WASHINGTON STATE DEPARTMENT OF ECOLOGY

Frequently Asked Questions about
Protecting Oxygen in the Spokane River

from Ecology's Water-Quality Program

Overview

Phosphorus and other nutrients and organic matter have polluted the Spokane River, causing it to violate water-quality standards. These pollutants deplete dissolved oxygen in the river and Lake Spokane. Fish and other organisms need dissolved oxygen to survive. To address the problem, a cleanup plan, also known as a total maximum daily load (TMDL), will set allocations for how much of the pollutants (such as phosphorus and ammonia) each of the major dischargers and other sources will be allowed to discharge at very low levels. The amounts will be set to protect water quality and bring the river into compliance with state water-quality standards and the federal Clean Water Act.

The water quality cleanup plan

Q: What's the status of the water-quality cleanup plan?

A: By early 2005, we will have a draft cleanup plan, also known as a total maximum daily load (TMDL). The plan will determine acceptable levels of phosphorus and other pollutants each of the major cities and industries along the river may discharge as well as addressing ways to control other, more diffuse (nonpoint) sources. It also will include pollution-load allocations for each tributary to the river.

Q: Why is low oxygen (and, therefore, nutrients like phosphorus) a problem?

A: When the river contains too much phosphorus or other "nutrient" pollution, algae and other water plants thrive. The pollution acts like fertilizer, stimulating the growth of aquatic plants. When these plants die, their decomposition uses up the oxygen in the water. There's too much nutrient pollution in the river and, therefore, not enough oxygen. Oxygen levels in the river or Lake Spokane are currently too low for a healthy fish population.

Q: How do we know about the problem of low dissolved oxygen in the river and Lake Spokane?

A: A scientific report completed in early 2004, entitled *Spokane River and Lake Spokane Pollutant Loading Assessment for Protecting Dissolved Oxygen* (Publication #04-03-006), used monitoring data and computer modeling to evaluate how changing pollution discharges into the river might affect the concentrations of dissolved oxygen.

The report comes to four major conclusions:

- A cleanup plan for phosphorus, approved by the U.S. Environmental Protection Agency (EPA) in 1992, set pollutant-loading allocations that are not strict enough to protect water quality.
- Some parts of the Spokane River and Lake Spokane continue to be low in dissolved oxygen during the summer and violate water quality criteria.
- To solve the problem, the current loading of pollutants that affect dissolved oxygen would need to be significantly reduced or eliminated (if the concentrations can't be lowered enough) during crucial times of the year.
- The sources of the pollutants that deplete oxygen include the major point sources to the river (industries or cities that discharge effluent to the river) and "nonpoint" (runoff) sources, such as fertilizers, animal waste, failing septic systems, etc. They also include point and nonpoint sources in the tributaries (such as Hangman Creek and the Little Spokane River), agricultural runoff and stormwater runoff from small communities.

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Q: When will the cleanup plan be done?

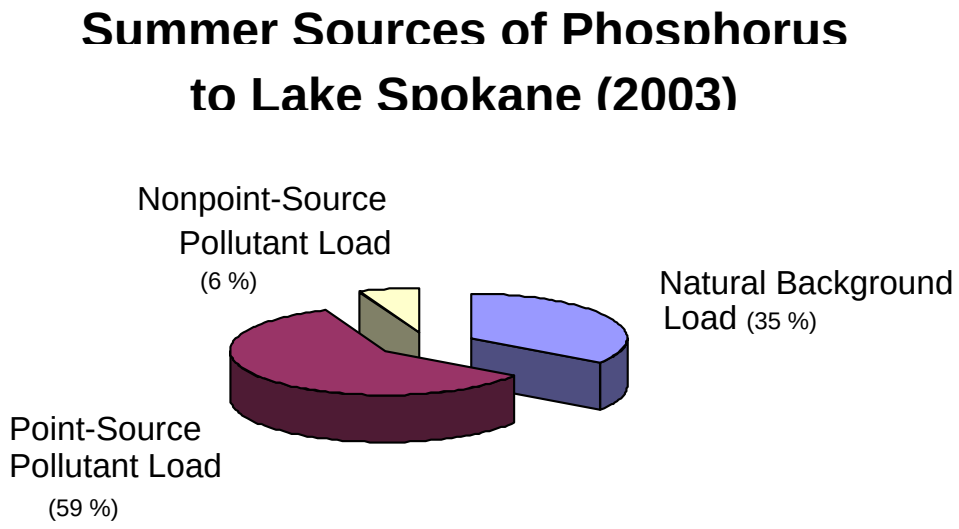
A: A draft of the plan (TMDL) will be available late in the fall of 2004 for public review and comment. It will be submitted to the EPA in early 2005. The actual cleanup will occur over a maximum 10-year period, as allowed by state law.

Q: Where are these pollutants coming from?

A: The "point-source" facilities that discharge treated waste water directly into the main stem of the Spokane River include the city of Spokane wastewater treatment plant, Liberty Lake Sewer and Water District, Kaiser Aluminum in Trentwood and Inland Empire Paper. In Idaho, the dischargers include the cities of Post Falls and Coeur d'Alene and the Hayden Sewer District. Spokane River's tributaries also carry loads from wastewater discharges from smaller outlying point sources, such as Rockford, Fairfield, Tekoa, Spangle, Cheney, Medical Lake, Spokane Fish Hatchery and the Spokane County Colbert Landfill. The effluent from these dischargers contains varying amounts of phosphorus and other pollutants.

Some of the nonpoint-source (runoff) pollution comes from the sub-basins of the Little Spokane River, Latah Creek, and seasonally from Coulee Creek. Some typical nonpoint sources of pollution are stormwater runoff, agricultural runoff, timber harvesting, fertilizers, animal waste and leaking septic systems.

The percentage of phosphorus coming from these different sources varies with the time of year. For example, nonpoint-source pollution is a higher percentage of the total phosphorus load to Lake Spokane during the spring runoff season. This is when tributary and river flows are high and they carry pollution caused by soil erosion. The pollution settles to the bottom and uses more oxygen. During the summer months, most of the pollution that causes algae blooms that deplete oxygen in the upper layers of the reservoir is from the point sources.



Q: How will you control nonpoint sources of pollution?

A: The cleanup plan will require significant reductions in nonpoint pollution, such as soil erosion, fertilizers, animal waste and failing septic systems. Plans are being developed for the Little Spokane River and for Hangman (or Latah) Creek to better define ways to control the sources of phosphorus in these tributaries. Those cleanup plans will have more specific strategies for reducing pollution.

In addition, Ecology is launching an educational program to inform residents who live near the river and lake about their role in the pollution problem and how they can contribute to the solution. Workshops will be planned for various communities along the river to educate the community about fertilizers and pesticides, natural vegetation along the shoreline, landscaping and other issues that affect water quality. (Contact Allison Gray at 509-329-3448.)

Q: What about pollutants coming from Idaho? Why should Washington clean those up?

A: Part of the cleanup plan would be to identify actions to make sure water quality standards are met as the water comes across the border. The EPA and Idaho Department of Environmental Quality will need to work together to see that pollution is reduced, as necessary, to meet the requirements of the cleanup plan at the state line.

Q: How will the new cleanup plan affect the treatment-plant expansion proposed by Liberty Lake?

A: Currently, Liberty Lake has a permit to discharge up to 1 million gallons of treated waste water per day. For the existing permit, the city could be put on a compliance schedule to meet the needs of the new cleanup plan within a defined amount of time (not longer than 10 years). Any addition to the facility that discharges more than 1 million gallons per day must meet water-quality based requirements immediately upon coming on line and must first receive a permit to do so from the Department of Ecology. This is all part of ongoing discussions. Ecology has approved the facilities plan for expanding the Liberty Lake plant, conditional on the outcome of the cleanup plan. We will not know how much discharge Liberty Lake is allowed until the plan is finished.

Q: Currently, what are the requirements that point sources must meet?

A: Each of the point sources to the Spokane River must have a water-quality permit, which is issued by the Department of Ecology. These permits restrict the amount of pollution that a municipality or an industry is allowed to discharge to the river.

Q: What level of treatment are dischargers likely to be expected to meet when the cleanup plan is finished?

A: In the future, when the water-quality cleanup plan is finished, it is likely that the current, commonly accepted wastewater management and end-of-pipe pollution controls will not be adequate to protect the river. Therefore, permitted point sources of pollution will need to achieve a higher level of treatment. These higher levels of treatment will be determined by the outcome of the cleanup plan and will be referred as “water-quality-based” effluent limits in the permits.

The engineering technologies, and other management options, available for effectively treating waste water, are changing from traditional to more innovative approaches. This is especially true in areas that have significant water quality and quantity challenges, such as the Spokane River. Preliminary indications are that the waste water will have to be treated to a very high level to meet upcoming requirements. A variety of alternatives are being considered for the Spokane River.

Q: What are alternatives to discharging to the river?

A: Because phosphorus is not a problem for drinking water, one option is to treat water to a very high standard and either let it sink back into the aquifer (recharge) or use it for irrigation. Waste water also can be treated to a high standard and used again in other ways, such as for industrial purposes. However, emerging treatment options that use more-intensive filtration may allow continued discharge to the river. This new technology allows water to reach very low levels of phosphorus and is currently being used in New York's drinking-water system. It is too early to know which technologies or combination of technologies will be necessary to meet our future needs. These engineering options and alternatives will need to be identified, evaluated and implemented as permits and facilities are upgraded. We also need to consider ways to generate less waste water in the first place.

Q: Is Ecology considering how the amount of water flowing in the river affects efforts to control pollution?

A: Yes. Numerous studies indicate that the amount of water (stream flow) is an important factor in maintaining a healthy stream, river or lake. Some *loss* in flow might even be beneficial if the majority of pollution can be removed along with it. In the case of the Spokane River, 60 % of the phosphorus that enters the river in the summer comes from only 10 % of the flow contributed by waste water. Stream flows in the Spokane River are steadily decreasing over time. If this trend continues, it will limit our ability to use the river and to protect the uses of the river we've come to take for granted. Therefore, maintaining adequate flow in the river, including flow from highly treated waste water, and replacing water withdrawn from the aquifer with re-used waste water will be important considerations as we evaluate our options for sustainable water management.

Q: Water-quality criteria (or standards) for dissolved oxygen in Lake Spokane are based on "natural conditions." How did you determine what that means?

A: First, natural levels of phosphorus and other nutrients were estimated for the tributaries and the river based on data collected in the 1980s in the west branch of the Little Spokane River, upstream from Eloika Lake. The "natural condition" of water quality in the Spokane River was estimated using water samples from the outlet of Lake Coeur D'Alene. Scientists then created a separate computer model for the Idaho portion of the river from the outlet of Lake Coeur D'Alene to the state line, to estimate the background levels of phosphorus there.

Ecology's review of the geological characteristics of the area supports the low nutrient values used as estimates of natural conditions. The values are fairly typical of what is found in less disturbed watersheds in Eastern Washington.

Q: How can Washington's water-quality standards require Lake Spokane reservoir to meet natural water conditions when the lake isn't even natural in the first place?

A: Damming the river was not a natural occurrence and it significantly changes the character of the river and the way it responds to pollution. The TMDL process regulates pollution based on the physical characteristics and the climate of the watershed where it occurs. The presence or absence of a dam is not considered a justification for the presence of pollution. If Lake Spokane's dam did not exist, the same pollution problems would manifest themselves downstream in the next lake-like spot in the river such as those that occur near the river's mouth (Porcupine Bay). Violations of the dissolved-oxygen standards occur in this area because of excessive algae growth. That problem might have been worse if Lake Spokane were eliminated from the river system.

Use-attainability analysis

Q: What is a use-attainability analysis (UAA) and why is Spokane pursuing one?

A: A UAA is a scientific and technical examination of the human and natural factors influencing the river's water quality and watershed health. A UAA is intended to determine a river's existing and attainable uses and may be used as a

basis for revising the state's water quality standards so that the correct uses are targeted for protection. The process of doing a UAA is provided for in the federal regulations governing state water-quality standards. The process includes evaluating economic and social implications of changing water-quality standards.

The dischargers along the Spokane River have decided to pursue a UAA to revisit whether the "designated beneficial uses" (e.g., fishing, swimming, aquatic life, wildlife habitat, etc.) listed for the river are actually attainable.

Q: When will the dischargers have the UAA done? How does this timeframe fit with the cleanup plan? Don't we need to know if the water-quality standards are going to change in order to determine how much pollution each source can discharge?

A: The UAA is being done at the same time the cleanup plan is being done. If the plan is completed before the UAA, it may be amended later to take the results of the UAA into account.

If Ecology agrees that the findings of the UAA have merit, it will be used as the basis for a proposed change to the water quality standards. Results of the change would potentially set different standards that would need to be met on the Spokane River. EPA ultimately must approve any change to the water quality standards resulting from a UAA. Load allocations in the water quality cleanup plan will be based on the water quality standards set for the Spokane River.

Q: Why are the dischargers allowed to set the water quality standards for the river?

A: The dischargers are not actually setting water quality standards for the river. The dischargers have embarked on a UAA study under the premise that the uses designated for the river and reservoir are incorrect. The Department of Ecology will review the UAA to determine if there is sufficient information to demonstrate that the designated uses are neither existing nor attainable. If sufficient information exists, the next step would be a formal rule change. Any proposed changes to the water-quality standards based on a UAA will be subject to public review as well as state and federal approval.

Q: Who is actually doing the work for the UAA?

A: The dischargers hired the environmental consulting firm CH2M Hill to conduct the UAA.

Q: Why is Ecology allowing the cleanup plan to be held up to accommodate the dischargers this way?

A: Work on the cleanup plan will continue on a parallel track while the UAA is going on. We still expect the plan to be completed in draft form by late 2004/ early 2005.

Q: How do the standards recommended by the UAA become law?

A: If the UAA study includes sufficient information to demonstrate that a use is neither existing nor attainable, and therefore the current standards are incorrect, Ecology could use the UAA to change water quality standards in the river. Any rule/regulation change involves a thorough public involvement process and also must be approved by the EPA.

Spokane County's wastewater treatment plant

Q: How does developing a cleanup plan affect the proposed treatment plant for Spokane County?

A: The river currently is not meeting water-quality standards, so we don't want to add more phosphorus. If and when a new county plant comes on line, it would need to be in compliance immediately. (Currently-existing sources can be put on a compliance schedule to reduce pollutants.)

Q: What is the status of the $8.5 million loan the county sought to construct a new treatment plant?

A: By law, the Department of Ecology can't allow a new discharge of pollutants to a river that is already violating state standards. Rules are very strict about the use of state money for these types of projects. Facilities are ineligible if they would contribute to the problem when a body of water already violates water-quality standards.

The Department of Ecology has worked very hard to help the county figure out how to build a plant without creating additional water-quality problems for the Spokane River. On Aug. 16, 2004, Spokane County signed a loan agreement that commits the county to modify its "facilities plan" (a plan to build a new plant) to ensure that the treatment plant's design will protect water quality by satisfying the requirements of the new water-quality cleanup plan. After the amended facilities plan is approved, the county could then move ahead to design and build a new treatment plant. This was the only way that Ecology could legally make the money available to the county.

This loan offer keeps the project alive and reserves a place for the county to receive future SRF money. That way, the county will be in a good position to get additional loan funding that will be needed for the project.

Q: What are the county's options now?

A: The county can redesign its facility so that the amount of pollution would be further reduced; or the county could pursue other alternatives besides discharging to the river, such as water re-use. We don't know exactly what will be necessary until we finish the cleanup plan that will be designed to increase the amount of dissolved oxygen in the river and Lake Spokane.

Q: Wouldn't it be cheaper to have one regional wastewater treatment facility for Spokane, Spokane County, Spokane Valley and Liberty Lake?

A: Maybe. In the past, the Spokane County wastewater treatment facility proposal was presented to the community as a regional facility capable of serving the needs of several communities in the basin. It will be difficult to know if a regional wastewater treatment facility will be considered until the water-quality cleanup plan is complete and Spokane County has an opportunity to revise its facilities plan. Until that time, many issues need to be addressed, including governance, growth, capacity and economics. Ultimately, the decision about whether there will be a regional wastewater treatment facility rests with our local communities and leaders and our ability to work together in a cooperative manner to address these important issues.

Information on this topic can be accessed through Ecology's Web site. The address is: **http://www.ecy.wa.gov/**

If you need this information in an alternate format, please contact us at 509-329-3400. If you are a person with a speech or hearing impairment, call 711 or 800-833-6388 for TTY.