

Agricultural Runoff

C3. Agricultural Runoff

The Challenge

Improperly managed surface water runoff from farms can convey a variety of pollutants to Puget Sound including sediment, phosphorous, pathogens from animal waste, pesticides and other chemicals, and excess nutrients. Nutrients can pose particular risks because they can support and enhance production and accumulation of algal blooms. As the algae die and decompose they deplete the water of available oxygen, contributing to the death of aquatic organisms, such as fish and shellfish. In Puget Sound, inlets with few freshwater inputs and deep basins that have limited exchange with surrounding waters such as South Puget Sound and Hood Canal are particularly vulnerable. Nutrients can also impact shellfish harvest by requiring the closing of shellfish areas due to contamination.

Agricultural and rural areas constitute about 30-35% of the Puget Sound, these lands include commercial agriculture, small farms, and rural development and they can produce significant sediment, nutrient, pathogenic, and toxic loads to stormwater through non-point sources. Strategies in this area seek to provide both incentives and tools to farmers to help them apply best management practices to improve surface water runoff management, while ensuring that working farm land can be maintained and agriculture in the Puget Sound remains economically viable. Particularly challenging are the large number of small acreage farms. These farms typically contain small numbers of animals, including cows, horses, sheep, or goats, but can be a significant source of polluted runoff. These landowners can be difficult to reach through education and technical assistance outreach programs because they typically do not belong to any agricultural group. More significant, small acreage landowners may not qualify for federal incentive programs because they may not meet eligibility requirements for these programs.

Maintenance of agricultural land also is critical. Strategies and actions oriented towards protection and stewardship of ecologically sensitive rural and resource lands and maintaining the vibrancy of agriculture are discussed in A3.3.

SALMON RECOVERY

Salmon Recovery Plan priorities: C3 Placeholder

How are these priorities integrated: C3 Placeholder

Relationship to Recovery Targets

Reducing pollution in runoff from agricultural lands will help achieve recovery targets for freshwater quality, shellfish bed recovery, freshwater aquatic habitat, swimming beaches, dissolved oxygen in marine waters, and marine sediment quality.

C3.1 Target voluntary and incentive-based programs in ways that will best contribute to Puget Sound recovery.

Numerous programs, guidelines and technical assistance opportunities exist to help farmers identify potential pollution impacts from farming activities and implement best management practices to reduce, control or eliminate pollution.

For example, Conservation Districts currently work with farmers to develop a voluntary Farm Management Plans. A farm plan identifies the resources on the property and the possible impacts to those resources from agriculture activities, identifies the practices the landowner will undertake to correct these impacts, and identifies the funding programs the landowner will seek to assist in implementing the practices. If the landowner implements the practices consistent with the plan, the landowner will address the resource impacts. The practices a landowner may undertake include: streamside fencing, manure composting, pasture renovation, and innovative weed management techniques. The planning process takes into account the size of the farm, types of soil, slope of the land, proximity to streams or water bodies, types of livestock, or crops, resources such as machinery or buildings, and available finances. Once the farmer decides what changes he or she wants to make on their property, they work with the Farm Planner to set a tentative implementation schedule.

Another successful program to address impacts to water quality due to agricultural activities is the Conservation Reserve Enhancement Program (CREP). CREP is a voluntary program that helps farmers protect environmentally sensitive land, decrease erosion, restore wildlife habitat and safeguard ground and surface water resources. Under CREP eligible farmers can receive financial compensation when they enter into ten to fifteen year contracts to keep valuable resource land out of production and technical and financial assistance (up to fifty percent) to install restoration measures such as riparian plantings along streams.

These incentive-based programs are currently implemented in an “opportunistic” manner – that is, the landowner seeks out the conservation district or WSU Extension staff for information and assistance. These entities do not target their service delivery to specific locations in an effort to address specific resource concerns in a focused approach with the ultimate goal of improving the overall resource conditions. The purpose of this sub-strategy is to strengthen the water quality focus of these programs, align them with regulatory efforts to make both more effective, and to target specific geographic areas with significant resource concerns with the goal of achieving improved resource conditions.

Ongoing Programs

The primary objective of this sub-strategy is to encourage the targeting of ongoing landowner incentive programs to address specific resource concerns. The method to achieve this objective will be the use of resource assessment or characterization tools to identify the resource concern and then to implement private property stewardship, and enhance and promote incentive and technical assistance programs that focus on reducing sources of water pollution from commercial and non-commercial farms. In an effort to better target voluntary and incentive and technical assistance programs and promote their use

in Puget Sound, the Conservation Commission has worked with all the Puget Sound Conservation Districts to develop a Puget Sound Conservation District Action Agenda. This document links the work of the 12 Conservation Districts in the Puget Sound basin to the specific threats identified by the PS Partnership. Funding is then provided by the State Conservation Commission to the conservation districts to implement on-the-ground activities that address the identified threats. In this way, specific conservation district work and landowner activities can be directly linked to specific Puget Sound threats.

The Conservation Commission also is working with counties and other state agencies to implement the new Voluntary Stewardship Program (VSP). This program was the result of successful negotiations facilitated by the Ruckelshaus Center from 2007 to 2011. This new program is intended to address the contentious issue of the protection of critical areas on agricultural lands while maintaining viable agricultural production. The program provides counties who opt in an alternative to protecting critical areas from agricultural activities through the GMA process. A county choosing this alternative has until January 22, 2012 to “opt-in” to the program; identify, in accordance with specified criteria, watersheds that will participate in the Program; and nominate, in accordance with specified criteria, watersheds for consideration by the Conservation Commission as state priority watersheds.

Once a county has opted-in to the Program and funding is made available, the county is to identify a watershed group to develop a work plan that will identify how critical areas in the watershed will be protected in the context of agricultural activities. The work plan is submitted to the Conservation Commission for approval and must include measureable goals and benchmarks for the protection of critical areas. The watershed group must show progress on these goals and benchmarks every 5 years, or implement adaptive management if progress is not being made.

Near-Term Actions

C3.1 NTA 1: The State Conservation Commission and the departments of Agriculture, Ecology and Health should identify priority areas and resource impacts to target areas where implementation of voluntary incentive programs for rural unincorporated landowners, small-acreage landowners, working farms and nurseries can complement regulatory efforts and where they can best contribute to Puget Sound protection and recovery.

Performance measure: Identification of areas and implementation of programs in these areas.

C3.1 NTA 2: [Placeholder: The Department of Ecology, in collaboration with the Department of Agriculture and the Conservation Commission will identify an approach to ensure best management practices achieve water quality standards.]

Performance measure: Complete or not

C3.1 NTA 3: [Placeholder: [WHO] will report on the effectiveness of incentive programs to achieve resource objectives, with a particular focus on water quality standards. Participation will be sought from: PSP, Ecology, Agriculture, Health, the Conservation Commission, Conservation Districts, Federal agencies, and Tribes.]

Performance measure: Done or not

In addition, actions associated with Ecology, Health, the Department of Agriculture and the Conservation Commission identifying priority areas and resource impacts to target implementation of voluntary incentive and technical assistance programs for rural unincorporated landowners, hobby farms, working farms and implementing these programs are described in A3.1.

C3.2 Ensure compliance with regulatory programs designed to reduce, control or eliminate pollution from working farms.

The Washington Water Pollution Control Act prohibits the discharge of pollutants from all lands in the state, including agricultural lands. The Act is administered by the Department of Ecology.

Ongoing Programs

Ecology has the jurisdiction to control and prevent the pollution of streams, lakes, rivers, ponds, inland waters, salt waters, water courses, and other surface and underground waters of the state of Washington. Ecology also is authorized to provide grants to address pollution problems.

Ecology identifies priority areas for work to address agricultural runoff through a variety of processes, including ambient monitoring and the state Water Quality Assessment, which lists the impaired waters in the state. To address these impaired waters, Ecology may develop a Total Maximum Daily Load / Water Cleanup Plan or may work to directly implement the practices necessary to solve the water quality problems. In many cases, incentive and technical assistance programs are available to help land owners identify and implement best-management practices; some of these programs provide financial assistance. Ultimately Ecology uses a combination of tools – education, technical and financial assistance, and compliance actions to ensure water quality standards are met. In conducting this work, Ecology often works with other entities such as conservation districts or WSU Extension.

Best management practices (BMP) is a legal term that refers only to those combinations of pollution controls used to prevent and control water pollution that achieve compliance with water quality law. Regulations in Washington specifically define water quality BMPs as those approved by the Department of Ecology (WAC 173-201A-020), and those that are applied to attain compliance with the water quality regulations (WAC 173-201A-510).

In addition, there are specific livestock programs and permits focused on addressing pollution from animal feeding operations. These include the state Dairy Nutrient Program and the Concentrated Animal Feeding Operation (CAFO) NPDES permit. In general, these efforts require the management of animals and stored manure to prevent discharges of waste to surface and groundwaters. The Washington State Department of Agriculture implements the Dairy Nutrient Management Act and Ecology regulates CAFOs through the CAFO permit. This permit is required for all animal feeding operations that discharge to waters of the state. Animal feeding operations are defined as operations that confine and feed animals for a total of 45 days or more in any 12-month period where vegetation or post harvest residues are not sustained in the normal growing season over any portion of the facility where animals are confined. Ecology's work implementing the CAFO permit is focused on ensuring that manure is stored, handled and applied properly and at agronomic rates to prevent discharges to surface

and groundwater. This includes discharges from application fields, waste storage facilities and animal confinement areas.

Near-Term Actions

C3.2 NTA 1: Ecology will issue an updated CAFO permit in 2012.

Performance measure: Done or not

Target View: Fresh Water Quality

Clean water is vital to people and key to healthy fish and wildlife populations. But when our rivers and streams pick up pollutants, toxic contaminants, or excessive sediments and nutrients, it not only affects the health of our watersheds, but impacts our marine waters, swimming beaches, and shellfish beds as well. Our fresh waters should be safe for drinking and swimming, able to support farms, fish, and wildlife, and not harm our beaches, shellfish beds, or marine waters.

Walk along a small stream or creek in the region, and on the rocks and sediments of the streambed you may find a lively community of aquatic insect larvae, snails, and other small invertebrates. These small creatures thrive in clean, cool waters and form a critical part of the aquatic food chain. But this unique biological community is sensitive to many things, including pollution and runoff from agricultural and developed lands, reduced water levels and high temperatures in the summer, and the clearing of trees and vegetation along streambanks. Scientists often measure the condition of the aquatic community as an indicator of overall water quality and stream health.

Three 2020 recovery targets were established for fresh water quality:

- At least half of all monitored streams should score 80 or above on the fresh water quality index
- Reduce the number of “impaired” waters
- Protect (i.e. allow no degradation of) any small streams that are currently ranked “excellent” for biological condition, and improve water quality in streams ranked “fair” so their average scores become “good”

Scientists who monitor our streams and rivers have developed an index of fresh water quality. A score of 80 or higher (out of 100) indicates that water quality is generally meeting our goals for sediments, nutrients, temperature, dissolved oxygen, fecal coliform bacteria, and other conventional pollutants (the index does not address toxic contaminants for a number of technical reasons). In general, fresh water quality index scores for the major rivers in Puget Sound have slowly improved since the index was first established in 1995 and now average in the mid-70's range. Scores in small urban streams are lower.

Water Quality Index

Annual, 2000-2010

Meeting Goals	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Avg
Duckabush	93	95	94	90	74	94	89	85	88	96	86	89
Elwha	86	88	83	76	73	74	86	67	66	81	81	78
Skokomish	95	95	94	85	70	67	92	89	89	94	86	87
Snohomish	92	91	89	81	74	75	89	75	81	85	79	83
Borderline	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Avg
Cedar	87	76	60	78	72	84	81	79	79	81	77	78
Upper Skagit	87	86	59	85	64	81	84	75	75	81	56	76
Lower Skagit	89	91	71	76	61	73	77	77	75	76	74	76
Deschutes	62	72	70	73	61	83	88	88	83	76	74	75
Nisqually	40	60	79	79	69	71	74	75	91	74	83	72
Not Meeting Goals	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Avg
Green	82	73	66	67	75	49	72	68	60	69	63	68
Nooksack	65	68	58	57	52	54	61	51	60	69	56	59
Puyallup	60	58	57	55	51	58	59	58	61	49	62	57
Samish	86	75	32	49	34	71	67	74	59	80	63	63
Stillaguamish	81	60	44	72	55	67	71	69	75	75	71	67

Source: River and Stream Ambient Monitoring Program, Washington State Department of Ecology

The Water Quality Index (WQI) is an aggregation of monthly measurements of typical water pollutants reported on a scale of 1 to 100. A higher number indicates better quality. An index score of 80 or above indicates that water quality is generally meeting our goals; between 70 and 80 is considered "fair" or "borderline"; 40-70 is failing to meet water quality goals and less than 40 is "poor".

Stations meeting water quality goals are all in the relatively undeveloped Olympic Peninsula (except for the Snohomish River). Stations not meeting water quality goals tend to be in watersheds with more people and more agricultural development.

The three Action Agenda strategies most related to the fresh water quality target are:

- Develop and implement local and tribal pollution identification and correction (PIC) programs (C11.4)
- Complete Total Maximum Daily Load (TMDL) studies and other necessary water cleanup plans for Puget Sound to set pollution discharge limits and determine response strategies to address water quality impairments (C11.1)
- Fix problems caused by existing development (structural upgrades; regular and enhanced maintenance) (C2.3)

Miradi target diagrams are still being developed for the fresh water quality target.