity	N/A	Any Earth Disturbance Activity or any activities that involve the alteration or development of land in a manner that may affect stormwater runoff.
MD3.	Regulated Earth Disturbance Activity	N/A	Any activity involving Earth Disturbance subject to regulation under 25 Pa. Code Chapter 92, Chapter 102, or the Clean Streams Law.
PROPOSED RECOMMENDED DEFINITIONS (RD1. to RD5.) (these would apply if the term is used in the ordinance)			
RD1.	Impervious Surface	A surface, which has been compacted or covered with a layer of material so that it is resistant to infiltration by water. It includes semi-pervious surfaces such as compacted clayey soils, as well as most conventionally surfaced streets, roofs, sidewalks, parking lots, and other similar surfaces. Net Increase of Impervious Surface refers to the difference between the existing impervious coverage and the total impervious surface proposed. (see p. 51)	A surface that has been compacted or covered with a layer of material so that it is highly resistant to infiltration by water, including but not limited to buildings, structures, and paved areas such as driveways, sidewalks, parking lots, patios, decks, swimming pools, tennis courts, etc. For the purposes of determining compliance with [this ordinance], stone surfaces routinely used for vehicle parking and movement shall be considered impervious.
RD2.	New Development	Any activity regulated by this ordinance that is not considered a redevelopment as defined in this ordinance. (see p. 52)	Any new construction or Regulated Activity on previously undeveloped land, and/or any Regulated Activity that is not considered a Redevelopment Activity as defined in this Ordinance. Certain types of New Development Activities may be exempt from certain portions of this Ordinance as described in Section _____.

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RD3.	Redevelopment	An existing, developed property and/or a graded, altered and compacted site (as of or after the date of adoption of this Ordinance) that is proposed for reconstruction. (see p. 52)	Any Regulated Activity that involves demolition, removal, reconstruction, or replacement of existing impervious surface(s). Certain types of Redevelopment Activities may be exempt from certain portions of this Ordinance as described in Section _____.
RD4.	Undeveloped Land	N/A	An area of land or portion of a property with no existing impervious surfaces.
RD5.	Others	Additional definitions listed. (see pp. 49 – 55)	All other terms and definitions contained in the Post Construction Stormwater Management Model Ordinance (CCWRA, 2005) are recommended for consideration for municipal stormwater ordinances. (pp. 49-55)