

August 3, 2005

Mr. Larry Nelson, PE  
City of Madison Engineer  
210 Martin Luther King Jr. Blvd.  
Room 115  
Madison, WI 53703

Re: Proposed Odana Hills Golf Course recharge project  
Summary of effects on Lake Wingra

Dear Larry:

As requested, this letter provides a summary of the effects that the groundwater recharge project proposed to be installed at the Odana Hills golf course will have on Lake Wingra. As you know, this groundwater recharge project is proposed for installation by MG&E and the State of Wisconsin, and has been designed to meet the requirements of the water withdrawal permit for the West Campus Cogeneration Facility, located on the UW campus. The permit requires that at ultimate cogeneration facility capacity, approximately 80 million gallons per year of stormwater are to be infiltrated into the ground to provide recharge to the groundwater system, to compensate for the occasional pumping of groundwater for low-flow augmentation of the Yahara River. The groundwater recharge project will pump water from the large pond at the western end of the Odana Hills golf course and infiltrate it via an underground seepage bed system. The background and details of the proposed project are contained in the design report that we have submitted to you, and which is available on the MG&E web site.

The Odana Hills golf course pond is part of the drainage system that discharges runoff to Lake Wingra. Diversion of stormwater from the Odana Hills pond to recharge the groundwater system will have several beneficial effects on the Lake Wingra watershed and on Lake Wingra itself. These effects include a reduction in overall stormwater volume discharge to the lake, creation of a modest amount of additional flood storage volume in the Odana Hills pond, and a projected increase in the flow of the natural springs that discharge into Lake Wingra. These issues are discussed in more detail below.

The diversion of 80 million gallons per year from the Odana Hills pond will significantly reduce the volume of stormwater runoff that will discharge from the upstream watershed to Lake Wingra. Our analyses indicate that the annual runoff volume passing through the Odana Hills averages approximately 250 million gallons per year, meaning that operation of the recharge facility will divert approximately one third of the runoff volume that would enter Lake Wingra via the stormwater outfall at Manitou Way. This reduction in stormwater runoff volume will reduce the stormwater pollutant loading to Lake Wingra.

Additionally, pumping water from the Odana pond will slightly lower its water level (approximately 6-inch lower median stage), creating additional storage capacity to retain runoff from upstream. This will reduce downstream discharge, especially for smaller events, and will reduce the erosive potential of stormwater flowing from the Manitou Way outfall to Lake Wingra.

Finally, the runoff that is diverted from the rapidly-responding surface water drainage system will slowly flow to Lake Wingra in the local groundwater flow system. Our groundwater modeling analysis indicates that a substantial portion of the 80 million gallons per year of recharge water will discharge to Lake Wingra from natural springs in the southwestern portion of the lake. A 1979 water budget study by the U.S. Geological Survey estimated that the total groundwater inflow to Lake Wingra was approximately 540 million gallons per year. Thus, the recharge system will provide a substantial increase in groundwater flow to the lake and will help reverse the trends of increasing stormwater flow and decreasing groundwater flow due to urbanization of the watershed.

Although the groundwater recharge system is designed to meet the criteria of the West campus cogeneration facility permit requirements, we believe this project will provide significant hydrologic and water quality benefits to Lake Wingra.

Please contact us with any further questions on these issues.

Sincerely,

Montgomery Associates: Resource Solutions, LLC



Robert J. Montgomery, PE  
Principal

Cc: Don Peterson, MG&E