



LakeFront

Quarterly newsletter to Whitefish Lake Institute members

Winter 2007

Gasoline Constituent Loading and Motorized Watercraft Levels for Whitefish Lake

The Whitefish Lake Institute recently completed a study looking at the relationship between gasoline constituent loading in the form of BTEX (benzene, toluene, ethyl-benzene and xylene) and motorized watercraft densities on Whitefish Lake.

BTEX are known to have the potential to cause a myriad of human health problems and to affect the aquatic environment. Recreationalists (swimmers) can be exposed to BTEX through inhalation, ingestion, and absorption through the skin.

BTEX samples were collected from four sites on Whitefish Lake on seven sample dates. Sample sites included a mid-lake reference site and three shoreline sites where high boat densities are known to exist. Results indicate that BTEX levels generally increase as motorized watercraft on the lake increase. An exception to this finding occurred at the City Beach Boat Launch Site where correlation values were not found to be as strong. On September 10, 2006, the City Beach Boat Launch Site also displayed the highest BTEX concentrations (benzene was 66% of the EPA Maximum Contaminant Level for drinking water) even though there was the second lowest number of motorized watercraft on the lake of the seven sample dates.

The data suggest that secondary inputs, unrelated to total motorized watercraft numbers, occur at the City Beach Boat Launch site. Secondary BTEX inputs could range from irresponsible fuel confinement by boat owners, the draining of boat hull effluent by pulling transom plugs on the boat ramp, and excessive engine idling at the dock.

The study also enumerated the number of boat docks located around Whitefish Lake, and the number of on-lake watercraft, including those stored or moored by lakeshore residents. It was found that there were 509 motorized and 461 non-motorized watercraft parked around the lake by lakeshore residents, homeowner associations and businesses. The total number of docks counted around the lake was 278. The study

found that a disproportionately low number of docks had an estimated high number of boat slips. For example, 16 percent of the larger dock configurations had 44 percent of the estimated boat slips.

When the on-lake and shoreline motorized watercraft densities are combined, it is estimated that the motorized watercraft breakdown on Whitefish Lake was 13% pontoon boat, 64% regular boat, and 23% personal watercraft.

Due to the direct and indirect effect of motorized watercraft and the various avenues of BTEX exposure to recreationalists, the data suggests that public health could be compromised in select areas of Whitefish Lake at specific times. It is also reasonable to conclude that aquatic life located in shoreline areas with heavy boat traffic can be affected. The report can be found at www.whitefishlake.org.

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Whitefish Lake
INSTITUTE

*Protecting and improving the
Whitefish, Montana area
lake resources*

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Founded in 2005, the Whitefish Lake Institute is committed to acquiring scientific research and engaging the local citizenry to protect and improve the Whitefish area lake resources of today, while providing a collective vision for tomorrow.

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Mike Koopal, Editor

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(Aerial view of Whitefish 1/27/07)

Whitefish Water Quality Advisory Committee

In 2006, the Whitefish City Council prioritized goals in a strategic planning session with Whitefish City Staff. One of the priority actions included in the City's final 2006 priority ranking was the establishment of a local water quality advisory committee that would report periodically to City Council and City Staff.

The purpose of the Whitefish Water Quality Advisory Committee is not to duplicate the efforts of any existing group, but to utilize the expertise of each through collaboration and sharing of information. With this approach, current, accurate water quality information can be supplied to city government and the public.

The City Council requested that Mike Koopal of the Institute coordinate the committee. The Water Quality Advisory Committee is not an official City committee nor is it a committee of the Institute. The independent committee has representation from the following entities: Whitefish Lake Institute, Whitefish City Council, Whitefish Public Works Department, Whitefish Planning Department, Whitefish School District, Whitefish Lakeshore Protection Committee, Whitefish Water District, Friends of Blanchard Lake, Swift Creek Coalition, and the Haskill Basin Watershed Group.

Meetings of the committee are open to the public and are advertised in the Whitefish Pilot. One of the initial goals of the committee is to prepare a presentation to City Council introducing them to the role, function and geographic scope of each water quality related entity. During this process, a "one stop shopping" library for water quality reports for the area will be developed and housed at the Institute. The library will include an annotated bibliography off all reports. Another early priority for the committee will be to educate City staff and the community about the Total Maximum Daily Load (TMDL) Program currently underway for many local waterbodies. –MK

Clean Water and Property Values

Economically, it's important to protect lake water quality. Here's a quick look at a few studies on the topic that have been completed around the nation.

A study in Wisconsin that evaluated data on 892 vacant lakefront properties from 1986-1995 concluded that zoning requirements that preserve clean water, natural scenic beauty, and peace and quiet generated an economic gain that more than offset the economic loss resulting from the constraints of development.

A 1998 study that examined land values before and after the implementation of critical land-use regulations in Maryland and New Jersey found the regulations had no impact on the volume of construction activity, and land values appreciated 5-25%. The researchers noted that residents benefited from the knowledge that public actions were taken to protect the environmental amenity in which they had already invested.

A Wisconsin study of more than 1,100 lakefront property sales from 1997-2001 showed that more restrictive zoning regulations had a positive influence on property values. The researchers concluded that lakefront homeowners value environmental preservation by showing a willingness to exchange rights to live on a healthier lake.

So what happens if water quality does become degraded? A five year Maine study found that declining water clarity accounted for a 10-20% drop in selling price for 900 lakefront properties on 34 lakes.

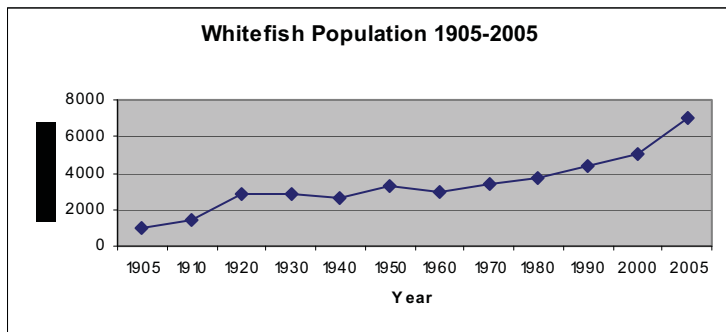
Closer to home we have an estimate of what a local lake means to the economy. After collectively studying data last summer, Dr. Jack Stanford, Director of the Flathead Lake Biological Station and Dr. John Duffield, an economics professor at the University of Montana, determined the economic value of Flathead Lake to be somewhere between \$6 billion and \$10 billion.

The economic value of clean water is transparent. –MK

Executive Director's Essay

Decision Time for Whitefish

Unlike any other large lake in the State of Montana, Whitefish Lake is found entirely within the boundaries of a municipality. The City of Whitefish annexed the lake in October of 2005. Whitefish has a rapidly increasing population of around 7,000 people. U.S. Census Bureau data show that the population of Whitefish increased 36 percent from 1980 to 2000. New estimates show an approximate 40 percent increase from 2000-2005.



Whitefish is at a pivotal crossroads. Three concurrent issues are at play that will influence the future of Flathead County, Whitefish, and the protection of Whitefish Lake.

The first is a Growth Policy for Flathead County. A 30 day written comment period to the final draft began on February 5th and extends until March 9th. Chapter 8 deals with natural

resources. You can review the final draft at the county's website: www.co.flathead.mt.us/fcpz/growthpolicy.

The second issue is the City of Whitefish Critical Areas and Groundwater Ordinance. This will be an interim ordinance for 15 months until such time as the City of Whitefish can formulate and adopt permanent hillside development, critical area, and groundwater protection ordinances pursuant to the Whitefish City-County Growth Policy. Find more about this issue at the City of Whitefish website: www.whitefishgovoffice.com.

The third issue is the Growth Policy for the City of Whitefish. The City will host a public meeting on March 1st at the O'Shaughnessy Center from 4:00 p.m. to 7:00 p.m. to gather comments. The Natural Resources element will address air quality, water quality, critical lands such as wetlands, riparian areas, steep slopes, habitat, agricultural lands, timber lands, and flood-prone areas. Find out more at www.planitwhitefish.com.

Many people visit and live in the Flathead Valley and Whitefish because of the high quality of life. Maintaining clean water and protecting critical lands is integral to the qualities that Whitefish area residents value and enjoy.

The quality of these visioning documents are only as good as the input the drafters receive from the public. Take the time and become involved, the future depends on it.

Institute Hires Part-Time Scientist

The Institute welcomes Chris Ruffatto as a staff scientist. Chris, an Earth Science and Technology Education Teacher at Whitefish High School, will spend his summer months collecting data on Whitefish Lake. Chris will also spearhead the upkeep, calibration and maintenance of scientific equipment.



During the school year, Chris will help out at the Institute as much as his busy schedule allows.

At the high school, Chris and his students have accumulated 11 years of chemical, physical and biological data for Haskill Creek and have published a Watershed Survey and Stream Reach Inventory for the area. They have also conducted sporadic sampling on Whitefish Lake and are currently involved in a groundwater study in the Whitefish area.

Chris has also served on the Institute's Technical Advisory Committee since our founding year in 2005.

Thank you **Charlie and Susan Abell and Dewey and Sandra Hartman** for providing a mooring buoy for the Institute's pontoon boat in 2006. The pontoon boat was donated by **Bill and Ruth Leonard**. Our boat is still looking for a permanent home and a trailer. If you can help us out, give us a call.

Ruffatto receives Flathead Basin Commission "Stewardship Award" for 2006

Chris Ruffatto was recently named a recipient of the Flathead Basin Commission's "Stewardship Award" for his activities outside of the classroom to foster a high level of understanding of local water quality issues among hundreds of his students.

The FBC "Stewardship Award" was created in the early 1990s to recognize area citizens, organizations and businesses that demonstrate an exceptional awareness of water quality issues and take extraordinary means to address them.

Chris, an active Whitefish High School science teacher with 23 years classroom experience, was one of the primary architects of "Project Free Flow," an activity designed to get students out of the classroom and into a watershed setting to learn first hand about water quality issues. The project became the model for what evolved into a state-wide program involving thousands of students. Locally, Ruffatto's students completed a comprehensive watershed survey of the Haskill Creek Watershed, a tributary of the Whitefish River, and have done water quality monitoring on Whitefish Lake, among many other water quality-related projects.

Chris has also been involved in Flathead Basin Commission volunteer monitoring projects, and has spent time as a volunteer trainer. —Mark Holston, FBC

Whitefish Lake Institute Short Courses- Summer 2007

(Courses offered through the Whitefish Parks & Recreation Department)

Take advantage of this early registration offer:

To request an enrollment form, please call the Whitefish Parks & Recreation Program at 863-2470, or stop by their City Hall office at 418 East Second Street. These classes will also be advertised in the April Parks & Recreation Summer Guide. Enrollment is limited to 18 per class. Class registration is \$40. All classes will be held at the Lodge at Whitefish Lake.

Short Course: Grade levels 3-6

Discover Whitefish Lake

Dates: July 25-27, 1-4pm Instructors: Mae Koopal, Jes Qunell

Course description: Students will get a basic awareness of Whitefish Lake during three fun-filled afternoons of discovery. They will start by learning about the water cycle and then explore different life forms, including; fish, frogs, zooplankton, and aquatic plants. Then, students will learn about the different aquatic habitats of the lake. Each day, students will spend time creating a short natural resource book about Whitefish Lake to share with their parents.

Short Course: Grade levels 7-12

Whitefish Lake Ecology

Dates: July 25-27, 1-4pm Instructors: Chris Ruffatto, Mike Koopal

Course description: Older students will build upon their science knowledge to explore Whitefish Lake's unique ecology. Chemical, physical, biological, and social components of the ecosystem will be looked at independently and in combination. This course is designed to allow students to problem solve natural resource related issues. Students will go out on Whitefish Lake to view examples from classroom discussion and to see current field data collection techniques.

Adult Short Course #1

Watershed Function

Dates: July 25-27, 6-9pm Instructors: Chris Ruffatto, Mike Koopal

Course description: You're never too old to learn about how the natural world works. Explore basic watershed topics and processes including hydrology, geomorphology, stream ecology, forestry and limnology. The course will examine how humans can influence aquatic ecosystems with an emphasis placed on point and non-point source pollution. Students will be treated to an outing on Whitefish Lake to view examples from classroom discussion and to see current field data collection techniques. The class will feature guest speakers.

Adult Short Course #2

Whitefish Lake- Past, Present and Future

Dates: July 18-20, 6-9pm Instructors: Chris Ruffatto, Mike Koopal

Course description: Did you ever wonder what Whitefish Lake was like before European settlement? This course will start with a discussion of Whitefish Lake geology and then transition to a look at past history, current events, and current research underway to understand the resource. In the end, students will explore two potential future scenarios for the lake. The course will involve an outing on Whitefish Lake to view examples from classroom discussion and to see current field data collection techniques.



Photo courtesy of Christine Hensleigh

Second graders at Muldown Elementary get a "birds-eye" view of Whitefish Lake zooplankton during the Institute's Pond Unit presentation. The microscopes and video feed used for these presentations are courtesy of a educational mini-grant through the Montana Department of Environmental Quality.

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