

The creeks are too warm with little oxygen for fish

Fish breathe oxygen in the water (dissolved oxygen). Cooler water holds more oxygen. When water has too little oxygen or is too warm, local fish can face thermal stress and harm. Parts of Bear, Evans, and Cottage Lake creeks have unhealthy temperature and oxygen conditions and fail to meet Washington State water quality standards.

These creeks serve as important migration corridors and spawning and rearing areas for several fish species – Puget Sound Chinook, coho, sockeye, kokanee, steelhead/rainbow, cutthroat trout – that all need cold waters for optimum health during various stages of their lives.

Together, we can all restore and help protect clean and healthy streams.

To restore these waters and protect the vital salmonid habitat, the Department of Ecology (Ecology) is working with partners in the watershed on a water quality improvement effort that determines what is called the Total Maximum Daily Load (TMDL) of allowable pollutants.

Through this process, Ecology:

- Evaluates the water quality conditions.
- Estimates how much the pollutants of concern need to be reduced to meet state water quality standards.
- Describes how citizens, state and local governments, and other organizations and businesses can help improve temperature and dissolved oxygen conditions in this watershed.

Ecology's *Bear-Evans Watershed Temperature and Dissolved Oxygen TMDL/Water Quality Improvement Report* documents this information. Ecology values your input and wants to hear your comments on this report. Please join us at the public meeting or send your comments to Ecology.



PUBLIC MEETING

Come learn about effort to improve water quality in the Bear-Evans Watershed and share your ideas:

Monday, August 11, 2008

Woodinville Public Library

17105 Avondale Rd NE
Woodinville, WA 98072

6:30 to 8:30 p.m.

Light refreshments and snacks will be provided.

COMMENT PERIOD

Ecology requests your input on the *Draft Bear-Evans Watershed Temperature and Dissolved Oxygen TMDL/Water Quality Improvement Report*:

July 21 – August 22

Please find a copy at the Redmond, Sammamish, and Woodinville Public Libraries or at: www.ecy.wa.gov/biblio/0810058.html

Please submit comments to:

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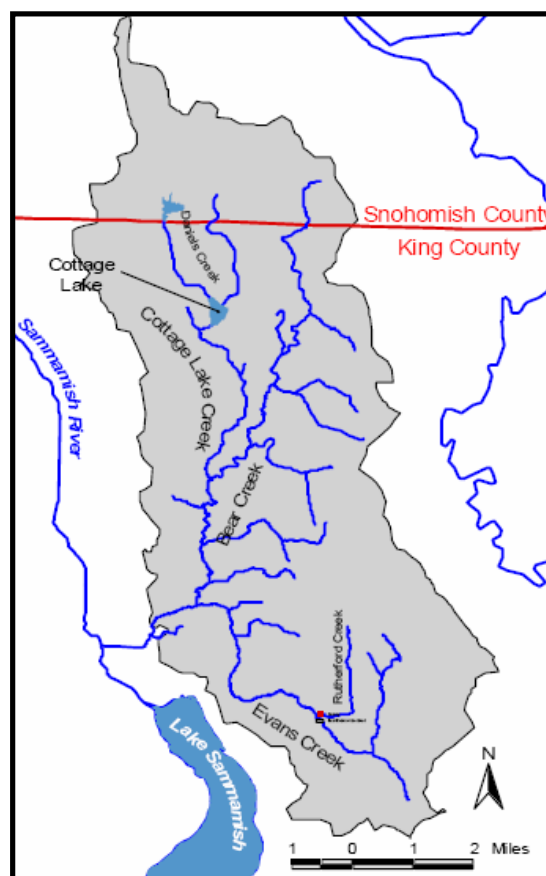
Special accommodations:

If you need this publication in an alternate format, call the Water Quality Program at 360-407-6404. Persons with hearing loss, call 711 for Washington Relay Service. Persons with a speech disability, call 877-833-6341.

What did we learn and what does the report tell us?

Current water quality conditions

- The headwaters of Bear and Cottage Lake creeks are really warm, partly due to the lakes that drain to these creeks. Bear Creek cools as it flows downstream, but warms up again as it makes its way to the Sammamish River. Cottage Lake Creek experiences continual warming as it flows downstream. Evans Creek is cooler than the rest of the creek system. It is influenced by groundwater and cooler tributaries.
- All three creeks had lower dissolved oxygen (DO) levels than the state water quality standard. Some tributaries to these creeks had healthier DO levels. The lowest DO levels were recorded in Evans Creek, which has many wetlands. Lake bottoms, wetlands, and groundwater naturally have low DO levels and so are likely to influence the DO levels in the creeks.



Causes of the water quality problems

Stream temperature is dependent upon a number of factors.

- Lack of streamside vegetation means lack of shade over the water, making it easier for the creek to heat up. Erosion and sediment loss from poorly-managed forest lands, agricultural areas, or construction sites can make streams shallower and wider and harder to shade.
- Reduced water stored in the ground means less cool water to feed the local creeks during the dry summer months. Expanded areas of impervious surfaces and water withdrawals for purposes such as irrigation and drinking water can cause the stream flows to become lower and shallower than usual in the summer.

Failing on-site septic systems and stormwater rushing over urbanized areas can 'flush' nutrients (in the form of human waste, soaps, domestic animal wastes, and poorly managed fertilizers) into our waters. Algae thrive on these excess nutrients. When they die, oxygen-consuming bacteria break down the algae and use up the DO in the water.

How you can help

Restore stream channels. Get involved in streamside restoration projects to help prevent erosion and sediment loss. Where streams have been straightened and channelized, restoration projects can help re-establish connections with the natural floodplain and with cool groundwater resources.

Conserve water. Practice wise use of water near streams to help protect flows during late-summer low-flow conditions. Reduce lawn areas for watering or use less-consumptive irrigation methods (soaker hoses or smart watering). Use deep soaks early in the morning or late in the evening to minimize evaporation and leave more water in the stream or in groundwater resources that 'recharge' stream flows. For more great ideas visit:

<http://www.nesswd.org/conservation.htm>

http://www.cascadewater.org/con_rebates.html

<http://dnr.metrokc.gov/wtd/waterconservation/>

Plant tree borders. Streamside landowners can plant trees that shade the stream, cooling the water as the trees mature. Woody debris and vegetation that falls into streams can provide food and habitat for fish. Mature streambank plants can help filter excessive amounts of sediments, fertilizers, or other nutrients from upland lawns and agricultural areas. This helps prevent the growth of algae and other water plants that use up precious oxygen.

Keep nutrients and organic material out of streams. Take these actions to prevent nutrient pollution in the streams and stormwater runoff:

- Check on-site septic systems every 2-3 years.
- Keep all soaps out of streams. If washing cars at homes, use only bio-degradable soaps and wash only on lawns.
- Prevent overuse and runoff of fertilizers. Use slow-release organic fertilizers if possible. Store fertilizers properly.
- Carefully manage domestic animal and livestock wastes: pick-up, cover, and keep away from streams; properly dispose of pet wastes.
- Keep grass clippings and other organic debris out of streams.



Students volunteer to restore streamside areas of Bear Creek. Photo: Water Tenders

Together, We can Improve Water Quality in the Bear-Evans Watershed



~ YOU ARE INVITED ~

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Hear about recent studies; why and how temperature and dissolved oxygen must be improved in Bear, Evans, and Cottage Lake Creeks. Come share your ideas.

For more information:

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