

**RESPONSIVENESS SUMMARY TO PUBLIC COMMENTS ON THE ADDITION  
OF THE REDEVELOPMENT PROJECTS CHAPTER TO THE NEW YORK  
STATE STORMWATER MANAGEMENT DESIGN MANUAL**

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**Introduction**

The New York State Department of Environmental Conservation announces the availability of the response to public comments on the new Chapter to the New York State Stormwater Management Design Manual on Redevelopment Projects. This Chapter was published for public comments in the Environmental Notice Bulletin on June 21, 2006 at <http://www.dec.ny.gov/enb2006/20060621/not0.html>. The document was made available at DEC's website and the comment period, initially set to end July 28, was extended to August 8, 2006.

All comments received were reviewed and evaluated as part of the update process. Incorporating several valuable comments resulted in a few adjustments and clarifications to the Redevelopment Projects Chapter. The purpose of this responsiveness summary is to acknowledge and respond to the comments received. The responsiveness summary is available at: [http://www.dec.ny.gov/docs/water\\_pdf/responsesummary.pdf](http://www.dec.ny.gov/docs/water_pdf/responsesummary.pdf). Hard copies may be requested from the Bureau of Water Permits, 625 Broadway, Albany, NY, 12233-3505, telephone: 518-402-8102.

All comments were carefully examined and taken into consideration. The editorial and formatting comments, all accepted and incorporated in the Chapter, do not appear in the responsiveness summary. Some comments on clarifications are responded to in this summary and also addressed by modification to the Chapter if appropriate. There were also a series of comments that, although greatly appreciated and responded to in this summary, are not considered for modification to the Chapter at this time.

Generally, comments related to specific manufactured products are not addressed in this summary. Some of the product specific comments are summarized and addressed in a generic fashion. The intent of this process is to improve the content of the proposed Chapter. Addressing issues that involve modification to the adopted verification process is not in the scope of public review process. However, the comments are considered valuable and will be considered in the future direction of evaluation and acceptance of treatment technologies. Several comments that share the same concerns are summarized and responded to by a generic statement.

## RESPONSIVENESS SUMMARY

- **Explain how systems are to be sized based on their approved rating.**
  - The sizing of each individual system is defined based on the operating flow rate by which the accepted removal rate was achieved in the verification process. Sizing of the individual models of each product is referenced to the data provided by the verification source. Treatment systems must be designed to provide the removal rates accepted by the NYS design standards for redevelopment projects and not the minimum 50% removal rate.
  
- **NYS should specify minimum performance requirements and the amount of data needed to verify performance. If laboratory testing is used, it is essential that all manufacturers use the same sediment gradation and testing procedures.**
  - The comment is generally accepted. Consistency in sediment gradation and testing procedure is essential to lab testing of the products. However, the NYSDEC is currently relying on other verification systems for the Redevelopment Chapter. We are listing verified treatment systems that meet the minimum removal rate that is established for redevelopment projects.
  - Hydrodynamic/Gravity Systems- must be designed to capture and treat the flow from the water quality volume while bypassing larger events, provided that it is equal or smaller than the verified flow rate. Bypass must be designed to direct the design storm to the system for treatment.
  
- **We think the water quality flow should be treated before any flow is bypassed.**
  - Bypass is required for all treatment systems that do not provide storage and detention.
  
- **Clearly identify approved treatment flows for each technology (such as the NJDEP approved flows). Also recognize that many manufacturers offer multiple model sizes so they must be held to consistent sizing for each model size. Acceptable flows are set by the verification source (e.g. NJCAT) and are referenced in the list of verified practices. Since filtration technology will likely be used on both new and redevelopment projects, in addition to 80% TSS removal the results must also demonstrate 40% Total Phosphorus removal. Since the performance of any filter is a function of media type and gradation, we feel it is important that the approved media type and gradation be specified for any filtration technology approved in NY.**
  - Only filtration systems and tested media that provide 80% TSS and 40% TP removal can be used as a standard practice in new development. Filter design is sized based on the hydraulic load (gallons per minute per square foot) of filter surface area or gallons per minute per filter cartridge, as defined in the

verification process. If the testing of some of the manufactured media such as CSF leaf which has shown a TSS removal efficiency of 73% allows the media to be used for redevelopment applications but not used as a stand alone standard practice.

- **Make sure that the proposed sizing methodology for any filter is consistent with the design methodology used during data collection. Results are only valid for systems designed in the same manner (same media, gradation, flow, etc)**
  - Filters are flow through systems for which flow rates are calculated based on the Water Quality Volume (WQv) according to the instructions provided in Appendix B of the Design Manual. Flow rates are dependent on the head characteristics, orifice sizing, and bypass structures, which must be incorporated in flow rate computation. Based on this rate, the number of cartridges containing tested media is determined and system configuration must be designed to meet the removal rate at which the systems are verified.
  
- **We do not yet have Independent Study and verification by the sources listed on the Proprietary Practices Profile Sheet. Please note that these verifications provide performance data but do not evaluate the empirical design and operating parameters that caused the performance to be obtained. Our Professional Engineering approach has been to understand and define the empirical parameters that cause a given level of performance to be obtained. Determining hydraulic efficiency in field tests of installed systems is not practical due to the sporadic and inconsistent nature of the site-specific operating conditions. Performance concerns such as re-suspension of stored sediment, internal head loss at high flow events, and carryover of floatables, and most importantly accessibility for maintenance can be addressed by defining empirical parameters.**
  - Evaluation of the empirical design and operating parameters is certainly valuable, specifically if accompanied by lab and field testing under conditions where variable design elements are tested. The Design Manual requires records of field performance, while laboratory testing as an alternative, which allows examination of some of the design elements in a controlled environment, are integral to the verification process. Limiting the evaluation to modeling and simulation of the theoretical design of the system is found insufficient for verification of a proposed technology. Issues such as scouring, head loss, and bypassing are important parameters, need to be defined in the design of each system, and are incorporated in the verification process.
  
- **What particle settling velocity and media interstitial pore size is recommended for dissolved phosphorus filterable phosphorus treatment by the NYSDEC?**
  - The performance criteria defined in the Redevelopment Chapter does not use phosphorus removal as an indicator for stormwater treatment. The current standards rely on performance data of the treatment techniques by defining a few

design elements such as detention time, width to length ratio, minimum surface area, coefficient of permeability, filter media type, etc., which effect variables mentioned above. A new Chapter is being developed to address enhanced phosphorus removal.

- **The regulations and guidelines as drafted are prescriptive as far as regulating how these proprietary devices must meet the end water quality goals. For example the regulations dictate how much flow has to be passed through these units and do not clearly support the ability to utilize innovative, non-proprietary sizing methodologies to achieve the water quality objective.**
  - The comment does not clearly define innovative, non-proprietary sizing methodologies. The sizing criteria in the Redevelopment Chapter are based on a design storm, which are consistent with the sizing criteria in chapter 4 of the Design Manual.
- **The approved proprietary products are being modeled in accordance to the TARP Program. The TARP Tier I test results illustrated significant differentiators in product capability. Unfortunately, not all devices adhered to the predefined lab protocol, preventing an equivalent performance comparison.**
  - NYSDEC is aware of the inconsistencies in testing procedures, which does not allow equivalent performance comparison. The third party verification process has provided adequate level of confidence in evaluation of the existing technologies. The need to develop standards for redevelopment applications has been a high priority that could be addressed by the use of readily available verification processes. The Redevelopment Chapter requires design of the systems to be equivalent to the performances established through the third party verification process.
- **Currently, most manufactured sediment treatment systems are classified without distinction as “peak flow” devices, and are sized accordingly without concern for scouring and re-suspension of pollutants, nor down stream water resource. If designing and sizing “peak flow” devices for use in the State of New York are not properly regulated by clearly:**
  - **Stipulating a particle size distribution (PSD) that must be used in design and;**
  - **Prescribing the requirement for data submission for the ability to prevent scour with the prescribed PSD under large rain events (peak flows) to obtain approval for design on-line versus off-line.**

**Higher flows will continue to be forced through proprietary “peak flow” stormwater management practice devices and larger PSDs will be used in design in order to gain competitive advantage in the marketplace – to the disadvantage of the environment and New York State water resources.**

**Some stormwater technologies are designed and sized based on the calibrated and validated continuous simulation programs. This methodology is a volume based sizing methodology, which is a much more technical, non-traditional sizing and design approach in comparison to a number of other proprietary devices.**

- As a requirement of the state standards all flow through systems must be designed as offline systems. This provision will address surcharge and scouring in the systems, which lack a bypass mechanism.
- In the absence of a verification and or certification process by the New York State Department of Environmental Conservation, we are adopting the existing verifications undertaken by other agencies with equivalent regulatory programs.
- Since sizing criteria is integral to the verified performance of individual practices, the Redevelopment Chapter of the New York State Stormwater Management Design Manual refers to the sizing criteria determined by the verification source.
- The Redevelopment Chapter generally advises the designers to follow manufacturer's recommendations in all aspects of the design. However, consistency with the state standards remains a primary objective.
  - The Design Manual requires the use of design storms in the sizing of stormwater practices.
  - Since flow through systems do not have the capacity to store the target water quality volume, the Design Manual provides instructions for the calculation of flow rate in the design of the flow through systems. This method of calculation applies to all hydrodynamic practices.
- Since the NYSDEC is relying on readily available verification processes, introducing new elements to the process that are not necessarily examined by the verification source will conflict with the process established and applied to all other manufactured systems. Although we respect manufacturer's claim on effective performance of the systems in the field under varied precipitation conditions factored in the simulation process, accepting the claim will result in deviation from the documented verification procedures, studies and analysis. We are confident that the third party field verification process will help examine the performance of the systems in the field and verify the claim.
- If the NYSDEC decides to adopt sizing of treatment systems based on the theoretical design and modeling components of the treatment, this opportunity must be equally provided to many other manufactured systems which do not have a third party verification and rely on modeling the system function.

- We agree that continuous simulation of hydrology is a useful tool for understanding the long-term effects of water cycle and performance of the treatment systems. In fact we have utilized this method of analysis in other areas of the stormwater program. Due to limited resources and programmatic constraints, we have to adopt more practical design tools for use in the implementation process. Although some models such as various versions of SWMM (Stormwater Management Model) have the capability for long-term simulation of stormwater systems, they require many input variables that add to the complexity of the design elements. In order to adopt such design tool NYSDEC would need to:
  - Make a decision as to whether we can adopt the continuous simulation models for the design of stormwater treatment systems.
  - Verify the significance of the input variables utilized in the model for a statewide application in the State of New York.
  - Perform a sensitivity analysis on the model input, potential errors, and variation of hydrographs in different types of climate, soil, and region.
  - Assess the level of training required for both NYSDEC's review staff and the design community.
  
- Such an approach in the routine permit implementation process will require a case-by-case review of the hydrology modeling and determination of the proposed technology. Upon the examination of proposed approach along with coordination with the verification source, NYSDEC would consider revisiting its accepted sizing method. Presently, treatment systems sized by the modeling tool that were not incorporated in the verification process may be presented as a deviation from standards (60-day review process) to provide NYSDEC an opportunity to examine the modeling approach and determination of acceptance of the design.
  
- **As technologies change and develop what will be the procedure for adding new products?**
  - At this time, the plan is to update the list of practices that meet the redevelopment performance criteria periodically depending on the significance of the verified new products.
  
- **Page 3- On total impervious area, should we eliminate pool area from drainage area because of freeboard and grass areas?**
  - Calculation of WQ<sub>v</sub>, similar to new development conditions, relies on the percentage of impervious area including water surface area.
  
- **On the NOI, do we select "5 day permit it is met?"**
  - Yes. Design of redevelopment project according to Chapter 9 of the Design Manual is considered conformance with the standards.

- **On the TMDL requirement, will a 60-day review be required or more strict requirement will apply?**
  - Under current permit requirements a 60-day review period is required in TMDL areas.
- **Under Scope and Applicability could banking and trading credits be used to add to a regional facilities and not do improvement onsite.**
  - If an existing regulated municipality incorporates such provisions in their stormwater management plan, the municipality may implement a banking and trading system.
- **First paragraph on page 5: If we have a pond, that has water quality and quantity provisions, but does not meet NYSDEC's current standards, can the reconstructed area be treated by this existing pond with any upgrade to WQv or flood control.**
  - The proposed systems, at minimum, must include all the existing quality and quantity controls. The redevelopment sizing criteria such as 25% area reduction, 25% WQv treatment or the use of alternative practices in reconstruction are additional controls that can be designed in parallel, in series, or incorporated into existing facilities. It must be noted that any of the above configurations will depend on the site-specific conditions and should result in a treatment in conformance with the standards defined in the Redevelopment Chapter.
- **Determination of the “equal to existing systems” needs research.**
  - “As Built” should be used for this determination.
- **What happens if you don't agree with our assessment?**
  - The essence of a 5-day permit process is that the planner strictly follows the standards. The plan must include an objective justification and document the physical limitation of the site and appropriateness of the proposed practices. If under some circumstances, such as during a site inspection or a random review of conflicting information surface, it would be the responsibility of the permittee to address the problems.
- **Does 25% reduction mean WQv treatment is not required?**
  - Yes.
- **Do the 25% or 75% treatment apply to new areas or total site area?**

- It only applies to the redevelopment areas. Treatment applies to all the contributing drainage areas if diversion is not utilized.
- **Does this mean that in new projects (not redevelopment) we can use alternative methods if site does not allow for conformance with the standards.**
  - All the standards presented in this chapter only apply to redevelopment projects. Alternative practices for new development would not be considered in conformance with standards.
- **Are alternative practices subject to 60-day review process?**
  - Not if they proposed for redevelopment projects.
- **If we use Porous Pavements, can we count that as non impervious?**
  - The Design Manual identifies 50 % imperviousness for the porous pavement, which can be applied to the area of the facility in WQv calculation. However, this area cannot be accounted as an impervious area reduction credit.
- **In Section 9.1 Introduction (Page 1) – The Introduction should include a definition of “redevelopment projects”. What is the difference between redevelopment and a redevelopment project? Can a redevelopment project be one that also includes new development? This should be clarified.**
  - A redevelopment project is a construction project, which may entirely or partially include reconstruction of already existing impervious areas. Clarifications are made to the Chapter to include the Redevelopment Project as a project that undergoes redevelopment. The project area can be entirely under redevelopment or the project area can be a combination of redevelopment and new development.
- **Key Terminology (Page 2) - The term “Redevelopment” includes a phrase “land where there had not been previous disturbance”. This could be problematic in that road widening has been interpreted in the past as new development because it is a new impervious area that previously did not exist. Using the definition as written, however, pavement widening would be considered redevelopment because it will typically be in an area where there was previously an earth embankment, which is an area that has undergone previous construction. If this is the case, the new development would be the extension of the toe of slope with the new embankment, but would not result in a new impervious surface in the new development area. This needs to be clarified.**
  - Redevelopment applies to the reconstruction of an already existing impervious area. Pervious areas being converted to impervious areas are not subject to the Chapter.

- **Section 9.2 Pages 3 & 4 – the word “plan” is used in the second and fourth paragraphs. Is the “plan” supposed to be the SWPPP? If so, it should be clarified that the use of the word “plan” throughout this chapter refers to a SWPPP.**
  - Throughout the Design Manual (not just in Chapter 9) the words plan, site plan, and stormwater pollution plan are used interchangeably.
- **Page 4, first paragraph – There is reference to “disturbed area”. Is it mentioned here because the disturbed area is the “A” in the calculation of the Water Quality Volume? If so, this should be clarified.**
  - This paragraph clearly defines that the plan must address the entire disturbed area and the practice must be sized to the entire contributing area, unless diversion is provided. This is consistent with the definition in Chapter 4 of the Design Manual.
- **Section 9.3 = Section 9.3.2, A. III. (Page 6) – The first sentence states “If the redevelopment results in an increase in the total impervious area...”. Again, this suggests that new development is included in the definition of redevelopment project. NYSDOT considers this to be counterproductive to helping the user to determine when the redevelopment strategy applies, because it seems that the criteria in the redevelopment chapter does not apply to all of the activities within a redevelopment project, if some activities are considered new development.**
  - A construction project may include areas that are reconstructed and areas that are newly developed. An emphasis is made throughout the redevelopment chapter to distinguish between the two so that the alternative sizing and practices are applied only to the reconstructed areas of the already existing impervious areas.
- **Section 9.3.2, A. II. (Page 6) states: “This criterion, as defined in Chapter 4 of the Design Manual, is not based on a pre versus post development comparison.” It goes on to state “However, if the hydrology and hydraulic study shows that the post construction 1-year, 24-hours discharge rate remains below pre-construction discharge rate, additional controls to meet the channel protection criteria will not be necessary.” The last sentence requires that a pre versus post construction comparison be made. This section should be revised to remove this apparent contradiction.**
  - The channel protection criteria in Chapter 4 is based on 24 hour detention of 1-yr 24-hour storm regardless of the changes in comparison with pre construction hydrology. However in reconstruction this requirement is relaxed and a comparison is allowed. A comparison of pre vs. post peak discharge and flow velocity is utilized for channel protection in redevelopment scenarios. This method does not apply to discharges from new development of the construction site.

- **Section 9.3.2.B.IV. (Page 7) – It would be helpful to use equations and design examples to illustrate how the use of both standard and alternative practices are used in a redevelopment area.**
  - The Department is not able to include examples in the Redevelopment Chapter at this time.
- **Section 9.4 First paragraph (Page 8) - Does the phrase “disconnected impervious area” also include the situation where a pipe draining highway pavement directly to the waterbody is replaced with overland flow from the highway, down an embankment, to the waterbody? How do disconnected impervious areas factor into the calculation of water quality and water quantity controls?**
  - A disconnection without treatment though one of the alternative practices is not acceptable. The disconnection language appears to be confusing and has been removed in the final chapter.
- **Comment2: The definition of redevelopment refers to impervious surface but fails to adequately explain how much impervious surface is required in order for land to quality as previously developed.**
  - Previously developed strictly refers to areas occupied by existing structure, pavement, and or any form of impervious cover that does not allow infiltration of runoff. This definition doe not relate to the percentage of imperviousness or land use. Instead, physical constraints of the site, which are inherent conditions of existing developed areas, are used as indicators for appropriateness of redevelopment applications.
- **Permeable pavers, in feasibility, need to address the required testing according to appendix D. In recommended application, Need to remove the sentence recommending this practice for new development.**
  - Modifications are made to address adequate infiltration testing and appropriate applications. All infiltration systems must conform to the design guidance and required elements of infiltration systems as defined in the Design Manual.
- **Projects that maintain, rehabilitate, and reconstruct transportation corridor should not be grouped into the Redevelopment Chapter; the alternative practices do not apply to highway projects; standards for transportation projects should be addressed in a separate chapter of the Design Manual.**
  - Redevelopment Chapter is a generic document that addresses stormwater treatment options for reconstruction of existing developed areas regardless of land use. For guidance on roadway maintenance activities please refer to the responses number 8, 38, 42 in the construction permit frequently asked questions. Roadway

reconstruction projects may utilize sizing options along with standard practices or alternative practices for stormwater treatment. NYSDEC in cooperation and with input from transportation agencies is preparing a guidance documents to address challenges of highway projects.