



ISSUE PAPERS “I & J”

BMP Fact Sheets and Engineering Specifications Part 2

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To: Minnesota Stormwater Manual Sub-Committee

From: EOR and CWP

This issue paper is the second of two papers that focus on the Best Management Practice content to be included in Volume 2 of the Minnesota Stormwater Manual. Issue Paper I/J – Part 1, dated June 9, 2005, contained detailed information on how these fact sheets and engineering papers will fit into the final manual. The information contained in this issue paper supplements the procedures described in the June issue paper.

Attached to this paper is the second and final set of fact sheets and engineering papers:

Issue Paper I/J – Part 2 (July, 2005)

- Temporary Construction Sediment Control Fact Sheets
- Stormwater Ponds Fact Sheet and Engineering Specifications
- Stormwater Wetlands Fact Sheet and Engineering Specifications
- Supplemental Pre- and Post-Treatment BMP Fact Sheets

Reviewers should keep in mind that these papers are still evolving. Technical inconsistencies will constantly be corrected as the manual moves into final production. Electronic links will be added as a last step, to best preserve the currency of ever changing web addresses. Throughout this issue paper are content and technical questions raised by the consultant team for consideration by the Manual Sub-Committee which will be incorporated into later drafts.

Sediment and Erosion Control Fact Sheet – In Minnesota we have a well developed network of information related to construction related erosion and sediment control. MPCA, watershed organizations and municipalities have developed permitting programs and the University of Minnesota facilitates a training and certification program. Mn/DOT has prepared technical specifications and the MPCA has a toolkit for compliance. With all this information available, it became more appropriate to use this fact sheet to educate the manual user on the importance of construction site erosion and sediment control, and to create links to the excellent existing resources.

Structural BMPs – Each structural BMP begins with a two page “fact sheet” summarizing the BMP with additional pages of engineering details. Design variations will be part of the sheet compilation: for example, ponds are a single category, with variable features of pond design such as storage volume and physical configuration described within the design sheet.

Ponds (design based upon components needed to fulfill the desired function)

- Components include forebay/pre-treatment, various storage volumes, physical configuration
- Functions include water quality (including thermal impact) and flow control (rate and volume), which determine whether they are wet/dry or some combination

Wetlands (selection criteria similar to ponds)

- Components include pre-treatment, hydrology, and biologic character
- Functions include primarily water quality and flow control, but also includes ecological factors

Supplemental Pre- and Post-Treatment BMPs - The final category of BMPs are those that are generally, but not always, included in the stormwater treatment train as a supplement to the primary treatment device. There is the possibility, however, that these devices could be the only BMP used at sites where no other structural BMP is feasible. Our approach will be to describe these in less detail than the previous sections. Instead, the designer will be guided through a process of determining the function a generic device serves within the treatment train. Once manufacturers are involved, then each designer should be able to assess the proposed device against the needed function. We will also generically describe the proprietary device categories rather than listing individual companies and risking some omissions.

Supplemental Treatment (discussed for function within a treatment train)

- Hydrodynamic Devices
- Biological and Chemical Treatment *
- Filtration Devices (including catch basin inserts)

* Note: these chemical treatments will have limited use in the State of Minnesota because of the potential toxic effects associated with them; care will be taken to assess these impacts in the BMP discussions.

Pollutant Removal Mechanisms

Table 1 was prepared to identify the BMP pollutant removal mechanisms utilized by each BMP group. The information in this table is now complete for the Pond and Stormwater Wetland BMP groups.

Table 1: Primary and Secondary BMP Pollutant Removal Mechanisms

| BMP Group | Mechanisms | | | | | | | | | |
|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|----------|----------------------|------------------------|--------------------|-------------------|--------------|---------------------|-------------------------|
| | Water Quality | | | | | | Water Quantity | | | |
| | Screening/ Filtration | Infiltration/ Recharge | Settling | Biological Uptake | Temperature Control | Soil Adsorption | Volume Control | Rate Control | Velocity Control | Evapo- transpiration |
| Pollution Prevention | Not applicable – pollutants not exposed to stormwater | | | | | | | | | |
| Minimize Volume | | S | | | s | | P | s | | |
| Construction Sediment Control | | | | | | | | | | |
| Bioretention Devices | P | S | s | s | | s | s | s | | s |
| Filtration Practices | P | S | | s | | s | | s | | s |
| Infiltration Practices | s | P | | s | P | s | s | s | | |
| Ponds | | | P | s | | | | P | P | s |
| Wetlands | s | | P | P | | s | | P | P | s |
| Supplemental Treatment | Each supplemental and proprietary device should be carefully studied to learn the primary and secondary pollutant removal functions. | | | | | | | | | |
| P = Primary Pollutant Removal Mechanism s = Secondary Pollutant Removal Mechanism | | | | | | | | | | |

APPENDIX A: Sediment and Erosion Control Fact Sheets

APPENDIX B: Supplemental Treatment Fact Sheets

APPENDIX C: Stormwater Ponds Fact Sheet and Engineering Specifications

APPENDIX D: Stormwater Wetlands Fact Sheet and Engineering Specifications

APPENDIX E: Construction Inspection Checklists

APPENDIX F: Operation, Maintenance and Management Inspection Checklists