

MILESTONE 4B:
VOLUNTARY MEASURES
FOR THE DEAL LAKE WATERSHED
REGIONAL STORMWATER MANAGEMENT PLAN

PREPARED BY
THE DEAL LAKE COMMISSION
LEAD PLANNING AGENCY

AND

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Milestone 4B outlines voluntary stormwater management measures for the municipalities of the Deal Lake watershed and as such, will not appear in the New Jersey Register. Since these measures are voluntary, municipalities of the Deal Lake watershed as well as other community stakeholder groups are encouraged to pursue NJDEP 319(h) grant money or other funding sources to implement these projects. Other sources of funding are included in Appendix A.

This section of the RSWMP outlines the types of projects that are deemed necessary to remedy stormwater-related problems in the watershed; specific sites have been identified by members of the DLC and RSWMPC. Most sites have had known long-standing problems and other sites are the result of the effects of recent development in the western reaches of the watershed along the Routes 35 and 66 road corridors. Improper and, in many cases, lack of stormwater management has caused problems downstream; of particular concern to the RSWMPC is the transport of sediment to Deal Lake. Some portions of the Lake are completely unnavigable by boats due to unmitigated sediment deposition. As Deal Lake has a history of being a popular boating and fishing spot for both watershed residents and summer tourists, the high sediment loading is causing the opportunities for these activities to diminish. Not only is the transport of sediment a problem, but high nutrient and bacterial loading like phosphorus and fecal coliform, has had negative effects on the physical and biological health of the lake. The measures outlined in this section have been crafted to address the water quality, quantity and recharge objectives of the RSWMP through three types of initiatives:

1. Watershed Restoration
2. Stormwater Management
3. Education

1. Watershed Restoration

Rationale

Watershed restoration addresses the water quality objectives identified in the Deal Lake RSWMP as well as the impacts of stream bank erosion and sediment transport, which includes but is not limited to the loss and degradation of aquatic and riparian habitats. As water quality becomes degraded and pollutants concentrations increase in Deal Lake, the effects of improper stormwater management are readily visible. Besides the obvious impacts to the lake's aesthetic and recreational values, the historic lack of stormwater management has impacted the functional ecological value of the lake's littoral (shallow water) areas and the tributaries' riparian corridors and wetland ecosystems. Water quality, quantity, and recharge objectives and measures need to be implemented in order to address these existing impacts and protect littoral areas and riparian habitats from future impacts. This can be accomplished in part through lake and stream buffers that promote the maintenance of native vegetated shorelines along Deal Lake and its tributaries.

As identified in the Deal Lake Watershed Characterization and Assessment Report, Milestone 2, approximately 30% of the watershed area is comprised of forest, wetland, recreational land, water, agriculture and beach areas. These types of land use and land covers are found mostly in the western portions of the watershed which up until recently tended to be largely undeveloped and characterized by a low percentage of impervious area. The remainder of

the watershed, approximately 70%, is essentially characterized as developed urban land-areas having high (> 25%) impervious cover. As such, it is recommended through this RSWMP that restoration techniques that are suited for urban areas be prioritized for implemented. Each disturbed site or riparian area should be evaluated independently so that site-specific restoration measures can be taken to develop the restoration design plans. Where funding allows, hydrologic and hydraulic studies of the system should be completed as part of the full restoration project. Background information about urban stream restoration can be found in Appendix B.

Specific Elements:

The watershed-based restoration plan should include the following elements:

- Baseline water quality monitoring and creation of a long-term monitoring database
- Completed inventory and survey of stormwater conveyance system including a map of sanitary sewer lines (to address fecal contamination) in the subwatershed area
- Urban restoration techniques
 - Stream bank stabilization
 - Buffer improvements
 - Urban forestry
 - Other appropriate techniques
- Example restoration sites as identified by the LPA and RSWMPC:
 - Harvey Brook
 - Colonial Terrace
 - Hollow Brook
 - Lollipop Pond
 - Fireman's Pond

2. Stormwater Management

Rationale

Proper stormwater management will help alleviate pollutant loading to the lake's tributaries, including headwater streams, as well as to Deal Lake proper. The NJDEP recognizes that properly sized and sited BMPs can be part of a watershed restoration solution to reduce total suspended solids (TSS), particulate phosphorus, bacteria and floatables. Many of these devices, commonly referred to in N.J.A.C. 7:8 and the NJDEP stormwater manual as manufactured treatment devices (MTDs), have been tested and their removal efficiencies certified by the NJCAT program. Table 1 summarizes the NJCAT verified removal efficiencies of some of these devices. However, the NJDEP also recognizes the effectiveness of non-NJCAT certified technologies and MTDs. As such, the products listed in Table 1 are a sub-set of potential MTDs that could be used in the Deal Lake watershed.

Company	MTD Name	TSS Removal (NJCAT Verification)
CONTECH Stormwater Solutions, Inc.	Stormwater Management StormFilter®	79% (2007)
	Vortechs® Stormwater Treatment System	64% (2004)
	CDS- High Efficiency Unit	68.5-88% (2003)
	VortSentry® System	69% (2005)
	CDS- Filtration System	82.7% (2006)
Stormceptor® Group of Companies	Stormceptor® System	75% (2004)
Hydro International	Downstream Defender®	70% (2005)
AquaShield, Inc.	Aqua-Swirl™ Concentrator	60% (2005)
	AquaFilter™ Filtration Chamber	80.5% (2005)
Terre Hill Concrete Products	Terre Kleen Stormwater Device	78% (2007)

Table 2 provides a summary of other structural devices that have been used to remove phosphorus, bacteria and other stormwater pollutants in other watershed restoration projects, most of which are outside of New Jersey. Many of the devices presented in Tables 1 and 2 are particularly well suited for the Deal Lake watershed where the majority of the needed solutions are for existing development and re-development. Also, due to the limited amount of available land, MTDs are realistic solution for implementation within the Deal Lake watershed as they can be placed below grade or within existing right-of-ways, thus avoiding the need for new site clearing.

Company	Name	Pollutant Targets
AbTech Industries	Smart Sponge® Technology	Bacteria , Hydrocarbons, and Floatables
	Case Study: Installed at a public bathing beach in RI to capture bacteria in catchbasins before entering waterbody. Catch basin inserts installed in Norwalk, CT helped abate an oil spill of 1200 gallons in an effort to protect the Long Island Sound.	
EcoSense™ International	EcoSense™ Stormwater Filtration System	Bacteria , Hydrocarbons, Floatables, Heavy Metals, Sediment, Phosphorus , Nitrogen
Fabco Industries	Fabco StormX Products	Bacteria , Hydrocarbons, Floatables, Heavy Metals, Sediment, Phosphorus , Nitrogen
Source: http://www.epa.gov/ne/assistance/ceits/stormwater/techs.html		

It is further recommended that where feasible, nonstructural measures such as low impact development (LID) techniques, be applied. Background information on LID is provided in Appendix C. Subchapter 5 of the NJDEP Stormwater Management Rules requires the implementation of the following nine strategies for all new major developments. As LID strategies are most commonly used in new development and the majority of the problems in the Deal Lake watershed are due to existing development, the application of LID must be extended where appropriate and practical to redevelopment activities. Thus, this RSWMP will encourage these strategies be applied whenever feasible to not only new major development, but to redevelopment projects, in-fill projects and other similar development activities which may not specifically meet the NJDEP definition of a major development. Most of the typical LID strategies are listed below:

- Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss.
- Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces.
- Maximize the protection of natural drainage features and vegetation.
- Minimize the decrease in the pre-construction “time of concentration.”
- Minimize land disturbance including clearing and grading.
- Minimize soil compaction.
- Provide low maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers, and pesticides.
- Provide vegetated open-channel conveyance systems discharge into and through stable vegetated areas.
- Provide preventative source controls.

It should again be noted that the combination of structural and nonstructural measures, the end of pipe retrofit and pollution control at the source, have the potential of alleviating the water quality, quantity and recharge problems of Deal Lake watershed. Therefore, these techniques should be used in a complementary fashion to control the amount of runoff entering the watershed, manage stormwater before it enters a waterbody and lessen the effects of development and impervious surfaces in the Deal Lake watershed.

Specific Sites for Stormwater Management—as prioritized by DLC

The following is a prioritized list of specific stormwater management projects identified by the DLC and members of the RSWMPC that must be addressed and implemented over time for Deal Lake and its tributaries to improve.

1. Creation of a regional stormwater basin at Mayer Dam (Harvey Brook);
2. Creation of a regional stormwater basin at Seaview Square;
3. Creation of a regional stormwater basin at Hollow Brook;
4. Electrification of the lake’s outlet flume gates;
5. The installation of new and the retrofit of existing catch basins at key locations along State highways Routes 35, 66 and 18.

3. Education

Rationale

As required by the municipal stormwater permit for Tier A communities, township employees must be educated in aspects related to BMP maintenance and management, and stormwater permitting. Plan A of the Deal Lake Watershed RSWMP will require that an extensive education program be implemented including one that involves township engineers, and a watershed-wide Coastal Lakes Stormwater Committee that will initiate round table discussions of stormwater issues and serve as a forum for brainstorming options for stormwater management techniques, drafting stormwater- related ordinances, identifying sites suitable for stormwater management and providing outreach to township officials.

Plan B will focus education efforts to focus on the general public: disseminating information to landowners, schools and residents of the watershed about ways in which they can make a difference in the water quality of Deal Lake. Plan B will recommend that municipalities work with the Coastal Lakes Stormwater Committee to target watershed residents and deliver educational material and create opportunities to raise awareness about stormwater issues.

Specific Topics

1. Education on Canada goose biology and the importance of not feeding waterfowl will be communicated to the public using interpretative signs on public land where waterfowl are known to nest and congregate.

2. Information about low phosphorus fertilizers and proper lawn care and action strategies to disseminate this information to the public. Additional resources for municipal use can be found in Appendix D.

- A ‘lawn care expo day’ for residents will be organized to demonstrate proper lawn care without the use of phosphorus fertilizers. Hand out information and demonstrations to be included.
- Outreach to retail businesses to advertise and promote lake friendly, low phosphorus products.

Appendix A:
Funding Resources

Appendix B:
Urban Stream Restoration Information

Appendix C:
BMP Information

Appendix D:
Fertilizer Education Resources