



**NH Department of Environmental Services**  
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### **Memo**

**To:** Paul Currier, DES Watershed Management Bureau Administrator  
Eric Williams, DES Watershed Assistance Section Supervisor  
**From:** Natalie Landry, DES Coastal Watershed Supervisor  
**Date:** July 14, 2007  
**Subject:** Willand Pond Impairment Status

The purpose of this memo is to document an impairment for a State surface waterbody known as Willand Pond located in the cities of Dover and Somersworth, New Hampshire.

Willand Pond is 86 acres in size, listed as a Class A waterbody and assigned the waterbody identification number NHLAK600030405-03 by the New Hampshire Department of Environmental Services (DES). It is situated in the Middle Salmon Falls River, HUC Code 010600030405 which is located in the Piscataqua River Watershed. When the pond information was entered into the DES Environmental Monitoring Database (EMD) on 4/1/2002, the elevation was reported as 182 ft, the shoreline length as 2,700 m, the maximum water depth as 11.2 m and the mean water depth as 4.7 m. The watershed area was reported as 290 acres. The pond is natural.

The DES EMD lists no inlets for the pond and one outlet. The EMD has the outlet named Bates Brook but it is shown as Peter's Marsh Brook on the 7.5 minute series Dover West Quadrangle (USGS Topo) and it is also known locally by that name. The assessment unit ID for Bates Brook is NHRIV600030405-13 and it is listed as a Class B waterbody.

The current DES assessment for both of the assessment units assign 3-ND to the following uses: aquatic life, primary contact recreation, secondary contact recreation and wildlife. The assessment for each AUID also assigns 2-G to fish consumption and drinking water after adequate treatment uses.

The EMD waterbody information detail that was entered in 2002 lists the water volume at 1,627,000 m<sup>3</sup> and the flushing rate at 0.3 times/year. The phosphorus retention coefficient was shown as 0.84.

Over the decades the pond watershed has been steadily developed. Route 108 borders the pond to the south and west in Dover and Route 9 is situated along the east of the pond in Somersworth. The Dover and Somersworth planning departments produced a document called *Willand Pond and Surrounding Property High Water: Summary of Issue* (Attachment) that describes the history of development and the current situation. A multitude of factors contribute to a sustained elevated water level that has resulted in flooding, property damage, inaccessibility to trails and other detrimental human and environmental impacts.

Of particular note is the encroachment into the outlet over time and filling that continues today. The planning departments' document reports filling of hydric soils sometime between 1950 and 2000 north of the pond. In addition, installation of a sanitary sewer line in Somersworth intersected the path of the brook. According to the document, "surface water flows out of the pond, through a wetland to the north and appears to be redirected and/or impounded where the sanitary line crosses the hydric soils." The report also states that "In 2003 when Home Depot was constructed the developers apparently worked within an already filled area and used it to construct the necessary retention pond for the project." The City of Somersworth designed and engineered a future connector road to be built alongside Home Depot to connect routes 108 and 9. This road follows the waterline in the wetland. Construction of this road is scheduled to begin in 2007.

Sustained flooding at Willand Pond since the so called Mother's Day Storm in May 2006, has resulted in flooded homes, an inaccessible road (Photo 1) to the trails along the pond (under 9" of water on 6/14/07) and the New Hampshire Department of Fish and Game public boat launch (Photo 2) being submerged (under 27" of water on 6/14/2007).

On July 13, 2007, DES documented a cyanobacteria bloom in Willand Pond. A press release was issued by DES and all access points were posted due to the potential acute impacts to humans and pets. While most human health impacts have resulted from ingestion of contaminated drinking water, cases of illnesses have also been attributed to swimming in waters infested with cyanobacteria. *Anabaena*, the cyanobacteria identified in Willand Pond by DES, produces neurotoxins (nerve toxins) that interfere with the nerve function and have almost immediate effects when ingested.

Willand Pond is impaired under the DES Surface Water Quality Standard, Env-Ws 1703.01 Water Use Classifications, (c) All surface waters shall provide, whenever attainable, for the protection and propagation of fish, shellfish and wildlife, and for recreation in and on the surface waters and (d) Unless the flows are caused by naturally occurring conditions, surface water quantity shall be maintained at levels adequate to protect existing and designated uses. The Designated Uses not being met are Aquatic Life Use (refer to Indicator 9 Flow in the DES Consolidated Listing and Assessment Methodology [CALM]) and Primary Contact Recreation (refer to CALM PCR Indicator 4 and see notes for cyanobacteria).

It appears that a multitude of human-induced causes have resulted in these impairments which include but may not be limited to removal of thousands of trees in the watershed that balance the hydrologic budget naturally, tremendous construction of impervious surfaces, fill of wetlands and blocking the flow of the outlet. The rains of the past year have placed a spot light on the problem.

I suggest the following recommendations for the Department of Environmental Services.

1. Refrain from approving any Dredge and Fill and Alteration of Terrain permit applications in the watershed until the situation is clearly understood and solutions have been implemented.
2. Compile all recently approved DES permits in the watershed and re-review them in light of the impairments.
3. Inspect all properties in the watershed that were constructed with DES approved permits to determine compliance with the engineered plans. If the projects are not in compliance with the approved plans, require immediate compliance.
4. Strongly encourage the officials of Somersworth and Dover to immediately and holistically study the situation, including the environmental impacts of the elevated water level.

This is an alarming situation in terms of the length of time the high water levels have been sustained and the extent of the property and now environmental damage that has occurred. Trees along the pond's edge are dying and stormwater is directly entering the pond with little or no treatment. It is a complex problem that will be expensive to fix but one that needs immediate attention and solutions to address human and environmental problems.



**Photo 1 Access road to Willand Pond Trail under water and inaccessible by car and by foot (6/14/07).**



**Photo 2 Person standing at top of submerge public boat launch. Wooden post marks left side of boat launch (6/14/07).**