

WATERLINE

Sept 2006

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Regional Lakes Conference Ahead!

by BiJay Adams, president-elect and conference coordinator, WALPA

Mark your calendars for September 13-15, the scheduled dates for this year's Pacific Northwest Regional Conference. The **North American Lake Management Society, Oregon Lakes Association and Washington State Lake Protection Association** have teamed up to present a regional lake conference titled *Research and Management Trends in the Pacific Northwest*. To be held at Portland State University, this year's conference is sponsored by the PSU Center for Lakes and Reservoirs, Hach Environmental, and the Pacific States Marine Fisheries Commission.

All your favorite experts will be there presenting insightful papers and discussion sessions on exotic plants and animals, toxic cyanobacteria, water quality modeling, lake management/restoration, and many other great topics. And of course you'll also want to take advantage of poster presentations, a photo contest, vendor exhibits, keynote speakers, field trips, and great food and networking.

Research and Management Trends in the Pacific Northwest will take place at PSU's Smith Memorial Student Union Building. Lodging is available at the nearby University Place Hotel (www.pdx.edu/cegs/uplace.html; (503) 221-0140) for only \$69 (plus tax) per night. Activities and attractions abound in the Portland area including the scenic Willamette and Columbia Rivers.

For program and conference registration, visit www.nalms.org. You can get more information from the OLA and WALPA websites at www.oregonlakes.org or www.nalms.org/walpa. For other conference details, contact Mark Sytsma at (503) 725-3833; sytsmam@pdx.edu or Vanessa Howard at (503) 725-9706; vhoward@pdx.edu. Hope to see you in Portland in September!

Funds Available for Your Lake Projects!

Have a project in mind for your lake? There are many grant opportunities available for Washington lakes groups; for other groups, see p. 7 for leads to other funding sources.

Aquatic weeds play a major role in the condition of many Washington lakes. If your lake has a public boat ramp, you are eligible for the state Aquatic Weeds Management Fund, which sponsors projects to prevent aquatic weed problems or control existing populations of freshwater, non-native, invasive aquatic plants. Cities, counties, state agencies, tribes, and special purpose districts may apply; lake groups—including lake management districts—and other private organizations must work with a local jurisdiction to get funding.

Continued on page 7

Lake Focus on Green Lake, Seattle, WA

A look at "one of Seattle's most beloved parks." by Heidi Wachter

From the Milk Carton Derby to a Hiroshima memorial, Seattle's Green Lake supports a variety of uses by local residents and visitors. Walkers, bike commuters, crew racers and toddlers love Green Lake. Those with rowboats or windsurfers (and help carrying) have easy access to the lakeshore. Even the birds find sanctuary in or near this popular urban lake. Located about four miles north of downtown Seattle, the lake and its surrounding park are extremely popular, with summer peak use estimated at 40,000 visitors a week.



East Green Lake Bathing Beach, July 15, 1930.
Courtesy of Seattle Municipal Archives (item: 29152).

The 260 acre lake has 2.9 miles of shoreline and lies 164 feet above sea level with a mean depth of 12.8 feet and a maximum depth of 26.9 feet. Green Lake's 173 acre drainage is primarily within the surrounding park; its main inflows are subsurface seepage, rainfall, stormwater runoff, and City of Seattle drinking water, with three human-made outflows along the lake's southeast shoreline.

Green Lake was formed 50,000 years ago by the Vashon glacier, which also created Lake Washington to the east and Lake Union to the south. Originally, the lake drained into Lake Washington through Ravenna Creek, but the lake's water level was lowered seven feet in 1911 to create Green Lake Park, effectively drying up Ravenna Creek between the lake and Cowen Park.

David Phillips named Green Lake in 1855 as he was

surveying the region; his "first notes referred to it as 'Lake Green' because even in its natural state the lake is prone to algae blooms." In the early 1900's, Green Lake and adjoining Woodland Park became part of Seattle's Olmsted Plan "to create a series of interconnected greenspaces around the entire city."

Throughout the 20th century, the lake has hosted many Seattle events. In July 1929, the first hydroplane race was held on Green Lake; these continued until

1984, when community complaints about noise and crowds encouraged the city to ban motorboat racing. In 1950, the 5,000 seat Aqua Theater was built for the first Seafair. The unique theater, with high diving platforms, a round stage, and a floating orchestra pit, hosted both Bob Hope and the Grateful Dead in its heyday, though not at the same time. The theater was decommissioned in 1970, and today, only sections of the grandstand remain.

Concerns about water quality, specifically related to algal blooms, have also been part of Green Lake's history. Green Lake is "highly eutrophic" and its water clarity and quality have long been impacted by internal and external sources of nutrients, mainly phosphorus (P). Beach closures due to phytoplankton blooms are documented back to 1921.

Continued on page 5

Your Input Needed for Algae Control Program

As most lake folks know, blue-green (cyanobacteria) algae blooms are occurring more frequently in lakes around the Northwest. Some blue-greens may form potent toxins that can affect human health and have caused the death of pets. The Department of Ecology is developing an algae control program, focusing on blue-green algae, that will include technical and financial assistance to help manage algae problems in Washington lakes.

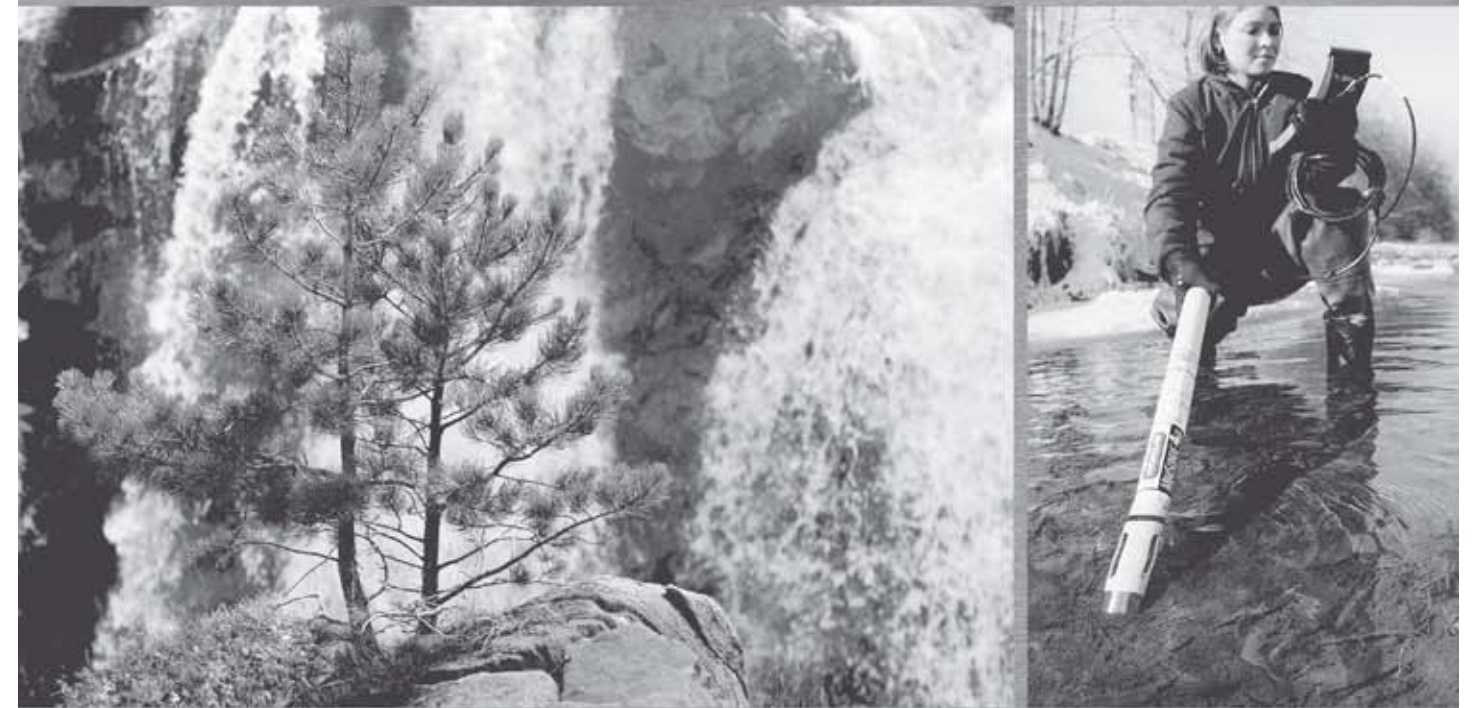
One proposed feature of the program is a service that allows people to collect algae samples and mail them to Ecology staff for identification. If the bloom contains a toxin-producing species, Ecology will test

the sample for toxicity. All information about the sample will be posted on-line.

Ecology also plans to offer small grants to local governments (we cannot offer grants directly to lake groups under this program). Grants could fund activities like: education about reducing lake nutrients, developing educational material about algae, and small pilot projects.

Ecology wants your help. Tell us what kind of algae program would work for you! Please send your comments and suggestions about an algae program to **Kathy Hamel** at: kham461@ecy.wa.gov or call her at (360) 407-6562.

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Septic Common Sense

by Shawn Ultican and Peter Burgoon

Do you have a sewage treatment plant buried in your yard? Many people do. These residential sewage treatment plants, or “septic systems”, can be expensive to repair or replace. By keeping some simple things in mind you can help your septic system operate properly for years to come and reduce the potential for pollution to nearby lakes, streams or rivers.

The Basic Parts

A septic system, also known as an “on-site sewage system”, is designed to prevent disease by collecting, treating and disposing of wastewater or sewage. This wastewater may come from toilets, showers, sinks, or laundry.

The most common septic system is a conventional or “gravity” system, with two basic parts:

The septic tank, which traps things that would plug up the drainfield before they get that far.

The drainfield, where the soil absorbs and treats wastewater. A replacement drainfield area is needed in case the primary drainfield fails.

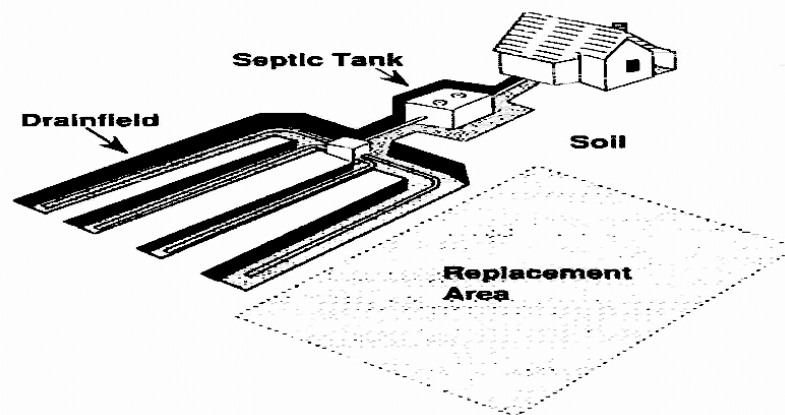
If your property has poor soils, or is close to wells or surface water, other, more complex types of septic systems may be needed. These systems need careful maintenance to keep them working effectively.

How the System Works

The Septic Tank

A septic tank is a large buried container that prevents solids from entering and damaging the drainfield. As wastewater enters the septic tank, it slows down. Heavy solids settle to the bottom forming “sludge”, which is broken down by bacteria. Lighter solids, like grease and toilet paper, rise to the top forming a “scum” layer.

Septic tanks are shaped like a box or cylinder made of concrete, fiberglass or polyethylene. The most important thing a homeowner can do to protect water quality is have the septic tank checked every 3-5 years,



and the solids pumped out when necessary.

If you're building a new house near a lake, you'll need to make a special effort to make sure your tank is installed correctly and is watertight.

The Distribution Box

After wastewater flows through the septic tank, it passes through a distribution box on its way to the drainfield. The distribution box evenly divides the sewage between different drainfield trenches. To keep your system working as long as possible, the distribution box must be level. If one part of the drainfield gets more sewage than another, the system could fail early.

The Drainfield

The drainfield spreads the wastewater out, allowing it to soak into the soil slowly, filtering and treating it again. Eventually the treated water will help recharge groundwater. Properly designed and installed drainfields are very effective at removing pollutants and human pathogens before they reach groundwater.

Maintaining Your System

Just as with your car, basic maintenance can extend septic system life, while replacing it may be very expensive.

Maintain the Septic Tank

Septic tanks need to be inspected every 3 to 5 years, and pumped as necessary to keep the solids that won't decompose from overflowing and damaging the drainfield. If your tank has a screen or filter on the outlet side, it will need to be inspected yearly and cleaned as needed. Remember also:

Septic additives aren't necessary and may harm the system.

Easy access to the tank is important for regular pumping and maintenance.

Risers over the tank lids are recommended for access and are required on some systems.

Protect Your Drainfield

Direct downspouts, surface and groundwater away from the system to avoid saturating the soil.

Don't drive, park, or build on your drainfield. Keep livestock off; use your sprinkler system elsewhere.

Maintenance Contracts

Alternative septic systems provide additional treatment and are more complex. These systems also need additional maintenance. Some areas require that you have a maintenance contract and yearly inspections by a certified contractor.

Warning Signs of a Failing System

Standing water or soggy soils in the drainfield area, sewage backing up into a residence, caused by slow absorption in the drainfield and sewage on the surface of the ground or discharging into surface water.

Watch What Goes Down the Drain.

Don't flush grease, food, hair, cigarettes, personal hygiene products or kitty litter down the toilet. They will clog the system or fill up the septic tank faster.

Use your garbage disposal sparingly. Try composting food scraps.

Minimize your use of household chemicals; don't dump chemicals down the drain.

Laundry Matters

Do laundry throughout the week; don't do more than two loads a day. Give the soil around your drainfield time to absorb the extra water.

Use a concentrated liquid detergent.

Don't use more detergents, chemicals or bleach than necessary.

Use dryer sheets instead of liquid fabric softeners.

Protect Your System from Damage

Get copies of your septic records, and locate your drainfield.

Don't drive, dig or park on the septic system.

Landscape appropriately. Some plant roots can damage your system.

Don't Drown the Drainfield

Conserve water and fix leaky fixtures (and save money). Using too much water is one of the most common reasons septic systems fail.

Additional Resources

If you have questions, contact your local health department or building office. They will have any records of your system, and can usually provide detailed information and technical advice. There are also state agencies that have helpful information:

Washington State Department of Health
(360) 236-3062 or toll free 1-888-586-9427

www.doh.wa.gov/ehp/ts/WW/default.htm
Sets statewide standards for septic systems, and has information on wastewater management.

Washington Sea Grant Program
(360) 432-3054

www.wsg.washington.edu/outreach/mas/water_quality/water

Click on links for On-site Sewage Systems.

Washington State Department of Licensing
(360) 664-1575

www.dol.wa.gov/engineers/onsitefront.htm

Find out if your septic designer or engineer is authorized to provide design services.

Greenlake - continued from page 2

1990's, park managers turned to alum treatments (aluminum sulfate and sodium aluminate) to control toxic algal blooms, with the first application in fall of 1991. The treatment provided a short-term solution with increased water clarity the following summer. However, P concentrations rose again and beaches were closed in the summers of 1999, 2002, and 2003. During March and April 2004, Green Lake underwent a second alum treatment, which may “provide up to ten years of protection from toxic algae blooms.” The citizen group Friends of Green Lake hopes the alum treatments will control phytoplankton blooms until managers find a longer-term solution.

According to a 1997 warmwater fish study by Washington's Department of Fish and Wildlife (WDFW), the predominant fish in Green Lake are common carp and largemouth bass. Rainbow trout, pumpkin seed, brown trout, rock bass, brown bullhead, yellow perch, smallmouth bass, and sculpin were also found in the lake, which is stocked with rainbow trout, brown trout, channel catfish and tiger muskie.

Today, in addition to human-uses, the park provides “a natural preserve for hundreds of species of trees and plants, as well as numerous birds and waterfowl.”

Note: WALPA makes no guarantee as to the accuracy of the information included in this article. Sources are listed below.

Have an idea for the next Lake Focus? Please contact Heidi Wachter at heidi@taylorassoc.net.

Sources for this article:

Dugopolski, R.A. 2005. Short-term effects of an aluminum sulfate on Green Lake water quality and sediment phosphorus speciation. Masters Thesis. Civil and Environmental Engineering. University of Washington. Seattle, WA.

Mueller, K.W. 1997. 1997 Green Lake Survey: the warmwater fish community of an urban lake plagued by algal blooms and eurasian watermilfoil. Warmwater enhancement program. Washington Department of Fish and Wildlife (WDFW). Olympia, WA.

Herrera Environmental Consultants. 2003. Technical Report: Green Lake alum treatment study. 2003. Prepared for Seattle Department of Parks and Recreation. Seattle, WA.

Residents, business coexist in this recreational mecca. Debera Carlton Harrell, Seattle Post-Intelligencer – www.seattlepi.nwsourc.com/neighbors/greenlake

Maintaining the park and water is a priority. Debera Carlton Harrell, Seattle Post-Intelligencer – www.seattlepi.nwsourc.com/neighbors/greenlake

Seattle Department of Parks and Recreation – www.seattle.gov/parks

Friends of Green Lake – www.friendsofgreenlake.org

Green Lake History, Seattle – www.en.wikipedia.org

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Funds - continued from page 1

This year's funding cycle opens for applications October 1 and closes November 1, 2006. Aquatic Weeds Grant Workshops are scheduled for September 26 (from 9:00 -11:00 in Ecology's Lacey headquarters auditorium) and September 28 (same time at Spokane's regional Ecology headquarters). A workshop on Ecology's new algae program will follow the Lacey workshop. To find out more, visit www.ecy.wa.gov/programs/wq/plants/grants/index.html.

Washington State Department of Ecology also awards Centennial Clean Water Fund Grants. These provide low-interest loans and grants for wastewater treatment facilities and activities that reduce nonpoint sources of water pollution. These grants are open to local governments, recognized Indian tribes, special purpose districts and non-profit groups. The CCWF grant cycle opens September 1 and closes October 31, 2006. For more information, visit www.ecy.wa.gov/programs/wq/funding/2008/index.htm.

Finally, Ecology is developing a brand new algae program (see related story) that may include grant monies to local governments for projects that help educate citizens about and control algae growth.

Idaho residents, note that some lakes are getting help for projects from Federal Clean Water Act Section 319 grants through Idaho's DEQ. Last year a grant was approved for Pend Oreille Lake to fund testing of bottom barrier mats to control Eurasian milfoil. The 319 program provides 60% federal money with a 40% local match. Highest priority for funding are water bodies with EPA approved TMDLs and at least a draft TMDL implementation plan. The fund does not include public information and education projects, and only 10% of project funds may go to monitoring. For more information, contact **Glen Rothrock** at (208) 666-4623 or glen.rothrock@deq.idaho.gov.

There are many other state and federal funding opportunities, as well as other grant-related resources. Check out these links to find a funding source for your project:

<http://dnr.metrokc.gov/wlr/PI/Fundsrcs.htm>

<http://cfpub.epa.gov/fedfund>

www.epa.gov/ogd/grants/funding_opportunities.htm

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The Trouble with Green Lake Carp - Part I

by Bruce Bolding, Washington Department of Fish and Wildlife

Common carp (*Cyprinus carpio*), the bane of many lakes, is no stranger to bad publicity, and the population in Seattle's Green Lake is no exception. Although their disruptive behavior and competition with trout stocked for sport anglers won them few friends, it was not until the city had the lake treated with "alum" that reducing Green Lake's carp population became a management priority.

The alum (aluminum sulfate) treatment in Green Lake was intended to stop its repeated blue-green algae blooms, which in some cases created toxic conditions in the water and forced beach closures (see related article, p. 2). Ideally an alum treatment could last ten years, but in Green Lake, the carp—which can reach 30 pounds—routinely dig and root in the bottom to feed and spawn, reducing alum's effectiveness. Disturbing the bottom and increasing turbidity also lowers light penetration, reducing plankton

production, lowering dissolved oxygen production, increasing water temperature, suffocating fish eggs and young, and reducing food available for other fish.

The City of Seattle contracted with the Washington Department of Fish and Wildlife to remove the carp mechanically rather than treat the lake with rotenone (an organic piscicide), which some citizens opposed because

it would kill all the lake's fish. The city chose the more selective but unproven method of capturing and removing the carp by electrofishing and gillnetting. Staff completed a carp population estimate before the process began; knowing roughly how many carp lived in Green Lake will give managers a benchmark for progress as they proceed with the year-long project.

Read your next *Waterline* for the results of the population estimate and an update on the rest of the carp removal project.



Common carp, revered in many parts of the world as an important food source and even as a cultural and religious icon, has been relegated to the category of "trash fish" and "deleterious invasive" in the United States.