



# The ASHWAUBENON CREEK WATERSHED

Monitored by the West De Pere High School Ecology Club & Green Bay East High School

## The Monitoring Sites

### Creamery Road

One of the fastest sections of our stream.

It has mucky bottoms with steep banks, clearly indicating that erosion has occurred.

Big carp chum up the waters nearby.



### Little Rapids Road

Virtually no stream flow, lots of pooling.

There are huge culverts in place to allow the stream, swollen by spring thaws, to flow quickly under the bridge.

However, the stream has also been artificially narrowed so that normal flow levels can only go through one of them.



As Kaylee Beck works the turbidity tube, Jared Halbrook gets into a previous position to take another sample, and Ryan Ballard stands ready for the quick exchange.



Ahh... spring! Grace Grocholski, Kaylee Beck, Rachel Kolz, and Justin Douglas endure Miss. Lee's compulsive photo-taking while in the background, Kyle Hendricks and Ryan Ballard continue to work on stream flow.



You'd think summer sampling should have more lush vegetation, but Jared Halbrook, Jerah Dvorkar, and Kyle Hendricks crouch in the mud and sparse plant cover.



Yucking it up with macros in the muck is junior Kaylee Beck.

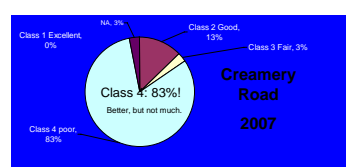
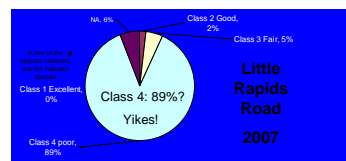


How many Class 4's does it take to prove your stream is poor? Not many according to junior Ryan Ballard.



Junior Grace Grocholski shares a gentle moment with a slug.

### Statistics Reveal Biodiversity Woes



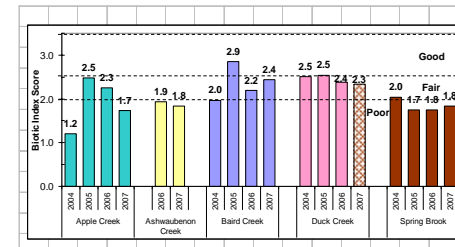
### Comparisons to Other Streams Seem to Correlate with Land Use

\*Ashwaubenon Creek's headwaters and tributaries flow through land traditionally used primarily for agriculture, much like Spring Brook

\*However, within the past 10 years, this land has been rapidly developed into subdivisions with small lots and little green space except for an occasional massive detention pond, similar to the development occurring by Baird Creek and Apple Creek

\*Baird Creek has been fiercely protected, however, unlike Apple Creek—note each creek's IBI data over the past three years

\*Duck Creek also scores "highly" considering its intensive and diverse land use—what's their secret? Rocky riffles?



A Longitudinal View of Watershed Macro invertebrate IBI's

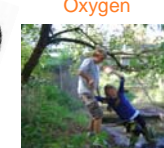


### ADDITIONAL CONTRIBUTING FACTORS

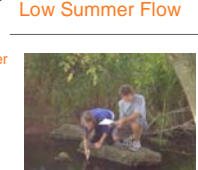
Flash Flooding Is Common



Low Dissolved Oxygen



Severe Erosion & Low Summer Flow



Sucky-Mucky Bottoms

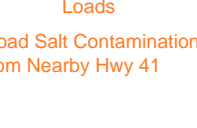
Provide high BOD and little cover for macro invertebrates



Turbidity Troubles



High Nutrient Loads



Road Salt Contamination from Nearby Hwy 41

## Frog Results Are Much Improved

Spring 2006 (Out of 9 Point Counts)



Spring 2007 (Out of 6 Point Counts)

Eastern Gray Tree Frog 50% of sites	American Toad 50% of sites
Green Frog 17% of sites	Western Chorus Frog 66% of sites
Northern Leopard Frog 17% of sites	Spring Peeper 17% of sites

### Possible Explanations:

1. Lack of experience on our part (it was our first spring out)
2. The stream was plowed in during the winter or spring, disrupting or burying many frogs
3. An unknown but significant event occurred earlier that winter or spring



## Phocus on Phosphorus

NH <sub>3</sub> (mg/L)	2007		2006	
	Creamery Road	Little Rapids Road	Creamery Road	Little Rapids Road
SPRING	0.36	0.05	0.07	Not a monitored site
SUMMER	0.38	0.06	0.13	0.18
FALL	0.09	0.015	0.14	0.05

These numbers seem rather stable throughout the year, and compared to the others, also seem rather low.

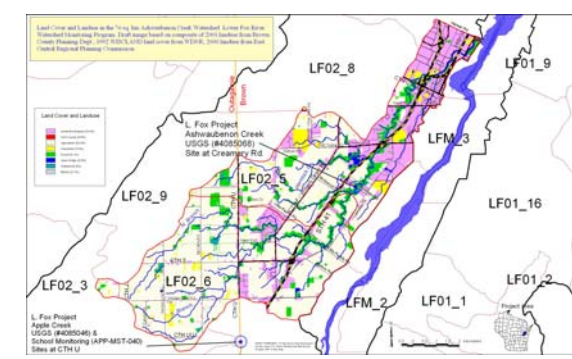
NO <sub>3</sub> (mg/L)	2007		2006	
	Creamery Road	Little Rapids Road	Creamery Road	Little Rapids Road
SPRING	4.5	2.7	0.07	Not a monitored site
SUMMER	0.02	0.01	0.31	0.18
FALL	0.00	0.8	0.55	0.15

Spring 2007 and Fall 2006 show elevated levels of nitrates, and are a concern. Both sites show very different patterns and we are looking for any insight a more experienced eye may provide.

P (mg/L PO4-P)	2007		2006	
	Creamery Road	Little Rapids Rd.	Creamery Road	Little Rapids Rd.
SPRING	0.37	0.37	1.26	Not a monitored site
SUMMER	0.80	0.90	0.60	0.78
FALL	0.83	1.01	0.23	0.25

When the DNR flagged Ashwaubenon Creek as an impaired waterway this spring, it specifically cited the creek's elevated phosphorus levels. Considering that the current acceptable level is 0.10 mg/L, this designation is not surprising!

## Future Research Plans



### Pinpointing Phosphorus Sources

Now entering our third year of monitoring, we are getting restless. We can see the problems and how they are adding up, but we wonder:

1. Where exactly are the phosphorus and other nutrients coming from?
2. Which land uses are hurting the stream the most—point or non point sources?

### Integrating Bird & Habitat Data into the Big Picture

With the new bird data analysis technology & field guides coming out this spring, we should be able to get a fuller and richer view of the watershed as a whole. By feeding past bird data into the program, we can see if any trends have changed over time. If conditions change, birds simply fly away to find better places. Are they shifting within the watershed, or going elsewhere entirely?

Erosion has come up again and again—it's time to look at the data and see how much it is changing, and how rapidly as well. Armed with enough data, can we influence city or village ordinances, or help private landowners implement sustainable land use practices?