



# Manchester Urban Ponds Restoration Program

One City Hall Plaza, Manchester NH 03101 (603) 624-6450

[www.manchesternh.gov/UrbanPonds](http://www.manchesternh.gov/UrbanPonds)

## Nutts Pond Stormwater Best Management Practices (BMP) Summary

### Tannery Brook Inlet Stormwater BMP Engineering & Construction

Comprehensive Environmental Inc (CEI) has worked with the City of Manchester to provide engineering and construction services for drainage improvements. Construction included a sediment forebay with a gabion level spreader at the end of a 4 foot by 6 foot closed drainage culvert. This drainage system previously filled surrounding wetlands and Nutts Pond with sediment associated with large parking areas and dense urban and residential land uses located along South Willow Street. The sediment forebay and level spreader provide a way to capture sediment and debris prior to discharge into the wetland area. A level spreader was installed to spread stormwater flows evenly through down gradient wetland areas. The forebay and level spreader were completed in December 2006 and has already captured a years worth of sediment and debris which is routinely removed by the City. The total project cost including engineering and construction was \$150,000



### Nutts Pond Stormwater Improvements



CEI installed a “first flush” stormwater diversion structure, stormwater forebay and wet pond to provide sediment and nutrient removal for urban runoff associated with large parking lot areas. The diversion structure was designed to divert first flush flows to BMPs while allowing larger volume storms to pass through the existing drainage system. The sediment forebay and wet pond provides a way to capture sediment and debris prior to discharge into Nutts Pond in order to prevent the growth of a sediment delta. Stormwater was diverted from a 42 inch pipe using a precast structure and discharged water into a large riprap forebay. This wetland was converted to a wet pond, which was tied

back into the 42 inch pipe using a precast concrete outlet structure and deep sump. This worked required construction in close proximity to sensitive wetland areas, which required specialized erosion control planning and temporary water handling techniques. The forebay, wet pond and precast structures were completed in June of 2007. The total cost for design and construction was \$228,000.

### Tannery Brook Inlet Wetland Cleanup, Restoration & Replication Project

As part of the Nutts Pond BMP construction, CEI also designed and oversaw construction of the wetland restoration and cleanup of the surrounding damaged wetlands. The cleanup consisted of removing approximately 100 cubic yards of sediment from the wetlands as well as trash and debris associated with highly urbanized areas. The cleanup and wetland installation required very careful construction techniques and coordination to work around sensitive existing wetland plants and habitats. The proposed design consisted of replicating and restoring approximately 10,000 square feet of forested wetlands. The surrounding forested wetlands were replicated by maintaining existing mature vegetation when



possible and constructing low flow vegetated swales and hummocks that meandered around the existing vegetation. A combination of mature native woody vegetation with specialized wetland plant mixes was installed in the disturbed wetland areas and the use of woody and organic debris with hydric soils assisted in promoting natural organic decay. The wetland restoration and replication was completed in July of 2007. The total cost for design and wetland construction was \$44,000.