

# Sample Storm Water Plan Narrative

(Sample Project: 40 lot rural subdivision on a county road)

## Drainage Background:

The entire subdivision is located in the Pewaukee Lake watershed of the Fox River basin. There are no perennial or intermittent streams or any other water bodies within or adjacent to the site. Surface drainage from the site discharges into two ephemeral channels (which later join together) and travels approximately 900 lineal feet to the lake. No off-site runoff enters the site. Predevelopment drainage is shown on Map 1. Three acres of the site (Map 2) are exempted from meeting infiltration requirements as they have a measured infiltration rate of less than 0.6 in/hr (Attachment A).

## Planning Goals:

The storm water planning goals include:

- Minimize sediment and other pollutants from entering the lake during and after construction; and
- Maintain predevelopment peak flows to avoid off-site channel erosion during post development storm water conveyance to the lake.
- Infiltrate runoff to recharge groundwater and maintain stream base flow.

## Design Summary:

To accomplish the above goals, we propose to install a grass swale storm water conveyance system throughout the subdivision and two wet detention basins near the natural discharge points. (See the erosion control plan for site stabilization plans.) An infiltration basin will be installed at the outfall of each wet basin and the flows ultimately enter the existing ephemeral channels off site. Both wet detention basins are designed to comply with DNR's Wet Detention Basin Standard 1001, and the infiltration basins comply with the 1002 and 1003 standards. Specific design goals include the following:

- The wet basins will also serve as sediment basins during the road construction phase (extra 2' of storage volume in design) to trap 80% of suspended solids in accordance with DNR design standards.
- Pre-development peak flow rates will be maintained for the 2, 10 and 100-year/24 hour design storm events.
- The infiltration basins will infiltrate 25% of the post-development 2-year runoff volume.

The infiltration basins are designed to spread out the discharge flows before leaving the site. They will be excavated to a 2-3 foot depth, or until the sandy loam soil is exposed. After deep-tilling the subsoil, a 2-inch layer of leaf compost will then be applied, tilled into the surface, and seeded with native grasses. The downstream edges of these basins are 1 foot lower than the sides, which will act as a level lip weir to spread out and direct the flows downstream.

During construction and for one year following completion of the infrastructure, the infiltration basins will be bypassed using a temporary swale. The swale will then be filled and restored, and the discharge from the wet basins will be directed into the infiltration basins. Detail drawings of all the proposed storm water structures are included in the attached grading plans. A summary of pre and post-development storm water runoff, detention/infiltration basin design calculations and accompanying hydrographs are attached as Exhibits 1, 2 and 3.

## Soils Information:

Results of soil profile investigations for the basin areas are also enclosed, while the profiles are illustrated on the grading plans. These reports show that a clayey soil layer generally exists at 18-28 inch depths, underlain by a sandy loam material for both basins. During detention basin construction, the clayey layer will be stockpiled. The basin bottoms will be over-excavated 1 foot and the clayey material reapplied in the wet detention basins to a depth of 1 foot to ensure that a permanent pool can be adequately maintained. The

bottoms of the infiltration basins will not be lined, and will have the soil amended with compost as described above.

Construction:

Our office (the design firm) will supervise and verify construction of all of the basins. We will stake the location of the structures in accordance with the approved plans and the construction inspection plan (Attachment B) will be provided to the contractor. The inspection plan will ensure that we are contacted at critical moments during construction to check elevations, soil conditions, placement and compaction of pipes, the earthen berm, etc. A certified as-built plan will be provided to the county in accordance with the bond agreement.