

Summary of State Stormwater Standards

Office of Water
Office of Wastewater Management
Water Permits Division

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(This document is draft as EPA is accepting any necessary corrections)

This document summarizes the post-construction stormwater standards for all 50 states and the District of Columbia.

The following table briefly presents the information on selected aspects of each program (such as size threshold and the type of volume control requirement). The program names are linked to the full summary later in the document. Each summary follows a consistent format for comparison purposes.

These summaries were based on regulations, design manuals, or other information published by each program. The sources used to develop the summary are identified. State water quality agencies were given the opportunity to review and comment on their standard summary. Where individual states have commented on their standard, those comments have been incorporated into this draft.

For comments or corrections contact:

Jeremy Bauer

US Environmental Protection Agency

bauer.jeremy@epa.gov

EPA Region	Program	Date	Where required?	Size Threshold	Volume Control Requirement			Redevelopment Standard
					Retention	Treatment	Exception	
1	Connecticut	2009	MS4s	1 acre disturbed area		Capture and treat 1" (non-regulatory – only described in the manual)		Same as new development
1	Maine	2008	MS4s	1 acre disturbed area		Treat 1" times impervious area plus 0.4 times pervious area		No increase in current stormwater runoff
1	Massachusetts	2009	Wetland areas	1 acre disturbed area	Recharge (post development volume to predevelopment volume)	Treat 0.5" (1" in critical and other areas)		Post to pre, minimize recharge loss, follow Stormwater Management Standards
1	New Hampshire	2003	MS4s	1 acre disturbed area / 100,000 sf outside MS4s	Infiltrate, evapotranspire, or capture first 1"			Same as new development
1	Rhode Island	2011	State-wide	1 acre disturbed area		Capture and treat WQv equivalent to 1.2" rainfall runoff	WQv requirement may be waived or reduced by applying disconnection-based LID practices	Same as new development if < 40% IC; >40% IC then reduce IC by 50% or water quality and recharge for 50% of area
1	Vermont	2003 (Draft 2010)	State-wide	1 acre development, redevelopment and/or increase IC	Capture 90% annual storms		WQv may be reduced where non-structural practices are employed.	Reduce IC by 20% or treat 20% of WQv
2	New Jersey	2009	State-wide	1 acre disturbed area or increase IC by ≥ 0.25 acres	Maintain groundwater recharge volume or infiltrate runoff for 2-year storm (post development volume to predevelopment volume)			50% TSS reduction or equivalent to existing BMP; 80% TSS removal to new IC
2	New York	2010	State-wide	1 acre disturbed area	RR for post-development volume (0.8" – 1.2") to replicate pre-development hydrology	Remaining WQv not retained must be treated	Single family homes less than 5 acre disturbance	Same as new development but if not possible IC reduced by 25%, and/or 25% WQv treated
3	Delaware	2010 (Draft)	State-wide	5,000 sf disturbed area	RR for 1-year event (post-development runoff volume to predevelopment volume) or 0% effective IC		RR practices should be employed to the MEP.	RR to reduce runoff by 20% from existing conditions ²
3	Maryland	2009 (2000)	State-wide	5,000 sf disturbed area	Manage 0.9" / 1" of rainfall			Same as new development if <40% IC, For >40% IC, volume control required for 50% of existing imperviousness, no channel protection for existing imperviousness

EPA Region	Program	Date	Where required?	Size Threshold	Volume Control Requirement			Redevelopment Standard
					Retention	Treatment	Exception	
3	Pennsylvania	2006	MS4s	1 acre disturbed area	For sites < 1 acre; Remove 1" of runoff from IC. All sites: No post development runoff volume increase for the 2-year storm	Sites <1 acre: Capture 2" of runoff from contributing IC.		Same as new development; modeling guidance for pre-development IC
3	District of Columbia	2004	State-wide	5,000 sq ft of land disturbance	Narrative standard			
3	Virginia	2008	MS4s	1 acre disturbed area	Narrative standard			20% (sites > 1ac) 10% (sites ≤1ac)P reduction from existing condition
3	West Virginia	2009	MS4s	1 acre disturbed area	Keep and manage on site 1" rainfall from 24-hour storm preceded by 48 hours of no rain			0.2" reduction of 1" on site retention standard and additional 0.2" reductions exist
4	Alabama	2009	MS4s	1 acre disturbed area	Narrative standard			
4	Florida	1995 - present	State-wide	4,000 sq ft imperv area	Must meet predevelopment volume in closed basins only	Varies by WMD – From first ½ inch runoff to 1.25 times percent imperviousness plus an additional one half inch of runoff for online retention systems.		Same as new development
4	Georgia	2007	MS4s	1 acre disturbed area		Treat runoff from 85% of storms (1.2" rainfall)		Same as new development
4	Kentucky	2010	MS4s	1 acre disturbed area		Manage 80 th percentile precipitation event runoff (0.75") ²		Same as new development
4	Mississippi	2009	MS4s	1 acre disturbed area	Narrative standard			
4	North Carolina	2006	In 20 coastal counties ; Water supply watersheds, nutrient sensitive waters, ONRWs	1 acre disturbed area; Coastal-Non residential: 10,000 sf IC; Residential w/in ½ mile shellfish waters: 10,000 sf IC		Non-coastal: 1" rainfall; Coastal: 1.5" rainfall		Same as new development
4	South Carolina	2006	MS4s	1 acre disturbed area	1,000 ft from shellfish waters, retain 1.5" of rainfall	Volume control varies by practice		Same as new development
4	Tennessee	2010	MS4s	1 acre disturbed area	Infiltrate, evapotranspire, harvest, or use first 1" of rainfall		If retention standard cannot be met, 80% TSS removal standard applied to remaining volume	Same as new development

EPA Region	Program	Date	Where required?	Size Threshold	Volume Control Requirement			Redevelopment Standard
					Retention	Treatment	Exception	
5	Illinois	2009	MS4s	1 acre disturbed area	Narrative standard			Same as new development
5	Indiana	2003	MS4s	1 acre disturbed area		Phase I only: Treat runoff from first 1" of precipitation		Same as new development
5	Michigan	MS4 permit withdrawn in November 2010						
5	Minnesota	2006	State-wide	1 acre disturbed area		Treat ½ inch runoff from new imp. surfaces > 1 acre		Reduce IC and/or implement stormwater management practices
5	Ohio	2009	State-wide	1 acre disturbed area		Treat WQv equivalent to 0.75" rainfall runoff volume		20% WQv treatment and/or 20% IC reduction
5	Wisconsin	2010	State-wide	1 acre disturbed area	Infiltrate runoff to achieve 60% -90% of predevelopment volume based on IC level		Size of infiltration area is limited to 1%-2% of site area.	40% TSS reduction from parking areas and roads or MEP
6	Arkansas	2009	MS4s	1 acre disturbed area	Narrative standard			
6	Louisiana	2007	MS4s	1 acre disturbed area	Narrative standard			
6	New Mexico	2007	MS4s	1 acre disturbed area	Narrative standard			
6	Oklahoma	2005	MS4s	1 acre disturbed area	Narrative standard			
6	Texas	2007	MS4s	1 acre disturbed area	Narrative standard			
7	Iowa	2009	MS4s	1 acre disturbed area		Treat 1.25 inch WQv	WQv depth can be adjusted locally based on historical data	Same as new development
7	Kansas	2004	MS4s	1 acre disturbed area	Narrative standard			
7	Missouri	2008	MS4s	1 acre disturbed area	Narrative standard			
7	Nebraska	2005	MS4s	1 acre disturbed area	Narrative standard			
8	Colorado	2001	MS4s	1 acre disturbed area	Narrative standard			
8	Montana	2010	MS4s	1 acre disturbed area	Infiltrate, evapotranspire, or capture for reuse runoff from first 0.5"			Same as new development
8	North Dakota	2009	MS4s	1 acre disturbed area		Treat 0.5" runoff from IC		Same as new development
8	South Dakota	2003	MS4s	1 acre disturbed area	Narrative standard			

EPA Region	Program	Date	Where required?	Size Threshold	Volume Control Requirement			Redevelopment Standard
					Retention	Treatment	Exception	
8	Utah	2010	MS4s	1 acre disturbed area	Narrative standard			
8	Wyoming	2010	MS4s	1 acre disturbed area	Narrative standard			
9	Arizona	2002	MS4s	1 acre disturbed area	Narrative standard			
9	California	2003	MS4s	1 acre of disturbed area	Retain volume from 85 th percentile storm event		Biofiltration may be used if retention is infeasible	Local program defined
9	Hawaii	2007	MS4s	1 acre disturbed area	Narrative standard			
9	Nevada	2010	MS4s	1 acre disturbed area		80% annual runoff volume treatment	Treatment volume may be locally determined based on historical records	Same as new development
10	Alaska	2009	MS4s	1 acre disturbed area	Retain first 0.52 inches of rainfall from 24 hr event preceded by 48 hrs of no precip.			Same as new development
10	Idaho	2000	MS4s	1 acre disturbed area	Narrative standard			
10	Oregon	2007	MS4s	1 acre disturbed area	80% average annual runoff volume reduction (for Phase I)			Capture and treat 80% annual average runoff
10	Washington	2007	MS4s	2000 sf of new and/or replaced IC or 7000 sf disturbed area	Infiltrate, disperse, and retain onsite to MEP	Volume predicted from 6 month 24 hr storm OR 91 st percentile 24 hr runoff volume indicated by continuous runoff model. Max flow rate where 91% of runoff volume (determined by model) will be treated		Same as new development when size threshold is met.

Stormwater Program Summary – Connecticut

Program Name: Connecticut DEP Stormwater Management Program

Program Status: State NPDES Regulations, Phase II MS4 General Permit (2009), Connecticut Stormwater Quality Manual (2004)

Regulatory Authority: Stormwater Quality Manual, which contains the stormwater standard described below, is non-regulatory. Phase II MS4 general permit does not contain a specific stormwater standard.

Standard source: Connecticut Stormwater Quality Manual (non-regulatory)

Website references:

Connecticut DEP Stormwater Website

<http://www.ct.gov/dep/cwp/view.asp?A=2721&Q=325702>

General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems

[http://www.ct.gov/dep/lib/dep/Permits and Licenses/Water Discharge General Permits/MS4_gp.pdf](http://www.ct.gov/dep/lib/dep/Permits%20and%20Licenses/Water%20Discharge%20General%20Permits/MS4_gp.pdf)

2004 Connecticut Stormwater Quality Manual

<http://www.ct.gov/dep/cwp/view.asp?a=2721&q=325704>

Regulations:

<http://www.ct.gov/dep/lib/dep/regulations/22a/22a-430-3and4.pdf>

Size Threshold:

Post Construction Stormwater management is required on new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the MS4 or directly to waters of the State. (DEP-PED-GP-021 p. 15)

Limited geographic area where standards apply: N/A (standard is non-regulatory)

Significant exemptions: Indian lands are exempt.

Post-Construction Standards for New Development: The following standards are described in the Stormwater Quality Manual, which is non-regulatory, but may be adopted by MS4s.

On-Site Retention/Volume Control:

- Capture and treat the volume of runoff generated by one inch of rainfall. (Manual, p. 7-3)
- The Water Quality Flow (WQF), which is the peak discharge from the 1" storm, may be used in some conveyance-based practices instead. (Manual, p. 7-3)

Channel protection requirement:

Control the 2-yr, 24-hour post-development peak flow rate to 50 percent of the 2-yr, 24-hr pre-development level or to the 1-yr, 24-hr pre-development level. (Manual, p. 7-9)

Stormwater Program Summary – Connecticut

Water Quality Requirement:

Reduce the average annual T.S.S. loadings by 80 %. (Manual, p. 3-2) (Assumed to be achieved by water quality volume control standards)

Flood control requirement:

- Design the conveyance system leading to, from, and through stormwater management facilities based on the 10-year, 24-hour storm. (Manual, 7-10)
- Control the post-development peak discharge rates from the 10-, 25-, and 100-year storms to the corresponding pre-development peak discharge rates, as required by the local review authority. (Manual, 7-10)

Redevelopment standard: N/A

Special criteria:

High Quality Waters- High quality receiving waters and sites with the highest potential for significant pollutant loadings, reduce post-development pollutant loadings so that average annual post-development loadings do not exceed pre-development loadings (i.e., no net increase) (Manual p. 3-7).

Tidal Wetlands - Retain on-site the volume of runoff generated by the first 1" of rainfall from areas adjacent to or within 500 feet of tidal salt marshes and estuarine waters (Manual, P 3-7).

Groundwater Recharge - Maintain pre-development annual groundwater recharge volume to the maximum extent practicable through the use of infiltration measures (Manual, p. 7-3)

Offset /mitigation: N/A

Compliance: Manual requirements are non-regulatory.

Inspection & Maintenance/O&M: Stormwater management plans should describe the procedures, including routine and non-routine maintenance, that are necessary to maintain treatment practices, including vegetation, in good and effective operating conditions. Detailed inspection and maintenance requirements/tasks include; Inspection and maintenance schedules; Parties legally responsible for maintenance (name, address, and telephone number); Provisions for financing of operation and maintenance activities; As-built plans of completed structures; Letter of compliance from the designer; post-construction documentation to demonstrate; compliance with maintenance activities. (Manual, p. 9-7)

Does development on agricultural land qualify as redevelopment? N/A

Definition of Impervious surface: None

Definition of New Development: None

Definition of Predevelopment: None

Definition of Redevelopment: None

Stormwater Program Summary – Maine

Program Name: Maine DEP Stormwater Program

Program Status: Existing Regulations Effective 1997, Updated December 27, 2006; Three MS4 General Permits Effective July 1, 2008

- State Stormwater Management Law: 38 MRSA § 420-D; and Regulation: Chapter 500 & Chapter 502;
- Maine Pollutant Discharge Elimination System MS4 Permit: Permit Nos. MER041000, MER043000, & MER042000.

Regulatory Authority: The Stormwater Management Law only applies in organized municipalities, not unorganized townships which occupy about ½ of the state – they are covered by the Land Use Regulation Commission whose stormwater recommendations follow those of ME DEP.

Standard Source: Stormwater Management Regulations, Chapter 500

Website references:

Maine DEP Stormwater Program website

<http://www.maine.gov/dep/blwq/docstand/stormwater/index.htm>

Stormwater Management Regulations Chapter 500

<http://www.state.me.us/dep/blwq/rules/stormwater/2006/ch500.pdf>

Stormwater Management Regulations Chapter 502 (lakes most at risk from new development, and urban impaired streams)

<http://www.state.me.us/dep/blwq/rules/stormwater/2006/ch502.pdf>

General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (MER041000)

http://www.maine.gov/dep/blwq/docstand/stormwater/ms4/final_2008_ms4_gp.pdf

General Permit for the Discharge of Stormwater from Maine Department of Transportation and Maine Turnpike Authority Municipal Separate Storm Sewer Systems (MER043000)

http://www.maine.gov/dep/blwq/docstand/stormwater/ms4/final_transportation_ms4_gp_08.pdf

General Permit for the Discharge of Stormwater from State or Federally Owned Municipal Separate Storm Sewer Systems (MER042000)

http://www.maine.gov/dep/blwq/docstand/stormwater/ms4/final_fed_facility_ms4gp_08.pdf

Stormwater Best Management Practices Manual (guidance)

- Volume I. Stormwater Management Manual
- Volume II. Phosphorus Control in Lake Watersheds: A Technical Guide to Evaluating New Development
- Volume III. BMP Technical Design Manual

<http://www.maine.gov/dep/blwq/docstand/stormwater/stormwaterbmps/index.htm>

Size Threshold: A project disturbing one acre or more. Additional thresholds of impervious cover and developed area requires compliance with one or more of the post-construction standards (Chapter 500, Sec. 4A, p. 4)

Stormwater Program Summary – Maine

Limited geographic area where standards apply: The Stormwater Management Law only applies in organized municipalities, not unorganized townships which occupy about ½ of the state. Unorganized townships are covered by the Land Use Regulation Commission whose stormwater recommendations follow those of ME DEP.

Significant exemptions: Certain exemptions apply (See Chapter 500.4.B.(3))

Post-Construction Standards for New Development:

On-Site Retention/Volume Control:

General Standard:

- 20,000 square feet or more of impervious area, or 5 acres or more of developed area, in the direct watershed of an urban impaired stream (listed in Chapter 502);
- One acre or more of impervious area, or 5 acres or more of developed area, in any other stream, coastal, or wetland watershed.
 - Traditional BMPs wet ponds, Filters, Infiltration, and other practices provided in the BMP Manual sized to treat a runoff volume equal to 1-inch times impervious area plus 0.4-inch times the developed pervious area.
 - LID practices are encouraged.

(Chapter 500, Sec. 4(C), p. 7-8)

Channel protection requirement: Urban Impaired Stream Standard

Apply in addition to Basic, General, and Phosphorus Standards when:

- located within the direct watershed of urban impaired stream or stream segment listed in chapter 502;
- Impervious area ≥ 3 acres
- Developed area ≥ 20 acres
 - Urban Impaired Stream Standard: A project in the direct watershed of an urban impaired stream must pay a compensation fee or mitigate project impacts by treating, reducing or eliminating an off-site or on-site pre-development impervious stormwater source as described in Section 6(A).

(Chapter 500, Sec. 4(B)(2), p. 5 & Sec. 6(A) p.13).

Water Quality requirement:

- Phosphorus Standard: Applicable in lake watersheds:
 - Allowable per acre phosphorus allocation for designated watersheds serving “at risk” lakes.
 - A list of designated Lakes and watersheds is provided by MDEP, and the corresponding phosphorus allocation as determined by MDEP.

(Chapter 500, Sec. 4(C), p. 7-8)

Flood control requirement:

- Impervious area ≥ 20 acres; or developed area ≥ 20 acres, or requires review pursuant to the Site

Stormwater Program Summary – Maine

- Applies in addition to the basic standards, general standards, phosphorus standards and urban impaired stream standards;
- Stormwater management systems must detain, retain, or infiltrate stormwater such that post developed peak flows from the 2-year, 10-year, and 25-year 24-hour storm frequencies do not exceed the pre-developed peak flows.

(Chapter 500, Sec. 4 (E)(1), p. 8).

Redevelopment standard:

Redevelopment of an existing impervious area is not required to meet the General Standard or the urban impaired stream standard provided the department determines that the new use of the existing impervious area is not likely to increase stormwater impacts in the proposed project's stormwater runoff beyond the levels already present in the runoff from the existing impervious area (Chapter 500, Sec. 4(D)(3), p. 8).

Special criteria:

Discharge to Freshwater or Coastal Wetlands: Stormwater standards for the waterbody must be met before the stormwater enters a wetland. Wetlands must receive stormwater in the same manner as before the project unless otherwise approved or required by the department.

Offset /mitigation: (Compensation Fees and Mitigation Credits)

Offsite mitigation and/or fees may be allowed for:

- General Standard Requirements (Chapter 500, Sec. 6 (B)(1), p. 14).
- Urban Impaired Stream Standard Requirements (Chapter 500, Sec. 4(D)(2), p. 8); and
- Phosphorus Standard Requirements (Chapter 500, Sec. 6(C), p. 15).

Compliance: Within three months of the expiration of each five-year interval from the date of issuance of the permit, the permittee shall certify to the DEP that (1) all aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the facilities and (2) the stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the department, and the maintenance log is being maintained (Chapter 500, Sec. 10(A)(9), p. 25).

Inspection & Maintenance/O&M:

The components of the stormwater management system must be adequately maintained to ensure that the system operates as designed, and as approved by the department (Chapter 500, Sec. 10(A)(8), p. 25).

Does development on agricultural land qualify as redevelopment? No.

Definition of impervious surface: The total area of a parcel that consists of buildings and associated constructed facilities or areas that will be covered with a low-permeability material, such as asphalt or concrete, and areas such as gravel roads and unpaved parking areas that will be compacted through design or use to reduce their permeability. A natural or man-made waterbody is not considered an impervious area, but is treated as an immediate runoff surface in curve number calculations (Chapter 500 (3)(K), p. 2).

Stormwater Program Summary – Maine

Definition of predevelopment: An impervious or developed area created prior to the effective date of the Stormwater Management Law for a stormwater project, or the effective date of the jurisdictional threshold under which a development is licensed for a Site Law development (Chapter 500 (3)(U), p. 3).

Definition of new development: All land areas that are stripped, graded, grubbed, filled, or excavated at any time during the site preparation or removing vegetation for, or construction of, a project (definition of "Disturbed area") excluding area that within one calendar year of being disturbed is returned to a condition with the same drainage pattern that existed prior to the disturbance and is revegetated, provided the area is not mowed more than once per year (Chapter 500 (3)(D), p. 1).

Definition of redevelopment: N/A

Do they have retrofit requirements that are state wide? N/A

Additional references:

Land Use Regulation Commission: <http://www.maine.gov/doc/lurc/>

Stormwater Program Summary – Massachusetts

Program Name:

Massachusetts NPDES Stormwater permits

- EPA administers and enforces NPDES stormwater permits issued in Massachusetts: Construction General Permit; Multi-Sector General Permit; MS4 permit (MassDEP co-issued 2003 MS4 permit)

Massachusetts Stormwater Standards

- State stormwater requirements: enforced only in wetland resource areas and buffer zones through Mass. Wetlands Protection and 401 regulations (about 12% of the State).
- Standards apply to new development and redevelopment only within wetlands jurisdictional areas and adjacent 100-foot buffer zone.
- Standards do not apply to existing stormwater discharges, or new development and redevelopment located outside of wetland resource areas, unless and until they alter a wetland resource area. The burden is on local town or MassDEP to prove that an existing stormwater discharge altered a wetland.
- Adopted as part of the state Wetlands and 401 Regulations in 2008, previously enforced through a policy issued by MassDEP in 1996
- Towns may adopt Standards locally

Program Status:

- EPA has proposed a successor MS4 permit (estimated start date 2011)
- Wetlands Protection Act, M.G.L. c. 131, § 40; and Regulation, 310 C.M.R. 10.00
- Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53, and Regulation 314 CMR 9.00.

Standard source:

- Massachusetts Stormwater Handbook is a comprehensive guide to the Stormwater Standards set forth in the Wetlands regulations, 310 CMR 10.00 and 401 regulations, 314 CMR 9.00 (January 2008). Standards apply only to Wetlands and 401 permits, and not to activities regulated by CGP, MSGP, or MS4 permit.

Website references:

Massachusetts Stormwater

<http://www.mass.gov/dep/water/wastewater/stormwat.htm>

The Wetlands Protection Act Regulations

<http://www.mass.gov/dep/service/regulations/310cmr10a.pdf>

Surface Water Quality Standards

<http://www.mass.gov/dep/service/regulations/314cmr04.pdf>

Surface Water Discharge Permit Program

<http://www.mass.gov/dep/service/regulations/314cmr03.pdf>

Massachusetts Stormwater Handbook

<http://www.mass.gov/dep/water/laws/policies.htm#storm>

Size Threshold:

- For the CGP: 1-acre land disturbance

Stormwater Program Summary – Massachusetts

- For the MS4 permit: Towns adopt locally enforceable mechanisms to regulate construction and post-construction projects disturbing one acre or more
- For the Mass. Wetlands Protection and 401 regulations: No regulatory size threshold – all new development and redevelopment within wetland resource area or buffer zone are required to comply with Stormwater Standards (except for single family house projects not part of a pattern of common development)

Limited geographic area where standards apply:

- NPDES permits: geographic area not limited
- Mass. Wetlands Protection and 401 regulations: Standards only apply to new development and redevelopment within wetland resource areas and their buffer areas
- Towns may apply Standards to other areas at local option

Significant exemptions to State Wetlands Protection and 401 Regulations:

- Stormwater discharges from a single-family house not part of a pattern of common development;
- Only to the maximum extent practicable for stormwater discharges from housing development and redevelopment projects comprised of detached single-family dwellings on four or fewer lots provided that there are no stormwater discharges that may potentially affect a critical area;
- Only to the maximum extent practicable for stormwater discharges from multi-family housing development and redevelopment projects with four or fewer units, including condominiums, cooperatives, apartment buildings and townhouses, provided that there are no stormwater discharges that may potentially affect a critical area;
- Emergency repairs to roads or their drainage systems (310 C.M.R. 10.00 Wetlands Protection; Handbook, Volume 1, Chapter 1, p. 2-3)

State Wetlands and 401 Regulations Post-Construction Standards for New Development:

- The 10 Stormwater Standards apply to wetland jurisdictional areas: No new stormwater conveyances (*e.g.* outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

State Wetlands and 401 Regulations *On-Site Retention/Volume Control*:

- Loss of annual recharge to ground water shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices and good operation and maintenance. At a minimum, the annual recharge from the post development site shall approximate the annual recharge from the pre-development conditions based on soil type. (310 C.M.R. 10.00; Handbook, Volume 1, Chapter 1, Standard 3, p. 1).

State Wetlands and 401 Regulations *Channel protection requirement*:

- No new stormwater conveyances (*e.g.* outfalls) may cause erosion in wetlands or waters of the Commonwealth (Handbook, Volume 1, Chapter 1, Standard 1).

State Wetlands and 401 Regulations *Water Quality requirement*:

- Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS) from the ½" Water Quality Volume (Handbook, Volume 1, Chapter 1, Standard 4, p. 1).

Stormwater Program Summary – Massachusetts

- The Water Quality Volume is 1” in Critical Areas, for Land Uses with Higher Potential Pollutant Loads , soils with Rapid Infiltration Rates and in some other circumstances

State Wetlands and 401 Regulations *Flood control requirement:*

- Peak rate control for runoff from the 2-year and 10-year 24-hour storms, and if increased off-site flooding will result from peak discharges from the 100-year 24-hour storm (Handbook, Volume 1, Chapter 1, Standard 2, p. 1).

State Wetlands and 401 Regulations *Redevelopment standard:*

- A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions. (Handbook, Volume 1, Chapter 1, Standard 7, p. 2).

State Wetlands and 401 Regulations *Special criteria:*

- Standard 5 applies to Land Use With Higher Potential Pollution Load
- Standard 8 applies to construction period work
- Standard 10 applies to Illicit Discharges
- Handbook requires use of Environmentally Sensitive Site Design and Low Impact Development techniques (Handbook, Volume 1, Chapter 1, p. 4).
- In TMDL watersheds stormwater BMPs must be “consistent” with TMDL

State Wetlands and 401 Regulations *Offset /mitigation:* N/A

State Wetlands and 401 Regulations *Compliance:*

- Individual permit required for new development and redevelopment within wetland resource areas or buffer zone
- Local plan review and approval: a Stormwater Report must be submitted to document compliance with the Stormwater Management Standards (Handbook, Volume 3, Chapter 1, p.1) as part of the application for work in wetland resource area or buffer zone
- MassDEP may provide comments, hears appeals, and may issue Superseding Orders

State Wetlands and 401 Regulations *Inspection & Maintenance/O&M:*

- A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed (Handbook, Volume 1, Chapter 1, Standard 9, p. 2).

Does development on agricultural land qualify as redevelopment? No. Commercial agricultural use is exempt from review pursuant to State Wetlands Protection Act.

Definition of impervious surface: N/A

Definition of predevelopment: N/A

Stormwater Program Summary – Massachusetts

Definition of new development: N/A

Definition of redevelopment: Redevelopment is defined to include:

- Maintenance and improvement of existing roadways, including widening less than a single lane, adding shoulders, correcting substandard intersections, improving existing drainage systems, and repaving;
- Development rehabilitation, expansion and phased projects on previously developed sites, provided the redevelopment results in no net increase in impervious area; and
- Remedial projects specifically designed to provide improved stormwater management, such as projects to separate storm drains and sanitary sewers, and stormwater retrofit projects (310 C.M.R. 10.00; Handbook, Volume 1, Chapter 1, pp. 20-21).

Additional references: N/A

Stormwater Program Summary – New Hampshire

Program Name: New Hampshire Stormwater Program

Program Status: Existing MS4 Stormwater Program (administered by EPA in New Hampshire). Permits originally issued March 2003, current draft permit has not been reissued and the 2003 Small MS4 General Permit remains in effect. EPA anticipates that the final permits for each small MS4 general permit should be available in spring 2011.

- New Hampshire Code of Administrative Rules, Chapter Env-Wq 1500 Alteration of Terrain.

Standard source: Chapter Env-Wq 1500 Alteration of Terrain, Sections 1507 and 1508; New Hampshire Stormwater Manual.

Website reference:

New Hampshire Stormwater Program

<http://des.nh.gov/organization/divisions/water/stormwater/index.htm>

EPA Region 1 Stormwater Program

<http://www.epa.gov/region1/npdes/stormwater/index.html>

2009/2010 General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4s)

<http://www.epa.gov/region1/npdes/stormwater/nh/Draft-NH-Small-MS4-Permit.pdf>

New Hampshire Stormwater Manual

<http://des.nh.gov/organization/divisions/water/stormwater/manual.htm>

New Hampshire Code of Administrative Rules, Chapter Env-Wq 1500 Alteration of Terrain.

<http://des.nh.gov/organization/commissioner/legal/rules/index.htm#envwq1500>

Size Threshold: Phase II MS4 general permit: projects disturbing one acre or greater

Alteration of Terrain permits are required whenever a project involves earth moving operations, such as industrial, commercial, and residential developments as well as sand pits, gravel pits, and rock quarries that proposes to disturb more than 100,000 square feet of contiguous terrain (50,000 square feet, if any portion of the project is within the protected shoreland), or disturbs an area having a grade of 25 percent or greater within 50 feet of any surface water. In addition to these larger disturbances, the AoT Permit by Rule applies to smaller sites. (New Hampshire Code of Administrative Rules, Chapter Env-Wq 1500 Alteration of Terrain)

Limited geographic area where standards apply: Alteration of Terrain Permits apply to activities in or on the border of the surface waters of the state that significantly alter the characteristics of the terrain, in such a manner as to impede the natural runoff or create an unnatural runoff.

NPDES permit requirements are applied only in regulated MS4 areas as designated in the permit.

Significant exemptions: N/A

Post-Construction Standards for New Development:

On-Site Retention/Volume Control

Stormwater Program Summary – New Hampshire

For new development or redevelopment projects greater than one acre, the program shall include a process, if practicable, to require the implementation of low impact development practices that infiltrate, evapotranspire, or capture for reuse the first 1 inch of rainfall from a 24 hour storm preceded by 48 hours of no measurable precipitation. (Draft 2009/2010 NPDES Permit, Part 2.3.6.2, Page 25)

Channel protection requirement

Off-site flows shall meet one of the following criteria:

- (1) If the 2 year, 24-hour post-development storm volume has not increased over the predevelopment volume, then the 2-year, 24-hour post-development peak flow rate shall be equal to or less than the 2-year, 24-hour pre-development peak flow rate;
- (2) The 2-year, 24-hour post-development peak flow rate shall be less than or equal to 50 percent of the 2-year, 24-hour pre-development peak flow rate; or
- (3) The 2-year, 24-hour post-development peak flow rate shall be less than or equal to the 1-year, 24-hour pre-development peak flow rate.

(New Hampshire Code of Administrative Rules, Chapter Env-Wq 1500 Alteration of Terrain. Section 1507.05. Channel Protection Requirements.)

Water Quality requirement

None.

Flood control requirement

The 10-year, 24-hour post-development peak flow rate should not exceed the 10-year, 24-hour pre-development peak flow rate for all flows leaving the site;

The 50-year, 24-hour post-development peak flow rate should not exceed the 50-year, 24-hour pre-development peak flow rate for all flows leaving the site;

The project should provide supporting information showing that there is no impact to properties as a result of developing within the 100-year floodplain;

(New Hampshire Code of Administrative Rules, Chapter Env-Wq 1500 Alteration of Terrain. Section 1507.06. Peak Runoff Control Requirements.)

Redevelopment standard

None

Special criteria:

Recharge

The permittee must evaluate physical conditions, site design, and best management practices to promote ground water recharge and infiltration where feasible in the implementation of the control measures described in Part 2.3. The permittee must address recharge and infiltration for the control measures, as well as any reasons for electing not to implement recharge and infiltration. Loss of annual recharge to ground water should be minimized through the use of infiltration to the maximum extent practicable. (Draft 2009/2010 NPDES Permit, Part 4.1, Page 35)

Low Impact development

Within two (2) years of the effective date of this permit, the permittee shall develop a report assessing current street design and parking lot guidelines and requirements that affect the creation of impervious cover. This assessment shall be used to provide information to allow the permittee to determine if changes to design standards for streets and parking lots can be modified to support low impact design

Stormwater Program Summary – New Hampshire

options. If the assessment indicates that changes can be made, the assessment shall include recommendations and proposed schedules to incorporate policies and standards to relevant documents and procedures to minimize impervious cover attributable to parking and street designs. The local planning board and local transportation board should be involved in this assessment. This assessment shall be part of the SWMP. The permittee must report in each annual report on the status of this assessment including any planned or completed changes to local regulations and guidelines. (Draft 2009/2010 NPDES Permit, Part 2.3.6.6, Page 25)

Directly Connected Impervious Area

Within one (1) year from the effective date of the permit, the permittee shall estimate the number of acres of impervious area (IA) and directly connected impervious area (DCIA) tributary to its MS4 jurisdiction. The permittee shall report the tabulated results and its estimation methodology in the first annual report. The permittee shall tabulate its estimates by the subbasins and receiving waterbodies. Beginning with the second year annual report and in each subsequent annual report, the permittee shall estimate for each subbasin identified pursuant to Part 2.3.6.8(a) the number of acres of DCIA tributary to its MS4 that have been added or removed during the prior year. The permittee shall include in its estimates the additions or reductions resulting from development, redevelopment, or retrofit projects undertaken directly by the permittee; or by private developers and other parties in a voluntary manner or in compliance with the permittee's regulations pursuant to Part 2.3.6.3 of this permit. (Draft 2009/2010 NPDES Permit, Part 2.3.6.8, Page 26)

New Hampshire Public Drinking Water Requirements

MS4s that discharge to public drinking water sources and their source protection areas must consider these sources priority resources when implementing control measures of Part 2.3. Discharge to public drinking water supply sources and their protection areas must provide pretreatment and spill control suitable to protect drinking water sources to the extent feasible. The permittee shall avoid direct discharges to groundwater and surface water drinking water sources and ensure any discharges near source protection areas of water supply wells or intakes comply with the applicable state requirements. Stormwater systems must meet the minimum discharge setback requirements of Env-Wq 1500 unless exempt under Env-Wq 1500.8.2 (Draft 2009/2010 NPDES Permit, Part 4.2, Page 35)

Offset /mitigation: None indicated

Compliance: Compliance with the NPDES permit is achieved through submission of annual reports by the MS4. Compliance with Alteration of Terrain permits is through inspection during projects.

Inspection & Maintenance/O&M: The Alteration of Terrain regulations require the development of an Inspection and Maintenance (I&M) Manual for stormwater management systems, identifying responsible parties for implementing the required maintenance activities, detailing the activities that are necessary, and documenting the implementation of the activities. (New Hampshire Code of Administrative Rules, Chapter Env-Wq 1500 Alteration of Terrain. Section 1507.08. Long-Term Maintenance.)

Does development on agricultural land qualify as redevelopment? Not indicated.

Definition of impervious surface: Env-Wq 1502.28 "Impervious cover" means a structure or a land surface with a low capacity for infiltration, including but not limited to pavement, roofs, roadways, and compacted soils with a curve number of 98 or greater.

Stormwater Program Summary – New Hampshire

Definition of predevelopment: None

Definition of new development: None

Definition of redevelopment: None

Additional references:

DES Alteration of Terrain (AoT) Bureau

<http://des.nh.gov/organization/divisions/water/aot/index.htm>

Stormwater Program Summary – Rhode Island

Program Name: Rhode Island Pollutant Discharge Elimination System (RIPDES) Storm Water Program

Program Status: NPDES Permit # RIR040000 and state regulation: RIPDES Rule 31(a)(5)(i)(A-J) Existing Regulations, Rhode Island Stormwater Design and Installation Standards Manual (manual p. 1-2)

Regulatory Authority: RIPDES Rule 31(a)(5)(i)(A-J)

Standard source: Rhode Island Stormwater Design and Installation Standards Manual, 2010

Website references:

Rhode Island Stormwater Website

<http://www.dem.ri.gov/programs/benviron/water/permits/ripdes/stwater/index.htm>

Manual:

<http://www.dem.ri.gov/pubs/wetmanl/stormmnl.pdf>

Regulations:

<http://www.dem.ri.gov/pubs/regs/regs/water/ripdes03.pdf>

MS4 General Permit:

<http://www.dem.ri.gov/pubs/regs/regs/water/ms4final.pdf>

Fact Sheet:

<http://www.dem.ri.gov/programs/benviron/water/permits/ripdes/stwater/pdfs/imgguide.pdf>

Size Threshold: In the MS4: projects that disturb greater than or equal to one (1) acre, including projects less than one (1) acre that are part of a larger common plan of development or sale that discharge into the MS4 (Rhode Island MS4 General Permit, p. 19).

Limited geographic area where standards apply: Only in regulated MS4 areas.

Significant exemptions: None

Post-Construction Standards for New Development:

On-site Retention/Volume Control:

Structural (designed) post-construction storm water treatment practices must be sized to capture and treat the water quality (WQv), equivalent to the runoff associated with the first 1.2 inches of rainfall over the impervious surface (which is assumed to equal 1" of runoff) and shall be determined according to the following equation: $WQv = (1") (I) / 12$ (Manual 3.3.3 p. 3-13)

Note: The water quality volume requirement may be waived or reduced by applying disconnection-based LID practices (Manual 4.6.1 p. 4-10)

Channel Protection Requirement:

The channel protection volume (CPv) requirement is the 24-hour extended detention of the post-development runoff volume from the 1-year, 24-hour Type III design storm event. If a stormwater discharge is proposed within 200 feet of streams and any contiguous natural or vegetated wetlands

Stormwater Program Summary – Rhode Island

in watersheds draining to cold-water fisheries, surface detention practices are prohibited (underground detention or infiltration practices will be required). (Manual 3.3.4 p. 3-17)

Water Quality Requirement:

Structural BMPs are generally required to achieve the following minimum average pollutant removal efficiencies: 85% removal of total suspended solids (TSS), 60% removal of pathogens, 30% removal of total phosphorus (TP) for discharges to freshwater systems, and 30% removal of total nitrogen (TN) (Manual 3.2.3, p. 3-3)

Flood Protection Requirement:

Peak flow attenuation is required for the 10-year and 100-year, 24-hour Type III design storm events. (Manual 3.3.5, p. 3-18)

Redevelopment standard: For sites with less than 40% existing impervious surface coverage, the stormwater management requirements for redevelopment will be the same as for new development. The applicant, however, can meet those requirements either on-site or at an approved off-site location within the same watershed provided the applicant satisfactorily demonstrates that impervious area reduction, LID strategies, and/or structural BMPs have been implemented on-site to the maximum extent practicable.

For redevelopment sites with 40% or more existing impervious surface coverage, stormwater quality and recharge shall be managed for in accordance with one or more of the following techniques: reduce existing impervious area by at least 50% of the redevelopment area; or implement other LID techniques to the maximum extent practicable to provide water quality and recharge management for at least 50% of the redevelopment area; or use on-site structural BMPs to provide water quality and recharge management for at least 50% of redevelopment area; or any combination of impervious area reduction, other LID techniques, or on-site structural BMPs for at least 50% of redevelopment area. (Manual 3.2.6, p. 3-5)

Note: If none of the above options are practical in terms of water quality management, alternatives may be proposed that would achieve an equivalent pollutant reduction by using a combination of other types of BMPs and strategies, including treating 100% of the redevelopment area by BMPs with a lesser pollutant removal efficiency.

Special criteria:

Groundwater Recharge Requirement:

Recharge requirements are based on hydrologic soil group. The recharge volume is considered as part of the total water quality volume that must be provided at a site (i.e., Rev is contained within WQv) and must be achieved by disconnection of impervious areas, a structural practice, or a combination of the two (Manual 3.3.2 p. 3-11).

Note: The groundwater recharge requirement may be waived or reduced by applying the LID Stormwater Credit

Water Quality Flow Requirement:

Stormwater treatment practices in this manual sized based the WQv require the design of flow diversion structures for off-line stormwater treatment practices to bypass flows greater than the WQf. The WQf shall be calculated using the WQv and a modified curve number (CN) for small storm events. (Manual 3.3.3.2, p. 3-15)

Stormwater Program Summary – Rhode Island

Offset /mitigation:

LID Stormwater Credit:

For redevelopment sites, off-site structural BMPs to provide water quality and recharge management for an area equal to or greater than 50% of redevelopment areas may be used to meet the water quality requirements provided that the applicant satisfactorily demonstrates that impervious area reduction, LID strategies, and/or on-site structural BMPs have been implemented to the maximum extent practicable. An approved off-site location must be identified, the specific management measures identified, and an implementation schedule developed in accordance with local review and with DEM/CRMC concurrence, as appropriate. The applicant must also demonstrate that there are no downstream drainage or flooding impacts as a result of not providing on-site management for large storm events.

Compliance: MS4s must develop an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects, that includes nonstructural and structural BMPs, as well as their installation and operations and maintenance (O&M), and sanctions to ensure compliance, to the extent allowable under State and local law. (Rhode Island MS4 General Permit, p.19)

Inspection & Maintenance/O&M: The MS4 must develop procedures to ensure adequate long term operation and maintenance of BMPs and procedures for coordination of local and State post-construction storm water management in new and redevelopment permitting and referrals for enforcement actions. (Rhode Island MS4 General Permit, p.19)

Does development on agricultural land qualify as redevelopment? No.

Definition of impervious surface: Those surfaces that cannot effectively infiltrate rainfall consisting of surfaces such as building rooftops, pavement, sidewalks, driveways, compacted gravel (e.g., driveways and parking lots) (Manual, glossary-8).

Definition of New Development: None

Definition of Predevelopment: None

Definition of Redevelopment: Any construction, alteration, or improvement that disturbs a total of 10,000 square feet or more of existing impervious area where the existing land use is commercial, industrial, institutional, governmental, recreational, or multifamily residential. (Manual p. 3-4)

Stormwater Program Summary – Vermont

Program Name: Vermont State Stormwater Program

Program Status: State-wide stormwater regulation separate from NPDES. Administered by the State (10 V.S.A. 1264 Chapter 47).

Regulatory Authority: Vermont Stormwater Management Rule and Manual

Standard source: 10 V.S.A. 1264 Chapter 47

Website references:

Vermont Stormwater Program

<http://www.vtwaterquality.org/stormwater.htm>

Vermont Stormwater Management Manual (2002):

www.anr.state.vt.us/dec//waterq/stormwater/docs/sw_manual-vol1.pdf

Permit:

http://www.anr.state.vt.us/dec//waterq/stormwater/htm/sw_3-9015.htm

General Permit 3-9010 to implement non-impaired rule and renewing existing permits

http://www.anr.state.vt.us/dec//waterq/stormwater/htm/sw_3-9010.htm

Regulations:

10 V.S.A. 1264 Chapter 47; Vermont Stormwater Management Rule

<http://www.leg.state.vt.us/statutes/fullsection.cfm?Title=10&Chapter=047&Section=01264>

Chapter 18, Environmental Management Rule for Non-impaired Waters

<http://www.anr.state.vt.us/dec/rule/sum.htm>

www.anr.state.vt.us/dec//waterq/stormwater/docs/sw_rule-unimpaired.pdf

Chapter 22, Environmental Management Rule for Impaired Water

<http://www.anr.state.vt.us/dec/rule/sum.htm>

Size Threshold: New development, expansion of existing impervious surface and redevelopment equal to or greater than one acre. State may regulate discharges from any size impervious surface as deemed to reduce adverse impacts. Exceptions apply as §18-304(a)(4) of the Rule (§18-302)

10 V.S.A. § 1264 (d)(1)(D) states “requirements concerning a permit for discharges of regulated stormwater runoff from the development, redevelopment, or expansion of impervious surfaces equal to or greater than one acre or any combination of development, redevelopment, and expansion of impervious surfaces equal to or greater than one acre”

Limited geographic area where standards apply: none – applies statewide

Significant exemptions: Does not apply to stormwater discharges to impaired waters (303(d) listed) (separate permit), or MS4 municipalities who administer their own post-construction program and projects.

Stormwater Program Summary – Vermont

The expansion of an existing impervious surface, such that the total resulting impervious surface is equal to or greater than one (1) acre, if:

- (A) the increase or addition of impervious surface is less than 5,000 square feet; and
- (B) the expansion is made to existing impervious surfaces created prior to June 1, 2002; and
- (C) This exemption may be used for consecutive expansions of an existing impervious surface up to a cumulative total of 5,000 square feet. When the cumulative total expansion exceeds 5,000 square feet, the expanded impervious surface in excess of 5,000 square feet must comply with the treatment standard in subsection 18-306(a)(1) of this Rule. (§18-304(a)(4), p10-11)

Post-Construction Standards for New Development:

On-Site Retention/Volume Control

Capture 90 percent of the annual storm events (Manual, p. 1-3)

Water Quality requirement:

Remove 80 percent of the average annual post development total suspended solids load (TSS), and 40 percent of the total phosphorus (TP) load. The following water quality treatment standards must be met for all new and existing development (Manual, p. 1-3)

The WQ_v may be reduced where nonstructural STPs are employed in the site design (Manual, p.1-4)

Infiltration Standard:

The average annual recharge rate for the prevailing hydrologic soil group(s) (HSG) shall be maintained in order to preserve existing water table elevations. Recharge volume (Rev) is determined as a function of annual predevelopment recharge for a given soil group, average annual rainfall volume, and amount of impervious cover at a site.

The groundwater recharge treatment standard shall be satisfied by one of two methods or a combination of both. The first is designated as the “Percent Volume Method,” and is based on infiltrating the recharge volume using one or more approved structural STPs (see Manual, Tables 2.1 and 2.2). The second method is designated as the “Percent Area Method,” and is based on draining runoff from some or all of the site impervious area through one or more approved nonstructural STPs (See Manual Table 2.2).

Channel protection requirement:

The channel protection volume (CP_v) shall be provided by means of 12 to 24 hours of extended detention storage (ED) for the one-year, 24-hour rainfall event. If a stormwater discharge is to a coldwater fish habitat, 12 hours of extended detention is required and if a stormwater discharge is to a warmwater fish habitat, 24 hours of extended detention is required.

Where extended detention is being used as a water quality treatment component, routing through the treatment practice can use a composite stage-discharge relationship. In addition, where an offline treatment practice is used to treat only the water quality volume, an additional facility is necessary to manage the full channel protection volume (that is, CP_v and WQ_v shall be provided separately).

Alternative design standards may be used where majority of impervious surfaces are disconnected on the site and the post-developed peak discharge from the disconnected portion of the site for the one-year storm is no greater than the peak discharge from the same portion of the site as modeled

Stormwater Program Summary – Vermont

as if 12-hour detention were provided (Amendments to Manual Section 1.1.2, in §18 Stormwater Rule, p29).

The treatment standard for channel protection shall be waived for:

1. Expansions involving less than or equal to one (1) acre of impervious cover;
2. A site where the pre-routed post-development discharge is less than 2 cubic feet per second; or
3. A site that directly discharges to a waterbody with a drainage area equal to or greater than 10 square miles, and that is less than 5% of the watershed area at the site's upstream boundary; (Manual, p. 1-4).

Flood control requirement:

Overbank protection (Q_{p10}) for the post-development peak discharge rate shall not exceed the pre-development peak discharge rate for the 10-year, 24-hour storm event.

The Agency will waive the 10-year control requirement on a case-by-case basis where the developer demonstrates that there will be no increase in flood threat downstream to the point of the "so-called" 10% rule following downstream hydrologic/hydraulic analyses.

The treatment standard for overbank flood protection shall be waived if:

1. A site discharges directly to a large reservoir, lake, or stream with a drainage area greater than or equal to 10 square miles; or
2. The site is smaller than five (5) acres and the channel has adequate capacity to convey the post-development 10-year discharge downstream to the point of the so-called 10% rule; and downstream conveyance systems have adequate capacity to convey the 10-year storm.

Extreme Storm: (Q_{p100}) Control the peak discharge from the 100-year storm to 100-year predevelopment rates.

Redevelopment standard: Discharges of regulated stormwater runoff from redeveloped impervious surfaces obtain an individual permit or coverage under a general permit consistent with the following:

- (A) The existing impervious surface shall be reduced by a minimum of 20%; or
- (B) a stormwater treatment practice shall be designed to capture and treat 20% of the water quality from the existing impervious surface; or
- (C) a combination of (A) and (B) that when combined equal a minimum 20% reduction/treatment. (§18-306)

Special criteria:

Stormwater Credits Six specific non-structural practices are set forth, which, if used properly, can result in the granting of a stormwater credit to a site designer. A stormwater credit can reduce the required water quality and recharge storage volumes, thereby reducing the size and cost of structural STPs. (Manual, 3-1).

Cold Climate Considerations: Mandatory guidance is given to modify BMP designs (Amendments to Manual Section 2.7.2.G, in §18 Stormwater Rule, p.30).

Groundwater recharge: The average annual recharge rate for the prevailing hydrologic soil group(s) (HSG) shall be maintained in order to preserve existing water table elevations (Manual, p.1-6).

Stormwater Program Summary – Vermont

The groundwater recharge treatment standard shall be waived for:

1. Stormwater runoff from hotspot land uses (as described in section 2.6).
2. Stormwater recharge may be prohibited or otherwise restricted within groundwater recharge areas, wellhead protection areas, or where certain unusual geological features may exist such as karst topographic areas; areas of documented slope failure, or redevelopment projects.
3. No subsurface infiltration of stormwater will be allowed within 500' of a public community water supply or non-transient non-community water supply. (Manual, p.1-8)

Offset /mitigation: Offsets are defined as “a state-permitted action or project within a stormwater-impaired water that a discharger or a third person may complete to mitigate the impacts that an existing or proposed discharge or discharges of regulated stormwater runoff has or is expected to have on the stormwater-impaired water (§18, Glossary). It is not discussed further in the manual.

Compliance: Permit compliance shall be judged on the basis of performance with the terms and conditions of the discharge permit, including construction and maintenance in accordance with BMP specifications (§18-307).

Inspection & Maintenance/O&M: A general permit shall require that the permittee properly operate and maintain all stormwater collection, treatment and control systems and that the permittee shall submit an annual inspection report on the operation, maintenance and condition of the stormwater collection, treatment and control systems. Inspections shall be conducted between the conclusion of spring snow melt and June 15th of each year and the inspection report shall be submitted to the Secretary by July 15th of each year, or by July 30th of each year if performed by a utility or municipality pursuant to a duly adopted stormwater management ordinance. The first annual inspection report for a new development, redevelopment or expansion shall include a written certification by a designer, other than the landowner, stating that the stormwater system was installed in accordance with the conditions of the general permit and is functioning properly (§18-307 (c)(2)). Maintenance requirements are specified for individual treatment practices in the Manual and agreements are a condition of approval (Manual, various pages in section 2.7).

Does development on agricultural land qualify as redevelopment? Not addressed.

Definition of impervious surface: those man-made surfaces, including, but not limited to, paved and unpaved roads, parking areas, roofs, driveways and walkways, from which precipitation runs off rather than infiltrates. (§ 18-201)

Definition of new development: means the construction of new impervious surface on a tract or tracts of land where no impervious surface previously existed. (§ 18-201)

Definition of predevelopment: land use for on-site areas shall be woods, meadow, or pasture in good condition. For agricultural land, assume pasture in good condition. (Manual, p. 1-2)

Definition of redevelopment: means the construction or reconstruction of an impervious surface where an impervious surface already exists when such new construction involves substantial site grading, substantial subsurface excavation, or substantial modification of existing stormwater conveyance, such that the total of impervious surface to be constructed or reconstructed is greater than the minimum regulatory threshold. Redevelopment does not mean the construction or reconstruction of impervious

Stormwater Program Summary – Vermont

surface where impervious surface already exists when the construction or reconstruction involves less than 5,000 square feet. Redevelopment does not mean public road management activities, including any crack sealing, patching, coldplaning, resurfacing, reclaiming, or grading treatments used to maintain pavement, bridges, and unpaved roads. (10 V.S.A. § 1264 (10)).

Stormwater Program Summary – New Jersey

Program Name: New Jersey State Stormwater Management Program

Program Status:

- State-wide stormwater management rules, New Jersey Administrative Code (NJAC) 7:8;
- NJPDES Permit (No.NJ0141852); March 1, 2009.

Regulatory Authority:

NJ Stormwater Management rules are separate from the NJPDES program, but are considered to be an equivalent state program, and are implemented by:

- Local authorities through the Municipal Land Use Law (MLUL) and the Residential Site Improvement Standards (RSIS);
- Local authorities through NJPDES MS4 Permits
- The New Jersey Department of Environmental Protection through the review of permits issued by the Division of Land Use Regulation (DLUR) (Flood Hazard, Freshwater Wetlands, CAFRA, Waterfront Development and Coastal Wetlands).

Standard source: Technical criteria outlined in:

- Stormwater management rules, NJAC 7:8;
- New Jersey Stormwater Best Management Practices Manual (Regulatory Document).

Website references:

New Jersey Stormwater Program

<http://www.nj.gov/dep/stormwater/>

Stormwater Design Manual: New Jersey Department of Environmental Protection; njstormwater.org

http://www.njstormwater.org/bmp_manual2.htm

Regulations:

New Jersey Department of Environmental Protection; njstormwater.org; last amended April 19, 2010.

http://www.nj.gov/dep/rules/rules/njac7_8.pdf

Size Threshold: Land development projects that disturb greater than 1 acre; or increase impervious cover by 0.25 acre or more. (Regulations; 7:8-1.2 Definitions: Major Development, p. 6; 7:8-1.6 Applicability to major development, p. 9)

Limited geographic area where standards apply: Applies statewide

Significant exemptions: N/A

Post-Construction Standards for New Development:

On-Site Retention/Volume Control (Regulation 7:8-5.4 Erosion control, groundwater recharge and runoff quantity standards; p.28):

- Maintain 100 percent of the average annual pre-construction groundwater recharge volume for the site; or
- Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction for the two-year storm is infiltrated.

Stormwater Program Summary – New Jersey

Channel protection AND flood control requirement (7:8-5.4 Erosion control, groundwater recharge and runoff quantity standards):

Using hydrologic and hydraulic design calculations as defined in N.J.A.C. 7:8-5.6 demonstrate one of the following:

- post-construction runoff hydrographs for the 2, 10 and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events; or
- no increase, as compared to the pre-construction condition, in the peak runoff rates of stormwater leaving the site for the two, 10 and 100-year storm events and that the increased volume or change in timing of stormwater runoff will not increase flood damage at or downstream of the site.
- Design stormwater management measures so that the post-construction peak runoff rates for the two, 10 and 100-year storm events are 50, 75 and 80 percent, respectively, of the pre-construction peak runoff rates. The percentages apply only to the post-construction stormwater runoff that is attributable to the portion of the site on which the proposed development or project is to be constructed

Water Quality requirement (Regulation 7:8-5.5 Stormwater runoff quality standards):

- Reduce the post-construction annual average load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm by 80 percent of the anticipated load from the developed site.
- The water quality design storm is 1.25 inches of rainfall in two hours (a rainfall distribution for the 1.25 inch-2 hour storm is provided).
- List of BMPs and TSS removal credits is provided;
- Provision for BMPs in series is provided.

Flood control requirement:

See Channel Protection Requirement above

Redevelopment standard:

Redevelopment is defined as new impervious surface replacing an equal area of existing impervious surface on a project site, and requires:

- 50% TSS reduction or equivalent reduction to an existing BMP (if present);
- 80% TSS removal rate applies to the new impervious surfaces on the site.
- However, the water quality provisions of the Stormwater Management rules only apply if the impervious surface onsite increases by at least 0.25 of an acre.

Special criteria:

Pinelands Area

Pinelands Area Municipalities have a model ordinance that includes language for alternative calculation methods to the NRCS methodology that may be utilized to calculate runoff rates and volumes. This language is consistent with the Pinelands Comprehensive Management Plan at N.J.A.C. 7:50-6.84(a)6.i(1).

Stormwater Program Summary – New Jersey

Regional Stormwater Management Planning

Regional stormwater management planning addresses stormwater-related water quality, groundwater recharge and/or water quantity impacts of new and existing land uses in a regional stormwater management planning area. (Regulation 7:8-3; p. 13)

Non-structural Stormwater Management Strategies:

Nonstructural stormwater management strategies must be utilized to the maximum extent practicable to meet the erosion control, groundwater recharge, runoff quantity, and runoff quality standards. (7:8-5.3 Nonstructural stormwater management strategies; p. 27).

Performance verification of manufactured BMPs:

Verification of manufactured BMPs in meeting the water quality TSS performance goals is provided through the New Jersey Corporation for Advanced Technology (NJCAT).

<http://www.njcat.org/verification/index.cfm>

Offset /mitigation: N/A

Compliance: Compliance achieved through County and Municipal local program plan review, approval and inspections

Inspection & Maintenance/O&M: (7:8-5.8 Maintenance requirements)

Stormwater plan shall include a maintenance plan for the stormwater management measures, including preventative and corrective maintenance to be performed to maintain the function of the stormwater management measure, including repairs or replacement to the structure; removal of sediment, debris, or trash.

Municipalities may require the posting of a performance or maintenance guarantee in accordance with N.J.S.A. 40:55D-53.

Does development on agricultural land qualify as redevelopment? No

Definition of impervious surface: “Impervious surface” means a surface that has been covered with a layer of material so that it is highly resistant to infiltration by water.

Definition of predevelopment: N/A

Definition of new development: “Development” means the division of a parcel of land into two or more parcels, the construction, reconstruction, conversion, structural alteration, relocation or enlargement of any building or structure, any mining excavation or landfill, and any use or change in the use of any building or other structure, or land or extension of use of land, for which permission is required under the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq.

Definition of redevelopment: “Redevelopment” is defined as new impervious surface replacing an equal area of existing impervious surface on a project site: 50% TSS reduction or equivalent reduction to an existing BMP (if present);

“Urban Redevelopment Area” is defined as previously developed portions of areas:

Stormwater Program Summary – New Jersey

1. Delineated on the State Plan Policy Map (SPPM) as the Metropolitan Planning Area (PA1), Designated Centers, Cores or Nodes;
2. Designated as CAFRA Centers, Cores or Nodes;
3. Designated as Urban Enterprise Zones; and
4. Designated as Urban Coordinating Council Empowerment Neighborhoods.

Stormwater Program Summary – New York

Program Name: New York State Stormwater program

Program Status: Phase II Permit (New York SPDES Permit (Permit No: GP-0-10-002)) was issued in April 2010, and became effective on May 1, 2010

Regulatory Authority: Codes, Rules And Regulations Of The State Of New York, Title 6. Department of Environmental Conservation, Chapter X. Division of Water Resources, Subchapter A. General Article 3. State Pollutant Discharge Elimination System, Part 750. State Pollutant Discharge Elimination System (SPDES) Permits. New York Environmental Conservation Law, Article 17, Titles 7, 8 and Article 70.

Standard source: New York State Stormwater Manual; SPDES Permit

Website reference:

New York State Stormwater Program

<http://www.dec.ny.gov/chemical/8468.html>

2010 General Permit for Storm Water Discharge Associated with Small Municipal Separate Storm Sewer System

http://www.dec.ny.gov/docs/water_pdf/ms4gp2010.pdf

Codes, Rules And Regulations Of The State Of New York, Title 6. Department of Environmental Conservation, Chapter X. Division of Water Resources, Subchapter A. General Article 3. State Pollutant Discharge Elimination System, Part 750. State Pollutant Discharge Elimination System (SPDES) Permits
<http://government.westlaw.com/linkedslice/default.asp?SP=nycrr-1000>

New York Environmental Conservation Law, Article 17, Titles 7, 8 and Article 70

<http://public.leginfo.state.ny.us/LAWSSEAF.cgi?QUERYTYPE=LAWS+&QUERYDATA=@LLENV+&LIST=LA W+&BROWSER=BROWSER+&TOKEN=17130544+&TARGET=VIEW>

New York State Stormwater Manual

<http://www.dec.ny.gov/chemical/29072.html>

Size Threshold: New development and redevelopment projects that result in a land disturbance of one acre or greater, including projects less than one acre if they are part of a larger common plan of development or sale or if controlling such activities in a particular watershed is required by the Department (New York SPDES Permit No: GP-0-10-002, Part VII.A.5.a.ii.)

Limited geographic area where standards apply: Standards are applied statewide. Regulated MS4 areas designated as urbanized areas and expanded designated TMDL areas as listed in the Designation Criteria.

Significant exemptions: None

Post-Construction Standards for New Development:

On-Site Retention/Volume Control

Runoff reduction shall be achieved by infiltration, groundwater recharge, reuse, recycle, evaporation/evapotranspiration of 100 percent of the post-development water quality volumes (90 percentile storm = 0.8" – 1.2") to replicate pre-development hydrology by maintaining pre-

Stormwater Program Summary – New York

construction infiltration, peak runoff flow, discharge volume, as well as minimizing concentrated flow by using runoff control techniques to provide treatment in a distributed manner before runoff reaches the collection system. This requirement can be accomplished by application of on-site green infrastructure techniques, standard stormwater management practices with runoff reduction capacity, and good operation and maintenance. (New York State Stormwater Manual, Chapter 4, Section 4-3)

Channel protection requirement

Stream Channel Protection Volume Requirements (Cpv) are designed to protect stream channels from erosion. In New York State this goal is accomplished by providing 24-hour extended detention of the one-year, 24-hour storm event, remained from runoff reduction. Reduction of runoff for meeting stream channel protection objectives, where site conditions allow, is encouraged and the volume reduction achieved through green infrastructure can be deducted from CPv. Trout waters may be exempted from the 24-hour ED requirement, with only 12 hours of extended detention required to meet this criterion. (New York State Stormwater Manual, Chapter 4, Section 4-4)

Water Quality requirement

All design and plan review professionals must adhere to the design parameters that constitute the removal efficiency equivalent to the Department's performance criteria (80% TSS removal and 40% phosphorus removal). (New York State Stormwater Manual, Chapter 3, Section 3-3)

Flood control requirement

Overbank control requires storage to attenuate the post development 10-year, 24-hour peak discharge rate (Q_p) to predevelopment rates. (New York State Stormwater Manual, Chapter 4, Section 4-5)

100 Year Control requires storage to attenuate the post development 100-year, 24-hour peak discharge rate (Q_f) to predevelopment rates. (New York State Stormwater Manual, Chapter 4, Section 4-6)

Redevelopment standard

Redevelopment sites must first attempt to comply with all the post-construction management requirements outlined in the Manual. When physical constraints in a redevelopment situation are present, alternative stormwater management practices and sizing criteria may be used:

- Channel protection requirements are waived if impervious cover will not increase
- For water quality volume control, existing impervious cover should be reduced by 25%, 25% of the WQv should be treated or reduced, 75% of WQv should be treated by an alternative practice (acceptable technologies listed on the Department's website) or a combination of the above.

(New York State Stormwater Manual, Chapter 9)

Special criteria:

Lake George Stormwater Management

The Lake George Park Commission oversees and manages the unique resources of the "Lake George Park" by special authority and responsibility of New York State. The Lake George Park Commission has the authority to develop regulations to guide preparation of local stormwater management plans and regulatory programs. (Codes, Rules and Regulations of the State Of New York, Title 6. Department of

Stormwater Program Summary – New York

Environmental Conservation, Chapter IX). Independent Agencies within the Department, Subchapter A. Lake George Park Commission, Part 646. Substantive Regulations, Subpart 646-4. Stormwater Management)

Watershed Improvement Strategy Requirements

The state has developed criteria and design standards for specific watersheds with regards to phosphorus, pathogens, and nitrogen. The watershed areas are identified in the permit, and specific requirements for the post-construction stormwater management measures are detailed. In addition, the Watershed Improvement Strategy Requirements specifically call for the implementation of a retrofit program to address runoff from sites with regards to phosphorus, pathogens, and nitrogen. The Stormwater Management Manual has a chapter devoted to design standards for “enhanced phosphorus removal” for projects in phosphorus-limited watersheds.

(New York SPDES Permit No: GP-0-10-002, Part IX; New York State Stormwater Manual, Chapter 10)

Green Infrastructure

The SPDES permit includes a requirement for SWMP’s to utilize a combination of structural and non-structural management (according to standards defined in the most current version of the NYS Stormwater Management Design Manual) that will reduce the discharge of pollutants to the maximum extent practicable. In the development of the watershed plans, municipal comprehensive plans, open space preservation programs, local law, ordinances and land use regulation, covered entities must consider principles of Low Impact Development (LID), Better Site Design (BSD) and other Green Infrastructure practices to the MEP. (New York SPDES Permit: GP-0-10-002, Part VII.A.5.a.iv)

Offset /mitigation:

For redevelopment projects, under conditions where onsite treatment is not practicable, an appropriate off-site watershed improvement to offset the required level of control may be applied, in the presence of a regulated/permitted municipal stormwater management program. The off-site stormwater management approach is subject to applicable local agency approval for banking and trading of credits. (New York State Stormwater Manual, Chapter 9, 9-3)

Covered entities may include in the SWMP Plan provisions for development of a banking and credit system. MS4s must have an existing watershed plan based on which offsite alternative stormwater management in lieu of or in addition to on-site stormwater management practices are evaluated. Redevelopment projects must be evaluated for pollutant reduction greater than required treatment by the state standards. The individual project must be reviewed and approved by the Department. Use of a banking and credit system for new development is only acceptable in the impaired watersheds to achieve the no net increase requirement and watershed improvement strategy areas to achieve pollutant reductions in accordance with watershed plan load reduction goals. (New York SPDES Permit No: GP-0-10-002, Part VII.A.5.a.viii.)

Compliance: Compliance is achieved through submission of annual reports by the MS4 to the state.

Inspection & Maintenance/O&M: The responsibility for implementation of long term operation and maintenance of a post-construction stormwater management practice shall be vested with a responsible party by means of a legally binding and enforceable mechanism such as a maintenance agreement, deed covenant or other legal measure. This mechanism shall protect the practice from neglect, adverse alteration and/or unauthorized removal. The mechanism and Operation and Maintenance (O&M) plan must be included in the SWPPP. (New York State Stormwater Manual, Chapter 3, 3-5)

Stormwater Program Summary – New York

All covered entities must develop a post-construction stormwater program that ensures adequate long-term operation and maintenance of management practices identified in Part VII.5.a.vi by trained staff, including inspection to ensure that practices are performing properly. The inspection shall include inspection items identified in the maintenance requirements (NYS Stormwater Management Design Manual, SWPPP, or other maintenance information) for the practice. (New York SPDES Permit No: GP-0-10-002, Part VII.A.5.a.vii)

Does development on agricultural land qualify as redevelopment? No.

Definition of impervious surface: Those surfaces in the urban landscape that cannot effectively infiltrate rainfall consisting of building rooftops, pavement, sidewalks, driveways. Steep slopes and compact soils are not typically included as impervious cover. (New York State Stormwater Manual, glossary)

Definition of predevelopment: For redevelopment projects, pre-development means the preconstruction condition. This is based on the assumption that the site has been built out for a long period of time. For redevelopment projects that have completed the demolition phase (removal of impervious cover) and will not begin reconstruction for five (5) or more years, the pre-development condition shall be the post-demolition condition. (New York State Stormwater Manual, Chapter 9, 9-2)

Definition of new development: Any construction or disturbance of a parcel of land that is currently undisturbed or unaltered by human activities and in a natural state. (New York State Stormwater Manual)

Definition of redevelopment: Reconstruction or modification to any existing, previously developed land such as residential, commercial, industrial, institutional or road/highway, which involves soil disturbance. Redevelopment is distinguished from development or new development in that new development refers to construction on land where there had not been previous construction. Redevelopment specifically applies to constructed areas with impervious surface. (New York State Stormwater Manual, Chapter 9, 9-2)

Stormwater Program Summary – Delaware

Program Name: Delaware Sediment and Stormwater Program

Program Status: Proposed Regulations, current draft – May 2010; Existing regulations found at <http://regulations.delaware.gov/AdminCode/title7/5000/5101.shtml>

Regulatory Authority: State-wide stormwater regulation authorized by 7 Del. C. Ch. 40 and 7 Del. C. Ch. 60. 7 Del. C. Ch. 40 establishes Delaware’s sediment and stormwater program.

Standard source: 7 Del. C. Ch. 40 establishes Delaware’s sediment and stormwater program; Delaware Sediment and Stormwater Regulations

Website reference:

Delaware Sediment and Stormwater Program

<http://www.swc.dnrec.delaware.gov/Pages/SedimentStormwater.aspx>

Draft Stormwater Regulations:

<http://www.swc.dnrec.delaware.gov/Drainage/Documents/Sediment%20and%20Stormwater%20Program/Reg%20Revisions/2nd%20Draft%20May%202010%20-%20Clean%20Version.pdf>

Size Threshold: Land development projects that disturb greater than 5,000 square feet. (Current regulations part 3.1.2; Draft Regulations, p. 2)

Limited geographic area where standards apply: Applies statewide

Significant exemptions: N/A

Post-Construction Standards for New Development:

On-Site Retention/Volume Control:

Draft Regulations (p. 19): For the Resource Protection Event (the 1-year, 24-hour rainfall event – 2.7 inches), runoff from disturbed areas that were wooded or meadow in the pre-developed condition shall be reduced using runoff reduction practices to an equivalent wooded condition to the maximum extent practicable. All remaining disturbed areas shall employ runoff reduction practices to achieve an equivalent 0% effective imperviousness (to the maximum extent practicable).

Current Regulations (10.3.1): Goal of the Department is to ... mimic predevelopment hydrology, to the maximum extent practicable, in regards to the rate, volume and duration of flow.

Channel protection requirement:

See On-Site Retention/Volume Control

Water Quality requirement:

Draft Regulations (p. 19): Additional water quality treatment BMPs shall be provided if the runoff reduction requirements above are not sufficient to meet Total Maximum Daily Load (TMDL) requirements for the receiving water.

Stormwater Program Summary – Delaware

Current Regulations (10.3.5): Projects shall use “green technology BMPs as the preferred option. Water quality practices shall be designed to manage the rate and volume of flow from the 2.0” NRCS Type II rainfall event, up to a maximum of 1.0” of runoff.

Flood control requirement:

Draft Regulations (p. 19): Runoff from the 10-year, 24-hour rainfall event shall first be reduced by runoff reduction practices. Quantity management shall be provided for any runoff that is not reduced such that there is no adverse impact to downstream properties, channels, and structures.

Current Regulations (10.3.4): Projects shall not exceed the post-development peak discharge for the 2 and 10 year frequency storm events at the pre-development peak discharge rates for the 2 and 10 year frequency storm events (also the 100 year frequency storm event for projects in New Castle County north of the Chesapeake and Delaware Canal)

Redevelopment standard:

Draft Regulations (p. 18): Projects are exempt from the above regulations if they are limited to reconstruction of existing paved areas, re-grading and replacement of existing pervious areas, or rebuilding or repairing of structures damaged by fire, flood, wind, or other natural disaster and where the disturbed area will return to the original hydrologic condition and land cover at the conclusion of the project.

Draft Regulations (p. 21): Runoff from redeveloped areas that were wooded or meadow in the pre-developed condition shall be reduced using runoff reduction practices to an equivalent wooded condition. All remaining redeveloped areas shall employ runoff reduction practices to achieve a 20% reduction in the effective imperviousness based on the pre-developed condition.

Current Regulations: No separate redevelopment standard

Special criteria:

Stormwater Management Plan Design: The developer must certify that all personnel responsible for daily oversight of the construction site and guidance of construction personnel have attended a state-sponsored Contractor Training Program. (Draft Regulations, p. 22)

Offset /mitigation: An offset shall be provided for any portion of the R_{Pv} that does not meet the minimum reduction requirements or that is not sufficient to meet TMDL requirements. An offset may include trading, banking, fee-in-lieu, or other similar program that serves as compensation when the requirements cannot be reasonably met on an individual project basis

Compliance: Compliance is achieved through review of site plans by the State or by the delegated agencies with a 3-step process. Step 1 of the plan approval process is scheduling and conducting the project application meeting. Step 2 of the plan approval process is submission of the preliminary Sediment and Stormwater Management Plan. Step 3 of the plan approval process is submission of the Sediment and Stormwater Management Plan (Draft Regulations, p. 12)

Inspection & Maintenance/O&M: The site owner is responsible for all maintenance of permanent stormwater management systems. The state or delegated agency may conduct maintenance reviews to verify the condition of the systems. (Draft Regulations, p. 28)

Stormwater Program Summary – Delaware

Does development on agricultural land qualify as redevelopment? No. (Draft Regulations, p. 9)

Definition of impervious surface: “Impervious surface” means a hard surface which either prevents or retards the entry of water into the soil. (Draft Regulations, p. 7)

Definition of new development: N/A

Definition of predevelopment: N/A

Definition of redevelopment: “Redevelopment”, including brownfield development, means a change to existing or improved property, including but not limited to the demolition or building of structures, filling, grading, paving, or excavating. Ordinary maintenance activities, remodeling of existing buildings, resurfacing of paved areas, and exterior changes or improvements are typically not considered redevelopment activities.

Stormwater Program Summary – Maryland

Program Name: Maryland State Stormwater Management Program

Program Status: Existing Regulations, Guidebook Revised in May 2009 (originally issued October 2000)

Regulatory Authority: State-wide stormwater regulation; State-wide stormwater manual (regulatory)

Standard Source: Code of Maryland Regulations (COMAR) 26.17.02; Maryland Stormwater Design Manual

Website references:

Maryland Stormwater Program

<http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/SedimentandStormwaterHome/Pages/Programs/WaterPrograms/SedimentandStormwater/home/index.aspx>

Stormwater Design Manual:

http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/MarylandStormwaterDesignManual/Pages/Programs/WaterPrograms/SedimentandStormwater/stormwater_design/index.aspx

Regulations:

<http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/Documents/www.mde.state.md.us/assets/document/26.17.02.%202009.pdf>

Size Threshold: Land development projects that disturb greater than 5,000 square feet. (Regulations, 26.17.02.05B(2), p. 12)

Limited geographic area where standards apply: Applies statewide

Significant exemptions: None.

Post-Construction Standards for New Development:

On-Site Retention/Volume Control (enacted 2000, significant revisions in 2009):

Accepted Environmental Site Design (ESD) practices as defined in the Stormwater Design Manual must be implemented to manage the stormwater quality volume, defined as the runoff volume from the 1-inch rain event in the MD Eastern Rainfall Zone and 0.9" in the MD Western Rainfall Zone. (See channel protection requirements as well). (Manual, p. 5.18)

Channel protection requirement (enacted 2000, significant revisions in 2009):

Environmental Site Design (ESD) must be implemented to the Maximum Extent Practicable (MEP) to mimic predevelopment hydrologic conditions, defined as woods in good condition, when subjected to a 1-year 24-hour design rain event. This means that ESD practices must provide retention storage sufficient to reduce the runoff depth of the proposed development to that of woods in good condition. Any channel protection volume remaining after the implementation of ESD to the MEP can be managed utilizing the traditional strategies and practices designed in accordance with the State Manual (such as detention ponds, filtration or other treatment structures). (Manual, p. 5.18)

Stormwater Program Summary – Maryland

Water Quality requirement (enacted 2000):

40% phosphorous and 80% TSS reduction required. Assumed to be met if on-site volume control requirements are met. (Manual, p. 1.13)

Flood control requirement (enacted 2000):

Optional criteria applied at the discretion of the appropriate plan review/approval authority to control the developed condition peak rate of discharge from the 10-year 24-hour design storm event to the pre-development rate. (Manual, p. 2.1)

Redevelopment standard:

Any land development project disturbing 5,000 square feet or more where existing land use is commercial, industrial, institutional, or multifamily residential and existing site impervious area exceeds 40 percent must achieve one of the following:

- a) Reduce existing impervious area within the limit of disturbance by at least 50 percent according to the Design Manual;
- b) Implement ESD to the MEP to provide water quality treatment (1" or 0.9") for at least 50 percent of the existing impervious area within the limit of disturbance; or
- c) Use a combination of both a) and b) for at least 50 percent of the existing site impervious area.

Alternative measures may be allowed if the applicant successfully demonstrates implementation of the above to the MEP. (Regulations, 26.17.02.02B(29), p. 6; 26.17.02.05D, p. 13)

Special criteria:

Stormwater Management Plan Design: MD Stormwater Act of 2007 requires a comprehensive process at the county and municipal level for approving grading and sediment control plans and stormwater management plans. This is to include a Concept Design and Review Phase, a Site Development and Review Phase, and a Final Plan Design and Review Phase. (Regulations, 26.17.02.04, p. 11)

Groundwater Recharge: The groundwater recharge volume is a fraction of the water quality volume based on the pre-developed hydrologic soil group. Therefore, ESD must be implemented to manage both groundwater recharge and water quality volumes. (Manual, p. 2.1)

Offset /mitigation: MDE has developed a *Phase I Point Source Nutrient Trading Policy* for point source discharges. Draft *Phase II A* and *Phase II B Guidelines* that govern the generation and purchase of Agricultural Nonpoint Nutrient Credits have been developed. No program exists for urban nonpoint nutrient trading or offset and/or in-lieu fee program. (Maryland Nutrient Trading webpage)

Compliance: Compliance is achieved through review of site plans by each localities stormwater management program. (Regulations, 26.17.02.04, p. 11)

Inspection & Maintenance/O&M: Maintenance and Inspection provisions are required by state regulation to be incorporated into local stormwater programs and ordinances. Property owners are responsible for maintenance of all stormwater practices, and the municipality is responsible for ensuring compliance through periodic inspections (once during the initial year of operation and at least once every three years thereafter with corresponding documentation). (Regulations, 26.17.02.11A, p. 29)

Does development on agricultural land qualify as redevelopment? No. (Regulations, 26.17.02.02B(29), p. 6)

Stormwater Program Summary – Maryland

Definition of impervious surface: “Impervious area” means any surface that does not allow stormwater to infiltrate into the ground. (Regulations, 26.17.02.02B(20), p. 5) A more detailed definition is provided in the Stormwater Design Manual: Those surfaces in the landscape that cannot infiltrate rainfall consisting of building rooftops, pavement, sidewalks, driveways, etc. (Manual, p. G.6)

Definition of new development: N/A

Definition of predevelopment: N/A

Definition of redevelopment: “Redevelopment” means any construction, alteration, or improvement exceeding five thousand square feet of land disturbance performed on sites where existing land use is commercial, industrial, institutional, or multifamily residential.

Additional references:

Maryland Nutrient Trading: <http://www.mda.state.md.us/nutrad/ntwhatis.php>

Stormwater Program Summary – Pennsylvania

Program Name: Pennsylvania Stormwater Management Program

Program Status: Existing regulations and NPDES permit. Expiration of state’s current NPDES Phase II MS4 general permit (PAG-13) has been extended from March 9, 2010 to March 9, 2011.

Regulatory Authority: Stormwater Management Act of 1978 (Act 167) is original authority for statewide stormwater management. The NPDES MS4 permit regulates stormwater in MS4s. The Comprehensive Stormwater Management Policy (established 2002) is a statement to integrate the state’s various stormwater management programs.

- Stormwater Management Act of 1978 (Act 167) requires all counties to develop watershed-based stormwater management plans (as funding becomes available) and requires municipalities to adopt and implement ordinances to regulate development consistent with these plans. These municipal level stormwater ordinances, when developed, are intended to provide the mechanism for meeting the Commonwealth’s regulatory requirements. A model ordinance was developed by DEP for use by municipalities across the state.

Standard source: Act 167 and Pennsylvania Stormwater Best Management Practices manual (non-regulatory), developed in 2006.

Website references:

Pennsylvania Stormwater Program

<http://www.portal.state.pa.us/portal/server.pt?open=514&objID=554331&mode=2>

1978 Stormwater Management Act (Act 167):

<http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-72110/3930-BK-DEP0121.pdf> :

MS4 Permit: <http://www.elibrary.dep.state.pa.us/dsweb/GetRendition/Document-75300/html>

Comprehensive Stormwater Management Policy, DEP Policy No. 392-0300-002:

<http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-48415/392-0300-002.pdf>

Pennsylvania Stormwater Best Management Practices Manual (2006):

<http://www.elibrary.dep.state.pa.us/dsweb/View/Collection-8305>

Size Threshold: MS4 permit applies to land development disturbances of one acre or more, including projects less than one acre that are part of a larger common plan of development or sale.

Limited geographic area where standards apply: The NPDES MS4 Permit applies to regulated MS4s statewide.

Act 167 applies to “designated watersheds” across the whole state. The designated watersheds were approved by the Environmental Quality Board July 15, 1980. Local watershed-based stormwater plans and ordinances dictate specific standards in those watershed areas.

Significant exemptions: None.

Post-Construction Standards for New Development:

Stormwater Program Summary – Pennsylvania

The following post-construction design standards are contained in the state’s BMP manual which is not deemed regulatory by the state, but which is deemed regulatory by many localities via their local stormwater ordinances.

On-Site Retention/Volume Control:

Volume Control Guideline 1 (Sec. 3.3.3) – Applicable to any size of land disturbance.

- Do not increase post-development runoff volume for all storms equal to or less than the 2-year/24-hour stormwater event;
- Pre-development non-forested pervious areas must be considered meadow in good condition

Volume Control Guideline 2 (Sec. 3.3.4) – Not applicable to land disturbances of greater than 1 acre or for development projects that require design of stormwater storage facilities.

- Capture at least the first 2" of runoff from all contributing impervious surfaces.
- At least the first 1" of runoff from new impervious surfaces shall be permanently removed from the runoff flow.
- In all cases, the first 0.5" of the permanently removed runoff should be infiltrated.

Channel protection requirement: See Volume Control Guideline 1 above.

Water Quality requirement: Achieve an 85% reduction in Total Suspended Solids (TSS), an 85% reduction in phosphorus loads, and a 50% reduction in NO₃-N loads (Sec. 3.5).

Flood control requirement: Do not increase the peak rate of discharge for the 1-year through 100-year event; as necessary, provide additional peak rate control as required by applicable Act 167 plans (Sec. 3.4).

Redevelopment standard:

Using Volume Control Guideline 1 to control runoff, 20% of pre-development impervious area shall be considered meadow in good condition in the model for existing conditions (BMP Manual, Sec. 3.3.3).

Special criteria: According to StormwaterPA.org, Pennsylvania’s regulatory standards for post construction stormwater discharges are designed to meet the anti-degradation requirements of Chapter 93 Water Quality Standards:

- *In Areas Tributary to High Quality and Exceptional Value (Special Protection) Waters*—there shall be no degradation of existing or designated stream quality through a change in post construction stormwater runoff volume, rate and quality.

Offset /mitigation: N/A

Compliance: Many Act 167 stormwater programs are administered by conservation districts. MS4 jurisdictions review site plans for compliance with NPDES and local ordinance stormwater rules.

Inspection & Maintenance/O&M: MS4s must ensure long-term operation and maintenance of required stormwater management BMPs.

Does development on agricultural land qualify as redevelopment? No.

Stormwater Program Summary – Pennsylvania

Definition of impervious surface: A surface that prevents the infiltration of water into the ground. Impervious surfaces (or covers) shall include, but not be limited to, roofs, additional indoor living spaces, patios, garages, storage sheds and similar structures, and any new streets or sidewalks. Decks, parking areas, and driveway areas are not counted as impervious areas if they do not prevent infiltration (Model Ordinance, pg. 12).

Definition of Predevelopment (if used in regs): Not officially defined.

Definition of New Development: Not officially defined.

Definition of Redevelopment: Not officially defined.

Additional references:

Pennsylvania Model Stormwater Ordinance:

<http://www.stormwaterpa.org/assets/media/regulatory/363-0300-003.pdf>

StormwaterPA website: <http://www.stormwaterpa.org/home.html>

Stormwater Program Summary – Virginia

Program Name: Virginia Stormwater Management Program (VSMP/NPDES)

Program Status: Existing Regulations, Undergoing significant updates to coincide with State re-issuance of VSMP (NPDES) Construction General Permit (date uncertain).

Regulatory Authority:

- Virginia stormwater law and regulations were amended dramatically in 1995 to combine the existing State stormwater program and the State NPDES permit program into one program: the Virginia Stormwater Management Program (VSMP/NPDES) Permit Regulations: Virginia Administrative Code (VAC) 4VAC50-60;
- The technical criteria is also required for certain localities (tidal Virginia) by the Chesapeake Bay Preservation Area Designation and Management Regulations, 9VAC10-20;

Standards source: Technical criteria outlined in:

- VSMP Regulations Part II (4VAC50-60-40); Adopted by Virginia Soil and Water Conservation Board on May 24, 2011 but will not be implemented until a new construction general permit is issued in Jul 2014 (the regulation must also go through additional approvals before 2014, so it is referred to as a proposed regulation below).
- Virginia Stormwater Management Handbook (published in 1998); undergoing significant updates to coincide with proposed regulations (date uncertain); Handbook is guidance, intended to be referenced as regulation.

Website references:

Virginia Stormwater Program

http://www.dcr.virginia.gov/stormwater_management/stormwat.shtml

Stormwater Design Manual:

http://www.dcr.virginia.gov/soil_and_water/stormwat.shtml#vswmhnbk

Regulations: http://www.dcr.virginia.gov/soil_and_water/documents/vaswmregs.pdf

Size Threshold: Land development projects that are regulated by §10.1-603.8 (Construction General Permit) of the Code of Virginia (Regulations 4VAC50-60-30, p. 16):

- Statewide: land development projects that disturb greater than 1 ac

Limited geographic area where standards apply:

- Regulated MS4 area (either under the operational control of the local government MS4 or VDOT MS4).
- Condition of Construction General Permit statewide.

Significant exemptions: N/A

Post-Construction Standards for New Development:

On-Site Retention/Volume Control: N/A

Note: No current requirement, however proposed regulations (due to be effective no later than July 1, 2014) require compliance with a site-based TP load limit through the use of volume

Stormwater Program Summary – Virginia

reduction and/or pollutant removal BMPs. Otherwise – no prescriptive volume reduction or retention standard is proposed.

Channel protection requirement:

Proposed Regulation (*due to be effective no later than July 1, 2014*) requires control of the 1-yr storm as a function of the condition of the downstream channel:

1. *Manmade: Peak rate reduced to the non-erosive capacity or as required for natural system ;*
2. *Restored: Peak rate reduced to the non-erosive capacity or as required for natural system; or*
3. *Natural System: Peak rate Reduced to 20% less than the pre-developed rate multiplied by the ratio of the pre- to post-developed runoff volume.*

Current regulations: If the post developed condition peak discharge will cause erosion of the downstream channel one of the following apply (Regulation 4VAC50-60-70. Stream channel erosion, p. 19):

- Detention of the post-developed condition peak discharge for the 2-year 24-hour storm back to the pre-developed rate; or
- 24 hour extended detention of the runoff from the 1-year 24-hour storm; or
- A combination of detention, channel improvements, or other measures satisfactory to the plan approving authority.

Water Quality requirement:

Proposed regulations (due to be effective no later than July 1, 2014) require runoff volume reduction to the extent needed to meet a site based TP load limit of 0.41 lb/ac/yr using simple method and a 0.26 mg/l TP concentration. Compliance is possible using a traditional pond/wetland design that achieves little to no runoff volume reduction (or retention). TP is surrogate parameter for compliance; reductions in TN and TSS are also reported but not part of the compliance formula.

Current regulations: Reduction of annual Total Phosphorus load to a baseline load established as that derived from 16% impervious cover using the simple method. Total Phosphorus is considered the keystone pollutant representing all urban pollutants (TSS, TN, etc.). Select BMPs and corresponding pollutant removal credits are provided in the regulations (Regulation 4VAC50-60-60. Water quality, p. 18)

Flood control requirement (enacted 2000):

Reduction of the post-developed peak discharge from the 10-year 24-hour design storm to pre-developed rate, (Regulation 4VAC50-60-80. Flooding, p. 20)

Redevelopment standard:

Proposed regulations (due to be effective no later than July 1, 2014) Sites ≥ 1 ac must reduce existing condition TP load by 20%. Less than 1 ac (regulated by state law independent of permit) required to reduce TP load by 10%.

Current regulations: Land development where the existing impervious cover is greater than 16% requires a 10% reduction in Total Phosphorus load from the existing condition (Regulation 4VAC50-60-60. Water quality, p. 18). Flooding and Channel protection criteria also apply as noted above.

Stormwater Program Summary – Virginia

Special criteria: N/A

Offset/Mitigation: Offset fees and nutrient trading are not part of the existing program. However, the regulation update will include provisions for offset fees, offsite compensatory treatment, nutrient trading, or other form of offsite mitigation.

Compliance:

- Compliance achieved through plan review, approval and inspections where local program is required: tidal Virginia; MS4 communities (or adopted at local option);
- Non-tidal portion of VA, and non-MS4 localities are managed through state implementation of Construction General Permit: no plan review, only random audit inspections of SW construction, and no mechanism to enforce long term BMP maintenance after NOT).

Inspection & Maintenance/O&M: Maintenance and Inspection provisions are required by state regulation to be incorporated into local stormwater programs and ordinances. Property owners are responsible for maintenance of all stormwater practices, and the municipality is responsible for ensuring compliance through periodic inspections (once during the initial year of operation and at least once every three years thereafter with corresponding documentation). (Regulations, 4VAC50-60-150. Administrative procedures: maintenance and inspections.)

Does development on agricultural land qualify as redevelopment? No. (Regulations, 4VAC50-60-60. Water quality, p. 18)

Definition of impervious surface: "Impervious cover" means a surface composed of any material that significantly impedes or prevents natural infiltration of water into soil. Impervious surfaces include, but are not limited to, roofs, buildings, streets, parking areas, and any concrete, asphalt, or compacted gravel surface (Regulations 4VAC50-60-10. Definitions).

Definition of predevelopment: "Pre-development" refers to the conditions that exist at the time that plans for the land development of a tract of land are approved by the plan approval authority. Where phased development or plan approval occurs (preliminary grading, roads and utilities, etc.), the existing conditions at the time prior to the first item being approved or permitted shall establish pre-development conditions.

Definition of new development: "Land disturbance" or "land-disturbing activity" means a manmade change to the land surface that potentially changes its runoff characteristics including any clearing, grading, or excavation associated with a construction activity regulated pursuant to the federal Clean Water Act, the Act, and this chapter.

Definition of redevelopment: N/A

Additional references:

VA Stormwater BMP Clearinghouse: <http://www.vwrrc.vt.edu/swc>

Final MS4 General Permit: <http://www.dcr.virginia.gov/documents/lrMS4Final.pdf>

Final Construction General Permit: <http://www.dcr.virginia.gov/lr4a.shtml>

Chesapeake Bay Watershed Nutrient Credit Exchange <http://www.dcr.virginia.gov/lr6.shtml>

Stormwater Program Summary – Washington, DC

Program Name: District of Columbia Stormwater Program

Program Status: In 2009, the District of Columbia Department of the Environment (DDOE) proposed [amendments to the District's regulations](#) governing soil erosion, sediment control, and stormwater management (District of Columbia Municipal Regulations Title 21, Chapter 5). In addition to establishing a new set of District-wide stormwater management requirements, the amendments would codify enhanced stormwater management standards for private projects within the Anacostia Waterfront Corporation Development Zone. Specifically, these amendments will promote the use of low impact development practices such as rain gardens, cisterns, green roofs, and other green technology best management practices to control and treat stormwater. In the Anacostia Waterfront Corporation Development Zone, surface water runoff volume must be reduced by one (1) inch, and an additional two (2) inches treated; in the rest of the District, three quarters of the total volume of surface water runoff must be reduced, and the remaining one quarter treated.

A draft MS4 permit was released for public comment and review in April 2010. The final permit has not been issued. This case study includes pertinent information regarding existing District stormwater standards and the standards proposed in the draft permit. The draft permit does not reflect any changes EPA has made based upon receipt of the public comments or other policy decisions made since the release of the draft.

Authority: The regulations governing stormwater management, erosion and sediment control, and floodplain management are outlined in

Standard source: Chapter 5 of Title 21, and Chapter 31 of Title 20, District of Columbia Municipal Regulations (DCMR) and DC Stormwater Guidebook.

Website references:

DC Stormwater Program

<http://ddoe.dc.gov/ddoe/cwp/view,a,1209,q,494833.asp>

Chapter 5 of Title 21, and Chapter 31 of Title 20, District of Columbia Municipal Regulations (DCMR)

http://os.dc.gov/os/lib/os/info/odai/title_21/title21_chapter5.pdf

Size threshold: A stormwater management plan is required for 5,000 square feet of land disturbance. For any proposed construction or development located entirely or partially within any identified Special Flood Hazard Area (SFHA), a floodplain development plan and study are required.

Limited geographic area where standards apply: District-wide

Significant exemptions: None

Post-Construction Standards [Existing Regulations]:

On-Site Retention/Volume Control: None included in the existing regulations.

Channel protection requirement: The existing regulations require that a developer must maintain the post-development peak discharges for a twenty-four hour, two- and fifteen-year frequency storm event at a level that is equal to or less than the respective, twenty-four hour, two- and fifteen-year pre-

Stormwater Program Summary – Washington, DC

development peak discharge rate through storm water management practices that control the volume, timing and rate of flows.

Water Quality requirement: Though not in the regulations, the DDOE Stormwater Guidebook uses the following formula for determining the volume of water to be treated.

$$V_w = R \times I_a / 12$$

V_w = water quality volume to be treated, in feet³
 R = runoff depth, in inches, as follows:

- $R = 0.5$ in for parking lots, city streets, and high speed roads
- $R = 0.3$ for rooftops, sidewalks, and pedestrian plaza areas

I_a = impervious area, in feet²

Flood control requirement: Where any development is planned in which the stormwater runoff will increase the downstream discharge into an area designated as a flood hazard watershed, as delineated on the National Flood insurance Flood hazard Boundary Maps (FHBM), the developer shall complete an analysis of the downstream peak discharge for a one-hundred year frequency storm event, and shall install the appropriate controls to avoid exceeding this peak discharge.

Redevelopment standard: Same as for new development.

Special criteria: None.

Offset/mitigation: None.

Post-Construction Standards [Proposed MS4 Permit]:

On-Site Retention/Volume Control: Contains the following numeric performance standards for stormwater retention:

- Non-Federal Facilities: Choice between: (1) an on-site retention standard of 1.2 (90% capture); or (2) design to achieve retention of the predevelopment runoff volume of stormwater from a 24-hour storm for the 1, 2, 10 and 100 year storm events.
- Federal Facilities: Choice between: (1) an on-site retention standard of 1.7 " (95% capture); or (2) design to achieve retention of the predevelopment runoff volume of stormwater from a 24-hour storm for the 1, 2, 10 and 100 year storm events.

Channel protection requirement: None.

Water Quality requirement: None.

Flood control requirement: None.

Redevelopment standard: Same as for new development.

Stormwater Program Summary – Washington, DC

Special criteria: The permit requires the District to retrofit existing impervious surface. The DC Retrofit Program shall manage runoff from 18,000,000 square feet of impervious surfaces over the Permit term. A minimum of 3,600,000 square feet of this objective must be in transportation rights-of-way.

Offset/mitigation: Requires the District to develop an off-site mitigation program and fee-in-lieu provisions to be used when projects cannot meet the above stormwater standards on site.

Compliance: The District Department of Environmental Services reviews sites plans to ensure standards are included.

Inspection & Maintenance/O&M: The District inspects SWM facilities for maintenance. A Declaration of Covenant for SWM is required for residential and business property owners. The covenant states that the owner must provide a schedule for maintenance, inspect the device periodically, and be responsible for any maintenance.

Does development on agricultural land qualify as redevelopment? N/A

Definition of impervious surfaces: N/A

Definition of New Development: N/A

Definition of Predevelopment: N/A

Definition of Redevelopment: N/A

Stormwater Program Summary – West Virginia

Program Name: West Virginia Stormwater Program

Program Status: Existing MS4 Stormwater Permit (Permit No. WV0116025). Issued on July 22, 2009, effective date July 22, 2009, expiration date July 22, 2014.

Regulatory Authority: MS4 permit

Standard source: MS4 Permit

Website references:

West Virginia Stormwater

<http://www.dep.wv.gov/WWE/Programs/stormwater/MS4/permits/Pages/default.aspx>

Size Threshold: Projects that disturb a land area one acre or greater, including projects less than one acre that are part of a larger common plan of development or sale.

Limited geographic area where standards apply: Only in the regulated MS4 areas (urbanized areas)

Significant exemptions: None.

Post-Construction Standards:

On-Site Retention/Volume Control:

Keep and manage on site the first one inch of rainfall from a 24-hour storm preceded by 48 hours of no measurable precipitation.

Runoff volume reduction can be achieved by canopy interception, soil amendments, evaporation, rainfall harvesting, engineered infiltration, extended filtration and/or evapotranspiration and any combination of the aforementioned practices. This first one inch of rainfall must be 100% managed with no discharge to surface waters, except when the project is eligible for a reduction based on the type of development (see redevelopment standard below) or when off-site mitigation or payment in lieu is used (see off-ramps/mitigation below). (Permit part C.b.5.a.ii.A.1)

Channel protection requirement: No separate standard – see on-site retention standard below.

Water Quality requirement: No separate standard – see on-site retention standard below.

Flood control requirement: None

Redevelopment standard:

A reduction of 0.2 inches from the one inch on-site retention standard may be applied for redevelopment projects. (Permit part C.b.5.a.ii.A.3) Additional 0.2 inch reductions (up to a maximum reduction of 0.75 inches) may be applied for:

- Brownfield redevelopment
- High density (>7 units per acre)
- Vertical Density, (Floor to Area Ratio (FAR) of 2 or >18 units per acre)
- Mixed use and Transit Oriented Development (within ½ mile of transit)

Stormwater Program Summary – West Virginia

Special criteria: None

Offset/mitigation: (Permit part C.b.5.a.ii.A.4) For projects that cannot meet 100% of the runoff reduction requirement on site, two alternatives are available: off-site mitigation and payment in lieu. Both alternatives are managed by the MS4, which must first develop a program and criteria before the alternative can be used. Cost cannot be only factor in determining whether projects cannot meet standard.

These alternatives are available, in combination or alone, for up to 0.6 inches of the original obligation at a 1:1.5 ratio, i.e., mitigation or payment in lieu must be for 1.5 times the amount of stormwater not managed on site. If, as demonstrated to the permittee, it is technically infeasible to manage on site a portion of all of the remaining 0.4 inches, off site mitigation or payment in lieu will be applied at a 1:2 ratio for that portion.

- *Off-site mitigation.* Runoff reduction practices may be implemented at another location in the same sewershed/watershed as the original project, approved by the permittee. Mitigation must be for retrofit or redevelopment projects, and cannot be applied to new development.
- *Payment in lieu.* Payment in lieu may be made to the permittee, who will apply the funds to a public stormwater project.

Compliance: Standards are reviewed by the MS4 during site plan review at the local level.

Inspection & Maintenance/O&M:

- Maintenance agreement and maintenance plan required for all approved stormwater management practices. Verification of maintenance must be provided by property owners. (Permit part C.b.5.a.ii.C)
- MS4 required to inspect stormwater BMPs at least once every five years (Permit part C.b.5.a.ii.E)

Does development on agricultural land qualify as redevelopment? No.

Definition of impervious surfaces: Permit defined “accessory impervious surfaces” as “those additional impervious surfaces that are created to service new development; including roads, shopping centers, office parks and parking lots. (Appendix B, page 28 of permit)

Definition of New Development: N/A

Definition of Predevelopment: N/A

Definition of Redevelopment: N/A

Stormwater Program Summary – Alabama

Program Name: Alabama Stormwater Program

Program Status: MS4 permit issued January 2011; Existing Regulations

Regulatory Authority: NPDES Phase II MS4 Permit and state regulation: Code of Alabama 1975, §§ 22-22-1 to 22-22-14 and §§ 22-22A-1 to 22-22A-16 et seq., as amended.

Standard source: Phase II MS4 Permit

Website references:

Alabama Stormwater Program

<http://www.adem.state.al.us/programs/water/municipal.cnt>

Regulations:

<http://www.adem.state.al.us/alEnviroRegLaws/files/Division6Vol1.pdf>

Phase II MS4 Permit:

<http://www.adem.state.al.us/programs/water/permits/ALR040000StormwaterDischarges.pdf>

Size Threshold: Projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the Permittee's regulated MS4. (Permit, p. 15)

Limited geographic area where standards apply: Only in the regulated MS4 areas (urbanized areas).

Significant exemptions: None.

Post-Construction Standards for New Development:

On-Site Retention/Volume Control: None.

Channel protection requirement: None.

Water Quality requirement: Permit requires MS4 to ensure "the volume and velocity of pre-construction stormwater runoff is not significantly exceeded. A design rainfall event with an intensity of up to that of a 2-yr, 24-hr storm event shall be the basis for the design and implementation of post-construction BMPs."

Flood control requirement: None.

Redevelopment standard: None

Special criteria: None

Offset /mitigation: There is no program for mitigation.

Compliance: MS4s must establish and use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State law. (Permit, p. 15)

Stormwater Program Summary – Alabama

Inspection & Maintenance/O&M: MS4s must include how they will ensure the long-term operation and maintenance (O&M) of the selected BMPs in the SWMP. (Permit, p. 16)

Does development on agricultural land qualify as redevelopment? Not addressed.

Definition of impervious surface: Impervious means not allowing infiltration. (Manual, p. A.56)

Definition of New Development: N/A

Definition of Predevelopment: N/A

Definition of Redevelopment: N/A

Stormwater Program Summary – Florida

Program Name: Florida State Stormwater Program

Program Status: Existing Programs:

- First state rules implemented in February 1982. Changes to BMP design criteria done regularly through 1994 when Environmental Resource Permitting program implemented which integrates stormwater quantity, stormwater quality, and wetlands protection within one permit. Currently have five sets of rules implemented cooperatively by Florida Department of Environmental Protection and five regional water management districts. Working on new statewide stormwater treatment rule that will be based on a performance standard of nutrient load reduction. Likely will be 2012 before new rule is adopted
- NPDES Phase I and Phase II MS4 permits reference the state stormwater rules as an equivalent state program for stormwater discharges from new development and redevelopment.
- Florida DEP implements the FL NPDES stormwater program. The NPDES stormwater permitting program is separate from the State's stormwater/environmental resource permitting (ERP) programs. The ERP program is implemented by the FL Department of Environmental Protection (DEP) and Water Management Districts (WMD), and local programs. The ERP Stormwater Program is considered an equivalent state program for the NPDES MCM 5. (Local stormwater/water quality programs may adopt their own regulations and local permitting requirements) is jointly administered by DEP and the five regional WMDs.

Regulatory Authority:

- State Stormwater: Chapter 373, Part IV and Chapter 403, Florida Statute (F.S.) combine wetland resource permitting and stormwater management permitting into an “Environmental Resource Permit” regulation. This is a technology-based rule which relies upon specific BMP design criteria that are presumed to achieve the minimum stormwater treatment standards specified in Ch. 62-40.432 F.A.C (Water Resource Implementation Rule).
- NPDES Stormwater: Section 403.0885, F.S. and implementing regulations such as Chapter 62-624, F.A.C. for MS4 permits

Standard source:

Florida Stormwater Erosion and Sedimentation Control Inspectors Manual, July 2008

<http://www.dep.state.fl.us/water/nonpoint/docs/erosion/erosion-inspectors-manual.pdf>

Post-Construction Stormwater Management in New Development and Redevelopment

<http://www.dep.state.fl.us/water/wetlands/erp/index.htm>

Draft 2010 Environmental Resource Permit Stormwater Quality Applicant’s Handbook

http://www.dep.state.fl.us/water/wetlands/erp/rules/stormwater/docs/ah_rule_draft_031710.pdf

Applicant's Handbooks for each of the five WMDs and DEP:

<http://www.dep.state.fl.us/water/wetlands/erp/wmd.htm>

Florida Development Manual: A Guide to Sound Land and Water Management

http://www.dep.state.fl.us/water/nonpoint/docs/nonpoint/Stormwater_Guide.pdf

State of Florida Erosion & Sediment Control Designer & Reviewer Manual

<http://stormwater.ucf.edu/publications/RevisedDesignerManual.pdf>

Website references:

DEP MS4 Permit Program:

http://www.dep.state.fl.us/water/stormwater/npdes/MS4_1.htm

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Urban Stormwater Program Overview:

<http://www.dep.state.fl.us/water/nonpoint/urban1.htm>

DEP/WMD Environmental Resource Permit Program:

<http://www.dep.state.fl.us/water/wetlands/erp/index.htm>

Regulations:

State ERP regulations:

<http://www.dep.state.fl.us/water/wetlands/erp/index.htm>

New Statewide Stormwater Treatment Rule (Draft)

<http://www.dep.state.fl.us/water/wetlands/erp/rules/stormwater/index.htm>

NPDES MS4 Phase I (Chapter 62-624, F.A.C)

<http://www.dep.state.fl.us/legal/rules/shared/62-624.pdf>

NPDES MS4 Phase II

http://www.dep.state.fl.us/water/stormwater/npdes/docs/Phase_II_MS4_GP.pdf

Size Threshold: State environmental resource permits and corresponding stormwater treatment are needed for all new or modified stormwater discharges and for all projects disturbing 4,000 square feet or more of impervious surface. The NPDES stormwater generic permit is required for all sites that disturb one or more acres of land.

Limited geographic area where standards apply: Statewide

Significant exemptions: N/A

Post-Construction Standards for New Development:

All new development and redevelopment projects must implement site appropriate BMPs that meet the required level of stormwater treatment set forth in the program's stormwater treatment performance standards which are found in Chapter 62-40.432, F.A.C.

Local governments may adopt alternative or more stringent local requirements than the State standards.

On-Site Retention/Volume Control:

Specific design criteria are provided for numerous BMPs including retention and detention systems that will provide the level of treatment required by the applicable performance standard.

The treatment volume for retention systems vary by WMD. The smallest retention volume is the first one half inch of runoff but it can be as much as 1.25 times the percent imperviousness plus an additional one half inch of runoff for online retention systems within the SJRWMD.

To minimize mosquito production and provide storage for the next storm, the specified treatment volume for a retention system must be recovered within 72 hours following a storm event.

Volume control requirements are specific to each of the WMDs as set forth in their rules and Applicant's Handbook. Volume control (post=pre) is required in closed drainage basins to prevent flooding.

Channel protection requirement:

Varies by WMD. Within the SJRWMD and NFWMD, stormwater systems serving new construction that is greater than 50 percent impervious of the project area, the post-development peak discharge

Stormwater Program Summary – Florida

rate must not exceed the predevelopment peak discharge rate for the 2-year, 24-hour design storm event).

Water Quality requirement:

Section 62-40.432, F.A.C., titled “Surface Water Management Regulation” establishes the minimum stormwater treatment performance standards :

- Stormwater discharges from construction sites shall not cause or contribute to violations of water quality standards which is 29 NTU above background
- New stormwater discharges must achieve at least 80% reduction of the average annual load of pollutants that would cause or contribute to violations of State water quality standards. However, current rules are based on TSS load reduction. New rule under development is based on TN and TP reduction;
- New stormwater discharges to Outstanding Florida Waters must achieve at least 95% reduction of the average annual load of pollutants that would cause or contribute to violations of State water quality standards (based on TSS at present).
- New stormwater discharges to impaired waters must achieve “net environmental improvement” which means that the loading from the site for the pollutant of concern must not increase above current levels.

State water quality standards are set forth in Chapter 62-302 FAC, titled “Surface Water Quality Standards” for each of the five surface water body classifications, according to designated uses, as follows:

- (1) Class I - Potable Water Supplies;
- (2) Class II - Shellfish Propagation or Harvesting;
- (3) Class III - Recreation, Propagation and Maintenance of a Healthy Well-Balanced Population of Fish and Wildlife;
- (4) Class IV- Agricultural Water Supplies; and
- (5) Class V -Navigation, Utility and Industrial Use.

In general, all surface waters of the State of Florida are classified as Class III unless otherwise specified. Chapter 62-302.700, titled “Special Protection – Outstanding Florida Waters, Outstanding Natural Resource Waters”, establishes a list of waters within the State of Florida to be afforded a higher level of protection.

Flood control requirement:

Flood control requirements are established in the rules and Applicant’s Handbook of the five regional WMDs. In general, the post-development peak discharge rate will not exceed the pre-development peak discharge rate for a specific design storm. The design storm varies by WMD from a 25 year, 24 hour design storm event to a three day 25-year design storm.

Redevelopment standard: Urban redevelopment projects which result in an increase in stormwater loading are subject to the stormwater treatment requirements within the existing stormwater rules of the WMDs

Special criteria:

Stormwater discharges to sensitive waterways such as Outstanding Florida Waters (OFWs) and impaired waters must provide a higher level of treatment. The performance standard for OFWs is 95% annual average TSS loading. The performance standard for discharges to an impaired water is “net environmental improvement” which means that the stormwater discharged from the site after

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development must have lower loading for the pollutant causing or contributing to violations of water quality standards. Several of the WMDs have adopted “basin specific rules” that require a higher level of treatment within specific watersheds.

Offset /mitigation: Off-site compensating treatment within the same watershed may be used if it is not possible to meet the stormwater treatment requirements on the project site

Compliance:

Penalties for violating permit requirements are set forth in Sections 403.121 and 403.161. F.S.

Inspection & Maintenance/O&M: Inspections during construction are conducted by WMD, DEP, or local stormwater staff. In addition, projects with a NPDES stormwater permit must have inspections done by qualified inspectors (i.e., completed the DEP’s Stormwater, Erosion, and Sedimentation Control Inspector Training Program) on a weekly basis or after any storm of 0.5” of rainfall or more. Regular inspections of post-development stormwater systems are required by three of the WMDs with recertification that the system is operating as permitted. All permits must identify the legal Operation and Maintenance entity, consistent with DEP and WMD regulations, which will be responsible for long term OM.

Does development on agricultural land qualify as redevelopment? No.

Definition of impervious surface: “Impervious” means land surfaces that do not allow, or minimally allow, the penetration of water; such as building roofs, non-porous concrete and asphalt pavements, and some fine grained or compacted soils

Definition of new development: N/A

Definition of predevelopment: Used for discharges to impaired waters when the “net environmental improvement” performance standard must be met and is defined as the existing land use condition.

Definition of redevelopment: “Redevelopment” means the construction of a stormwater treatment system on sites having existing commercial, industrial, institutional, or multi-family land uses where the existing impervious surface will be removed as part of the proposed activity.

Additional references:

- Evaluation of Current Stormwater Design Criteria within the State of Florida. (2007). Harvey H. Harper, PhD, PE and David M Baker, PE.
http://www.dep.state.fl.us/water/nonpoint/docs/nonpoint/SW_TreatmentReportFinal_71907.pdf
- Florida’s Water Management Districts Permitting Portal
<http://flwaterpermits.com>
- Two publications that provide good guidance for local stormwater programs are “Institutional Aspects of Urban Runoff Management: A Guide for Program Development and Implementation” and “Operation, Maintenance and Management of Stormwater Management Systems.”
http://stormwater.ucf.edu/research_publications.asp
- FL DEP and the Department of Community Affairs developed LID guidance
<http://www.dca.state.fl.us/fdcp/dcp/springs/index.cfm>
- Florida Urban Stormwater Research Reports

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http://www.dep.state.fl.us/water/nonpoint/pubs.htm#Urban_Stormwater_BMP_Research_Reports

- University of Central Florida Stormwater Management Academy
<http://stormwater.ucf.edu>
- Florida Stormwater Association
<http://stormwater.ucf.edu/>

Contact information:

NPDES Stormwater Program 2600 Blair Stone Road Mail Station 2500, Tallahassee, FL, 32399, Phone (850) 245-8430

Stormwater Program Summary – Georgia

Program Name: Georgia Department of Natural Resources Environmental Protection Division

Program Status: NPDES Phase II Permit (No. GAG610000) (effective December 7, 2007) Existing Regulations, GA's Stormwater Management Manual Volume 2: Technical Handbook (2001)

Regulatory Authority: State-wide stormwater guidance; State-wide stormwater manuals

Standard source: NPDES Phase II permit and GA's Volume 2: Technical Handbook (2001) MS4 Permit requires adoption of the State Stormwater Manual.

Website references:

GA NPDES Phase II Permit

http://www.gaepd.org/Files_PDF/techguide/wpb/Permit_MS4_Stormwater_Phase_II_2007.pdf

GA Erosion and Sediment Control Act of 1975 (amended 2010)

<http://www.lexisnexis.com/hottopics/gacode>

GA's Stormwater Management Manual, Volume 2: Technical Handbook (2001)

<http://www.georgiastormwater.com/>

Coastal Stormwater Supplement (GA CSS) (2009)

<http://www.georgiastormwater.com/Georgia-CSS-Final-Apr-09.pdf>

Size Threshold: Land disturbance of greater than or equal to one acre (NPDES Phase II permit, p. 10). The permittee shall develop, implement and enforce a Storm Water Management Program (SWMP) that include management practices; control techniques and system design and engineering methods; and other provisions as EPD determines appropriate for the control of such pollutants (NPDES Phase II permit, p. 7-8).

Limited geographic area where standards apply: Applies to designated MS4's statewide and Coastal Zone.

Significant exemptions: N/A

Post-Construction Standards for New Development: Develop, implement and enforce a program to address storm water runoff into the MS4 from new development and redevelopment projects that disturb greater than or equal to one acre of land, including projects less than one acre if they are part of a larger common plan of development of sale. (NPDES Phase II permit, p. 10).

On-Site Retention/Volume Control: None

Channel protection requirement (enacted 2001): Provide extended detention for the 1-year storm event released over a 24 hour period (Volume 2, p. 1.3-1).

Water Quality requirement (enacted 2001): The program must ensure that controls are in place that will prevent or minimize water quality impacts. Treat stormwater runoff from 85% of storms that occur in an average year. In GA this means providing water quality treatment for

Stormwater Program Summary – Georgia

runoff for 1.2 inch rainfalls. Reduce TSS by 80% on an average annual post-development basis (Volume 2, p. 1.3-1).

Flood control requirement (enacted 2001): Post-development peak discharge control does not exceed predevelopment peak discharge rate for the 25-year, 24-hour storm event (Volume 2, p. 1.2-3).

Redevelopment standard: Redevelopment is defined and covered under the same guidelines as new development (Volume 2, p. 1.2-1).

Special criteria:

Stormwater requirements comparable to the NPDES MS4 post construction rules are required in GA's 24 coastal counties the GA Coastal Stormwater Supplement (2009) provides stormwater management guidance to reduce TSS by 80% in post construction runoff, maintain pre-development hydrology, reduce erosion and sediment loss, preserve lands, protect waterways, and limit land disturbing areas whenever possible (GA CSS, p. 1-2). This is administered by GA's Coastal Resources Division.

Offset /mitigation: N/A

Compliance: Stormwater management compliance is through the local ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State and local law;

Inspection & Maintenance/O&M: Local programs must ensure adequate long-term operation and maintenance of the BMPs through ordinance provisions.

Does development on agricultural land qualify as redevelopment? Unknown.

Definition of impervious surface: "Impervious Cover" means a surface composed of any material that greatly impedes or prevents the natural infiltration of water into the underlying native soils. Impervious surfaces include, but are not limited to, rooftops, buildings, sidewalks, driveways, streets and roads (GA CSS, p. 10-3).

Definition of new development: New development is defined as land disturbing activities, structural development (construction, installation or expansion of a building or other structure), and/or creation of impervious surfaces on a previously undeveloped site. (GA Manual Volume 1, page 57).

Definition of predevelopment: N/A

Definition of redevelopment: Redevelopment is defined as structural development (construction, installation or expansion of a building or other structure), creation or addition of impervious surfaces, replacement of impervious surface not part of routine maintenance, and land disturbing activities associated with structural or impervious development. Redevelopment does not include such activities as exterior remodeling. (GA Stormwater Management Manual Volume 1, page 57; Volume 2, page 1.2-2).

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Additional references:

Manual for Erosion and Sediment Control in Georgia (2000) (under revision as of 10/16/10)

http://www.georgiaepd.org/Documents/esc_manual.html

For 2010 updates – <http://www.gaswcc.org/docs>

Volume 1: Stormwater Policy Guidebook (2001)

<http://www.georgiastormwater.com/vol1/gsmmvol1.pdf>

GA Erosion and Sediment Control Act of 1975 (amended 2010)

<http://www.lexisnexis.com/hottopics/gacode>

GA DEP Watershed Protection Branch Technical Guidance

http://www.gaepd.org/Documents/techguide_wpb.html

Contact information:

GA Department of Natural Resources Environmental Protection Division

<http://www.georgiaepd.org/>

GA's Coastal Resources Division

<http://crd.dnr.state.ga.us/>

Stormwater Program Summary – Kentucky

Program Name: Kentucky NPDES Stormwater Program

Program Status: NPDES MS4 Phase I and Phase II (KPDES No.: KYG200000; 3/1/10) permits.

Regulatory Authority: MS4 permits

Standard source: Phase II MS4 permit

Website references:

Phase II MS4 General Permit (KPDES No.: KYG200000; 3/1/10)

<http://kystormwater.org/images/stories/regulatory/2010/kyg200000.pdf>

NPDES MS4 Phase II KY Transportation Cabinet (2046)

<http://www.kytc.state.ky.us/EnvAnalysis/Stormwaterquality/PDF/whole.pdf>

Regulations:

Kentucky DOW Regulations

<http://lrc.ky.gov/kar/TITLE401.HTM>

Size Threshold: Stormwater discharges associated with construction activity that disturbs one acre or more (Phase II permit, Page II-7).

Limited geographic area where standards apply: MS4 areas

Significant exemptions: N/A

Post-Construction Standards for New Development:

This control measure requires permittees to develop, implement, and enforce a program to reduce pollutants in stormwater runoff from land development that results from land disturbance of one acre or greater. The program must include controls for runoff from land development that results from land disturbance of less than one acre if part of a larger common plan of development that disturbs more than one acre.

On-Site Retention/Volume Control: N/A

Channel protection requirement: N/A

Special consideration is required to be given to the promotion and consideration of riparian restoration incorporating stream restoration, bioengineering, natural channel design, habitat restoration and construction/enhancement of wetland features. (MS4 Permit MCM 5)

Water Quality requirement The proposed local standard will require, in combination or alone, management measures that are designed, built and maintained to treat, filter, flocculate, infiltrate, screen, evapo-transpire, harvest and reuse stormwater runoff, or otherwise manage the stormwater runoff quality.

- Permit recommends the use of non-structural practices.
- For structural practices: develop a locally derived water quality treatment standard that requires new development projects to implement controls to manage runoff through water-quality control structures. The standard shall be based on an analysis of precipitation

Stormwater Program Summary – Kentucky

records to determine the equivalent surface depth of runoff (e.g. 0.75 inches) produced from an 80th percentile precipitation event (MS4 Permit MCM5)

Flood control requirement: N/A

Redevelopment standard: N/A

Special criteria: N/A

Offset /mitigation: For projects that cannot meet the water-quality treatment standard, the local program may include an off-site mitigation and/or payment-in-lieu program based on conditions set out in the MS4 permit (PART II, Page II-8)

Compliance: Compliance through local ordinance for plan review, inspection, and enforcement authority per MS4 permits: Develop procedures for a post-construction process to demonstrate and document that post-construction stormwater measures have been installed per design specifications, which includes enforceable procedures for bringing noncompliant projects into compliance. (MS4 Permit PART II, Page II-8)

Inspection & Maintenance/O&M: Implemented through local ordinance permittee shall establish and implement procedures for inspection of a representative number of installed Best Management Practices (BMPs) (MS4 Permit PART II Page II-9)

Does development on agricultural land qualify as redevelopment? Unknown.

Definition of impervious surface: N/A

Definition of new development: N/A

Definition of predevelopment: N/A

Definition of redevelopment: N/A

Additional references:

Stormwater Management Handbook Implementing Green Infrastructure in Northern Kentucky Communities (2009)

http://www.epa.gov/npdes/pubs/gi_stormwatermanagementhandbook.pdf

Contact:

Larry Sowder

Kentucky Department for Environmental Protection / Division of Water

200 Fair Oaks Lane, 4th Floor

Frankfort, KY 40601

Phone: (502) 564-3410

Email: larry.sowder@ky.gov

Stormwater Program Summary – Mississippi

Program Name: Mississippi Stormwater Program

Program Status: Existing Small MS4 General NPDES Permit, Effective January 5, 2009

Regulatory Authority: Small MS4 NPDES Permit; State-wide Stormwater Guidance Manual (voluntary).

Standard source: Permit No. MSRMS4 (January 5, 2009); Mississippi's Phase II Small Municipal Separate Storm Sewer System (MS4) Guidance Manual (2002)

Website references:

General Permit

[http://www.deq.state.ms.us/mdeq.nsf/pdf/epd_MS4PhaseIIStormWaterGeneralPermit/\\$File/22General.pdf?OpenElement](http://www.deq.state.ms.us/mdeq.nsf/pdf/epd_MS4PhaseIIStormWaterGeneralPermit/$File/22General.pdf?OpenElement)

Guidance Manual Draft

[http://www.deq.state.ms.us/mdeq.nsf/pdf/epd_MS4PhaseIIStormWaterGuidanceManualDraft/\\$File/24General.pdf?OpenElement](http://www.deq.state.ms.us/mdeq.nsf/pdf/epd_MS4PhaseIIStormWaterGuidanceManualDraft/$File/24General.pdf?OpenElement)

Size Threshold: New development and redevelopment projects that disturb greater than or equal to one (1) acre, including projects less than one (1) acre that are part of a larger common plan of development or sale, that discharge into the regulated entity's small MS4 (General Permit, Act 5(5)(A), p. 17).

Limited geographic area where standards apply: Applies only to MS4s.

Significant exemptions: N/A

Post-Construction Standards for New Development:

On-Site Retention/Volume Control: N/A

Channel protection requirement: N/A

Water Quality requirement:

The program must ensure that controls are in place that would prevent or minimize water quality impacts (General Permit, Act 5(5)(A), p. 17).

Flood control requirement: N/A

Redevelopment standard: N/A

Special criteria: N/A

Offset /mitigation: N/A

Compliance: Use an ordinance or other regulatory mechanism to address post construction runoff from new development and redevelopment projects to the extent allowable under State or local law. The ordinance or regulatory mechanism shall not limit the post-construction minimum measure to a single type of best management practice. Existing ordinances addressing post construction storm water

Stormwater Program Summary – Mississippi

management shall be submitted to MDEQ for compliance review with the SWMP (General Permit, Act 5(5)(C), p. 17).

Inspection & Maintenance/O&M: Ensure adequate long term operation and maintenance of BMPs. The MS4 shall require a maintenance agreement and provide verification of maintenance provisions for post-construction management practices. These agreements shall allow the MS4, or its designee, to conduct inspections of the management practices and also account for transfer of responsibility in leases and/or deed transfers. Verification shall include one or more of the following as applicable:

- The developer's signed statement accepting responsibility for maintenance until the maintenance responsibility is legally transferred to another party; and/or
- Written conditions in the sales or lease agreement that require the recipient to assume responsibility for maintenance; and/or
- Written conditions in project conditions, covenants and restrictions for residential properties assigning maintenance responsibilities to a home owners' association, or other appropriate group, for maintenance of structural and treatment control management practices; and/or
- Any other legally enforceable agreement that assigns permanent responsibility for maintenance of structural or treatment control management practices (General Permit, Act 5(5)(D), p. 17).

Does development on agricultural land qualify as redevelopment? N/A

Definition of impervious surface: N/A

Definition of predevelopment: N/A

Definition of new development: N/A

Definition of redevelopment: N/A

Stormwater Program Summary – North Carolina

Program Name: North Carolina Stormwater Program

Program Status: Existing Regulations, NPDES MS4 Phase I and II

Regulatory Authority: State-wide stormwater regulation; Phase II Post-Construction (Session Law 2006-246), Blue Book (15A NCAC 02H.0126, amended September 1, 2006), and Red Book (15A NCAC 02B.0100, .0200, .0300) (ppt, slide 3)

Standard source: State-wide stormwater manuals (regulatory); Session Law 2006-246

Website references:

State Stormwater Rules and Laws

http://portal.ncdenr.org/web/wq/ws/su/statesw/rules_laws

Phase II

<http://portal.ncdenr.org/web/wq/ws/su/phase2>

NCDENR Stormwater BMP Manual

<http://portal.ncdenr.org/web/wq/ws/su/bmp-manual>

“Redbook”

- [15A NCAC 02B .0100](#) (Assignment of Water Quality Standards)
- [15A NCAC 02B .0200](#) (Standards for Surface Waters & Wetlands ([NSW](#), Buffers, Water Supply))
- [15A NCAC 02B.0225](#) (Updated ORW Rule)
- [15A NCAC 02B .0262-.0273](#) (Jordan Lake Rules (also see [JordanLake.org](#)))
- [15A NCAC 02B .0600](#) (Goose Creek Rules)
- [15A NCAC 02B .0300](#) (Assignment of Stream Classifications)

Regulations:

Session Law 2006-246 (Phase II Post-Construction Law that replaced 2H.1005)

http://portal.ncdenr.org/c/document_library/get_file?uuid=770ba987-eba3-4966-9eb7-935ad05f63c2&groupId=38364

Session Law 2008-246 (Revisions to Session Law 2006-246 and Session Law 2008-211)

http://portal.ncdenr.org/c/document_library/get_file?uuid=770ba987-eba3-4966-9eb7-935ad05f63c2&groupId=38364

Session Law 2008-211 (20 Coastal Counties Stormwater Law (replaces 2H .1005))

http://portal.ncdenr.org/c/document_library/get_file?uuid=c431dd18-aa4b-4424-a9b5-6aa5d98c397b&groupId=38364

Size Threshold: Permittees, delegated programs, and regulated entities must require stormwater controls for a project that:

Stormwater Program Summary – North Carolina

- Statewide: disturbs one acre or more of land, including a project that disturbs less than one acre of land that is part of a larger common plan of development or sale. (Session Law 2006-246, p. 11 and BMP Manual, p. 2-1).
- Coastal Counties: require stormwater permit for
 - Non residential development that disturb less than one acre but add more than 10,000 square feet of built upon area; and
 - Residential development activities within ½ mile of and draining to shellfishing waters that disturb less than one acre but add more than 10,000 square feet built upon area resulting in at least 12% total built upon area, also require a permit (ppt, slide 13). (Session Law 2008-211)

Limited geographic area where standards apply: 20 coastal counties, development activities draining to Outstanding Resource Waters, or development activities within one mile of and draining to High Quality Waters.

Significant exemptions: N/A

Post-Construction Standards for New Development:

Specific Standards designated for:

- 1) Water Supply Watershed I (WS-I) – 15A NCAC 2B.0212.
- 2) Water Supply Watershed II (WS-II) – 15A NCAC 2B.0214.
- 3) Water Supply Watershed III (WS-III) – 15A NCAC 2B.0215.
- 4) Water Supply Watershed IV (WS-IV) – 15A NCAC 2B.0216.
- 5) Freshwater High Quality Waters (HQW) – 15A NCAC 2H.1006.
- 6) Freshwater Outstanding Resource Waters (ORW) – 15A NCAC 2H.1007.
- 7) The Neuse River Basin Nutrient Sensitive Waters (NSW) Management Strategy – 15A NCAC 2B.0235.
- 8) The Tar-Pamlico River Basin Nutrient Sensitive (NSW) Management Strategy – 15A NCAC 2B.0258.
- 9) The Randleman Lake Water Supply Watershed Nutrient Management Strategy – 15A NCAC 2B.0251.

Additional standards (such as buffers and setbacks, approval authority, drainage specifications, etc., projects designated as:

- Density:
 - High;
 - Low
- Location:
 - Coastal Counties
 - Within ½ mile of saltwater Freshwater; salt water

Channel protection requirement: (Not designated as channel protection in regulations).

- Control and treat the difference in the runoff from the predevelopment and post-development conditions for the 1-year, 24- hour storm.
- Discharge the storage volume at a rate equal to or less than the predevelopment discharge rate for the one-year, 24-hour storm (Session Law 2006-246, p. 11).

Water Quality requirement:

Stormwater Program Summary – North Carolina

Statewide: Runoff from 1" rain; Coastal Counties: Runoff from 1.5-inch rain;

- Draw down the treatment volume no faster than 48 hours, but no slower than 120 hours.
 - Discharge the storage volume at a rate equal to or less than the predevelopment discharge rate for the one-year, 24-hour storm.
 - Remove 85% average annual TSS.
 - Meet the General Engineering Design Criteria set out in 15A NCAC 02H .1008(c). (Session Law 2006-246, p. 11).

Flood control requirement: See Channel Protection (Session Law 2006-246, p. 11).

Redevelopment standard: Post construction practices do not apply to redevelopment (Session Law 2006-246, p. 11).

Special criteria:

- Permittees, delegated programs, and regulated entities must require built-upon areas to be located at least 30 feet landward of all perennial and intermittent surface waters, have a fecal coliform reduction program, and have deed restrictions (Session Law 2006-246, p. 12).
- Additional requirements exist for areas draining to Class SA waters, Trout Waters, and Nutrient Sensitive Waters (Session Law 2006-246, p. 14).
- Impervious parking legislation mandates limits on percent impervious areas for vehicular parking lots (Session Law 2008-198, effective April 1, 2009) and for parking lots greater than 1 acre must have 20% impervious surface or 20% of a 2 inch rain event must flow to a bioretention area (Session Law 2008-246, p. 6).

Offset /mitigation: Water quality protection program offset can be granted by the Commission upon review that existing water quality protection programs can offset NPDES Phase II permit (Session Law 2006-246, p. 8).

Compliance:

- Compliance is achieved through review of site plans by each locality's stormwater management program.
- NCDENR has a compliance section. NC Division of Water Quality dispense civil penalties under the NC General Statute 143-214.5(c). The enforcement procedures are clearly explained here: <http://portal.ncdenr.org/web/wq/swp/ws/cu/enforcement>

Inspection & Maintenance/O&M: Long term operation and maintenance for structural BMPs is required. Annual maintenance inspection reports are required per structural BMP (Session Law 2006-246, p. 13).

Does development on agricultural land qualify as redevelopment? N/A

Definition of impervious surface: "Impervious surface" means any material that prevents the natural infiltration of water into the soil (Session Law 2008-246, p. 5).

Definition of new development: For the purposes of the Neuse Stormwater Program, new development shall be defined as to include the following: 1) Any activity that disturbs greater than one

Stormwater Program Summary – North Carolina

acre of land in order to establish, expand or modify a single family or duplex residential development or a recreational facility; 2) Any activity that disturbs greater than one-half an acre of land in order to establish, expand or modify a multifamily residential development or a commercial, industrial or institutional facility; 3) New development does not include agriculture, mining, or forestry activities (BMP Manual, p. 2-3).

Definition of predevelopment: N/A

Definition of redevelopment: “Redevelopment” means any land-disturbing activity that does not result in a net increase in built-upon area and that provides greater or equal stormwater control than the previous development (Session Law 2006-246, p. 2).

Additional references:

15A NCAC 02H .1000 (General State SW Requirements, ORW & HQW Rules)

http://portal.ncdenr.org/c/document_library/get_file?uuid=ea31b446-44ef-4f78-9257-08865ab299df&groupId=38364

15A NCAC 02H .1020 (Universal Stormwater Management Program

(USMP))http://portal.ncdenr.org/c/document_library/get_file?uuid=4ff04b0a-f07e-48a0-8ea1-dbedb4922ee9&groupId=38364

Phase II MS4 Resources and Guidance

<http://portal.ncdenr.org/web/wq/npdsw/ms4resources>

Stormwater Maps and GIS Resources

<http://portal.ncdenr.org/web/wq/ws/su/maps>

LID Guidebook

<http://www.bae.ncsu.edu/topic/lid/resources.html>

Contact information:

Post-Construction Website at: http://h2o.enr.state.nc.us/su/msi_post-construction.htm

Stormwater Program Summary – South Carolina

Program Name: South Carolina Stormwater Management Program administered by the South Carolina Department of Health and Environmental Control (SCDHEC)

Program Status: Existing Regulations issued January 30, 2006, NPDES Phase II Permit

Regulatory Authority: Regulated as MS4 designations by SCDHEC and in the Coastal Zone by SCDHEC-Office of Coastal Resource Management (OCRM); NPDES General Permit Phase II (issued 1/30/06)

Standard source: SC BMP Guidebook; Revised in 2005

Website references:

1. NPDES General Permit Phase II
<http://www.scdhec.gov/environment/water/docs/scs000000.pdf>
2. NPDES Qualifying Local Programs (QLPs) for Construction Site Stormwater Runoff Control and Post-Construction Storm Water Management in New Development and Redevelopment
<http://www.scdhec.gov/environment/water/docs/erfqlpfact.pdf>
3. SCDHEC-MS4 program
<http://www.scdhec.gov/environment/water/swnsms4.htm#large>
4. SCDHEC Stormwater Management BMP Field Manual (2005)
http://www.scdhec.gov/environment/ocrm/docs/Field_Manual/OCRM_DHEC_FIELD_MANUAL.pdf
5. Stormwater management BMP handbook (2005)
http://www.scdhec.gov/environment/ocrm/pubs/docs/SW/BMP_Handbook/BMP_Handbook.pdf
6. Stormwater Management and Sediment and Erosion Control Plan Review Checklist For Design Professionals (2006)
www.scdhec.gov/environment/water/docs/erfchecklist.doc

Regulations:

7. SC Water Pollution Control Permits Regulation 61-9 122.26 (2008)
<http://www.scdhec.gov/environment/water/regs/r61-9.pdf>

Size Threshold: Within eighteen months from the effective date of this permit, you must develop, implement, and enforce a program to reduce pollutants in any storm water runoff to your regulated MS4 from construction activities that result in a land disturbance of greater than or equal to one acre (NPDES Phase I, p. 15).

Limited geographic area where standards apply: MS4 designated municipalities statewide and in Coastal Zone

Significant exemptions: N/A

Stormwater Program Summary – South Carolina

Post-Construction Standards for New Development:

On-site Retention/Volume Control: None

Water Quality requirement:

- Wet Ponds: 24-hour release of ½-runoff from the site;
- Dry Ponds: 24-hour release of 1-inch runoff from the site;
- Wet and Dry Ponds within 1/2-mile of receiving water body in Coastal Zone:
 - 24-hour release of ½-runoff from the site; or
 - 24-hour release of 1-inch from the built-upon area, whichever is greater;
- Projects within 1,000 feet of shellfish beds retain 1.5-inches from the built upon area;
- Infiltration practices sized to infiltrate 1-inch of runoff from the impervious area of the site;
Reference 4: Standards for Stormwater Management and Sediment Reduction Regulation June 28, 2002; Section 72-307: Specific Design Criteria, Minimum Standards and Specifications;

Channel Protection & Flood Control Requirements:

- Post-development peak discharge rates shall not exceed pre-development discharge rates for the 2-and 10-year frequency 24-hour duration storm event.
- (b) Discharge velocities shall be reduced to provide a nonerosive velocity or the pre-developed velocity of the 10-year, 24-hour storm, whichever is greater.
- (c) Local governments may designate more stringent criteria in watersheds where documented water quantity problems exist.

Reference 4: Standards for Stormwater Management and Sediment Reduction Regulation June 28, 2002; Section 72-307: Specific Design Criteria, Minimum Standards and Specifications;

Flood control requirement: See Channel Protection.

Redevelopment standard: N/A.

Special criteria:

Coastal Stormwater Management applies in the eight coastal counties (Beaufort, Berkeley, Charleston, Colleton, Dorchester, Georgetown, and Horry), and administered by the SCDHEC-Office of Ocean and Coastal Resource Management

Offset /mitigation: Unknown.

Compliance: Compliance is achieved through review of site plans by each MS4 jurisdiction. As-Built are required.

Reference: SC Water Pollution Control Permits Regulation 61-9, p. 103

Inspection & Maintenance/O&M: Requires land owners to adequately maintain the stormwater management/Best Management Practices (BMP) facilities to ensure adequate long-term operation. Signed agreements between the responsible party accepting ownership is responsible for maintenance and a maintenance plan must be in place and used. Maintenance procedures should be scheduled

Reference 4: Standards for Stormwater Management and Sediment Reduction Regulation June 28, 2002; Section 72-308. Maintenance Requirements and Off-Site Damage Correction.

(SC Water Pollution Control Permits Regulation 61-9, p. 101)

Stormwater Program Summary – South Carolina

Does development on agricultural land qualify as redevelopment? No

Definition of impervious surface: N/A

Definition of new development: “Develop Land” means to change the runoff characteristics of a parcel of land in conjunction with residential, commercial, industrial, or institutional construction or alteration.

Definition of predevelopment: “Pre-Development” means the conditions which existed prior to the initiation of the land disturbing activity in terms of topography, vegetation, land use and rate, volume or direction of stormwater runoff.

Definition of redevelopment: “Redevelopment” means a land disturbance activity that alters the current use of the land but does not necessarily alter the pre-development runoff characteristics.

Additional references:

1. NPDES General Permit (SCR100000)
<http://www.scdhec.gov/environment/water/docs/finalcgp.pdf>
2. SCDHEC Sediment, Erosion, and Stormwater Management Program (website with major regulations, documents, and contacts)
<http://www.scdhec.gov/environment/water/swerfmain.htm>
3. SC Water Pollution Control Permits Regulation 61-9 for industrial activity 122.26(b)(14)(i)-(ix) and (xi) and for construction activity 122.26(b)(14)(x) (2008)
<http://www.scdhec.gov/environment/water/regs/r61-9.pdf>
4. SC Stormwater Management and Sediment Reduction Act 72-300 thru 72-316 (2002)
www.scdhec.gov/environment/water/regs/r72-300.doc
5. SC Water Pollution Control Permits Regulation 61-9 122.26 (2008)
<http://www.scdhec.gov/environment/water/regs/r61-9.pdf>
6. SC Stormwater Management and Sediment Control Handbook for Land Disturbing Activities (2003) <http://www.scdhec.gov/environment/water/regs/r72-300.pdf>
7. Small Project Requirements in Non-Coastal Counties
http://www.scdhec.gov/environment/water/docs/sw_smallprojreq.pdf
8. Permanent Stormwater System Maintenance and Responsibility Agreement
http://www.scdhec.gov/environment/ocrm/docs/SW/pond_maint.pdf
9. Agriculture Stormwater Permit
www.scdhec.gov/environment/water/docs/agswPermits.pdf

Stormwater Program Summary – Tennessee

Program Name: Tennessee NPDES Stormwater Program

Program Status: Existing Regulations, NPDES MS4 Phase I Permit (4 jurisdictions and TDOT) and Phase II (Effective October 1, 2010)

Regulatory Authority: TN Water Quality Control Act of 1977 (T.C.A. 69-3-101), required in MS4 areas and suggested for other areas (NPDES GCP, p. 21).

Standard source: Phase II MS4 permit

Website reference:

NPDES Phase I (2004)

<http://www.state.tn.us/environment/wpc/stormh2o/TNS077585.pdf>

NPDES Phase II (effective August 21, 2010)

http://www.state.tn.us/environment/wpc/stormh2o/finals/tns000000_ms4_phase_ii_2010.pdf

NPDES TN DOT (2006)

<http://www.state.tn.us/environment/wpc/stormh2o/TNS077585.pdf>

Size Threshold: Stormwater runoff from construction activities or part of a larger common development that results in a land disturbance of equal to or greater than one acre (NPDES Phase II, p. 14)

Limited geographic area where standards apply: Applies to designated MS4's statewide (NPDES Phase II, p. 1).

Significant exemptions: N/A

Post-Construction Standards for New Development:

Program must ensure that controls are in place that would prevent or minimize water quality impacts.

(MS4 Permit)

On-Site Retention/Volume Control:

Site design standards for all new and redevelopment require, in combination or alone, management measures that are designed, built and maintained to infiltrate, evapotranspire, harvest and/or use, at a minimum, the first inch of every rainfall event preceded by 72 hours of no measurable precipitation. This first inch of rainfall must be 100% managed with no storm water runoff being discharged to surface waters.

The MS4 may develop a program to allow for incentive standards for redeveloped sites. The MS4 may provide a 10% reduction in the volume of rainfall to be managed for any of the Small MS4 General NPDES Permit following types of development. Such credits are additive such that a maximum reduction of 50% of the standard in the paragraph above is possible for a project that meets all 5 criteria:

- Redevelopment;
- Brownfield redevelopment;

Stormwater Program Summary – Tennessee

- High density (>7 units per acre);
- Vertical Density, (Floor to Area Ratio (FAR) of 2 or >18 units per acre); and
- Mixed use and Transit Oriented Development (within ½ mile of transit).

Channel protection requirement: N/A

Water Quality requirement:

For projects that cannot meet 100% of the runoff reduction requirement unless subject to the incentive standards, the remainder of the stipulated amount of rainfall must be treated prior to discharge with a technology reasonably expected to remove 80% total suspended solids (TSS). The treatment technology must be designed, installed and maintained to continue to meet this performance standard.
(NPDES Phase II, p. 14).

Flood control requirement: N/A

Redevelopment standard: N/A

Special criteria: N/A

Offset /mitigation: If runoff reduction and/or pollutant removal cannot be fully accomplished on-site per the MS4 Permit program then the MS4 may propose off-site mitigation and/or payment into a fund for public stormwater projects. The MS4 must develop and apply criteria for determining the circumstances under which these alternatives will be available.
(NPDES Phase II, p. 16).

Compliance: Compliance through local implementation of ordinance or other regulatory mechanism to address project review, approval and enforcement procedures to ensure that permanent stormwater BMPs have been installed per design specifications, that includes enforceable procedures for bringing noncompliant projects into compliance.
(NPDES Phase II, p. 18).

Inspection & Maintenance/O&M: Local MS4 program shall ensure the long-term maintenance of stormwater BMPs by requiring the owner or operator to develop and implement a maintenance agreement (or an equivalent document ensuring compliance with this sub-section) addressing maintenance requirements for any BMPs, including off-site mitigation. The agreement must allow the MS4, or its designee, to conduct inspections of the stormwater BMPs and also account for transfer of responsibility in leases and/or deeds.
(NPDES Phase II, p. 18).

Does development on agricultural land qualify as redevelopment? No.

Definition of impervious surface: N/A

Definition of new development: N/A

Definition of predevelopment: N/A

Stormwater Program Summary – Tennessee

Definition of redevelopment: *Redevelopment* means the alteration of developed land that disturbs one acre or more, or less than an acre if part of a larger common plan of development, and increases the site or building impervious footprint, or offers a new opportunity for stormwater controls. The term is not intended to include such activities as exterior remodeling, which would not be expected to cause adverse stormwater quality impacts (NPDES Phase II, p. 35).

Additional references: N/A

Contact:

TN Department of Environment and Conservation's Division of Water Pollution Control

Paul E. Davis, Director

6th Floor, L & C Annex
401 Church Street, Nashville, TN 37243
(615) 532-0625
Questions? [Ask WPC](#)
<http://tn.gov/environment/wpc/>

Stormwater Program Summary – Illinois

Program Name: Illinois State Stormwater Management Program

Program Status: Existing Regulations (effective February 2009)

Regulatory Authority: State-wide stormwater regulation for small MS4s (Illinois Pollution Control Board Rules and Regulations 35 Ill. Adm. Code, Subtitle C, Chapter 1)

Standard source: General NPDES Permit No. ILR40

Website reference:

General Permit:

<http://www.epa.state.il.us/water/permits/storm-water/general-ms4-permit.pdf>

Size Threshold: Land development projects that disturb greater or equal than one acre or less than one acre for discharges from construction activity for a larger common plan of development or sale that would disturb one acre or more (General Permit, page 6).

Limited geographic area where standards apply: Applies statewide

Significant exemptions: Not specified

Post-Construction Standards for New Development: The permittee should require the person responsible for the construction or new development to adopt one or more of these strategies, in order of preference, or provide a rationale for selecting a more preferred strategy:

- i. Preservation of the natural features of development sites, including natural storage and infiltration characteristics;
- ii. Preservation of existing natural stream channels, and drainage ways;
- iii. Minimization of new impervious surfaces;
- iv. Conveyance of stormwater in open vegetated channels;
- v. Construction of structures that provide both quantity and quality control, with structures serving multiple sites being preferable to those serving individual sites; and
- vi. Construction of structures that provide only quality control, with structures serving multiple sites being preferable to those serving individual sites. (General Permit, page 7)

On-Site Retention/Volume Control: N/A

Channel protection requirement: N/A

Water Quality requirement: N/A

Flood control requirement: N/A

Redevelopment standard: Same as new development. (General Permit, page 7-8)

Special criteria: None.

Compliance: Compliance is achieved through the use of an ordinance or other regulatory mechanism by the permittee. (General Permit, p. 8)

Stormwater Program Summary – Illinois

Inspection & Maintenance/O&M: The permittee shall at all times properly maintain all facilities and systems of treatment and control which are related or used by the permittee to achieve compliance with conditions of the permit. The permittee shall allow an authorized representative of the IEPA to inspect regulated facilities or activities. (General Permit, page 13)

Does development on agricultural land qualify as redevelopment? Not specified

Definition of impervious surface: None

Definition of predevelopment: None

Definition of new development: None

Definition of redevelopment: None

Additional references:

Illinois Green Infrastructure Study: <http://www.epa.state.il.us/green-infrastructure/docs/draft-final-report.pdf>

Stormwater Program Summary – Indiana

Program Name: Indiana State Stormwater Program

Program Status: Existing Regulations, Phase I enacted October 2004, Phase II General Permit effective August, 2003

Regulatory Authority: Phase I (Indianapolis only) Permit No INS40001; Indiana Stormwater Design and Construction Specifications Manual (regulatory through code of City of Indianapolis Article 1 Section 561-101); Phase II - 327 IAC 15-13, Rule 13

Standard source: Indiana Stormwater Water Quality Manual

Website references:

Indiana Stormwater Water Quality Manual: <http://www.in.gov/idem/4899.htm>

Indianapolis Stormwater Design and Construction Specifications Manual:
<http://www.indy.gov/eGov/City/DPW/Business/Specs/Pages/stormwater.aspx>

Regulations: <http://www.in.gov/idem/4900.htm>

Indiana's MS4 Rule 13 Guidance: http://www.in.gov/idem/files/permits_water_rule13guidance.pdf

Phase I permit No INS40001: <http://www.epa.gov/npdescan/INS040001GFP.pdf>

Size Threshold: Projects that disturb one (1) or more acres of land or disturbances of less than one (1) acre of land that are part of a larger common plan of development or sale if the larger common plan will ultimately disturb one (1) or more acres of land within the MS4 area. (Regulations, page 86)

Limited geographic area where standards apply: Applies statewide

Significant exemptions: Phase I – where disturbance caused by redevelopment activities disturbs less than 0.5 acres, no water quality BMP plan shall be required. Staff has the discretion to exempt redevelopment activities disturbing up to 5% more area. (Indianapolis Stormwater Design and Construction Specifications Manual, page 7-1). Not specified for Phase II.

Post-Construction Standards for New Development:

Through the use of an ordinance or other regulatory means, an MS4 operator shall implement planning procedures to promote improved water quality. These planning procedures must include, at a minimum, the postconstruction requirements of a stormwater pollution prevention plan and, where appropriate, and to the extent of the MS4 operator's authority, the procedures may also include the following:

- (1) Buffer strip and riparian zone preservation.
 - (2) Filter strip creation.
 - (3) Minimization of land disturbance and surface imperviousness.
 - (4) Minimization of directly connected impervious areas.
 - (5) Maximization of open space.
 - (6) Directing the community's physical growth away from sensitive areas and toward areas that can support it without compromising water quality.
- (Regulations, p. 86)

Stormwater Program Summary – Indiana

On-Site Retention/Volume Control:

Phase I – based on TSS management; BMPs must be designed to treat the water quality volume or the first flush of runoff (1" of precipitation). (Indianapolis Stormwater Design and Construction Specifications Manual, page 7-2)

Phase II – Defined by individual stormwater management programs.

Channel protection requirement:

Defined by individual stormwater management programs.

Water Quality requirement :

Phase 1 – 80% TSS removal (Indianapolis Stormwater Design and Construction Specifications Manual, page 7-2)

Phase II – Specific reduction percentages and timetables must be identified by the MS4. At a minimum, goals must address relevant regulatory mechanism implementation, planning and structural BMP strategies, new impervious surface reduction, and discharge quality improvement. (Regulations, page 87)

Flood control requirement:

Defined by individual stormwater management programs.

Redevelopment standard:

Phase I – activity that disturbs more than 0.5 acre must meet the new development requirements (Indianapolis Stormwater Design and Construction Specifications Manual , page 7-3) Phase II - Same as new development. (Regulations, page 86)

Special criteria:

TMDL requirement: If a TMDL is approved for any waterbody into which an MS4 conveyance discharges, the MS4 operator must review and appropriately modify portions of their stormwater water quality management plan if the TMDL includes requirements for control of stormwater discharges under the jurisdiction of the MS4 operator. (Regulations, page 81)

Offset /mitigation: Not specified

Compliance: Compliance is achieved through review of site plans by each MS4's stormwater management program or designated authority. (Regulations, page 85)

Inspection & Maintenance/O&M: An MS4 operator shall develop and implement a written operational and maintenance plan for all storm water structural BMPs. (Regulations, page 86)

Does development on agricultural land qualify as redevelopment? Not specified

Definition of impervious surface: "Impervious Surface" means any surface that prevents stormwater to readily infiltrate into the soils. (Regulations, page 73)

Definition of predevelopment: None

Stormwater Program Summary – Indiana

Definition of new development: None

Definition of redevelopment: “Redevelopment” means alterations of a property that change a site or building in such a way that there is disturbance of one (1) acre or more of land. The term does not include such activities as exterior remodeling. (Regulations, page 75)

Stormwater Program Summary – Michigan

Program Name: Michigan NPDES Wastewater Discharge General Permit

Program Status: Because of a contested case, the 2008 general MS4 permits were withdrawn in December 2010. A standard summary will be provided at a later time after input from Michigan DEQ.

Stormwater Program Summary – Minnesota

Program Name: Minnesota Pollution Control Agency Storm Water Regulatory Program

Program Status: Minnesota post-construction stormwater standards are found in the NPDES/SDS Construction Stormwater General Permit No. MNR100001 (August 2008); The State-wide Minnesota Stormwater Manual, November 2005 is voluntary and intended as a guidance document. The Manual is not intended to establish new regulatory requirements and does not supersede existing local, state or federal requirements.

Regulatory Authority: Construction General Permit; Minnesota Stormwater Manual (voluntary)

Standard Source: Minnesota post-construction stormwater standards are found in the Construction Stormwater General Permit No. MNR100001 (August 2008); Minnesota Stormwater Manual

Website References:

Regulations

<https://www.revisor.mn.gov/rules/?id=7090>

Phase II MS4 General Permit

<http://www.pca.state.mn.us/index.php/water/water-types-and-programs/stormwater/municipal-stormwater/municipal-separate-storm-sewer-systems-ms4.html>

Construction General Permit

<http://www.pca.state.mn.us/index.php/water/water-types-and-programs/stormwater/construction-stormwater/construction-stormwater.html>

Minnesota Stormwater Manual

<http://www.pca.state.mn.us/index.php/water/water-types-and-programs/stormwater/stormwater-management/minnesota-s-stormwater-manual.html>

Size Threshold: Projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger Common Plan of Development or Sale (General Permit, V(G)(5), p. 12).

Significant exemptions: N/A

Post-Construction Standards for New Development

The following post-construction requirements are found in the Construction Stormwater General Permit, Part III.C and Appendix A.C.2:

- ½ inch from new impervious
- 1 inch with at least ½ inch infiltration when within 1 mile of a special or impaired water.

The following post-construction standards for new development are taken from the Minnesota Stormwater Manual which is voluntary.

On-Site Retention/Volume Control: N/A

Channel protection requirement:

Regular Waters

Stormwater Program Summary – Minnesota

No current state requirement. It is recommended that communities adopt a criterion for either 24-hour extended detention of the 1-year, 24-hour design storm or one-half of the 2-yr, 24-hr pre-development peak flow when revising or adopting local stormwater ordinances for peak flow control (and eliminate two-year peak discharge requirements) (Manual, p. 246).

Special Waters

One- and two-year design storm peak discharge and volume control required in four special water categories (wilderness, trout lakes, lake trout lakes, and scientific and natural areas) (Manual, p. 246). This is a requirement in the Construction Stormwater General Permit for these types of waters.

Water Quality requirement:

The 2000 state manual (MPCA, 2000) established a performance goal that BMPs provide a minimum degree of pollutant removal for a defined fraction of stormwater runoff events, which has been operationally defined as 90% sediment removal. A 50% total phosphorus removal can be assured to accompany this removal. Parts of the state CGP reference the 80% Total Suspended Solids (TSS) standard that must be met for infiltration/infiltration systems and alternative innovative treatment systems (Manual, p. 250).

Regular Waters

Water quality volume is calculated as ½ inch of runoff from the new impervious surfaces created by the project (Manual, p. 251-252). This is a requirement in the Construction Stormwater General permit.

Special Waters:

Water quality volume is calculated as 1 inch of runoff from the new impervious surfaces created by the project (Manual, p. 251-252). At least ½ inch must be infiltrated when within 1 mile of these waters. This is a requirement in the Construction Stormwater General Permit.

Flood control requirement:

Regular Waters

- No State requirement but falls under local requirements and typically involves either 10-year design storm peak discharge control, or a combination of 10- and 25-year design storm peak discharge control.
- For extreme storms frequently involves 100-year design storm peak discharge control (Manual, p. 246).

Redevelopment Standard

(From Manual, guidance only)

Any construction, alteration, or improvement that disturbs greater than or equal to 5,000 square feet of existing impervious cover performed on sites where the existing land use is commercial, industrial, institutional, or residential. A redevelopment will:

- Provide a reduction in impervious area; or
- Implement stormwater management practices; or
- A combination of both (a) and (b) to result in an improvement to water quality.

Where site conditions prevent the reduction of impervious area, stormwater management practices could be implemented to provide water quality control for at least 20 percent of the site's impervious area as a general guideline.

Stormwater Program Summary – Minnesota

When a combination of impervious area reduction and stormwater management practice implementation is used for redevelopment projects, the combination of impervious area reduction and the area controlled by a stormwater management practice should equal or exceed 20 percent coverage of the project size.

The MPCA may allow practical alternatives where conditions prevent impervious area reduction or on-site stormwater management. Practical alternatives include, but are not limited to:

- Fees paid in an amount specified by the approving agency and then dedicated to stormwater management;
- Off-site stormwater treatment practice implementation for a drainage area comparable in size and impervious cover to that of the project;
- Watershed or stream restoration; or
- Stormwater retrofitting.

The recharge, channel protection storage volume, overbank, and extreme flood protection volume requirements specified in the Manual do not apply to redevelopment projects unless specified in an approved and adopted basin plan (Manual, p. 279-280).

Special Criteria:

Recharge/Infiltration

Regular Waters

None required, although recharge and infiltration are strongly encouraged through better site design and stormwater credits (Manual, p. 246).

CGP Special Waters

All projects within 1 mile of special or impaired waters must have at least ½ inch infiltration per acre of new impervious surface – per the Construction Stormwater General Permit. Full infiltration of the excess runoff volume from the two year-24 hour storm event is one option contained in the CGP to meet the requirement for temperature control for trout streams (Manual, p. 246). This is also found in the Construction Stormwater General Permit.

Offset/mitigation: N/A

Compliance: Use an ordinance or Other Regulatory Mechanism to address postconstruction runoff from New Development and Redevelopment projects to the extent allowable under law (NPDES/SDS MS4 General Permit No. MNR040000, Part V(G)(5)(b), p. 13). Requirements for permanent treatment are also found in the Construction Stormwater General Permit.

Inspection & Maintenance/O&M: Ensure adequate long-term operation and maintenance of BMPs (NPDES/SDS MS4 General Permit No. MNR040000, Part V(G)(5)(c), p. 13). Requirements for inspection and maintenance are also found in the Construction Stormwater General Permit.

Does development on agricultural land qualify as redevelopment? No (Manual, p. 279-280).

Definition of impervious surface: “Impervious Surface” means a constructed hard surface that either prevents or retards the entry of water into the soil and causes water to run off the surface in greater quantities and at an increased rate of flow than prior to development. Examples include rooftops, sidewalks, patios, driveways, parking lots, storage areas, and concrete, asphalt, or gravel roads (CGP, p. 24).

Definition of predevelopment: N/A

Stormwater Program Summary – Minnesota

Definition of new development: Construction activities that create new impervious surface (General Permit, Appendix B, p. 21).

Definition of redevelopment: Refers to alterations of a property that change the “footprint” of a site or building in such a way that results in the disturbance of equal to or greater than one (1) acre of land. The term is not intended to include such activities as exterior remodeling, which would not be expected to cause adverse Storm Water quality impacts and offer no new opportunity for Storm Water controls (General Permit, Appendix B, p. 22).

Additional references: N/A

Stormwater Program Summary – Ohio

Program Name: Ohio Storm Water Program

Program Status: Existing Regulations, Rainwater and Land Development Manual
Updated in March 2010 (non-regulatory)

Regulatory Authority: NPDES Permit #'s OHC000003 and OHQ000002 and state regulation: Ohio
Administrative Code Chapter 3745-39

Standard source: Construction general permit and Phase II MS4 General Permit.

Website references:

Rainwater and Land Development Manual:

<http://www.dnr.state.oh.us/tabid/9186/Default.aspx>

Regulations:

http://www.epa.state.oh.us/portals/35/rules/39_all.pdf

MS4 General Permit:

http://www.epa.state.oh.us/dsw/permits/GP_MS4StormWater.aspx

Construction General Permit:

<http://www.epa.state.oh.us/LinkClick.aspx?fileticket=y8Ff9MECTVQ%3d&tabid=3466>

FAQ:

<http://www.epa.state.oh.us/dsw/storm/CGPPCQA.aspx>

(Note: MS4 requirements to be equivalent to requirements in CGP.)

Size Threshold: The Permittee must develop, implement and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into your small MS4. The permittee's program must ensure that controls are in place that would prevent or minimize water quality impacts. (OAC# 3745-39-03, p.8)

Limited geographic area where standards apply: Statewide through construction storm water general permit. In regulated MS4 areas through the MS4 general permit.

Significant exemptions: None.

Post-Construction Standards for New Development:

On-site Retention/Volume Control

Structural (designed) post-construction storm water treatment practices must be sized to treat the water quality volume (WQv) equivalent to the volume of runoff from a 0.75-inch rainfall and shall be determined according to the following equation: $WQv = C * P * A / 12$ (Ohio General Construction Permit p. 24).

Note: Small MS4's construction and post-construction requirements are equivalent with the technical requirements set forth in the Ohio EPA NPDES Construction General Permit(s) applicable for the MS4's permit area. (Ohio MS4 General Permit, p.12)

Stormwater Program Summary – Ohio

Channel Protection Requirement

Extended detention for WQv of 24-48 hours to minimize stream bed erosion from frequent small storms.

Water Quality Requirement

Reduce at least 80% of the average annual total suspended solids (TSS) load and floatable debris, including oil and petroleum products (Assumed to be achieved by water quality volume control standards alone or in combination with pretreatment). (Stormwater Post-construction FAQ 10)

Flood Control Requirement

None

Redevelopment standard: Post-construction BMPs are required on projects that qualify as redevelopment. Structural BMPs are still required on large construction sites. However, due to the site constraints typically incurred in redevelopment situations, three options for meeting post-construction requirements are provided: treatment must be provided for 20% of the WQv; the impervious area of the proposed redevelopment project will be 20% less than the impervious area on the existing site prior to the construction activity; or a combination of the two. (Storm Water Post-construction FAQ 17)

Special criteria: None

Offset /mitigation: Ohio EPA may authorize the offsite mitigation of the post-construction requirements of Part III.G.2.g of this permit on a case by case basis provided the permittee clearly demonstrates the BMPs listed in Table 2 are not feasible and the following criteria is met: (1) a maintenance agreement or policy is established to ensure operations and treatment in perpetuity; (2) the offsite location discharges to the same HUC-14 watershed unit; and (3) the mitigation ratio of the WQv is 1.5 to 1 or the WQv at the point of retrofit, whichever is greater. Requests for offsite mitigation must be received prior to receipt of the NOI applications. (Ohio General Construction Permit p. 24)

Compliance: MS4s must use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State or local law. The ordinance or other regulatory mechanism shall, at a minimum, be equivalent with the technical requirements set forth in the Ohio EPA NPDES General Storm Water Permit(s) for Construction Activities applicable for your permit area which have been issued (Ohio MS4 General Permit, p.12)

Inspection & Maintenance/O&M: MS4s post-construction SWMP shall also ensure that long-term operation and maintenance (O&M) plans are developed and agreements in place for all applicable sites (Ohio MS4 General Permit, p.13)

Does development on agricultural land qualify as redevelopment? No.

Definition of impervious surface: None

Definition of New Development: None

Definition of Predevelopment: None

Stormwater Program Summary – Ohio

Definition of Redevelopment: Ohio EPA interprets redevelopment to mean construction projects on land where impervious surfaces had previously been developed and where the new land use will not increase the runoff coefficient. (Stormwater Post-construction FAQ 15)

Stormwater Program Summary – Wisconsin

Program Name: Wisconsin Stormwater Management Program

Program Status: Proposed state regulations, dated September 24, 2010.

Regulatory Authority: Proposed State regulation revisions (Chapters NR 151, 153, and 155 and 216, Wis. Adm. Code); Existing permit: authorizing WPDES Permit No. WI-S050075-1 (Note: Summary below incorporates information from existing permit, and the proposed state regulation revisions, where applicable).

Standard source: Final Rulemaking Order, dated September 24, 2010 (NR 151.12 and NR 151.24)

Website references:

WPDES Permit No. WI-S050075:

http://dnr.wi.gov/runoff/pdf/stormwater/permits/S050075-1%20_municipal_permit.pdf

Proposed Regulations:

<https://health.wisconsin.gov/admrules/public/Rmo?nRmold=1703>

Size Threshold: Land development projects that disturb greater than 1 acre. (Regulations, 151.11, p. 28)

Limited geographic area where standards apply: Applies statewide

Significant exemptions:

Post-construction sites with less than 10 percent connected imperviousness, based on the area of land disturbance, provided the cumulative area of all impervious surfaces is less than one acre.

Agricultural facilities and practices, including impervious area (Regulations, 151.121, p. 34)

Post-Construction Standards for New Development:

On-Site Retention/Volume Control:

BMPs shall be designed, installed and maintained to infiltrate runoff in accordance with the following or to the maximum extent practicable:

(a) Low imperviousness. For development with less than 40 percent connected imperviousness, infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 90 percent of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this requirement, no more than one percent of the post-construction site is required as an effective infiltration area.

(b) Moderate imperviousness. For development with more than 40 percent and up to 80 percent connected imperviousness, infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 75 percent of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this requirement, no more than 2 percent of the post-construction site is required as an effective infiltration area.

(c) High imperviousness. For development with more than 80 percent connected imperviousness, infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 60 percent of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this

Stormwater Program Summary – Wisconsin

requirement, no more than 2 percent of the post-construction site is required as an effective infiltration area.

Channel protection requirement:

By design, BMPs shall be employed to maintain or reduce the 1-year, 24-hour and the 2-year, 24-hour post-construction peak runoff discharge rates to the 1-year, 24-hour and the 2-year, 24-hour pre-development peak runoff discharge rates respectively, or to the maximum extent practicable. (Regulations, 151.123, p. 36)

Channel protection requirements are waived if the stormwater runoff discharge is directly into a lake over 5,000 acres or a stream or river segment draining more than 500 square miles, or if the site is an infill site of less than 5 acres (Regulations, 151.123(2), p. 37).

Water Quality requirement:

80% TSS reduction required, or maximum extent practicable. (Regulations, 151.122, p. 35)

Flood control requirement:

Optional criteria applied at the discretion of the appropriate plan review/approval authority to control the developed condition peak rate of discharge from the 10-year 24-hour design storm event to the pre-development rate. (Manual, p. 2.1)

Redevelopment standard:

40% TSS reduction required from parking areas and roads, or maximum extent practicable. (Regulations, 151.122, p. 35)

For sites originally built after 2004, when the stormwater permit was first in effect, redevelopments must meet the 2004 standards or the current redevelopment standard, whichever is more stringent. (Regulations, 151.121(5), p. 35)

Special criteria:

Runoff from Existing Development: Within 2 years of receiving permit coverage, municipalities must achieve a 20 percent reduction in total suspended solids, or to the maximum extent practicable, as compared to no controls, for runoff from existing development that enters waters of the state.

Within 7 years of receiving permit coverage, municipalities must achieve a 40 percent reduction in total suspended solids.

Offset /mitigation: N/A

Compliance: Compliance is achieved through enforcement of a stormwater management ordinance and review of site plans by each locality. (Permit, 2.5.1, p. 12)

Inspection & Maintenance/O&M: The landowner is required to maintain all post-construction BMPs (Regulations, 151.121(3), p. 3)

Does development on agricultural land qualify as redevelopment? No.

Stormwater Program Summary – Wisconsin

Definition of impervious surface: "Impervious surface" means an area that releases as runoff all or a large portion of the precipitation that falls on it, except for frozen soil. Rooftops, sidewalks, driveways, gravel or paved parking lots and streets are examples of surfaces that typically are impervious. (Regulations, 151.002(17), p. 12)

Definition of new development: N/A

Definition of predevelopment: Predevelopment is not specifically defined, but may include grassland, woodland, or cropland. (Regulations, 151.123, p. 36)

Definition of redevelopment: "Redevelopment" means areas where development is replacing older development. (Permit, 5.19, p. 23)

Stormwater Program Summary – Arkansas

Program Name: Arkansas Stormwater Program

Program Status: Existing Regulations

Regulatory Authority: NPDES Permit and state regulation: Arkansas Water and Air Pollution Control Act, as amended (§§ 8-4-101— 8-4-106, 8-4-201 — 8-4-229, 8-4-301 — 8-4-314); Pollution Control and Ecology Commission Regulation 6 (May, 2010)

Standard source: Phase II MS4 general permit

Website references:

Phase II MS4 general NPDES Permit:

http://www.adeg.state.ar.us/water/branch_permits/general_permits/stormwater/pdfs/arr040000.pdf

Regulations:

http://www.adeg.state.ar.us/regs/files/reg06_final_100618.pdf

<http://www.arkleg.state.ar.us/bureau/Publications/Arkansas%20Code/Title%208.pdf>

Size Threshold: Projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into a small MS4. (NPDES Permit No. ARR040000, p.8)

Limited geographic area where standards apply: Only in the regulated MS4 areas (urbanized areas).

Significant exemptions: None.

Post-Construction Standards for New Development:

On-Site Retention/Volume Control

N/A

Channel protection requirement

N/A

Water Quality requirement

A goal of at least 80% removal of total suspended solids from these flows which exceed predevelopment levels should be used in designing and installing stormwater management controls (where practicable) (NPDES Permit No. ARR040000, p. 8).

Flood control requirement.

N/A

Redevelopment standard: None

Special criteria: None

Offset /mitigation: There is no program for mitigation.

Compliance:

Stormwater Program Summary – Arkansas

The post-construction SWMP shall include pre-construction site plan review for compliance with local requirements for post-construction management of stormwater (NPDES Permit No. ARR040000, p. 10).

Inspection & Maintenance/O&M: Maintenance and Inspection provisions are required by NPDES permit to be incorporated into local stormwater programs and ordinances (NPDES Permit No.: ARR040000, p. 9).

Does development on agricultural land qualify as redevelopment? N/A

Definition of impervious surface: none

Definition of New Development: none

Definition of Predevelopment: none

Definition of Redevelopment: none

Additional references:

Fact Sheet:

http://www.adeg.state.ar.us/water/branch_permits/general_permits/stormwater/pdfs/arr040000_renewal_fact_sheet.pdf

Stormwater Program Summary – Louisiana

Program Name: Louisiana Pollutant Discharge Elimination System (LPDES) Program

Program Status: Existing LPDES General Permit LAR 040000, Effective December, 5, 2007

Regulatory Authority: Louisiana’s Water Quality Regulations (LAC 33: Chapter IX) authorizes stormwater discharges in compliance with the NPDES MS4 General Permit

Standard source: No BMP Guidance or manuals;

Website references:

Regulations

<http://www.deq.louisiana.gov/portal/Portals/0/planning/regs/title33/33v09.pdf>

General Permit

<http://www.deq.state.la.us/portal/Portals/0/permits/lpdes/LAR040000.pdf>

Size Threshold: New development and redevelopment projects that disturb greater than or equal to 1 acre, including projects less than 1 acre that are part of a larger common plan of development or sale (Title 33, Part IX, Subpart 2, Section 2523, B.5.a).

Limited geographic area where standards apply: MS4s only.

Significant exemptions: N/A

Post-Construction Standards for New Development:

On-Site Retention/Volume Control:

N/A

Channel protection requirement:

N/A

Water Quality requirement:

The program must ensure that controls are in place that would prevent or minimize water quality impacts.

Flood control requirement:

N/A

Redevelopment standard:

N/A

Special criteria: N/A

Offset /mitigation: N/A

Compliance: Use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under state, tribal, or local law (Title 33, Part IX, Subpart 2, Section 2523, B.5.b.ii).

Stormwater Program Summary – Louisiana

Inspection & Maintenance/O&M: Ensure adequate long-term operation and maintenance of BMPs (Title 33, Part IX, Subpart 2, Section 2523, B.5.b.iii).

Does development on agricultural land qualify as redevelopment? N/A

Definition of impervious surface: N/A

Definition of predevelopment: N/A

Definition of new development: N/A

Definition of redevelopment: N/A

Additional references: N/A

Stormwater Program Summary – New Mexico

Program Name: USEPA Region 6 Small MS4's National Pollutant Discharge Elimination System (NPDES)

Program Status: Existing MS4 Stormwater Program: Permits issued July 1, 2007.

Regulatory Authority: US EPA NPDES Permit (Permit Nos: NMR040000, NMR040001)

Standard source: NPDES Phase II MS4 general permit

Website reference:

2007 General Permit for Storm Water Discharge Associated with Small Municipal Separate Storm Sewer System <http://www.epa.gov/region6/water/npdes/sw/sms4/evpermit.pdf>

Size Threshold: Development projects that disturb a land area of one acre or greater, including projects less than one acre that are part of a larger common plan of development or sale. (Permit Nos: NMR040000, NMR040001, Part 5.2.5, p. 20)

Limited geographic area where standards apply: Regulated MS4 areas designated as urbanized areas or listed in the permit

Significant exemptions: N/A

Post-Construction Standards for New Development:

On-Site Retention/Volume Control

None

Channel protection requirement

None

Water Quality requirement

None

Flood control requirement

None

Redevelopment standard

None

Special criteria:

None

Offset /mitigation: There is no language regarding mitigation or offset for stormwater management requirements in the permit.

Compliance: Compliance is achieved through submission of annual reports by the MS4 to the EPA. MS4s must develop an ordinance to address post-construction stormwater runoff.

Inspection & Maintenance/O&M: Maintenance and Inspection provisions are established by the permitted MS4. The NPDES General Permit requires a permittee to properly operate and maintain all

Stormwater Program Summary – New Mexico

facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. (Permit Nos: NMR040000, NMR040001, Part 6.10, page 32)

Does development on agricultural land qualify as redevelopment? No.

Definition of impervious surface: None

Definition of predevelopment: None

Definition of new development: None

Definition of redevelopment: None

Stormwater Program Summary – Oklahoma

Program Name: Oklahoma Storm Water Program

Program Status: Existing Regulations

Regulatory Authority: NPDES Permit (OKR04) and state regulation: Oklahoma Administrative Code 252:606-1-3(b)(3)

Standard source: Phase II MS4 general permit

Website references:

Regulations:

<http://www.oar.state.ok.us/oar/codedoc02.nsf/frmMain?OpenFrameSet&Frame=Main&Src=75tnm2shfcdnm8pb4dthj0chedppmcbq8dtmmak31ctijujrgcln50ob7ckj42tbkdt374obdcli00>

MS4 General Permit:

[http://www.deq.state.ok.us/WQDnew/stormwater/ms4/phase ii small ms4 final permit 8 feb 2005.pdf](http://www.deq.state.ok.us/WQDnew/stormwater/ms4/phase%20ii%20small%20ms4%20final%20permit%208%20feb%202005.pdf)

Fact Sheet:

[http://www.deq.state.ok.us/WQDnew/stormwater/ms4/phase ii small ms4 fact sheet 8 feb 2005.pdf](http://www.deq.state.ok.us/WQDnew/stormwater/ms4/phase%20ii%20small%20ms4%20fact%20sheet%208%20feb%202005.pdf)

Size Threshold: Projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the MS4. (Oklahoma MS4 General Permit, p. 15).

Limited geographic area where standards apply: Only in the regulated MS4 areas (urbanized areas).

Significant exemptions: Does not apply to discharges originating on Indian lands (Fact Sheet, p. 6).

Post-Construction Standards for New Development:

The State program does not provide numerical standards. The SWPPP must address stormwater runoff from new development and redevelopment projects and develop programs that will minimize water quality impacts, and attempt to maintain pre-development runoff conditions (Oklahoma MS4 General Permit, p. 15).

Redevelopment standard: N/A

Special criteria: None

Offset /mitigation: None.

Compliance: MS4s must use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State or local law (Oklahoma MS4 General Permit, p. 15).

Inspection & Maintenance/O&M: The MS4 must provide details in the SWPPP on how it will ensure the long-term operation and maintenance (O&M) of selected BMPs. Options to help ensure that future O&M responsibilities must be clearly identified including any agreements between the MS4 and other

Stormwater Program Summary – Oklahoma

parties such as the post-development landowners or regional authorities (Oklahoma MS4 General Permit, p.16).

Does development on agricultural land qualify as redevelopment? N/A

Definition of impervious surface: None

Definition of New Development: None

Definition of Predevelopment: None

Definition of Redevelopment: None

Stormwater Program Summary – Texas

Program Name: Texas Pollutant Discharge Elimination System

Program Status: Existing Texas Pollutant Discharge Elimination System (TPDES); August 13, 2007

Regulatory Authority: The Texas Commission on Environmental Quality (TXCEQ) administers the TPDES Permit: General Permit No. TXR040000 (Small MS4s), and Large and Medium MS4s (Title 30 TAC Chapter 213)

Standard source: Phase II MS4 general permit.

Website reference:

Regulations:

http://www.tceq.state.tx.us/permitting/water_quality/stormwater/WQ_ms4_AIR.html#phase2

Size Threshold: Projects that disturb greater than or equal to one acre of land, including projects less than one acre that are part of a larger common plan of development or sale that will result in disturbance of one or more acres, that discharge into the small MS4. (MS4 Permit)

Limited geographic area where standards apply: MS4s

Significant exemptions: N/A

Post-Construction Standards for New Development:

On-Site Retention/Volume Control: N/A

Channel protection requirement: N/A

Water Quality requirement: N/A

Flood control requirement: N/A

Redevelopment standard: N/A

Special criteria: N/A

Offset /mitigation: N/A

Compliance: Compliance is achieved through the review of site plans by each MS4 locality

Inspection & Maintenance/O&M: Standard permit language requiring provisions for adequate long-term operation and maintenance of BMPs.

Does development on agricultural land qualify as redevelopment? No

Definition of impervious surface: N/A

Definition of impervious surface: N/A

Stormwater Program Summary – Texas

Definition of predevelopment: N/A

Definition of new development: N/A

Definition of redevelopment: N/A

Additional references:

Edwards Aquifer: <http://www.cwr.utexas.edu/reports/pdf/1998/rpt98-tnrcc.pdf>

Stormwater Program Summary – Iowa

Program Name: Iowa State Stormwater Management Program

Program Status: Existing regulations and MS4 permit

Regulatory Authority: Iowa Administrative Code 567—64.13(2). This rule is intended to implement Iowa Code chapter 455B, division III, part 1 (455B.171 to 455B.187)

Standard source: Iowa stormwater management manual (non-regulatory)

Website references:

Stormwater Management Manual (non-regulatory):
<http://www.intrans.iastate.edu/pubs/stormwater/index.cfm>

Regulations:

<http://www.legis.state.ia.us/ACO/IAhtml/567.htm>

<http://coolice.legis.state.ia.us/coolice/default.asp?category=billinfo&service=iowacode&qa=83&input=455B>

Size Threshold: New development or redevelopment that disturbs 1 acre or more. (Iowa Stormwater Management Manual, 2A-4, p. 1)

Limited geographic area where standards apply: Applies to regulated MS4 jurisdictions.

Significant exemptions: none

Post-Construction Standards for New Development:

The standards below are taken from the Stormwater Management Manual, which is non-regulatory, but may be adopted by the MS4s.

On-Site Retention/Volume Control:

A statewide WQ_v of 1.25 inches is recommended or jurisdictions can use a similar value derived from an analysis of local historical rainfall data, i.e., adjusted based on location factors in Iowa (climate districts 1-9) (Manual, 2A-4, p.3).

Provide for treatment of the WQ_v for all developments where stormwater management is required. A minimum WQ_v of 0.2 inches per acre should be met at sites or in drainage areas that have less than 15% impervious cover (Manual, 2A-4, p.3).

Drainage areas having no impervious cover and no proposed disturbance during development may be excluded from the WQ_v calculations. Designers are encouraged to use these areas as non-structural practices for WQ_v treatment (Manual, 2A-4, p.3).

Channel protection requirement

Protection of stream channels is accomplished through three complementary criteria:

1. Extended detention of the 1-year, 24-hour storm for a period of 24 hours using structural stormwater controls. This requirement may be waived by a local jurisdiction for sites that discharge directly into piped stormwater drainage systems, larger streams, rivers, wetlands,

Stormwater Program Summary – Iowa

lakes, or other situations where the reduction in the smaller flows will not have an impact on streambank or channel integrity.

2. Implement velocity control, energy dissipation, streambank stabilization, and erosion prevention practices and structures as necessary in the stormwater management system to prevent downstream erosion and streambank damage.
3. Establishment of riparian stream buffers on the development site with 100-ft buffers recommended where feasible. (Manual, 2A-4, p.4).

Water Quality requirement:

WQv from a site to reduce post-development TSS loadings by 80%. Jurisdictions may use other parameters based on local conditions (Manual, 2A-4, p. 2).

Flood control requirement:

Post-development 5-year, 24-hour storm peak discharge rate (denoted Q_{p5}) must be reduced to the predevelopment (or natural conditions) discharge rate using structural stormwater controls (Manual, 2A-4, p 5).

Smaller storm events (e.g., 2-year and 10-year) should be controlled through the combination of the extended detention for the 1-year, 24-hour event (CP_v) and the control of the 25-year peak rate for overbank flood protection. These design guidelines are intended to be used together. If the control of the 1-year, 24-hour storm is exempted, then for overbank flood protection, peak flow attenuation of the 2-year (Q_{p2}) through the 50-year (Q_{p-50}) return frequency storm events must be provided. This guideline may be adjusted by a local jurisdiction for areas where all downstream conveyances and receiving waters have the natural capacity to handle the full build-out 50-year storm through a combination of channel capacity and overbank flood storage without causing flood damage (Manual, 2A-4, p 5).

Extreme flood protection:

Extreme flood protection is provided by controlling and/or safely conveying the 100-year, 24-hour storm event (denoted Q_f) (Manual, 2A-4, p 5).

Redevelopment standard: Above applies to redevelopment

Special criteria:

Critical or Sensitive areas: Restrictions or additional requirements may be used where new development or redevelopment occurs in critical or sensitive areas, or as identified through a watershed study or plan (Manual, 2A-4, p.2)

Downstream analysis: A downstream hydrologic analysis is performed to determine if there are any additional impacts in terms of peak flow increase or downstream flooding (Manual, 2A-4, p.5).

Groundwater recharge. Recharge to groundwater is implemented to the extent practicable through the use of nonstructural better site design techniques that allow for recharge of stormwater runoff into the soil. The annual recharge from the post-development site should approximate the annual recharge from the pre-development or existing site conditions, based on soil types. Stormwater runoff from a hotspot should not be infiltrated without effective pretreatment (Manual, 2A-4, p5).

Stormwater Program Summary – Iowa

Annual groundwater recharge rates should be maintained to the extent practicable through the use of nonstructural methods.

Infiltration

Use of site design practices that promote infiltration (LID/ Better Site Design) mentioned throughout Section 2A-4 of the stormwater manual.

Offset /mitigation: Not addressed

Compliance: Compliance is achieved through site plan review by localities.

Inspection & Maintenance/O&M:

Operation and maintenance plan provides:

- A clear assignment of stormwater inspection and maintenance responsibilities
- The routine and non-routine maintenance tasks to be undertaken
- A schedule for inspection and maintenance
- Any necessary legally binding maintenance agreements (Manual, 2A-4, p.6)

Localities may also require evidence that project proponents have executed an approved method of BMP maintenance, repair, and replacement before construction approvals are issued. May require Operation and Maintenance agreement, Maintenance Plan and locality may conduct annual inspections (Manual, 2A-2, p.5).

Does development on agricultural land qualify as redevelopment? Not addressed

Definition of Predevelopment: not given although “natural conditions” is given in parentheses in the Manual text when predevelopment mentioned (Manual, A2-4, p4).

Definition of New development: land disturbing activities, structural development (construction, installation, or expansion of a building or other structure), and/or creation of impervious surfaces on a previously undeveloped site (Manual, A2-4, p2).

Definition of Redevelopment: structural development (construction, installation, or expansion of a building or other structure), creation or addition of impervious surfaces, replacement of impervious surface not part of routine maintenance, and land disturbing activities associated with structural or impervious development. Redevelopment does not include such activities as exterior remodeling (Manual, A2-4, p2).

Definition of impervious surface: None

Stormwater Program Summary – Kansas

Program Name: Kansas Municipal Stormwater Program

Program Status: Existing Kansas National Pollutant Discharge Elimination System MS4 Permit

Regulatory Authority: Kansas Water Quality Regulations; NPDES program, or both, with code reference

Standard source: Guidance Manuals have been developed individually by the Phase I municipalities, and a consortium of 19 Phase II municipalities. There is no State level guidance manual.

Website reference:

Regulations:

<http://www.kdheks.gov/muni/ms4.htm>

Size Threshold: Projects that will result in a land disturbance area of greater than or equal to one (1) acre, including new developments and redevelopments that will result in a land disturbance area less than one (1) acre that are part of a larger common plan of development or sale that would disturb one (1) acre or more.

Limited geographic area where standards apply: Applies to designated MS4s statewide.

Significant exemptions: N/A

Post-Construction Standards for New Development:

On-Site Retention/Volume Control:

No state level requirement

Many jurisdictions have adopted the 85th to 90th percentile rain event to compute the required treatment volume (WQv) and a corresponding standard list of acceptable practices (comparable to 2000 MD Manual).

Channel protection requirement:

No state level requirement; however several Phase I and II Design Manuals are adopted by ordinance and reflect standard design criteria:

- 24-hour detention of the runoff volume from the 1-year frequency, 24-hour storm; or
- The volume difference between the pre- and post-development runoff for the 1-year frequency, 24-hour storm event must be infiltrated, reused or evaporated.

Water Quality requirement:

No state level requirement other than the standard permit language of developing, implementing, and enforcing a program to address post-construction stormwater runoff from regulated new- and redevelopment projects, to include:

- The development and implementation of BMPs to prevent or minimize adverse water quality impacts; and
- Strategies which include a combination of structural and/or nonstructural BMPs appropriate for the municipality.

Flood control requirement (enacted 2000):

Stormwater Program Summary – Kansas

No state level requirement; however several Phase I and II Design Manuals are adopted by ordinance and reflect standard design criteria: No increase in peak discharge from the 2-year, 5-year, 10-year, 25-year and 100-year return frequency, 24-hour duration storm events.

Redevelopment standard: N/A

Special criteria: N/A

Compliance: Standard NPDES Permit language that requires a local ordinance or other regulatory mechanism to address post construction runoff from new development and redevelopment projects to the extent allowable under State. Compliance is achieved through review of site plans by each locality's stormwater management program.

Inspection & Maintenance/O&M: Standard NPDES Permit language that requires a local ordinance to ensure adequate long term operation and maintenance of BMPs. Requires the MS4 to develop a maintenance agreement and provide verification of maintenance provisions for post-construction management practices through inspections.

Does development on agricultural land qualify as redevelopment? N/A

Definition of impervious surface: N/A

Definition of predevelopment: N/A

Definition of new development: N/A

Definition of redevelopment: N/A

Stormwater Program Summary – Missouri

Program Name: Missouri Storm Water Regulations

Program Status: Existing MS4 Stormwater Program

Regulatory Authority: NPDES Permit No. Mo-R04000 (June 13, 2008); State-wide Stormwater Regulations authorized by 10 CSR 20-6.200(November 2009).

Standard source: Phase II MS4 general permit

Website reference:

Regulations

<http://www.sos.mo.gov/adrules/csr/current/10csr/10c20-6a.pdf>

General Permit

<http://www.dnr.mo.gov/env/wpp/permits/issued/R040000.pdf>

Guidance Manual

<http://www.dnr.mo.gov/env/wpp/stormwater/sw-guide-phaseii.htm>

Size Threshold: Projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge in to the permittee's regulated small MS4 (General Permit, 4.2.5.1, p. 11).

Limited geographic area where standards apply: Applies to MS4s statewide.

Significant exemptions: N/A

Post-Construction Standards for New Development:

On-Site Retention/Volume Control: N/A

Channel protection requirement: N/A

Water Quality requirement:

Minimize water quality impacts by reasonably mimicking pre-construction runoff conditions in affected new development and incorporating water quality protection in affected redevelopment projects to the maximum extent practicable, and include a combination of structural and/or non-structural BMPs appropriate for the permittee's community (General Permit, 4.2.5.1.1, p. 11).

Flood control requirement: N/A

Redevelopment standard: N/A

Special criteria: N/A

Offset /mitigation: N/A

Stormwater Program Summary – Missouri

Compliance: Include an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State, or local law.

Inspection & Maintenance/O&M: A plan to ensure adequate long-term operation and maintenance of selected BMPs, including types of agreements between the permittee and other parties such as the post-development landowners or regional authorities (General Permit, 4.2.5.1.3, p. 12).

Does development on agricultural land qualify as redevelopment? No

Definition of impervious surface: N/A

Definition of predevelopment: N/A

Definition of new development: N/A

Definition of redevelopment: N/A

Additional references: N/A

Stormwater Program Summary – Nebraska

Program Name: Nebraska Department of Environmental Quality NPDES Permits and Compliance Unit

Program Status: Existing MS4 Stormwater Program: Statewide NPDES Phase II Permits originally issued July 2005, and currently on administrative extension. For three specific counties, permits were issued in October 2009, and expire in 2014.

Regulatory Authority: NPDES Permit; Nebraska Administrative Code

Standard source: NPDES Permit Number: NER210000, NER300000; Nebraska Administrative Code, Title 119 - Nebraska Department Of Environmental Quality, Chapter 10 - NPDES Regulations Applicable To Storm Water Discharges

Website references:

General Permit for Storm Water Discharge Associated with Small Municipal Separate Storm Sewer System - Not online; Availability by calling Nebraska Department of Environmental Quality

Title 119 Rules and Regulations Pertaining To the Issuance Of Permits Under The National Pollutant Discharge Elimination System <http://www.deq.state.ne.us/RuleAndR.nsf/pages/119-TOC>

Size Threshold: Objects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the Small Municipal Separate Storm Sewer System (sMS4). (NPDES Permit Number NER210000 - Phase II MS4s in Douglas, Sarpy, and Washington Counties of Nebraska, Part IV, Section B, Number 5, Page 10.)

Limited geographic area where standards apply:

NPDES Permit Number NER300000 – statewide to any Phase II MS4s except those covered under NER21000.

NPDES Permit Number NER210000 - Phase II MS4s in Douglas, Sarpy, and Washington Counties of Nebraska

Significant exemptions: N/A

Post-Construction Standards for New Development:

On-Site Retention/Volume Control: None

Channel protection requirement: None

Water Quality requirement: None

Flood control requirement: None

Redevelopment standard: None

Special criteria:

Part VIII. Wet Weather Monitoring Requirements

The permittee shall conduct baseline wet weather monitoring during the second year and fourth year after the issuance of authorization. (NPDES Permit Number NER300000, Part VIII, Page 14.)

Offset /mitigation: There is no language regarding mitigation or offset for stormwater management requirements in the permit or Administrative Code.

Stormwater Program Summary – Nebraska

Compliance: Compliance is achieved through submission of annual reports by the MS4. MS4s must develop an ordinance to address post-construction stormwater runoff.

Inspection & Maintenance/O&M: Maintenance and Inspection provisions are established by the permitted MS4. The permit only requires that the MS4s ensure adequate long-term operation and maintenance of BMPs. (NPDES Permit Number NER210000 - Phase II MS4s in Douglas, Sarpy, and Washington Counties of Nebraska, Part IV, Section B, Number 5, Page 10.)

Does development on agricultural land qualify as redevelopment? No.

Definition of impervious surface: None

Definition of predevelopment: None

Definition of new development: None

Definition of redevelopment: None

Stormwater Program Summary – Colorado

Program Name: Colorado Storm Water Program

Program Status: Existing Regulations

Regulatory Authority: NPDES Permit COR-070000, COR-090000 & COR-080000; Phase I individual MS4 permits; Code of Colorado Regulations (CCR 61.8(11)(a)(ii)(E))

Standard source: None. Treatment standards are determined by individual communities.

Website references:

Colorado's Phase II Municipal Guidance:

<http://www.cdphe.state.co.us/wq/PermitsUnit/POLICYGUIDANCEFACTSHEETS/factsheets/ms4guide.pdf>

Regulations:

<http://www.cdphe.state.co.us/regulations/wqccregs/100261dischargepermitsystemnew.pdf>

Colorado's Stormwater Program Fact Sheet

<http://www.cdphe.state.co.us/wq/PermitsUnit/POLICYGUIDANCEFACTSHEETS/factsheets/SWFactsheet.pdf>

Size Threshold: Projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the MS4. (Required by all MS4 permits and in CCR 6; Guidance, p.35)

Limited geographic area where standards apply: Only in the regulated MS4 areas.

Significant exemptions: None

Post-Construction Standards for New Development:

On-Site Retention/Volume Control: None

Channel protection requirement: None

Water Quality requirement: None

Flood control requirement: None

Redevelopment standard: None

Redevelopment standard: Same as for new development.

Special criteria: None

Offset /mitigation: Colorado's Water Quality Control Division (Division), has assembled a Pollutant Trading Policy as a guide to future trading initiatives within the state. It provides an initial framework under which trades can be established and approved, defining key terms, outlining use limitations and minimum trade criteria, and establishing the relationship between trades and more traditional water quality control measures.

<http://www.cdphe.state.co.us/wq/PermitsUnit/POLICYGUIDANCEFACTSHEETS/policyandguidance/TradingPolicy.pdf>

Stormwater Program Summary – Colorado

Compliance: The permit requires that the MS4 operator establish an ordinance or other regulatory mechanism requiring the implementation of post-construction runoff controls. (Guidance, p.35) Compliance is achieved through review of site plans and inspections conducted by each localities stormwater management program. (Guidance, P. 40)

Inspection & Maintenance/O&M: Maintenance and Inspection provisions are required by state regulation to be incorporated into local stormwater programs and ordinances. (Regulations,61.8(11)) As the permittee, the ultimate responsibility for compliance is placed on the municipality, however most municipalities prefer and require that responsibility for operation and maintenance of structural controls, such as a stormwater detention basin, remain with the private-property owner. (Guidance p. 38)

Does development on agricultural land qualify as redevelopment? Not exempted.

Definition of impervious surface: None

Definition of new development: None. MS4s must define “significant new development” individually. (Guidance, p. 36)

Definition of redevelopment: None. MS4s must define “significant redevelopment” individually. (Guidance, p. 36)

Definition of predevelopment: None.

Additional references:

Denver Urban Drainage and Flood Control Manual (often used reference):
http://www.udfcd.org/downloads/down_critmanual.htm

Stormwater Program Summary – Montana

Program Name: Montana Pollutant Discharge Elimination system (MPDES) program

Program Status: Existing MS4 Stormwater Program: Permits originally issued January 2005, and reissued in January 2010.

Regulatory Authority: NPDES Permit (MTR040000); State-wide Administrative Rules of Montana (ARM), Title 17, Chapter 30, Subchapters 11 and 13

Standard source: NPDES Phase II MS4 general Permit

Website references:

2010 General Permit for Storm Water Discharge Associated with Small Municipal Separate Storm Sewer System

http://deq.mt.gov/wqinfo/MPDES/StormWater/pdf/MTR040000_GeneralPermit_2010.pdf

Regulations:

<http://deq.mt.gov/dir/legal/Chapters/CH30-11.pdf>

Size Threshold: Development projects that disturb a land area of one acre or greater, including projects less than one acre that are part of a larger common plan of development or sale. (MPDES Permit # MTR040000, p. 13)

Limited geographic area where standards apply: Regulated MS4s

Significant exemptions: N/A

Post-Construction Standards for New Development:

On-Site Retention/Volume Control

For new development or redevelopment projects greater than or equal to one acre, a program shall include a process to require the implementation of low impact development practices that infiltrate, evapotranspire, or capture for reuse the runoff generated from the first 0.5 inches of rainfall from a 24-hour storm preceded by 48 hours of no measurable precipitation. This process must be in place by January 1, 2012. (MPDES Permit # MTR040000, p. 15)

Channel protection requirement

Detention/retention ponds shall be sized for a 2-year event, but must also be analyzed for a 100-year event, to ensure that no home sites or drainfields are inundated during this event. (DEQ Circular 8, page 8).

Water Quality requirement

None

Flood control requirement

See channel protection requirement.

Redevelopment standard

None

Stormwater Program Summary – Montana

Special criteria:

Stormwater Discharge Monitoring

Part IV of the MPDES General Permit requires the regulated MS4's to perform sampling, testing, and reporting of storm water discharges. Specific monitoring parameters and protocols are spelled out in the permit. (MPDES Permit # MTR040000, p. 22-27)

Offset /mitigation: There is no language regarding mitigation or offset for stormwater management requirements in the permit or Administrative rules.

Compliance: Compliance is achieved through submission of annual reports by the MS4. (Administrative Rules of Montana, Title 17, Chapter 30, Subchapter 11, Section 1111 (14)).

Inspection & Maintenance/O&M: Maintenance and Inspection provisions are established by the permitted MS4. The MPDES General Permit and the Administrative Rules require a permittee to properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. (Administrative Rules of Montana, Title 17, Chapter 30, Subchapter 13, Section 1342 (5))

Does development on agricultural land qualify as redevelopment? No.

Definition of impervious surface: None

Definition of predevelopment: None

Definition of new development: None

Definition of redevelopment: None

Additional references:

Montana DEQ Circular Number 8: MONTANA STANDARDS FOR SUBDIVISION STORM DRAINAGE
<http://deq.mt.gov/wqinfo/Circulars/CIRCULAR8.pdf>

Stormwater Program Summary – North Dakota

Program Name: North Dakota General Permit for Storm Water Discharges from Small MS4s

Program Status: Existing state-wide MS4 stormwater program, through NPDES Permit *NDR04-0000* (expires March 31, 2014).

Regulatory Authority: NPDES general permit with North Dakota Department of Health as the delegated permitting authority (Chapter 33-16-01 of North Dakota Department of Health rules promulgated under Chapter 61-28 of the North Dakota Century Code).

Standard source: Phase II MS4 general permit

Website reference:

Small MS4 Permit: <http://www.ndhealth.gov/wg/Storm/MS4/NDR04per20090701F.pdf>

Size Threshold: Projects that disturb a land area one acre or greater, including projects less than one acre that are part of a larger common plan of development or sale (Permit, Section V.G.4, pg. 10).

Limited geographic area where standards apply: Only in the regulated MS4 areas (urbanized areas)

Significant exemptions: N/A

Post-Construction Standards for New Development:

On-Site Retention/Volume Control: N/A

Channel protection requirement: N/A

Water Quality requirement: Guidelines shown in Appendix 1 of MS4 Permit, but no standard requirements. Guidelines essentially call for treatment of 0.5 inch of runoff from impervious area.

Flood control requirement: N/A

Redevelopment standard: N/A

Size Threshold: N/A

Special criteria: N/A

Offset /mitigation: N/A

Compliance: MS4 must ensure that stormwater controls are installed according to specifications (Permit, Section V.G.5.c.1, pg. 11).

Inspection & Maintenance/O&M: The MS4s must develop, implement, and document procedures to ensure adequate long-term operation and maintenance of BMPs, including procedures to enforce the requirements for other parties to maintain BMPs as appropriate (Permit, Section V.G.5.c, pg. 11).

Stormwater Program Summary – North Dakota

Does development on agricultural land qualify as redevelopment? No.

Definition of impervious surface: Not officially defined.

Definition of Predevelopment: Not officially defined.

Definition of New Development: “New development” means construction activities that create new impervious surface (Permit, Section VIII.13, pg. 20).

Definition of Redevelopment: “Redevelopment” refers to alterations of a property that change the “footprint” of a site or building in such a way that results in the disturbance of equal to or greater than 1 acre of land. The term is not intended to include such activities as exterior remodeling, which would not be expected to cause adverse stormwater quality impacts and offer no new opportunity for stormwater controls (Permit, Section VIII.22, pg. 20).

Additional references:

MS4 Designation Criteria: http://www.ndhealth.gov/WQ/Storm/MS4/NDR04-MS4_Designation_Criteria.pdf

MS4 Fact Sheet: <http://www.ndhealth.gov/wq/Storm/MS4/NDR04sob20090701F.pdf>

DOH MS4 Permit Program website: <http://www.ndhealth.gov/wq/Storm/MS4/MS4Permit.htm>

Stormwater Program Summary – South Dakota

Program Name: South Dakota General Permit for Storm Water Discharges from Small MS4s

Program Status: Existing MS4 Stormwater Program: State-wide general permit and guidance manual issued December 2002; all MS4s to have applied by March 10, 2003.

Regulatory Authority: MS4 General Permit administered by South Dakota Department of Environment and Natural Resources, Surface Water Quality Program as mandated in the Administrative Rules of South Dakota (Chapters 74:52:01 through 74:52:11)

Standard source: Phase II MS4 general permit

Website reference:

Surface Water Discharge Permit Regulations: <http://legis.state.sd.us/rules/DisplayRule.aspx?Rule=74:52>

General Surface Water Discharge Permit for Small Municipal Separate Storm Sewer Systems in South Dakota: <http://denr.sd.gov/des/sw/eforms/MS4.pdf>

Phase II Municipal Guidance Manual: <http://denr.sd.gov/des/sw/eforms/MunicipalGuide.pdf>

Size Threshold: Projects that disturb a land area one acre or greater, including projects less than one acre that are part of a larger common plan of development or sale (Permit, Section 4.5, pg. 13).

Limited geographic area where standards apply: Regulated MS4 areas (urbanized areas)

Significant exemptions:

Development/redevelopment sites zoned single or double family residential disturbing between 1 and 2 acres, or with only 2 residential lots if they are determined to pose a low risk of impact (Manual, pg. 6-2).

Post-Construction Standards for New Development:

On-Site Retention/Volume Control: N/A

Channel protection requirement: N/A

Water Quality requirement: BMPs must minimize water quality impacts. No specific state-wide standards beyond this (Permit, Section 4.5, pg. 13).

Flood control requirement: N/A

Redevelopment standard: N/A

Size Threshold: N/A

Special criteria:

If a Total Maximum Daily Load (TMDL) is developed and implemented for any waterbody into which the MS4 discharges, the stormwater management plan must be reviewed to determine whether the

Stormwater Program Summary – South Dakota

program meets the requirements of the TMDL implementation plan. If not, the plan must be modified, as appropriate, to meet the applicable requirements and schedules of the TMDL allocation(s) (Permit, Section 3.8.3, pg. 9).

Offset /mitigation: N/A

Compliance: Standards are reviewed by the MS4 during site plan review at the local level (Manual, pg. 6-2).

Inspection & Maintenance/O&M: The MS4 operator must ensure adequate long-term operation and maintenance of BMPs. MS4s should require that, as part of the plat, it be noted that the legal title holder to the property is responsible for maintaining the BMPs, and that the municipality has the legal right to enforce that obligation, either by legal action to obtain compliance, or by performing the maintenance itself and then collecting those expenses by recording a lien on the property. Post-construction inspection and enforcement programs are required (Manual, pg. 6-4).

Does development on agricultural land qualify as redevelopment? No.

Definition of impervious surface: Not specifically defined.

Definition of Predevelopment: Not specifically defined.

Definition of New Development: Not specifically defined.

Definition of Redevelopment: Not specifically defined.

Additional references:

DENR Storm Water Permitting website: <http://denr.sd.gov/des/sw/stormwater.aspx>

Stormwater Program Summary – Utah

Program Name: Utah Small MS4 General UPDES Permit

Program Status: Existing Program

Regulatory Authority: Utah Permit No. UTR090000, July 26, 2010; Utah Code – Title 19 – Chapter 05 – Water Quality Act

Standard source: Phase II MS4 general permit

Website reference:

Utah DEQ and Permit:

<http://www.waterquality.utah.gov/UPDES/stormwatermun.htm>

Size Threshold: Projects disturbing greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale. (UPDES Permit 4.2.5.1.)

Limited geographic area where standards apply: Applies statewide

Significant exemptions: N/A

Post-Construction Standards for New Development:

No specific technical standard is developed at the State level; however, specific standards goals are established in the Permit:

- The objective of this control measure is for the hydrology associated with new development to mirror the pre-development hydrology or to improve the hydrology of a redeveloped site and reduce the discharge of storm water.
(UPDES Permit 4.2.5.)
- Include non-structural BMPs such as requirements and standards:
 - To minimize development in areas susceptible to erosion and sediment loss;
 - to minimize the disturbance of native soils and vegetation;
 - to preserve areas in the municipality that provide important water quality benefits;
 - to implement measures for flood control; and to protect the integrity of natural resources and sensitive areas.
(UPDES Permit 4.2.5.3.1)

On-Site Retention/Volume Control:

No specific criteria are established; however the permit requires:

- The program shall include a process to evaluate and encourage a Low Impact Development (LID) approach which encourages the implementation of structural BMPs, where practicable, that infiltrate, evapotranspire or harvest and use storm water from the site to protect water quality.
- Structural controls may include green infrastructure practices such as rainwater harvesting, rain gardens, permeable pavement, and vegetated swales.
(UPDES Permit 4.2.5.3.2)
- Develop a plan to retrofit existing developed sites that are adversely impacting water quality. The retrofit plan must be developed to emphasize controls that infiltrate, evapotranspire or harvest and use storm water discharges.
(UPDES Permit 4.2.5.3.)

Stormwater Program Summary – Utah

- As of May 11, 2010, rainwater harvesting is legal in the state of Utah.

Channel protection requirement: N/A

Water Quality requirement:

No specific criteria are established; however the permit requires:

- Permittees shall provide developers and contractors with preferred design specifications to more effectively treat storm water for different development types such as industrial parks, commercial strip malls, retail gasoline outlets, restaurants, parking lots, automotive service facilities, street and road construction, and projects located in, adjacent to, or discharging to environmentally sensitive areas. (UPDES Permit 4.2.5.4.2)
- Documentation on how the requirements of the ordinance or other regulatory mechanism will protect water quality and reduce the discharge of pollutants to the MS4. Documentation shall include:
 - How long-term storm water BMPs were selected;
 - The pollutant removal expected from the selected BMPs; and
 - The technical basis which supports the performance claims for the selected BMPs. (UPDES Permit 4.2.5.2.2)

Flood control requirement: N/A

Redevelopment standard: N/A

Special criteria: none.

Offset /mitigation: N/A

Compliance:

Compliance achieved through local MS4 program plan review, approval and inspections. Ordinances must develop an enforcement strategy and implement the enforcement provisions of the ordinance or other regulatory mechanism. Procedures for enforcement of BMPs include: Procedures that include specific processes and sanctions to minimize the occurrence of, and obtain compliance from, chronic and recalcitrant violators which shall include appropriate, escalating enforcement procedures and actions. (UPDES Permit 4.2.5.2.1)

Inspection & Maintenance/O&M: Maintenance and Inspection provisions are required by state permit:

- The ordinance or other regulatory mechanism must include a provision for both construction-phase inspection and post-construction access for Permittees to inspect storm water BMPs on private properties that discharge to the MS4 as described in Part 4.2.5.5.1.
- Structural BMPs shall be inspected at least once during installation (Part 4.2.5.5.2), inspected annually by the Permittee and maintained as necessary (Part 4.2.5.5.3).
- The property owner/operator or third party may conduct an inspection in lieu of the Permittee through a maintenance agreement and with annual certification provided by the owner/operator or third party (Part 4.2.5.5.1).
- The Permittee is required to verify and ensure proper maintenance of those structures at least once during the 5-year Permit term (Part 4.2.5.5.3).

Stormwater Program Summary – Utah

Does development on agricultural land qualify as redevelopment? No

Definition of impervious surface: N/A

Definition of predevelopment: N/A

Definition of new development: N/A

Definition of redevelopment: “Redevelopment” is the replacement or improvement of impervious surfaces on a developed site.

Stormwater Program Summary – Wyoming

Program Name: Wyoming State Stormwater Management Program.

Program Status: Existing

Regulatory Authority: NPDES, WYDES permit, WYR04-0000 issued under provisions of WY Water Quality Rules and Regulations (WYRR), Chapter 2 Section 6(j)(i)(C)

Standard source: Phase II MS4 general permit

Website references:

WYPDES Stormwater Program: This provides guidance to MS4s to implement 6 minimum measures.

http://deq.state.wy.us/wqd/WYPDES_Permitting/WYPDES_Storm_Water/stormwater.asp

State of Wyoming Phase 2 Municipal Guidance

http://deq.state.wy.us/wqd/WYPDES_Permitting/WYPDES_Storm_Water/downloads/WY_SW_Muni_Guide5-10.pdf

Example stormwater design manual for Casper, WY modeled after Urban Drainage and Flood Control District (UDFCD) Drainage Criteria Manual (Vol.3)

http://www.udfcd.org/downloads/down_critmanual.htm

Permit

http://deq.state.wy.us/wqd/WYPDES_Permitting/WYPDES_Storm_Water/downloads/final_MS4_permit_08_8-0867.pdf

Regulations

<http://deq.state.wy.us/wqd/wqdrules/> See Chapter 2.

Size Threshold: Significant development or new development defined by projects that disturb one acre or more; site that discharges to sensitive waters such as on 303d list, less than one acre applies (Permit, p. 16)

Limited geographic area where standards apply: Applies statewide to regulated MS4s with exception of Wind River Indian Reservation (Permit, p. 1)

Significant exemptions: The permit covers all areas within the State of Wyoming except areas within the Wind River Indian Reservation where the State does not have jurisdiction. Permit applies to MS4 Phase II communities. (Permit, p. 1)

Post-Construction Standards for New Development: Permit specifies only that permittees must develop, implement, and enforce a program that ensures that controls are in place that would prevent or minimize water quality impacts from development and redevelopment. (Permit, p. 16)

On-Site Retention/Volume Control: None.

Channel protection requirement: None.

Water Quality requirement:

Stormwater Program Summary – Wyoming

The permit does not establish numeric effluent limits. However, the control measures specified in the SWMP shall ensure that storm water discharges from the facility do not cause a violation of state water quality standards as defined in Chapter 1 of the Wyoming Water Quality Rules and Regulations. (Permit, p. 27)

Flood control requirement: None

Redevelopment standard: Redevelopment standard same as new development

Special criteria:

None.

Offset /mitigation: Not addressed.

Compliance:

The MS4 operator should review their existing “review and approval” procedures to determine if the current program includes elements required in the regulation, or if additional improvements are warranted. If a review and approval procedure does not exist, a program should be developed.

Monitoring:

This may be a part of Section 6.3.6 of WYRR04-0000 that requires the MS4 operator to ensure adequate long-term operation and maintenance of BMPs to ensure long-term compliance. An inspection and enforcement program is required. Elements of the programs to include are provided.

Inspection & Maintenance/O&M: The MS4 operator is expected to develop procedures, ordinances or other regulatory mechanisms that will require, to the extent allowed by state or local law, that BMPs be appropriately designed and planned, and provide for enforceable operation and maintenance by the owner/operator. (Municipal Guidance, p. 46)

Does development on agricultural land qualify as redevelopment? There is no reference to agricultural land redevelopment

Definition of redevelopment: means alterations of a property that change the “footprint” of a site or building in such a way that results in a land surface disturbance of one or more acres. The term does not include such activities as exterior remodeling. (Permit, p. 4)

Definition of predevelopment: N/A

Definition of New development: N/A

Definition of impervious surface: N/A

Additional references:

<http://deq.state.wy.us/wqd/watershed/nps/NPS.htm>

Stormwater Program Summary – Arizona

Program Name: Arizona Pollutant Discharge Elimination System

Program Status: Existing Regulations

Regulatory Authority: NPDES Permit (AZG2002-002) and state regulation: Arizona Administrative Code (A.A.C.) R18-9-A905

Standard source: Phase II MS4 general permit

Website reference:

Permit:

<http://www.azdeq.gov/environ/water/permits/download/ms4small.pdf>

Regulations:

http://www.azsos.gov/public_services/title_18/18-09.htm

Fact Sheet:

<http://www.azdeq.gov/environ/water/permits/download/ms4fact1.pdf>

Size Threshold: The permittee shall develop, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, and discharge into the small MS4. The program must ensure that controls are in place that would prevent or minimize water quality impacts (NPDES permit AZG2002-002, p. 12).

Limited geographic area where standards apply: Only applies in regulated MS4 areas

Significant exemptions: Does not apply to Indian Lands

Post-Construction Standards for New Development:

On-Site Retention/Volume Control: None

Channel protection requirement: None

Water Quality requirement: None

Flood control requirement: None

Redevelopment standard: None

Redevelopment standard: The State program does not provide numerical standards. (Regulations A.A.R18-9-A905)

Special criteria: None

Offset /mitigation:

The State program does not have a stormwater offset program.

Compliance: The MS4 must establish an ordinance or other regulatory mechanism used to address post-construction runoff control and procedures to ensure compliance with local requirements (NPDES Permit No. AZG2002-002 p. 13).

Stormwater Program Summary – Arizona

Inspection & Maintenance/O&M: Maintenance and Inspection provisions are required by state regulation to be incorporated into local stormwater programs and ordinances. (Regulations, A.A.R18-9-A905) (NPDES Permit No. AZG2002-002 p. 13).

Does development on agricultural land qualify as redevelopment? Not addressed.

Definition of impervious surface: None

Definition of New Development: None

Definition of Pre-development: None

Definition of Redevelopment: None

Additional references:

MS4 Guidance document:

<http://www.azdeq.gov/environ/water/permits/download/ms4guid.pdf>

Model SWMP

<http://www.azdeq.gov/environ/water/permits/download/ms4model.pdf>

Stormwater Program Summary – California

Program Name: California NPDES Stormwater Discharge General Permit

Program Status: Existing General NPDES Permits: Phase I, Administratively Extended Phase II

Regulatory Authority:

- Small MS4 Permit, Phase II, Permit No. CAS000004 issued 2003, covers approximately 250 entities in California. Administratively extended.
- Medium and Large MS4 Permits, Phase I, issued in 1990 through 9 Regional Water Quality Control Boards. Most of these permits are issued to a group of co-permittees encompassing an entire metropolitan area. These permits are reissued as the permits expire.

Standard source: Varies; each MS4 or regional co-permittees have adopted reference and technical guidance documents:

MS4 Permit Phase I and Phase II Technical Design resources:

http://www.swrcb.ca.gov/water_issues/programs/stormwater/links.shtml#phase_i

California Stormwater Quality Association:

<http://www.cabmphandbooks.com>

Website reference:

General Permit

State Water Resources Control Board:

http://www.swrcb.ca.gov/water_issues/programs/stormwater/municipal.shtml

Size Threshold: Jurisdictions have adopted varying thresholds based on land disturbance, development type and density, impervious cover, etc. However, the minimum (or maximum) required by the permit:

- Develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the Small MS4 by ensuring that controls are in place that would prevent or minimize water quality impacts.

Limited geographic area where standards apply: Regulated MS4s statewide.

Significant exemptions: N/A

Post-Construction Standards for New Development:

- Develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the Small MS4 by ensuring that controls are in place that would prevent or minimize water quality impacts;
- Develop and implement strategies, which include a combination of structural and/or non-structural BMPs;

On-Site Retention/Volume Control:

Generally, the Phase I permits require a tiered implementation criterion. The following is excerpted from the California Regional Water Quality Control Board San Diego Region (Region 9):

Stormwater Program Summary – California

- LID BMPs shall be sized and designed to ensure onsite retention without runoff, of the volume of runoff produced from a 24-hour 85th percentile storm event, as determined from the jurisdictions 85th Percentile Precipitation Map¹⁴ (“design capture volume”);
- If onsite retention LID BMPs are technically infeasible based on the permit authority definitions, approved LID biofiltration BMPs may treat any volume that is not retained onsite by the LID BMPs (*refer to Water Quality Requirement below*).

The Phase II General Permit (administratively extended), includes similar language, however “retention” of the runoff is not specifically required, only treatment (*see Water Quality Requirement below*). Proposed draft language pending re-issuance.

Channel protection requirement:

Channel protection or hydromodification control is referenced in the Small MS4 Permit and has also been adopted by the State Water Control Board for implementation through the Construction General Permit for new development and re-development stormwater performance standards that relate to post-construction runoff and applies to all regulated land disturbing activities statewide:

Post-development peak storm water runoff discharge rates shall not exceed the estimated pre-development rate for developments where the increased peak storm water discharge rate will result in increased potential for downstream erosion. Individual jurisdictions are adopting standards applicable to their conditions.

Water Quality requirement:

- If onsite retention LID BMPs are technically infeasible based on the permit authority definitions, approved LID biofiltration BMPs may treat any volume that is not retained onsite by the LID BMPs as follows:
 - The LID biofiltration BMPs must be designed for an appropriate surface loading rate to prevent erosion, scour and channeling within the BMP.
 - Due to the flow through design of biofiltration BMPs, the total volume of the BMP, including pore spaces and prefilter detention volume, must be sized to hold at least 0.75 times the design storm volume that is not retained onsite by LID retention BMPs;
- If it is shown to be technically infeasible to treat the remaining volume up to and including the design capture volume using LID BMPs (retention or biofiltration), the project must implement conventional treatment control BMPs in accordance with the required flow or volume design standard and must also participate in an LID waiver program.

Flood control requirement:

Flood control requirements are referenced as hydromodification and vary by locality.

Redevelopment standard:

Redevelopment standards vary across the Regional Water Board Phase I Permits. The following is representative redevelopment criteria taken from State Water Quality Control Board Region 2:

- Redevelopment is defined as any land-disturbing activity that results in the creation, addition, or replacement of exterior impervious surface area on a site on which some past development has occurred that creates and/or replaces 10,000 square feet or more of impervious surface (collectively over the entire project site):
 - Where a redevelopment project results in an alteration of **more than 50 percent** of the impervious surface of a previously existing development that was not subject to

Stormwater Program Summary – California

stormwater quality, the entire project, consisting of all existing, new, and/or replaced impervious surfaces, must be included in the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from the entire redevelopment project).

- Where a redevelopment results in an alteration of **less than 50 percent** of the impervious surface of a previously existing development that was not subject to Provision C.3, only the new and/or replaced impervious surface of the project must be included in the treatment system design (i.e., stormwater treatment systems must be designed and sized to treat stormwater runoff from the new and/or replaced impervious surface of the project).

This requirement is not spelled out in Phase II General Permit, and the definition, as listed below, is from the Phase II General Permit.

Special criteria: N/A

Offset /mitigation: Offset, offsite, and/or mitigation programs are authorized by the Phase I and Phase II permits for when on-site compliance is not feasible.

Compliance: Local ordinance or other regulatory mechanism to address post construction runoff from new development and redevelopment projects to the extent allowable under State or local law.

Inspection & Maintenance/O&M: Permittee shall require that the applicant provide verification of maintenance provisions through such means as may be appropriate, including, but not limited to legal agreements, covenants, CEQA mitigation requirements and/or Conditional Use Permits.

Does development on agricultural land qualify as redevelopment? Unknown

Definition of impervious surface: N/A.

Definition of new development: New Development means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision. (MS4 Phase II GP Definitions-Attachment 9)

Definition of predevelopment: N/A

Definition of redevelopment: MS4 Phase II General Permit - Redevelopment means, on an already developed site, the creation or addition of at least 5,000 square feet of impervious area. Redevelopment includes, but is not limited to: the expansion of a building footprint or addition of a structure; structural development including an increase in gross floor area and/ or exterior construction or remodeling; and land disturbing activities related with structural or impervious surfaces. Where redevelopment results in an increase of less than fifty percent of the impervious surfaces of a previously existing development, and the existing development was not subject to these Design Standards, the Design Standards apply only to the addition, and not to the entire development.

Stormwater Program Summary – Hawaii

Program Name: Hawaii Polluted Runoff Control Program

Program Status: Existing Regulations

Regulatory Authority: NPDES Permit and state regulations: Hawaii Administrative Rules, Chapter 11-55

Standard source: Phase II MS4 general permit

Website reference:

Handbook:

A Handbook for Stormwater Reclamation and Reuse Best Management Practices in Hawaii December
http://hawaii.gov/dlnr/cwrm/planning/hsrar_handbook.pdf

Regulations:

<http://gen.doh.hawaii.gov/sites/har/AdmRules1/11-55appk.pdf>

<http://gen.doh.hawaii.gov/sites/har/AdmRules1/11-55.pdf>

Size Threshold: Projects that disturb greater than or equal to one acre, including construction sites less than one acre that are part of a larger common plan of development or sale that would disturb one acre or more, that, include structural and/or non-structural best management practices to minimize water quality impacts and attempt to maintain pre-development runoff conditions. (H.A.R Chapter 11-55 Appendix K-10)

Limited geographic area where standards apply: Regulated MS4 areas (urbanized areas).

Significant exemptions: None

Post-Construction Standards for New Development:

On-Site Retention/Volume Control: None

Channel protection requirement: None

Water Quality requirement: None

Flood control requirement: None

Redevelopment standard: None

Redevelopment standard: N/A

Special criteria: The permittee shall incorporate the total maximum daily load into the small municipal separate storm sewer system's storm water management plan within sixty days of the date of submittal of the plan and implement necessary steps to meet the plan. (H.A.R Chapter 11-55 Appendix K-5)

Offset /mitigation: The State program does not have a stormwater offset program.

Compliance: Compliance is achieved through review of site plans by each locality's stormwater management program and through the establishment of rules, ordinances, or other regulatory mechanism, including enforcement procedures and actions, that address post construction runoff from new development and redevelopment project. (H.A.R Chapter 11-55 Appendix K-10)

Stormwater Program Summary – Hawaii

Inspection & Maintenance/O&M: Maintenance and Inspection provisions are required by state regulation to be incorporated into local stormwater programs and ordinances. (H.A.R Chapter 11-55 Appendix K-10)

Does development on agricultural land qualify as redevelopment? N/A

Definition of impervious surface: None

Definition of New Development: None

Definition of Predevelopment: None

Definition of Redevelopment: None

Additional references:

Hawaii Office of Planning, Coastal Zone Management Program,
Low Impact Development, A Practitioner's Guide, June 2006
http://hawaii.gov/dbedt/czm/initiative/lid/lid_guide_2006.pdf

City and County of Honolulu, Department of Environmental
Services, *Stormwater Management Plan*, March 2007
<http://www.cleanwaterhonolulu.com/storm/notices/swmp/>

State of Hawaii, Department of Transportation, Highways Division,
Stormwater Permanent Best Practices Manual, March 2007
<http://stormwaterhawaii.com/pdfs/PermanentManual.pdf>

Stormwater Program Summary – Nevada

Program Name: Nevada Division of Environmental Protection (NDEP) Bureau of Water Pollution Control Stormwater Discharge Permit Program

Program Status: Existing MS4 Stormwater Program; Permits originally issued 2002, reissued in July 2010 and expire in 2015.

Regulatory Authority: NPDES Phase I MS4 Permits (Las Vegas Valley, Nevada DOT, and Truckee Meadows); NPDES Phase II General Permit Number: NVS040000

Standard source: NPDES Permit Number: NVS040000

Website references:

Phase I MS4 permits – http://ndep.nv.gov/bwpc/storm_large.htm

Phase II MS4 permit – http://ndep.nv.gov/bwpc/storm_small03.htm

Statutes & Regulations – Section 445A – <http://leg.state.nv.us/law1.cfm>

Size Threshold: Projects that disturb areas ≥ 1 acre, including projects < 1 acre that are part of a larger common plan of development or sale. (NPDES Permit Number NVS040000, Section VI.E.3.a.i, Page 16).
Note: All of Nevada's MS4 Permits contain similar language concerning post-construction requirements.

Limited geographic area where standards apply: Regulated MS4 areas

Significant exemptions: N/A

Post-Construction Standards for New Development:

On-Site Retention/Volume Control

Volumetric treatment control BMP design criteria for permittees must meet one of the following conditions:

1. Historical rainfall records for the Permittee's locality to determine the maximized capture stormwater volume for the area for the 24- hour event using the formula recommended in Urban Runoff Quality Management, Water Environment Federation Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998); or
2. The volume of annual runoff based on unit basin storage water quality volume, to achieve at least 80% of volume treatment by the method recommended in hydrology manuals, textbooks or similar technical publications.

(NPDES Permit Number NVS040000, Section VI.E.4.d.i, Page 18)

Channel protection requirement

Permittees must develop design standards for peak-urban runoff from NDSR projects that will provide protection against downstream erosion (NPDES Permit Number NVS040000, Section VI.E.4, Page 18)

Water Quality requirement

General requirements (see NPDES Permit No. NVS000001, Part IV.F.2, Page 9)

Flood control requirement

General requirements (see NPDES Permit No. NVS000001, Part IV.F.3.a.iv, Page 10)

Stormwater Program Summary – Nevada

Redevelopment standard

None

Special criteria:

Low Impact Development

Permittees must develop low-impact development (“LID”) measures that will remain in effect after construction is complete and are effective and appropriate for the Permittee’s locality and its environment. The program will outline the selected LID measures found effective and appropriate for the Permittee’s locality along with a summary and schedule for implementation in the MS4; (NPDES Permit Number NVS040000, Section VI.E.3.a.ii Page 16)

Carson City UA Discharges to Clear Creek

Permittees within the Carson City UA shall also maintain a separate Clear Creek Master Stormwater Management Program (“CCSWMP”). The CCSWMP must be developed, implemented, and enforced to reduce the discharge of pollutants to the MEP, to protect water quality, and to satisfy the appropriate water quality requirements of the CWA. At a minimum, silt fences, vegetative buffer strips, or equivalent sediment controls are required for all down slope boundaries (and for those side slope boundaries deemed appropriate as dictated by individual site conditions) of a construction area, unless a sediment basin providing storage for a calculated volume of runoff from a 2-year, 24-hour storm or 3,600 cubic feet of storage per acre drained, shall be provided. (NPDES Permit Number NVS040000, Section VI.G Page 22)

Offset /mitigation: None indicated

Compliance: Compliance with the NPDES permit is achieved through submission of annual reports by the MS4. NDEP also audits the individual MS4 Permittees once every 5 years.

Inspection & Maintenance/O&M: Maintenance and Inspection provisions are established by the permitted MS4.

Does development on agricultural land qualify as redevelopment? Not indicated.

Definition of impervious surface: None

Definition of predevelopment: None

Definition of new development: None

Definition of redevelopment: None

Stormwater Program Summary – Alaska

Program Name: Alaska Pollutant Discharge Elimination System (APDES); Anchorage Phase I MS4 permit

Program Status: Anchorage Phase I MS4 permit effective Feb. 1, 2010. Existing MS4 Regulations (effective 10/31/2008; stormwater permitting transferred from EPA to state authority in October, 2009). Alaska Stormwater Guide issued June 2009; voluntary.

Regulatory Authority: State stormwater regulation (18 AAC 83 APDES) and NPDES program

Standard source: Anchorage Phase I MS4 permit (Part II.B.2)

Website references:

Anchorage Phase I MS4 permit

[http://yosemite.epa.gov/r10/water.nsf/NPDES+Permits/MS4+requirements+-+Region+10/\\$FILE/ATTCZX11/AKS052558%20FP.pdf](http://yosemite.epa.gov/r10/water.nsf/NPDES+Permits/MS4+requirements+-+Region+10/$FILE/ATTCZX11/AKS052558%20FP.pdf)

Regulations:

<http://www.dec.state.ak.us/regulations/pdfs/18%20AAC%2083.pdf>

Alaska Stormwater Guide:

<http://www.dec.state.ak.us/water/wnpspc/stormwater/docs/AKSWGGuide.pdf>

Size Threshold: Land development projects that result in a land disturbance of 10,000 square feet or more.

Limited geographic area where standards apply: Anchorage Phase I MS4 area.

Significant exemptions: N/A

Post-Construction Standards for New Development:

On-Site Retention/Volume Control:

Required to keep and manage the runoff generated from the first 0.52 inches of rainfall from a 24 hour event preceded by 48 hours of no measurable precipitation (Part II.B.2.a.i)

Channel protection requirement:

N/A

Water Quality requirement:

In the Alaska Stormwater Guide, the goal is to reduce average annual postdevelopment TSS loadings by 80% through application of the volume control requirements. Stormwater Guide, p. 3.10)

Flood control requirement:

In the Alaska Stormwater Guide, the goal is to provide peak discharge control of the 5-year storm event such that the postdevelopment peak rate does not exceed the downstream conveyance capacity or cause overbank flooding in local urban watersheds. Some jurisdictions may require peak discharge control for the 2-year storm event. Evaluate the effects of the 100-year storm on the storm water management system, adjacent property, and downstream

Stormwater Program Summary – Alaska

facilities and property. Manage the effects of the extreme storm event through detention controls or floodplain management. (Stormwater Guide, p. 3.10)

Redevelopment standard:

Same as new development.

Special criteria: N/A

Offset/Mitigation: For projects that cannot meet the 100% retention requirement onsite, office mitigation within the same subwatershed may be available subject to restrictions developed by the MS4 (Part II.B.2.a.ii).

Compliance: Implemented through the Anchorage MS4 permit and voluntarily through the Alaska Stormwater Guide.

Inspection & Maintenance/O&M: Operation and Maintenance agreements required under the Anchorage MS4 permit (Part II.B.2.e).

Does development on agricultural land qualify as redevelopment? N/A

Definition of impervious surface: N/A

Definition of predevelopment: N/A

Definition of new development: N/A

Definition of redevelopment: Under Anchorage MS4 permit, redevelopment is defined as “the alteration, renewal or restoration of any developed land or property that results in the land disturbance of 10,000 square feet or more, and that has one of the following characteristics: land that currently has an existing structure, such as buildings or houses; or land that is currently covered with an impervious surface, such as a parking lot or roof; or land that is currently degraded and is covered with sand, gravel, stones, or other non-vegetative covering.”

Additional references:

MS4 permit No: AKS-053406 (Fairbanks and co-permittees):

<http://www.co.fairbanks.ak.us/PWorks/StormWaterManagementProgram/City%20of%20Fbks%20AKS0453406FP.pdf>

Stormwater Program Summary – Idaho

Program Name: Idaho National Pollutant Discharge and Elimination System Program

Program Status: Existing Regulations

Regulatory Authority: Required and regulated by EPA Region 10 under Section 402(p) of the Clean Water Act, 33 U.S.C. § 1342(p), and EPA's "Phase II" regulations for MS4 discharges, published in the Federal Register on December 8, 1999, 64 Fed. Reg. 68722. The Department of Environmental Quality (DEQ) is responsible for certifying that EPA permitted facilities meet Idaho water quality standards ([IDAPA 58.01.02](#)).

Standard source: MS4 permits

How Applied: State program delegates to localities to administer.

Website reference:

Regulations:

EPA: <http://yosemite.epa.gov/R10/WATER.NSF/NPDES+Permits/MS4+requirements+-+Region+10>

Idaho: <http://adm.idaho.gov/adminrules/rules/idapa58/0102.pdf>

Catalog of Stormwater Best Management Practices for Idaho Cities and Counties (September, 2005)
http://www.deq.idaho.gov/water/data_reports/storm_water/catalog/entire.pdf

Size Threshold: One or more acre of land, land, including projects that are less than one acre that are part of a larger common plan of development or sale that disturbs more than one acre.

Limited geographic area where standards apply: Applies statewide

Significant exemptions: N/A

Post-Construction Standards for New Development:

On-Site Retention/Volume Control: None

Channel protection requirement: None

Water Quality requirement: None

Flood control requirement: None

Redevelopment standard: None

Redevelopment standard: N/A

Special criteria:

TMDL Requirements: In a water body where EPA has approved a TMDL, any NPDES permit conditions must be consistent with the assumptions and requirements of available Waste Load Allocations. See 40 C.F.R. §122.44(d)(1)(vii)(B).

Offset /mitigation: N/A

Compliance: Compliance is achieved through development, implementation and enforcement of a Stormwater Management Plan to reduce pollutants to the MEP. (Regulations, 40 CFR §122.34)

Stormwater Program Summary – Idaho

Inspection & Maintenance/O&M: N/A

Does development on agricultural land qualify as redevelopment? No.

Definition of impervious surface: N/A

Definition of predevelopment: N/A

Definition of new development: N/A

Definition of redevelopment: N/A

Additional references: None

Stormwater Program Summary – Oregon

Program Name: Oregon Water Quality Permit Program

Program Status: Phase I MS4 Stormwater Program. The Department of Environmental Quality (DEQ) is administratively extending existing permits, which had expired in February, 2009. Current Phase II MS4 Stormwater Program (effective February, 2007).

Regulatory Authority: Oregon Administrative Rule 340-045 Regulations pertaining to NPDES and Water Pollution Control Facilities establishes the requirement of an NPDES permit by MS4s for stormwater discharges.

Standard source: Phase I MS4 permits

Website reference:

Water Quality Permit Program: <http://www.deq.state.or.us/wq/stormwater/stormwater.htm>

Oregon's Phase II Municipal Stormwater Program:

<http://www.deq.state.or.us/wq/pubs/factsheets/stormwater/ph2munistmprg.pdf>

Regulations:

<http://www.leg.state.or.us/ors/>

Size Threshold: Determined at local level for Phase I permittees, generally 1 acre or larger. Not specified for Phase II programs, but the national regulations are cited, which apply to sites 1 acre and larger.

Limited geographic area where standards apply: Regulated MS4 areas.

Significant exemptions: None.

Post-Construction Standards for New Development:

Minimum thresholds are established for Phase I permittees regulating 90% of all new or replaced impervious surfaces (DEQ staff, 10/21/2010). In general, DEQ expects that the requirements for post-construction stormwater management will be tailored by individual [co]permittees in order to best accommodate local conditions, watershed priorities and achieve the Maximum Extent Practicable standard. Permittees have the flexibility to determine the practices and measurable goals that are most appropriate for their system. The chosen practices and measurable goals, submitted to DEQ as part of the permit application, become the required stormwater management program. Permittees are also required to assess their progress in achieving their programs' measurable goals. If there is an indication of a need for improved controls, permittees are expected to revise their mix of practices to create a more effective program. (See individual permits, Schedule A)

Phase II permittees – no listed requirements

Stormwater Program Summary – Oregon

On-Site Retention/Volume Control:

80% reduction of average annual runoff volume (DEQ staff, 10/21/2010).

Channel protection requirement:

See individual permits.

Water Quality requirement:

[Co]permittees must incorporate Best Management Practices (BMPs) into an enforceable stormwater management manual, including a description of site-specific design requirements and pollutant removal efficiency performance goals that maximize the reduction in discharge of pollutants. (DEQ staff, 10/21/2010)

Flood control requirement:

See individual permits.

Redevelopment standard:

A minimum requirement to capture and treat 80% of the annual average runoff (DEQ staff, 10/21/2010).

Special criteria: *Total Maximum Daily Load (TMDL) Requirements:* If a waste load allocation (WLA) has been assigned to urban stormwater due to a TMDL, permittees are required to develop and propose to the Department specific performance measures and pollutant load reduction benchmarks. Performance measures and pollutant load reduction benchmarks are to be developed over the course of the permit cycle and must be submitted to the Department as part of the permit renewal application. (Oregon's Phase II Municipal Stormwater Program, page 2; Permit No 101348, page 38)

Offset /mitigation: See individual permits. Where site-specific conditions make the post-construction requirements infeasible, [co]permittees programs must require an equivalent approach to reduce pollutant loads, such as off-site stormwater quality management. DEQ expects that these alternative options will be granted by [co]permittees on a project-by-project basis. In some cases, water quality benefits may be realized when off-site mitigation projects are implemented in place of on-site practices, depending on a variety of factors, such as the location and nature of the regional projects and the ancillary benefits they offer (habitat, recreation, open space, flood control, etc.). (DEQ staff, 10/21/2010)

Compliance: Compliance is achieved through the use of an ordinance, permit, contract, order or other regulatory mechanism by the permittee. (Permit no. 101348, page 36)

Inspection & Maintenance/O&M: Phase I permittees, at a minimum, must have a long-term maintenance program with legal authority, the ability to identify and track stormwater management facilities, and include inspection and maintenance requirements, which are reflected in permit conditions. DEQ differentiates the requirements between publicly-owned and operated facilities, and those facilities that are owned or operated by a private entity. DEQ, however, encourages each [co]permittee maintain a general requirement under its legal authority that stormwater treatment facilities be properly operated and maintained. (Permit no. 108016, General Conditions, page 43)

Phase II permittees must ensure that appropriate mechanisms are in place to enforce stormwater programs minimum control measures. (Permit No. 113604 Fact Sheet, p. 6)

Stormwater Program Summary – Oregon

Does development on agricultural land qualify as redevelopment? N/A

Definition of impervious surface: N/A

Definition of predevelopment: N/A

Definition of new development: N/A

Definition of redevelopment: N/A

Additional references:

Department of Environmental Quality memo. Guidelines for Determining the Post-Construction Impervious Area Minimum Threshold for the Municipal Separate Storm Sewer System (MS4) Phase I Permits. June 3, 2009.

DEQ staff, Benjamin Benninghoff, Municipal Stormwater Coordinator. Phone conversation 10/21/2010.

Permit No 101348:

<http://www.deq.state.or.us/wq/wqpermit/docs/individual/npdes/ph1ms4/clackamas/permit.pdf>

Permit No. 113604 Fact Sheet: <http://www.deq.state.or.us/wq/pn/permits/ashlandr.pdf>

Stormwater Program Summary – Washington

Program Name: Washington State Stormwater Management Program

Program Status: Existing Regulations, Phase I enacted in 1995, to be reissued in 2012; Phase II permits issued 2007.

Regulatory Authority: State of Washington Water Pollution Control Law Chapter 90.48 Revised Code of Washington Department of Ecology NPDES permit program

Standard source: Stormwater Management Manuals for both Western and Eastern Washington

Website references:

<http://www.ecy.wa.gov/programs/wq/stormwater/municipal/StrmwtrMan.html>

Municipal Stormwater Programs Fact Sheet: <http://www.ecy.wa.gov/pubs/0610089.pdf>

Stormwater Management Manual for Western Washington (revised 2005):

<http://www.ecy.wa.gov/programs/wq/stormwater/manual.html>

Stormwater Management Manual for Eastern Washington (2004):

<http://www.ecy.wa.gov/programs/wq/stormwater/easternmanual/manual.html>

Regulations:

Phase I Municipal Stormwater General Permit:

<http://www.ecy.wa.gov/programs/wq/stormwater/municipal/phaseIpermit/MODIFIEDpermitDOCS/PhaseIStormwaterGeneralPermit.pdf>

Size Threshold: Land development projects that disturb greater than 2,000 square feet, or greater, of new, replaced or new plus replaced impervious surface area, or has a land disturbing activity of 7,000 square feet or greater. Additional requirements are required for new development that creates or adds 5,000 square feet, or more of new impervious surface area; converts $\frac{3}{4}$ acres, or more, of native vegetation to lawn or landscaped areas; or, converts 2.5 acres, or more, of native vegetation to pasture. (Phase I Municipal Stormwater Permit, Appendix 1, page 10)

Limited geographic area where standards apply: Eastern and Western Washington have different standards for Phase II permittees.

Significant exemptions: Municipal MS3s owned and operated by Washington State Department of Transportation (Phase I Municipal Stormwater General Permit, page 1). Underground utility projects that replace the ground surface with in-kind material or materials with similar runoff characteristics have less stringent requirements. (Phase I Municipal Stormwater General Permit, Appendix A, page 1-2)

Post-Construction Standards for New Development:

On-Site Retention/Volume Control:

The Permittee must require On-site Stormwater Management BMPs to infiltrate, disperse, and retain stormwater runoff onsite to the maximum extent feasible without causing flooding or erosion impacts. Roof Downspout Control BMPs, functionally equivalent to those described in Chapter 3 of Volume III of the *Stormwater Management Manual for Western Washington* (2005), and Dispersion and Soil Quality BMPs, functionally equivalent to those in Chapter 5 of

Stormwater Program Summary – Washington

Volume V, of the *Stormwater Management Manual for Western Washington* (2005) shall be required to reduce the hydrologic disruption of developed sites. (Phase 1 Municipal Stormwater Permit, Appendix 1, page 19)

Channel protection requirement:

Stormwater discharges shall match developed discharge durations to pre-developed durations for the range of pre-developed discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow. The pre-developed condition to be matched shall be a forested land cover unless:

- Reasonable, historic information is available that indicates the site was prairie prior to settlement (modeled as “pasture” in the Western Washington Hydrology Model); or
- The drainage area of the immediate stream and all subsequent downstream basins have had at least 40% total impervious area since 1985. In this case, the pre-developed condition to be matched shall be the existing land cover condition. Where basin-specific studies determine a stream channel to be unstable, even though the above criterion is met, the pre-developed condition assumption shall be the “historic” land cover condition, or a land cover condition commensurate with achieving a target flow regime identified by an approved basin study. This standard requirement is waived for sites that will reliably infiltrate all the runoff from impervious surfaces and converted pervious surfaces. (Phase 1 Municipal Stormwater Permit, Appendix 1, page 25)

Water Quality requirement:

High-use sites that generate high concentrations of oil must achieve Oil Control on the site as defined in the Phase I Municipal Stormwater Permit, Appendix 1, page 19-20. The requirement to provide phosphorous control is determined by the local government with jurisdiction (e.g., through a lake management plan), or the Department of Ecology (e.g., through a waste load allocation). Enhanced treatment for reduction in dissolved metals is required for the following project sites that discharge to fish-bearing streams, lakes, or to waters or conveyance systems tributary to fish-bearing streams or lakes: Industrial project sites, Commercial project sites, multi-family project sites, and high AADT roads. (Phase I Municipal Stormwater Permit, Appendix 1, page 20-21)

Flood control requirement (enacted 2000):

Optional criteria applied at the discretion of the appropriate plan review/approval authority to control the developed condition peak rate of discharge from the 10-year 24-hour design storm event to the pre-development rate. (Manual, p. 2.1)

Redevelopment standard:

All redevelopment shall be required to comply with requirements of the Construction Stormwater Pollution Prevention Plan. In addition, all redevelopment that exceeds certain thresholds shall be required to comply with additional requirements. The following redevelopment shall comply with additional requirements for the new and replaced impervious surfaces and the land disturbed:

- The new, replaced, or total of new plus replaced impervious surfaces is 2,000 square feet or more;
- 7,000 square feet or more of land disturbing activities;
- Adds 5,000 square feet or more of new impervious surfaces;

Stormwater Program Summary – Washington

- Converts $\frac{3}{4}$ acres, or more, of native vegetation to lawn or landscaped areas; or
- Converts 2.5 acres, or more, of native vegetation to pasture.

If the runoff from the new impervious surfaces and converted pervious surfaces is not separated from runoff from other surfaces on the project site, the stormwater treatment facilities must be sized for the entire flow that is directed to them. (Phase 1 Municipal Stormwater Permit, Appendix 1, pages 10-11)

Special criteria: TMDL Requirements: More specific requirements are applied to those permitted areas draining to TMDL listed waters. (Phase I Municipal Stormwater Permit, Appendix 2, page 1)

Offset/Mitigation: There is no program for stormwater mitigation.

Compliance: Compliance is achieved through implementation of a stormwater management plan by the permittee. (Phase I Municipal Stormwater Permit, page 7)

Inspection & Maintenance/O&M: Permittees must require an operation and maintenance manual that is consistent with the provisions in Volume V of the *Stormwater Management Manual for Western Washington* (2005) for all proposed stormwater facilities and BMPs. The party (or parties) responsible for maintenance and operation shall be identified in the operation and maintenance manual. For private facilities approved by the Permittee, a copy of the manual shall be retained onsite or within reasonable access to the site, and shall be transferred with the property to the new owner. For public facilities, a copy of the manual shall be retained in the appropriate department. A log of maintenance activity that indicates what actions were taken shall be kept and be available for inspection by the local government. (Phase I Municipal Stormwater Permit, Appendix 1, page 27)

Does development on agricultural land qualify as redevelopment? No

Definition of impervious surface: a hard surface area that either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development. A hard surface area which causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater. Open, uncovered retention/detention facilities shall not be considered as impervious surfaces for purposes of determining whether the thresholds for application of minimum requirements are exceeded. Open, uncovered retention/detention facilities shall be considered impervious surfaces for purposes of runoff modeling. (Stormwater Management Manual for Western Washington, Glossary p. 25)

Definition of new development: Land disturbing activities, including Class IV -general forest practices that are conversions from timber land to other uses; structural development, including construction or installation of a building or other structure; creation of impervious surfaces; and subdivision, short subdivision and binding site plans, as defined and applied in Chapter 58.17 RCW. Projects meeting the definition of redevelopment shall not be considered new development. (Stormwater Management Manual for Western Washington, Glossary p. 31)

Stormwater Program Summary – Washington

Definition of predevelopment: Predeveloped condition means, “The native vegetation and soils that existed at a site prior to the influence of Euro-American settlement. The pre-developed condition shall be assumed to be forested land cover unless reasonable, historic information is provided that indicates the site was prairie prior to settlement.” (Stormwater Management Manual for Western Washington, Glossary p. 36)

Definition of redevelopment: On a site that is already substantially developed (i.e., has 35% or more of existing impervious surface coverage), the creation or addition of impervious surfaces; the expansion of a building footprint or addition or replacement of a structure; structural development including construction, installation or expansion of a building or other structure; replacement of impervious surface that is not part of a routine maintenance activity; and land disturbing activities. (Stormwater Management Manual for Western Washington, Glossary p. 38)