

Habitat:

Water Quality

The purpose of this regional strategy on water quality is to address issues that are common to multiple watersheds or that have not been adequately addressed within an individual watershed plan as identified by the Puget Sound Technical Recovery Team. This strategy does not replace actions or strategies identified within an individual watershed plan.

Each individual watershed chapter identifies factors and conditions necessary to achieve recovery. In some limited cases additional factors or conditions have been identified by the TRT as noted in the watershed profiles contained in this plan. Together these factors and conditions are considered to be based on the best available science for recovery in the individual watershed. This regional strategy does not replace or substitute the conditions or actions necessary in an individual watershed as defined by that watershed chapter in this plan. If there is a conflict between the recommendations of this regional strategy and the individual watershed chapter, the individual watershed chapter shall take precedence.

“Ironically, as we work to save the salmon, it may turn out that the salmon save us.”

Paul Schell, former Seattle Mayor.

Background

Both people and salmon depend on clean water to survive and many of the watershed salmon recovery plans recognize the importance of water quality. Ensuring the quality of the water in Puget Sound involves a variety of tools, largely regulated by the Washington Department of Ecology (Ecology) and the US Environmental Protection Agency (EPA). However actions to address water quality rely heavily on the implementation of activities at a local and individual level. Collectively, these entities carry out an approach for addressing water quality by establishing standards for water bodies, issuing permits, cleaning up areas that exceed standards, and monitoring. Water quality requirements are contained in the state Water Pollution Control Act and the Clean Water Act.

The Water Pollution Control Act sets the state’s policy for clean water: to “...maintain the highest possible standards to insure the purity of all waters of the state consistent with public health and public enjoyment...the propagation and protection of wildlife, birds, game, fish and other aquatic life, and the industrial development of the state.”

The Clean Water Act (CWA), passed in 1972, sets the national policy for clean water: to “...restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” To accomplish this, section 303(d) of the act specifically requires the states to:

1. Establish and periodically review and revise water quality standards;
2. Perform water quality assessments to identify waterbodies that are not meeting the standards, and to list such waterbodies every two years; and
3. Develop cleanup plans (“total maximum daily loads”, or TMDLs) for listed water bodies.

These steps provide the foundation for Washington’s approach to ensuring safe water quality.

The water quality standards established by the state reflect current science, but as our knowledge of biology, aquatic systems, and pollutants improves, these standards and the scale at which they are applied can change to reflect advances in science and the needs for salmon recovery. After standards are set, actions are taken to both prevent the degradation of water and to clean up water bodies that are already impaired from pollution.

Primarily, preventive action to protect water quality is taken through the issuance of permits. Permits are applied to pollution dischargers for both point source pollution (where the source of a pollutant is known and originates from a distinct point) and non-point source pollution (where the source of a pollutant is either unknown or where the origin of the pollutant is from a diffuse source). Point source pollution is regulated throughout Puget Sound through National Pollutant Discharge Elimination System (NPDES) permits. Pollution that originates from urban runoff from streets, roofs, lawns, and construction sites is called stormwater and is also addressed through NPDES permits. Typically NPDES permits require the application of technology-based and water quality-based limits so that the discharge does not cause or contribute to a violation of water quality standards.

To ensure that water meets the water quality standards, available

data is collected on water bodies and assessed every two years (the state only has data on 5% of the water bodies). If water bodies do not meet the standards, cleanup plans or “total maximum daily loads” (TMDLs) must be developed. These involve identifying what the pollutant is and how to reduce it to target levels.

Together these measures, established by the federal government and implemented by the state, comprise Washington’s approach to ensuring that waters throughout the Puget Sound and across the state are safe for people and for fish.

Water Quality Standards

The state has had *Surface Water Quality Standards* to protect aquatic life and human health since 1975. The CWA also requires states to periodically review and update their water quality standards in order to comply with new or revised federal guidance, to incorporate new state programs, and to respond to new understandings of aquatic ecosystems and new scientific information. Such reviews must take place at least every three years, and are known as “triennial reviews.” This review process ensures that new information about aquatic systems and their pollutants is reflected in the standards.

The state’s surface water quality standards set limits on pollution in our lakes, rivers and marine



Photo by Dan Kowalski



waters in order to protect water quality. The Clean Water Act requires that the water quality standards protect beneficial uses, such as swimming, fishing, aquatic life habitat, and agricultural and drinking water supplies.

The State of Washington Sediment Cleanup Standards also address contaminated marine sediments which are important for salmon because a wide range of adverse impacts on the health and survival of juvenile salmonids and other marine species are associated with exposure to contaminated sediments. There are no standards for freshwater sediments.

In 2003, the Department of Ecology completed the first major overhaul of Washington's water quality standards in a decade. The Environmental Protection Agency has only partially approved the revised standards. The state will use the 2003 rule for the sections that EPA has approved, but will use the 1997 rule for the sections that EPA has not approved.

Updates to the water quality standards achieve two important goals: pollution prevention and protection of threatened fish species. New approaches allow Washington State to preserve pristine waters when there is broad public support to do so. There are also new tools to prevent increased pollution of water bodies that are already meeting water quality

standards and prohibit additional pollution of waters that violate water quality standards.

Updated rules also set a framework to address the protection of salmon and other temperature-sensitive fish, such as bull trout and Dolly Varden, from temperatures that could harm their populations.

Point Source Pollution

When the sources of pollutants are discrete, known entities, permits are issued so that, collectively, discharges do not exceed the established standards. The Department of Ecology

regulates discharges of pollutants to surface and ground waters by writing wastewater discharge permits for sewage treatment plants, industrial facilities, and other general categories of wastewater dischargers. A permit is a set of limits, monitoring requirements, and management practices which are designed to ensure that a facility can meet treatment requirements and water quality standards. The Department of Ecology prepares permits, conducts inspections, and provides assistance for more than 2,300 permit holders.

This permitting strategy becomes more difficult when the origins of pollutants are unknown, unquantifiable, and from diffuse sources.

Nonpoint Source Pollution

Nonpoint source pollution (or polluted runoff) is considered to be any water pollution without a distinct source. It is the leading cause of water pollution in Washington and poses a major health and economic threat. Nonpoint pollution can include fecal coliform bacteria, elevated water temperature, pesticides, sediments, and nutrients. Sources of pollution include agriculture, forestry, urban and rural growth, habitat alteration and recreation. In general, the Department of Ecology addresses

these problems by raising awareness, encouraging community action, providing funding, and supporting local decision makers. Working with local governments and providing assistance is key to resolving many nonpoint problems. In addition Ecology coordinates with other agencies through the Washington State Nonpoint Workgroup; Forest Practices Technical Assistance (working with the Department of Natural Resources); and Agricultural Technical Assistance (working with the Conservation Commission). Ecology also develops and coordinates implementation of the State's Nonpoint Pollution Management Plan which highlights nonpoint issues needing attention in the state.

Stormwater

One type of nonpoint source pollution is runoff from urban areas, or stormwater. As land development changes the natural hydrologic cycle by stripping vegetation cover, removing and destroying native soil, modifying surface drainage patterns, and adding impervious surfaces, our streams, lakes, estuaries, and marine waters are becoming degraded. The large impervious surfaces in urban areas reduce the amount of water that goes into the ground and, as a result, decreases summer base flow and increases the quantity and peak flow of runoff during the wet season. This development allows contaminated waters to flow unobstructed into water bodies from our rooftops, paved streets, highways, and parking lots as well as hard grassy surfaces like lawns and playing fields.

In general, untreated stormwater is unsafe for people and for fish. It contains toxic metals, organic compounds, and bacterial and viral pathogens. Urban stormwater also

harms and pollutes streams that provide salmon habitat. Virtually all of our urban embankments, creeks, streams, rivers, and marine waters are harmed by urban stormwater, making stormwater the leading contributor to water quality pollution of urban waterways.

NPDES Stormwater Permits

Because the sources of stormwater are diffuse, the control of this runoff does not fit very well with traditional wastewater discharge permit requirements. In 1987, Congress changed the federal Clean Water Act to include stormwater under the National Pollutant Discharge Elimination System (NPDES) permitting program. As a regulatory tool under the Clean Water Act, NPDES requires permits for urbanized areas to reduce the discharge of pollutants to the maximum extent practicable, protect water quality and effectively prohibit all non-stormwater discharges. Therefore, not all salmon habitat objectives can be addressed through these permits. In Washington State, the EPA delegated its authority to administer the federal wastewater discharge permit program to the Department of Ecology.

The EPA stormwater regulations establish two phases for the stormwater permitting program. In 1990, EPA issued NPDES Phase I rules that apply to stormwater discharges from certain industries,



Photo courtesy King County Department of Natural Resources and Parks

construction sites involving five or more acres, and storm sewer systems owned or operated by cities and counties with populations greater than 100,000. Washington has six Phase I jurisdictions: Snohomish, King, Pierce, and Clark counties, and the cities of Seattle and Tacoma. Discharges from Washington Department of Transportation (WSDOT) facilities within those jurisdictions are also regulated.



Photo courtesy King County Department of Natural Resources and Parks

On October 29, 1999, the final Phase II stormwater regulations were signed into rule by EPA. The Phase II regulations expand the requirement for stormwater permits to all municipalities located in urbanized areas, and to construction sites between one and five acres. The rule also requires an evaluation of cities outside of urbanized areas that are more than 10,000 in population to determine if a permit is necessary for some or all of these cities. Under the new rule up to 90 additional municipalities in Washington may need municipal stormwater permits.

The Department of Ecology is issuing a separate Phase II general permit for Western and Eastern Washington. Only the Western Washington permit has been announced. The Washington Phase II draft permit is still under development. The Phase II general permit for Western Washington applies to approximately 80 jurisdictions located within the 2000 Census-defined urban areas. Another five Western Washington cities have been evaluated and are proposed for inclusion in the Phase II permit.

These municipal stormwater permits require the implementation of a Stormwater Management Program. The Stormwater Management Program is a set of actions to be implemented during the term of the permit to reduce the discharge of pollutants to the Maximum Extent Practicable, protect water quality, eliminate illicit discharges, and make progress towards compliance with surface water, ground water and sediment standards. EPA Phase II municipal stormwater permit rules require stormwater management programs that address the following elements:

- Public Education and Outreach
- Illicit Discharge Detection and Elimination
- Post-Construction Runoff Control
- Public Participation/Involvement
- Construction Site Runoff Control
- Pollution Prevention/Good Housekeeping
- Implement applicable provisions in TMDLs
- Evaluation and Reporting

Schedule for permits:

Preliminary drafts of the Phase I and Phase II Municipal Stormwater Permits for Western Washington have been posted for public comment. The preliminary drafts Ecology is issuing at this time are considered works in progress and Ecology will be accepting comments through August 19, 2005. The final permit for Western Washington is scheduled to be issued by March 2006. The proposed date to issue the Phase II permit for Eastern Washington is June 2006.

Stormwater Management Manuals

Stormwater Management Manuals are used to provide guidance on the measures necessary to control the flow rate and quality of stormwater produced by new development and redevelopment. Local governments use the manual to set stormwater requirements for new development and redevelopment projects. Land developers and devel-

opment engineers use the manual to help design site plans and determine stormwater infrastructure. Businesses use the manual to help design their stormwater pollution prevention plans. There are separate manuals for Eastern and Western Washington due to the difference in climate and hydrology of these regions. Both manuals have been recently updated (the Eastern Washington manual was updated in September 2004 and the Western Washington manual was updated in April 2005). Ecology is proposing implementing the manuals through all the stormwater general permits.

Water Quality Assessments

The Department of Ecology compiles and assesses available water quality data on a statewide basis in order to get a better picture of the overall status of water quality in Washington's waters and to determine if water quality standards are being met. The results of the assessment are submitted to the Environmental Protection Agency (EPA) as an "integrated report" to satisfy federal Clean Water Act requirements of sections 303(d) and 305(b). The assessment includes the list of known polluted waters in the state, sometimes referred to as the 303(d) list.

Washington's Water Quality Assessment for 2004 has been submitted to EPA as an "integrated report" to meet the Clean Water Act requirements of sections 305(b) and 303(d). Of the total statewide river miles, approximately 4000 stream miles were assessed, representing about 5% of all streams.

This integrated report consists of 5 new categories of waters.

Category 1: Meets tested standards is for clean waters.

Category 2: Waters of concern is for waters where there is some evidence of a water quality problem, but not enough to require production of a TMDL at this time.

Category 3: No data is a category that will be

largely empty. Water bodies that have not been tested will not be individually listed here.

Category 4: Polluted waters that do not require a TMDL is for waters that have pollution problems that are being solved in one of three ways.

Category 4a has a TMDL and is for water bodies that have an approved TMDL in place and are actively being implemented.

Category 4b has a pollution control plan and is for water bodies that have a plan in place that is expected to solve the pollution problems.

Category 4c is impaired by a non-pollutant. This category is for water bodies impaired by causes that cannot be addressed through a TMDL. These impairments include low water flow, stream channelization, and dams. These problems require complex solutions to help restore streams to more natural conditions.

Category 5: Polluted waters that require a TMDL. The 303(d) list is the traditional list of impaired water bodies. Placement in this category means that Ecology has data showing that the water quality standards have been violated for one or more pollutants, and there is no TMDL or pollution control plan. TMDLs are required for the water bodies in this category.

This categorization provides the Department of Ecology with a more thorough picture of the status of Washington's waters.

The TMDL or Water Cleanup Plan

For waters determined to be in the state's Category 5 (or on the 303(d) list), clean up plans must be created and implemented. Total maximum daily loads (TMDLs or water cleanup plans) are a process established by Section 303(d) of the Clean Water Act (CWA). Based on the water quality standards described above, TMDLs describe the type, amount, and sources of water pollution in a



Photo courtesy Whatcom Conservation District

Best management practices on farms can limit non-point source pollution.

particular water body; analyze how much the pollution needs to be reduced to achieve clean water; and provide strategies to control pollution. TMDLs establish limits on pollutants that can be discharged to the water body and still allow state standards to be met. The state monitors the effectiveness of TMDLs after the actions identified in the Water Cleanup Plan have been put in place.

All TMDLs/Water Cleanup Plans have these main components:

1. Identification of the type, amount, and sources of water pollution in a particular water body.
2. Targets for how much the pollution needs to be reduced or eliminated to achieve clean water.
3. Actions for reducing the pollution to target levels.
4. A monitoring plan to assess effectiveness.

All water bodies identified on the list must attain water quality standards within a reasonable period, either through a water cleanup plan or other pollution control mechanisms. If at the end of this time-frame the water is still polluted then more stringent pollution controls will probably be required.

The schedule for Washington's cleanup plans

In 1996, the EPA was sued because it was not requiring Ecology to produce TMDLS at a quicker

pace. As a result, the Department of Ecology was given a deadline of 2013 to develop and implementation plans to clean up about 650 polluted water bodies throughout the state. The list represents all of the water bodies on the 1996 303(d) list. A schedule was established for completing the required water cleanup plans which includes interim targets at five-year intervals. The first five-year target required 249 cleanup plans completed by June 30, 2003. This deadline was met.

As part of the settlement, the EPA and the Department of Ecology agreed on a five year, five step process for prioritizing TMDLs in Washington. This process is part of a larger new managerial framework that emphasizes watershed management that Ecology is undertaking to improve the protection of water quality.

1. **Year 1.** Water quality issues will be identified and prioritized by assembling information from community involvement and reports, including the 303(d) list.
2. **Year 2/3.** Data will be collected and analyzed through monitoring, facility inspections and other general research.
3. **Year 4.** A Plan of Action will be developed in coordination with the watershed community that addresses the priority problems identified in Year 1. Draft TMDLs will be issued for public comment and subsequent submittal to EPA. Strategies and management activities will be developed to implement TMDLs, issue or reissue waste discharge permits, form partnerships, and address funding issues.
4. **Year 5.** TMDLs will be implemented, waste discharge permits will be issued or reissued, and Ecology will work with local, state and federal programs, and partners to implement nonpoint pollution prevention and control activities.

As part of Ecology's watershed approach, watershed resource inventory areas (WRIAs) were prioritized and divided into three groups for a staged

approach to beginning the process. The TMDL process for first group of WRIAs began in 2003. The second began in 2004 and the third began in 2005. Each group is scheduled to be completed within five years.

Puget Sound WRIAs scheduled to begin the TMDL process in 2003

WRIA 8- Cedar-Sammamish
WRIA 9- Duwamish-Green
WRIA 13- Deschutes
WRIA 14- Kennedy Goldsborough
WRIA 16- Skokomish- Dosewallips
WRIA 17- Quilcene- Snow
WRIA 18- Elwha- Dungeness
WRIA 19- Lyre-Hoko

Puget Sound WRIAs scheduled to begin the TMDL process in 2004

WRIA 3 - Lower Skagit
WRIA 4 -Upper Skagit
WRIA 5 - Stilliguamish

Puget Sound WRIAs scheduled to begin the TMDL process in 2005

WRIA 6 - Island WRIA 7 Snohomish
WRIA 10 - Puyallup-White
WRIA 11 - Nisqually
WRIA 12 - Chambers-Clover

Ecology is working with many local, state, and federal agencies to meet the water cleanup plan schedule and improve the health of Washington's waters. Ecology is partnering with the EPA, U.S. Forest Service, U.S. Navy, King County Department of Natural Resources, and numerous local governments to clean up specific water bodies of special interest to those agencies. The Department of Ecology is also exploring internal efficiencies and actively seeking additional partnerships with local governments and citizens to help complete water cleanup plans and attain better water quality statewide.

Clean Water Act/ Endangered Species Act Integration

Although the Endangered Species Act and the Clean Water Act were developed independently and for the most part have not been jointly administered, in this case there are several compelling reasons to link our clean water and salmon recovery efforts to the extent possible within the legal authority granted under each Act.

- The physical and biological integrity of our watersheds need to be restored.
- The resources that need to be protected are inextricably linked.
- There are common elements between basic programs.
- Neither program alone can protect resources at a satisfactory level.
- A joint program that meets the requirement of both Acts reduces the risk of future legal challenges that could jeopardize individual programs and decisions.
- The state is federally mandated to implement the Clean Water Act requirements and comply with ESA requirements.
- There is a clear desire among elected officials and the public for "one stop shopping" versus repetitive and potentially conflicting or duplicative requirements.

As the Puget Sound Chinook Recovery Plan is implemented, federal and state agencies will continue to work closely with local governments, tribes, and planning groups to ensure that the Clean Water Act and the Endangered Species Act are carried out consistently and in complement to one another.