



## State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor  
Scott Hassett, Secretary  
Gloria L. McCutcheon, Regional Director

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Sturtevant, WI 53177  
Telephone 262-884-2357  
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June 1<sup>st</sup>, 2006

Mr. Steven Dischler, P.E.  
Foth & Van Dyke  
2737 S. Ridge Road  
PO Box 19012  
Green Bay, WI 53407-9012

Subject: Sediment Sampling Protocols and Analysis for Proposed Nagawicka Lake Dredging Project

Dear Mr. Dischler:

In order to adequately characterize the sediments proposed for dredging as described in your NR 347 Preliminary Application, dated April 21<sup>st</sup>, 2006, please undertake sediment sampling within the following locations and according to the following directions:

### Mill Pond

Within the impoundment, two core samples shall be taken to a depth of two feet beyond project depth. The cores should be taken a minimum of 200 feet apart, and located in areas to be most representative of the Mill Pond sediment. The top half of each of the two core samples taken should be mixed, and a single grab composite sample should then be taken from the resulting mixture and analyzed for the parameters listed in the attached table. The bottom half of each of the two core samples taken should also be mixed, with single grab composite sample then taken from the resulting mixture and analyzed for the parameters in the attached table. Additionally, 4-5 random cores should be taken from within the whole impoundment. These cores should then be composited together, and a single grab sample taken from the resultant mixture and analyzed as previously discussed.

### Bark River Inlet

Within the Bark River Inlet proposed dredged area, three core samples shall be taken. The cores should be located in areas most representative of the Inlet sediment profile, and be taken two feet beyond dredge depth. Each of three core samples taken should be separated into sediment and "beyond dredge depth" portions. The sediment portions from each core should then be composited together, and a single grab composite sample should then be taken from the resulting mixture and analyzed for the parameters listed in the attached table. The "beyond dredge depth" portions of each of the three core samples taken should also be mixed, with single grab composite sample then taken from the resulting mixture and analyzed for the parameters in the attached table.

General

Core appearances for all cores taken should be documented with photos prior to separating. Sediment depths and core locations should be recorded. All sample analyses should follow the suggested analytical methods, and meet the required detection limits listed in the attached table. Additionally, sampling and analyses shall be done in accordance with ch. NR 347.06 Wis. Admin. Code, unless modified by specific methods described in this memo. All analyses submitted to the Department shall be done by a laboratory certified or registered under ch. NR 149, Wis. Admin. Code. Finally, I would suggest that the composite samples be saved and preserved until the Project Manager determines that extra testing will not be necessary.

Please don't hesitate to contact me at 262-884-2357 if you have any questions regarding the information above.

Sincerely,

Craig Helker  
Water Resources Biologist

Cc: File  
Tom Hafner, City of Delafield  
Craig Webster, WDNR  
Jim D'Antuono, WDNR (electronic)  
Vic Pappas, WDNR (electronic)  
Bizhan Shiekholeslami, WDNR (electronic)  
Ken Denow, WDNR (electronic)

<b>Arsenic</b>	<b>EPA 6010 or 7060</b>	<b>2.0</b>
<b>Cadmium</b>	<b>EPA 7131</b>	<b>0.02</b>
<b>Chromium (total)</b>	<b>EPA 6010 or 7191</b>	<b>5.0</b>
<b>Copper</b>	<b>EPA 6010 or 7211</b>	<b>2.0</b>
<b>Lead</b>	<b>EPA 6010 or 7421</b>	<b>5.0</b>
<b>Mercury</b>	<b>EPA 7471</b>	<b>0.02</b>
<b>Nickel</b>	<b>EPA 6010</b>	<b>5.0</b>
<b>Zinc</b>	<b>EPA 6010 or 7951</b>	<b>5.0</b>
<b>Nitrate</b>		
<b>Nitrite</b>		
<b>Ammonia-Nitrogen</b>		
<b>Available Phosphorus</b>		
<b>Total Phosphorus</b>		
<b>Total K-Nitrogen</b>		
<b>Particle Size Analysis</b>		
<b>Total Organic Carbon</b>	<b>SW 846 EPA 9060</b>	
<b>Polycyclic Aromatic Hydrocarbons (PAHs- 16 unsubstituted Parent Compounds)</b>	<b>EPA 8310</b>	<b>0.03</b>
<b>Chlordane</b>	<b>EPA 8081, 354440B, 3541</b>	<b>0.01</b>
<b>DDT</b>	<b>EPA 8081, 354440B, 3541</b>	<b>0.01</b>
<b>DDE</b>	<b>EPA 8081, 354440B, 3541</b>	<b>0.01</b>
<b>PCBs (total)*</b>		<b>0.05</b>

\* Note: PCB analysis should be included on Mill Pond samples only, and not run on the Inlet samples