

* bolded subsections are proposed sub-group topic areas

1. Updates to Standards

a. CPv and Qp Detention Standards

- i. For LID projects (credits/waiver)
- ii. For linear projects
- iii. Disconnection credits, how to apply CPv standard
- iv. Revise/clarify “Alternative” CPv standard/waiver
- v. Consider revising the 2cfs waiver
- vi. Evaluate validity of “large drainage area” waiver (for Cpv and Qp10/Qp100)
- vii. Research alternative standards
 1. Runoff reduction (a la CWP/Chesapeake SW Network proposals)
 2. Distributed Runoff Control (DRC) method
 3. release rates
- viii. Change to comparison of runoff rates and volume between pre and post development instead of total runoff released over 12 or 24hrs
- ix. Evaluate/clarify CPv “compliance” method
 1. Compare results of Harringtons Method to modeled center of mass detention time
 2. Compare modeled Center of Mass Detention time with original center of mass detention time discussed by original CPv method promulgators (Capucitti) and perhaps even DRC method
 3. Evaluate/understand/provide guidance on impact of “complex” orifices (WQv-ED orifice + CPv orifice)
 4. Provide guidance on demonstrating CPv is met when dealing with additional ponds in the drainage area

b. Infiltration

- i. Research cold climate design considerations
 1. overflows, infiltration beneath frost layer, storage of 10y design storm
- ii. Require use of sand filter for infiltration basins
- iii. Reconsider requirement that infiltration take place on native soils only
- iv. Reconsider requirement to pre-treat 100% of WQV
- v. Set specific standards for particular practices
 1. encourage infiltration (helpful in impaired waters)
- vi. Adjust separation requirement to seasonal high ground water table
 1. evaluate current wastewater gw separation distances
- vii. Consider differences between urban and rural sites for infiltration
- viii. Depth to groundwater
 1. Does the separation requirement discourage infiltration by being overly restrictive
- ix. Testing requirements
 1. Test pits
 - a. Replace the requirement for test pits every 220sf of infiltration basin and allow for less testing based on a demonstration of adequately characterizing the soils
 2. Use of “standardized” tables based on soil textural classification (or does soil structure play too much of a role to rely solely on texture)

c. Review 80% TSS/40%TP BMP removal efficiency standard

- i. Are there better methods for evaluating the effectiveness of BMPs?
 1. should we continue with “removal efficiency” as the standard, or should we consider other methods such looking for statistical difference in mean influent versus effluent pollutant concentration? Some recent research suggests the latter may be appropriate.
 - ii. Set higher or lower standards
 1. if we continue with “removal efficiency”, are the 80% and 40% standards appropriate?
 - iii. Alternative STPs are limited b/c the 80/40 removal efficiency is required
 1. Is this standard too difficult to meet, or are the unpredictable variables that affect removal efficiency, especially in a limited test, a detriment to incorporating beneficial STP?
 - iv. Consider specific redevelopment/infill development standards and STPs
 1. i.e. what if had a practice that could treat >16% TSS and >8% P (20% x 80% or 40%) from the entire site such that the impact on load was actually better than just treating 20% of the site or providing 20% of the water quality volume
 - a. How well does the “STP designed to capture and treat 20% of the water quality volume from the existing impervious area” work if you have all of the flow
 2. Or for “infill” – same thing, if you are adding 25% more impervious to your site, could you treat enough to “offset + some” your additional impervious by treating ALL the flow to some lower removal efficiency?
 3. See NY Redevelopment specific chapter – treat 25% of WQv from disturbed area of redevelopment if use standard practices, but allows for use of alternative practices (cisterns, green roofs, planters, permeable pavers) if treat 75% of WQv from those disturbed areas
- d. Update precipitation depths for WQ, 1yr, 10yr, 100yr to more recent research
- i. Washington state – continuous simulation based model vs. design storms
 - ii. Vermont state meteorologist figures
- e. Thermal impacts
- i. Should we continue with the 12-hr and 24-hr distinction based on receiving water type (i.e. cold versus warm)?

2. Updates to Treatment Practices & Credits

a. **LID – Green Infrastructure / Better Incorporation of LID Practices**

- i. Permeable pavers/pavement and concrete
- ii. Bioretention/rain gardens
- iii. Flow through planters
- iv. Tree boxes
- v. Rain barrels/Cisterns
- vi. Reconsider requirement to pre-treat 100% of WQV
- vii. LID/Cluster Development Credit
 1. Develop a credit or suite of STPs designed to promote cluster development
- viii. “Tree” credit
- ix. Grey water/water reuse systems

b. **Revision to Existing Practices & Credits**

- i. Incorporate findings from other researchers/UNH/other manuals
 1. revise stormwater wetlands section
- ii. Consider Runoff Reduction Method (see CWP/Chesapeake SW Network)
- iii. Refine standards for gravel wetlands
- iv. Refine standards for wet swales (currently manual only includes diagram)
- v. Consider requiring designing for snow storage
- vi. Refine standard for wet ponds
 1. Re-evaluate 4 ft deep forebay requirement for smaller pond applications
 2. Extended detention for water quality treatment should be allowed to release for a minimum of 24hrs and a maximum of 48hrs.
 3. This allows a single orifice to be sized to meet both WQ and CPv
 - a. a single orifice sized to meet the centroid to centroid detention requirement not only provides additional detention of the water quality storm, but also releases less discharge from the channel protection storm than 2 separate orifices designed to route the water quality and channel protection storms separately.
- vii. Eliminate grass channel credit
- viii. Allow for non-residential application of grass channel credit
- ix. Re-evaluate disconnection credits:
 1. could credit be given for disconnection on steeper slopes, shorter lengths, etc?
 2. provide a chart depicting slope steepness and disconnection length options, ie, greater slope, greater length; less slope, less length required.
- x. Natural Area Conservation Credit
 1. Remove exception that allows disturbance for utility construction
 2. Should credit be given when Natural Area required to be conserved by some other means (wetland regs, Act 250 etc?)
- xi. ESRD revision (Low Impervious Cover Credit)
 1. Remove CPv requirement
 - a. detention for CPv storage requires concentrating site runoff; difficult to return to sheet flow

- b. eliminate requirement to evaluate impervious surface on per lot basis
- 2. Consider eliminating this credit. It seems to promote sprawl and is not environmentally sensitive.
- xii. Evaluate current “formulas” (and the requirement to use them vs. some other design if it meets the intent)
- xiii. Evaluate and update design examples in Volume II
- xiv. Thoroughly evaluate what should be in “required” vs. guidance

c. **Alternative Treatment Practices**

- i. More flexible implementation – consider eliminating requirement to redo practice if it doesn’t meet standards
 - 1. Washington or Oregon examples

3. Stormwater Manual Layout Changes

- a. Provide better images
 - i. Provide examples from permitted projects that demonstrate creative/alternative designs
- b. Organized more effectively
 - i. Suggestions from other state’s manuals
 - ii. i.e. does the dry swale go in the “open channel” or the filter section, since it is a linear filter?