



WASHINGTON STATE
DEPARTMENT OF
E C O L O G Y

**Salmon Creek Watershed
Bacteria and Turbidity
Total Maximum Daily Load
(Water Cleanup Plan)**

Detailed Implementation Plan

March 2005
Publication Number 05-10-037



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Salmon Creek Watershed Bacteria and Turbidity Total Maximum Daily Load (Water Cleanup Plan)

Detailed Implementation Plan

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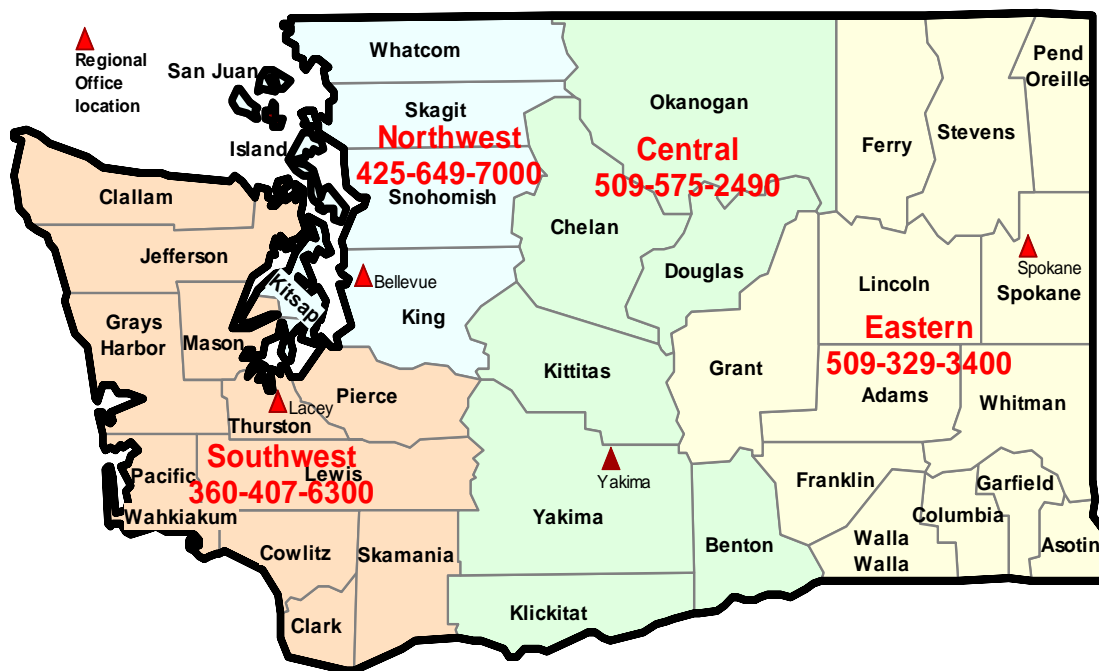
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Introduction

Salmon Creek, located entirely within Clark County, flows from the foothills of the Cascade Mountains west to Lake River, which in turn flows into the Columbia River. The Cascade foothills are generally forested, while the lower drainage is primarily urban. The city of Vancouver lies just south of lower Salmon Creek, and several small towns lie along the tributaries and central plains of the basin. These middle reaches contain a mixture of small towns, large and small-scale farms, pasture, and homes. Six major tributaries flow into Salmon Creek: Rock Creek and Morgan Creek to the east, Weaver Creek (also called Woodin) and Curtin Creek (also called Glenwood) in the middle, and Mill Creek and Cougar Creek to the west (Figure 1). Salmon Creek and the lower portions of Mill, Curtin, Morgan, and Rock Creeks and their associated wetlands are under shoreline jurisdiction of the Clark County Shoreline Master Program.

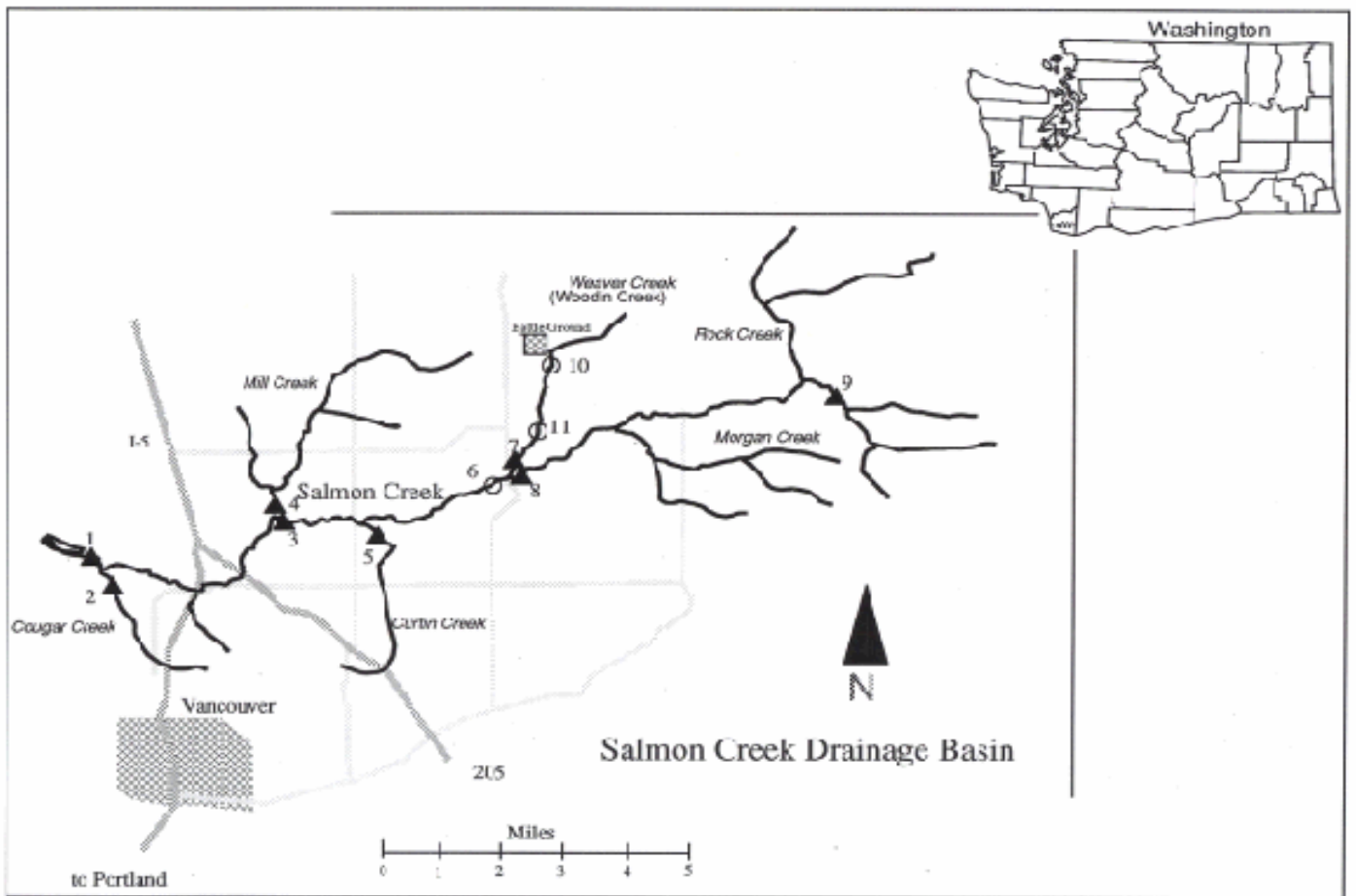


Figure 1. Salmon Creek study area and sampling locations

The federal Clean Water Act requires the U.S. Environmental Protection Agency or delegated states to develop water cleanup plans (TMDLs) for rivers, lakes, and streams that fail to meet water quality standards. Salmon Creek and several of its tributaries are among more than 650 water bodies in Washington State that violate water quality standards.

A plan to clean up fecal coliform bacteria in the Salmon Creek watershed was adopted by the Washington Department of Ecology and U.S. Environmental Protection Agency in April 2001. This water cleanup plan, called a “total maximum daily load” (TMDL), sets forth the goals, objectives, and tactics for achieving clean water in the Salmon Creek watershed.

As part of an agreement on the implementation of section 303(d) of the federal Clean Water Act, Washington State must prepare a detailed implementation plan, which includes a monitoring plan and measures of success.

This document is the detailed implementation plan (DIP) for the Salmon Creek watershed. Other documents related to the Salmon Creek Cleanup Plan (TMDL) are available through the Washington State Department of Ecology web site at <http://www.ecy.wa.gov/programs/wq/tmdl/index.html>. The Salmon Creek Cleanup Plan is referred to throughout this DIP as the Plan. This DIP is based on the technical assessment and decisions contained in the Plan. Water bodies addressed by this DIP are shown in Table 1.

Table 1. Waterbody Identification

Waterbody Name	Old I.D. #	Parameter
Salmon Creek	WA-28-1020	Turbidity, Fecal Coliform
Cougar Canyon Creek	WA-28-1023	Fecal Coliform
Mill Creek	WA-28-1025	Fecal Coliform
Curtin Creek	WA-28-1026	Fecal Coliform
Weaver (Woodin) Creek	WA-28-1027	Fecal Coliform

The basic implementation concept for achieving fecal coliform and turbidity reductions in the Salmon Creek watershed is that existing programs and requirements, if fully implemented, should result in meeting the Plan targets. This document provides the detail of how monitoring of water quality and implementation activities will be used to track progress as well as indicate when adaptive management procedures need to be employed. Adaptive management methods will be used to quickly identify whether additional effort or focus from existing programs is needed. If adaptive management methods demonstrate that existing programs are not adequate, new programs will be developed.

Pollutant loading capacity for a watershed is apportioned among all the potential sources in that watershed. Loading capacity is assigned to two general categories of sources: point sources (sewer outfalls, stormwater outfalls) are assigned a Waste Load Allocation (WLA); and non-point sources (dairy farms, failing septic systems) are assigned a Load Allocation (LA). The Salmon Creek Technical Assessment and Cleanup Plan assigned the entire available loading capacity to nonpoint sources. However, both reports were completed shortly before Clark County was issued a National Pollution Discharge Elimination System (NPDES) permit for all its stormwater discharges. Therefore, the WLA for Clark County stormwater discharges is included in the non-point LA for this TMDL.

The Approach

A study completed in 1995 by the state of Washington Department of Ecology (Ecology) found significant violations of water quality standards in Salmon Creek for fecal coliform, turbidity, temperature, and dissolved oxygen. Water quality monitoring by Clark Public Utilities from 1995 to 2003 shows those violations of water quality standards are continuing.

Fecal coliform is a major concern because it indicates that biological waste is entering the river. Common sources of fecal coliform are failing septic tanks and agricultural waste.

Turbidity is a measure of the ability of light to pass through the water and indicates suspended solids. Turbid water impairs the ability of fish to survive and spawn. It also degrades habitat needed for aquatic invertebrates that are a food source for fish. Runoff from construction sites and washouts due to natural and human causes sometimes cause turbid water.

This Plan is meant to be a reasonable and realistic approach to achieving water quality standards within a realistic timeframe under challenging environmental, socio-political, and economic conditions. It is based largely on the belief that encouraging voluntary actions and implementing existing regulations is the best way to achieve lasting improvement in the basin.

In general, this DIP identifies and incorporates outreach and technical assistance to help landowners and citizens understand what causes pollution and how to prevent it. By many accounts, people throughout the basin generally agree that water quality is important to their quality of life. Water quality is also very important for protecting land and property values. Property on or adjoining polluted water is often stigmatized as being less desirable for purchase, and loan approvals usually require access to clean water as essential to protect both current and future use and value of the property. In areas affected by a TMDL, future land use (*i.e.*, expansion or new enterprise) is typically restricted to activities that assuredly will not add pollution to the affected water body. In essence, it becomes much more challenging for an area affected by polluted water to attract new ventures for economic growth.

This DIP is intended to serve as a complete work plan to coordinate work efforts addressing turbidity and bacteria impairments. It describes an expected path for continued progress. Features of this DIP include:

- A more complete description by the implementing parties of their intended cleanup activities and schedule.
- Interim water quality targets and schedules for use as performance measures in the ongoing assessment of progress towards water quality standards.
- Description of a plan to track implementation of actions as well as monitor water quality improvements so that cleanup activities can be modified when it is appropriate.
- A description of likely sources of funding or other non-monetary resources to use for current and new work to keep the water clean.

Tables 2 and 3 show the reductions needed in each stream segment to achieve water quality standards for bacteria and turbidity respectively.

Table2. Salmon Creek drainage wet and dry season fecal coliform geometric means, 90th percentiles, and recommended reductions.

Salmon Creek and its Major Tributaries Station Name	Site No.	First Criterion: Geometric Mean < 100				Second Criterion: 90% of Samples < 200				Recommended Target Levels			
		Existing Geometric Mean		Percent Reduction Needed (mean <100)		Existing Upper Tenth Percentile		Percent Reduction Needed (90%<200)		Target Geometric Mean		Target Percent Reduction	
		Wet Season	Dry Season	Wet Season	Dry Season	Wet Season	Dry Season	Wet Season	Dry Season	Wet Season	Dry Season	Wet Season	Dry Season
Salmon Creek (mouth)	1	313	129	68	23	1917	301	89	34	33	86	89	34
Cougar Creek	2	722	899	86	89	9243	1803	98	89	16	100	98	89
Salmon Creek (lower)	3	182	281	45	64	1261	806	84	75	29	70	84	75
Mill Creek	4	839	282	88	65	8763	1121	98	82	19	50	98	82
Curtin Creek	5	1155	743	91	87	4409	2608	96	92	52	57	96	92
Salmon Creek (middle)	6	257	453	61	78	1162	869	83	77	44	100	83	78
Weaver Creek	7	534	857	81	88	9204	6509	98	97	12	26	98	97
Salmon Creek (upper)	8	234	751	57	87	1125	1404	82	86	42	100	82	87
Salmon (headwaters)	9	28	54	0	0	200	318	0	37	28	34	0	37

Table 3. Salmon Creek drainage wet and dry season average turbidity, 90th percentiles, and recommended reductions.

Salmon Creek and its Major Tributaries	Site No.	90 th Percentile of Adjusted Data ^a		90 th Percentile of Adjusted Data minus LA of 5 Nephelometric Turbidity Units (NTU)		Target Percent Reduction ^b	
		Wet Season	Dry Season	Wet Season	Dry Season	Wet Season	Dry Season
Station Name							
Salmon Creek (mouth)	1	13.4	3.7	8.4	-1.3	63	0
Cougar Creek	2	20.1	1.9	15.1	-3.1	75	0
Salmon Creek (lower)	3	12.8	1.8	7.8	-3.2	61	0
Mill Creek	4	21.1	3.5	16.1	-1.5	76	0
Curtin Creek	5	5.9	2.8	0.9	-2.2	16	0
Salmon Creek (middle)	6	17.9	2.8	12.9	-2.2	72	0
Weaver Creek	7	10.1	2.0	5.1	-3.0	51	0
Salmon Creek (upper)	8	8.2	3.2	3.2	-1.8	39	0
Salmon Creek (headwaters)	9	NA	NA	NA	NA	NA	NA

NOTES

^a Adjusted data equals each site value minus background (site 9) value for each sampling event.

^b Target reduction is the percent reduction required to reduce the 90th percentile of the adjusted data to 5 above

Recent water quality monitoring data analysis provided by Clark County paint a somewhat different picture than the 1988-1994 data set upon which the TMDL is based. Table 4 includes the 1999-2004 wet and dry season geometric mean fecal coliform bacteria concentrations for the eight Salmon Creek watershed-monitoring stations. This cursory analysis shows significant progress toward meeting the targets. This sort of data analysis is one of the steps that will be taken during the annual review for adaptive management purposes.

Table 4. Comparison of Geometric Mean Bacteria between Present (1999-2004) and TMDL Report (1988-1994).

Station	1995 TMDL Report Site #	Present Wet Season (Nov-Apr)* Geometric mean (MPN/100ml)	1995 TMDL Wet Season (Nov-Apr) Geometric mean (MPN/100ml)	Present Dry Season (May-Oct)* Geometric mean (MPN/100ml)	1995 TMDL Dry Season (May-Oct) Geometric mean (MPN/100ml)
Salmon Creek at NW 36th Avenue	1	75	313	93	129
Cougar Creek at NW 119th Street	2	237	722	593	899
Mill Creek at Salmon Creek Avenue	4	65	839	87	282
Salmon Creek at NE 50th Avenue	3	90	182	128	281
Curtin Creek at NE 139th Street	5	52	115	117	743
Salmon Creek at Caples Road	8	51	234	161	751
Woodin Creek at Caples Road	7	123	534	230	857
Salmon Creek at NE 199th Street	9	6	28	45	54

*Data source: 1999-2004 monthly data, collected by Clark Public Utilities and Clark County Public Works, Water Resources.

Bold = Meets a TMDL target

A voluntary approach must be more than just general encouragement to take those actions, which may improve water quality, and to refrain from those that don't. To be effective, a voluntary approach should be active and should include at least the following general elements: (1) assemble and publicize information on those locations where water quality is good, (2) assess existing protections that these high quality waters have and understand how and why they support high quality waters, (3) identify areas where existing protection programs are not likely to be effective, (4) identify voluntary mechanisms and incentives which can improve protection where needed, (5) obtain resources to implement voluntary approaches, (6) provide technical assistance, (7) publicize successful voluntary efforts and recognize successful individuals and institutions, (8) monitor to assess success, and (9) apply adaptive management to make improvements where needed.

While every effort will be used to achieve voluntary compliance, this plan also acknowledges that enforcement of existing regulations will continue as an implementation tool. The Water Pollution Control Act (Chapter 90.48 RCW) provides broad authority to issue permits and

regulations of discharges to waters of the state. The act openly declares that it is the policy of the state to maintain the highest possible standards to ensure the purity of all waters of the state and to require the use of all known, available, and reasonable means to prevent and control water pollution. The act defines waters of the state and pollution and authorizes the Department of Ecology to control and prevent pollution, to make and enforce rules, including water quality standards. Ecology is charged with enforcing that law and will apply enforcement, if it becomes necessary to achieve the water quality goals of this plan. The act also designates Ecology as the state water pollution control agency for all the purposes of the federal Clean Water Act. Under this statute, Ecology is authorized to administer wastewater disposal permits and to require prior approval of plans and methods of operation of sewage or other disposal systems.

Pollution Sources and Organizational Responsibilities

Pollution Sources

The Salmon Creek basin is primarily rural-residential and is characterized by gently rolling hills and alluvial flood plains. Forestry, agriculture, commercial, and industrial activities are significant uses within the basin (Wille 1990). Urban areas also comprise a considerable proportion of the basin's land area, mostly along its southwest reaches. The basin is highly urbanized near Vancouver, with many small sub-basins already heavily developed. The Suds Creek, Tenny Creek, 114th Street tributary, and 119th Street tributary sub-basins typify the urbanization within this portion of the Salmon Creek drainage. Cougar Creek and Curtin Creek, the larger tributaries of lower Salmon Creek, are also developing rapidly. These basins often experience problems with stormwater runoff, inadequate buffer vegetation, erosion, and sedimentation. Rapid and diverse development within the basin has also led to water quality degradation of Salmon Creek and its tributaries, resulting in non-attainment of state water quality standards.

Weaver Creek is a well-studied example of a Salmon Creek tributary suffering human-induced degradation. Flowing through Battle Ground, Weaver Creek received the town treated wastewater, which resulted in violations of state water quality standards, most notably dissolved oxygen and ammonia. A 1978 Ecology study found that total ammonia in the wastewater treatment plant (WWTP) outflow severely depleted the creek dissolved oxygen levels, threatening aquatic life in the stream (Moore and Anderson, 1978). The average dissolved oxygen concentration downstream of the outfall was 3.7 mg/L while the standard is a minimum of 8 mg/L for a Class A water body. A further investigation of impacts of the Battle Ground WWTP on Weaver Creek found that although stream flow responded quickly to rain events, it was insufficient to dilute WWTP inputs (Crawford 1985). The plant was designed to use natural stream flow to dilute effluent at a 20:1 ratio, but flow from the facility was typically half that of the stream. In 1993, the United States Environmental Protection Agency approved a

biochemical oxygen demand and ammonia TMDL for Weaver Creek. Subsequent to the approved TMDL, discharge from the treatment plant was rerouted to the regional wastewater treatment plant at the mouth of Salmon Creek and discharged to Lake River.

Fecal coliform levels on Weaver Creek, a problem throughout the basin, never met water quality standards both upstream and downstream of the WWTP (Crawford 1985). Upstream values were often higher, implying the WWTP discharge was diluting fecal coliform concentrations. Other point sources, including plywood manufacturing and dairy production, had been reported to contribute less than one percent of the coliform loading, suggesting that the fecal contamination was from nonpoint pollution (Crawford 1985).

Fecal coliform contamination is a major concern because it indicates that biological waste is entering the water. A 1981 study investigated the basin septic systems, which were believed to contribute to nonpoint fecal coliform contamination. The study found that three percent of surveyed septic systems along the Salmon Creek drainage were leaking, and ten percent had failed previously and been fixed. One finding was that 47 percent of failures were preventable: the result of a lack of maintenance, undersized systems, and poor siting, or physical damage (Southwest Washington Health District 1981).

A follow-up survey in 1989 of septic systems within Salmon Creek studied all parcels adjacent to the creek, and randomly sampled a subset of systems within 1,000 feet of the creek and its tributaries. In this study, 5.6 percent of the systems were failing, sub-standard, or absent. The vast majority (92%) of systems were at least 15 years old; 58.7 percent of the systems had either never been pumped or were not known to have been pumped. Calculations from this study attribute from one to five percent of Salmon Creek fecal coliform loading to failing septic systems (Newman 1989). The 1989 survey results are similar to the 1981 results, implying that septic systems contribute to but are not the major source of coliform contamination.

A 1990 study of the Salmon Creek basin by the Southwest Washington Health District found fecal coliform to be the most consistent and most severe violator of state water quality standards. This study isolated dairies as the primary source of contamination, with the regions around lower Morgan Creek, central Salmon Creek, and Mill Creek having the highest concentrations of both dairies and coliform contamination (Southwest Washington Health District 1990). In response to this agriculturally based water quality degradation, the Clark Conservation District (CCD) undertook a review of basin farming practices, recommending implementation of appropriate Best Management Practices (BMPs) for agriculture (CCD 1990). The document outlines BMPs for erosion and animal waste control, pastureland and cropland management, and stream corridor protection. It concludes with strong recommendations for stream fencing, streambank revegetation, and animal waste and sediment education programs to counter the negative impacts of dairy production.

However, negative impacts from human land uses are not strictly recent events. Euro-Americans settled along Salmon Creek beginning in 1852. In 1864, A.S. Marble built the first mill on the creek. A woolen factory, which failed, also attempted to run a mill on the stream in 1867. The draining and ditching of Fourth Plain swamp (now the town of Orchards) began in 1863, which may mark the beginning of wetland losses in the area. About 1880 Isaac Dietderich built a

millpond on the creek, perhaps the first man-made obstruction to salmon passage. Dairy farming in the basin goes back at least to 1882, when the Honorable H.D. Rissell owned 30 milk cows (Parsons 1983). Pasture, small-scale farms, forestry, and increasing development have all contributed to impaired water quality, which has gradually reduced habitat quantity and quality for salmon and other fish and aquatic organisms.

The earliest impediments to salmonid reproduction occurred in the late 19th century, when logging dams were first constructed along Salmon Creek. Today, however, it is sedimentation from widespread development that impairs stream habitat quality. While no historical data exist, current Coho, steelhead, and cutthroat trout populations are between three and five percent of what an intact habitat might support (Wille 1989). The highest quality existing habitat presently lies within the basins less developed headwaters: upper Salmon Creek, upper Morgan Creek, and Rock Creek. Direct cattle access along lower Salmon Creek and many tributaries increases turbidity and ammonia levels, and impairs habitat quality. As a low-gradient creek (averaging slope 0.24% over first 35 km), Salmon Creek has a limited ability to flush sediment deposits (Wille 1989). In addition to covering pool habitat for salmon, sediment buildup over time decreases the channel capacity, which increases the potential for flooding and can lead to increases in water temperature due to greater solar heating of the shallower waters.

Wetlands, which provide flood control and contribute to summer flow levels, have been estimated to constitute 3.4 percent of the basin (Wille 1990). Roughly half of Salmon Creek basin's wetlands are emergent (usually seasonal and adjacent to the stream), while forested and scrub-shrub wetlands are also fairly common. The greatest numbers of wetlands are within Mill Creek and Curtin Creek sub-basins, but the greatest acreage lies along lower and central Salmon Creek itself. However, one fifth of recent county developments involve wetlands. Threats to wetlands include channelization and draining, as well as indiscriminate filling of privately owned wetlands (Wille 1990). Loss of remaining wetlands could contribute to further water quality degradation by removing ecologically important water detention and filtering systems.

Turbidity

To meet the TMDL, numeric Load Allocations were established for monitoring stations 1-9 annotated in Figure 1. Background turbidity was assumed to be equal to turbidity at the headwater sampling site, which was always less than 50 Nephelometric Turbidity Units (NTU). Load Allocations were established such that turbidity levels would not exceed five NTU over background, 90 percent of the time. These targets will be reviewed on an annual basis.

Organizational Responsibilities

The following is a description of the key agencies and other groups in alphabetical order that have influence, regulatory authority, involvement, or other controls that will be incorporated into a coordinated effort to implement the Water Cleanup Plan. Ecology will lead the coordination effort as needed to affect Plan implementation. Considerable work will be needed by all parties, especially in the heavily urbanized section of Salmon Creek, in order to meet water quality standards. Regular reviews of monitoring data, leading to changes in management regimes, if standards are not being met will need to be conducted. A reasonable expectation of when the

stream might meet these standards for bacteria and turbidity is difficult to determine. The most reasonable expectation given the large population growth in the watershed, is that by 2010 an appreciable reduction in violations of the water quality standards for bacteria and turbidity will occur (see reasonable assurance paragraph below).

City of Battleground

EPA rules require local governments to develop stormwater programs to control stormwater pollution. Battleground has applied to Ecology for a Phase 2 Stormwater Permit. Ecology will develop by June of 2005 a Phase 2 Permit for Battleground. The permit will cover these six requirements.

1. Public Education and Outreach
2. Illicit Discharge, Detection and Elimination
3. Post-Construction Runoff Control
4. Public Participation/Involvement
5. Construction Site Runoff Control
6. Pollution Prevention/Good Housekeeping

It is anticipated that implementation of the permit requirements will result in meeting the requirements of this detailed implementation plan.

During review of this DIP, the Battleground Public Works Director requested that Ecology consider using Salmon Creek as a potential future point source. The request is based on Battleground's growth needs as developed in the most recent update of their Urban Growth Area.

He wrote as follows:

“The City is analyzing the feasibility of building a local Water Reclamation Facility (WRF) to supplement the conveyance and Salmon Creek Treatment Plant treatment capacity it owns and eliminate costly pumping and forcemain improvements that would otherwise be necessary. This new WRF, along with the City's existing surge lagoon, would allow the City to use the existing forcemain and pump station through the next 20 years.

The City requests that Ecology and the City discuss a logical means of determining an appropriate allocation for turbidity and fecal coliform from a potential WRF as the planning process for the WRF moves forward and as the DIP gets finalized and updated over time.”

As Battleground is aware, there is no waste load allocation for point sources in this TMDL. As discussed below in the Clark County section, improvements in water quality have occurred in the past ten years since the TMDL Technical Report was written. The planning horizon for the proposed WRF is five to eight years from 2004. The annual evaluation process that Ecology will conduct with all the partners as outlined in this DIP will be the best opportunity for a discussion of this issue.

Clark Conservation District

The Clark Conservation District (CCD) works closely with Ecology and National Resource Conservation Service (NRCS) in developing resources management plans. The CCD also provides education and technical assistance to landowners. Landowners receiving a Notice of Correction or a formal enforcement action frequently get assistance from the CCD to assist coming into compliance. Ecology will work closely with the CCD and NRCS by identifying and prioritizing referrals in the Salmon Creek area for resources management planning.

Ecology and CCD have developed the Small Farm Water Quality Improvement Project. The goals of this project are to provide people with small acreage farms technical assistance in controlling water pollution from their farm. The main focus of this grant is on providing educational efforts such as mud and manure workshops, septic tank workshops, and informational brochures for people with just a few livestock on their property. **Salmon Creek has been targeted as the first watershed to have this program.** Workshops have been held over the past two years. An informational brochure was first distributed in the spring of 2001 to several thousand property owners adjacent to Salmon Creek and its tributaries. This brochure is still being distributed.

If agricultural sources that are not associated with dairies are identified to be causing pollution, they will be referred to CCD. The CCD will develop or modify an existing farm plan to eliminate the potential to pollute under the guidance of NRCS. At that point, all three entities will then develop a monitoring plan to measure the effectiveness of the BMPs. During 2005 and 2006, the CCD will continue to work with small farm owners to implement BMPs using an Ecology Centennial Grant (G0500072, Small Farms for Clean Water).

Clark County

EPA rules require local governments to develop stormwater programs to control stormwater pollution. Clark County was granted a National Pollution Discharge Elimination Permit (NPDES) in 1999 for storm water as a Phase I permittee.

This is a brief summary of the Clark County's stormwater management program (SWMP) to meet requirements of its National Pollutant Discharge Elimination System (NPDES) municipal stormwater permit (State Waste Discharge Permit No. WA-004211-1) and county goals to protect and restore streams and lakes.

In 1998, Clark County adopted an ordinance prohibiting illicit discharges into its storm sewer system and waters of Clark County. This ordinance has been kept in effect and enforced since 1998.

The Water Resources Section of the Clark County Public Works Department performs the monitoring program. Several continuous stream flow gauges (Table 5) are currently in operation in the Salmon Creek Watershed. Three of them are intended to be operated for five to ten years as temporary facilities.

Table 5. Clark County Stream Gauges

	Site Name	Watershed
Curtin Creek at NE 139 th Street (temporary)	CUR022	Salmon Creek
Mill Creek at Salmon Creek Avenue (temporary)	MIL008	Salmon Creek
Cougar Creek at NW 119 th Street (temporary)	CGR018	Salmon Creek
Salmon Creek at Kline Line Foot Bridge	SMN020	Salmon Creek
Salmon Creek at NE 156 th Street	SMN045	Salmon Creek

Three continuous rainfall gauges (Table 6) are operated and monitored in the Salmon Creek Watershed.

Table 6. Clark County Rain Gauge Locations

	Watershed
Salmon Creek Treatment Works	Salmon Creek
Venersborg	Salmon Creek
Salmon Creek at 156 th Street	Salmon Creek

Clark County Water Resources also conducts dry weather storm sewer screening and follow up at problem spots. Water Resources is revising this program and over the next several years expects to apply it to several urban basins, including lower Salmon Creek tributaries.

In 2002, Clark County Water Resources and Clark Public Utilities agreed to consolidate ambient monitoring in Salmon Creek, standardize monitoring methods, and eliminate overlapping activities. As a result, Water Resources assumed responsibility for collecting water quality data at eight sites and Clark Public Utilities, in return, provides contracted maintenance and operation for two Clark County stream flow gauges and three continuous rainfall gauges. Monitoring at these sites is subject to ongoing participation by both parties.

A mix of revenue sources pay for county stormwater program activities in Salmon Creek Watershed. Development fees, the General Fund, the Solid Waste Program Fund, and the Road Fund are generally the revenue source for ongoing pre-NPDES permit activities. Clark County has also established a stormwater fee (Clean Water fee) to pay for increased stormwater management under the permit.

Clark County's Department of Assessment and Geographic Information System collects and maintains the largest amount of county geographic information system (GIS) information. The County Public Works Water Resources Section maps storm sewer infrastructure and maintains GIS data for the storm sewer system and specific stormwater management information. The Water Resources Section maintains stormwater program monitoring data.

The stormwater program endeavors to coordinate with local municipalities and agencies that play a role in water resource or stormwater management. Examples include:

- Maintaining a centralized, countywide GIS system for local storm drainage mapping (currently Clark County and the city of Camas use the system).

- Implementing an intergovernmental agreement with Clark Public Utilities for Salmon Creek watershed data gathering.
- Funding the cooperative Watershed Stewards education program at WSU Vancouver.
- Coordinated planning with WSDOT for stormwater retrofit capital improvement projects.
- Coordination with the Ecology TMDL program in Salmon Creek.

Clark County development regulations apply to project sites that discharge to county storm sewers or waters of the state. The Clark County Community Development Department implements the following development regulations to control stormwater's adverse influence on streams, wetlands, lakes, groundwater, and wildlife habitat.

- Stormwater and Erosion Control Ordinance
- Wetlands Protection Ordinance
- Habitat Preservation Ordinance
- Critical Aquifer Recharge Areas Ordinance

Clark County Public Works Department issues and enforces permits for utility construction in county right-of-way. These projects are also subject to the Stormwater and Erosion Control Ordinance.

The county stormwater management program has a process to identify, prioritize, and build stormwater retrofit projects. Additionally, stormwater retrofit facilities are often designed and built as a part of the County Road Capital Improvement Program.

Public Works' Operations Division maintains all county-owned storm sewers and roadside ditches. The Stormwater Facility Maintenance Manual adopted by reference under Chapter 13.26A CCC has standards and practices for maintaining both public and private storm sewer systems. Private facilities and storm sewer systems are maintained by the owner or operator and are inspected for compliance by Public Works. The county owns and operates a decant facility, which also serves other governments' maintenance programs.

Clark County maintains roads and streets according to schedules and standards established for the approved NPDES stormwater management program. The county Public Works Department follows standard practices in the Water Quality BMPs for Operation and Maintenance of Publicly Owned Property manual. The manual was adopted as county policy in July 2000 for the use of pesticides and fertilizer on county lands and by Public Works for road maintenance activities.

In 2004, Clark County became a member of the Regional Road Maintenance ESA Program. The program was started by municipalities in the Puget Sound region as a response to ESA listings of salmon as threatened. The program seeks to protect salmon by implementing a program of BMPs for road and storm sewer maintenance.

Clark County enforces the Water Quality Ordinance adopted in November 1998. The monitoring program inspects and tests storm sewers for dry weather pollutant discharges,

focusing on high risk areas. Public Works also works with businesses and the general public to collect and dispose/recycle oil, hazardous waste, and moderate waste.

The Water Resources Section and Solid Waste Section perform numerous activities to promote pesticide and fertilizer reduction, proper waste disposal, manure management, and source control BMPs through education for businesses, small farms, and residents. The Community Development Department has a certification program for erosion control contractors. Several activities, such as the Watershed Stewards Program, promote watershed stewardship.

Clark County Health Department

The Clark County Health Department (CCHD) has the specific requirement to: Identify failing septic tank drainfield systems in the normal manner and will use reasonable effort to determine new failures. (RCW 70.118.030)

“The normal manner” implies the use of inspections and responses to citizen complaints. These inspections are to take place in areas where water quality standards have been violated. CCHD has developed an administrative plan to respond to on-site sewage system failures, including, where appropriate, inspection of these systems. The outline below shows the steps that will be taken to implement the plan.

A. Identify Sources

- Phased approach.
- Develop complete and accurate list of septic systems in basin.
- Septic maintenance inspection program (statewide requirement for homeowners).
- Use monitoring results to focus efforts.
- Hold educational meetings for communities in various sub basins of the Watershed.

B. Identify Control Measures

- Provide list of certified/licensed inspection contractors.
- Provide list of certified pumpers and repair contractors.
- Provide educational materials.
- Require repairs or replacements if necessary.

A Memorandum of Agreement between Ecology and CCHD to carry out this program was signed on November 8, 2000 (see Appendix B).

Currently the CCHD is midway through a Centennial Clean Water Grant that implements actions A and B above. Once the grant is complete, CCHD will conduct implementation steps A and B on a four-year schedule, if funds are available.

Clark Public Utilities

In 1992, Washington State Departments of Ecology and Health, Clark Public Utilities, and Clark County entered into a memorandum of understanding to develop and implement a water resource management plan for the Salmon Creek basin. The memorandum created a partnership between state and local public agencies to evaluate the water resource management needs and craft a program that furthers state and local water resource management objectives and legal requirements. The Salmon Creek Basin Monitoring and Management Implementation Plan noted in the monitoring section of this summary was developed as a result of this memorandum.

For the past few years Clark Public Utilities has taken the lead in developing a number of programs that impact water quality in Salmon Creek in conjunction with other agencies.

The list of these programs is as follows:

- Water System Planning
- Water Conservation
- Ground Water Management
- Wellhead Protection
- Streamside Rehabilitation
- Streamflow Augmentation
- Wastewater Reuse
- Fisheries Enhancement
- School Salmon Rearing Aquarium
- Recreation and Park Planning
- Stormwater Management
- Septic Tank Maintenance
- Watershed Protection Planning
- Public Information and Education
- Environmental Information Center
- Salmon Creek Water Festival

The Utility agreed in May 2000 to conduct the necessary planning to develop a Phase 2 and Phase 3 Watershed Plan that would meet all the requirements of the Watershed Management Act (HB 2514, RCW 90.82). In addition, Clark Public Utility has contracted with the U.S. Army Corps of Engineers to conduct a limiting factors analysis in conjunction with the Washington State Conservation Commission. Both of these efforts were completed in 2002.

Lower Columbia Fish Recovery Board

Established in 1998 by state law, the Lower Columbia Fish Recovery Board (LCFRB) encompasses five counties in southwest Washington: Clark, Cowlitz, Lewis, Skamania, and Wahkiakum. The fifteen-member board is comprised of representatives from the Legislature, city and county governments, the Cowlitz Tribe, private property owners, hydro-project operators, the environmental community, and concerned citizens. Its goal is to forge a broadly

based regional partnership to return fish populations to healthy levels. State law directs the board to:

- Participate in the development of a regional fish recovery plan, particularly habitat recovery measures. In doing so, the board is to coordinate with local governments, the state, and the National Marine Fisheries Service.
- Assess the factors for decline of salmon and steelhead on a “stream-by-stream” basis.
- Implement the local government responsibilities for habitat restoration and preservation, including prioritizing and approving projects and programs, and receiving and disbursing funds.

The LCFRB has received a grant from Ecology to carry out the watershed planning authorized by RCW 90.82. This law established the watershed planning process including water quantity, quality, habitat, and in-stream flow issues. A watershed plan for Salmon Creek was completed in 2004.

Washington State Department of Agriculture

The Washington State Department of Agriculture inspects dairy farms and manages dairy permits in the Salmon Creek Watershed as part of their statewide statutory responsibility. All Class A dairies have a farm plan. All of the dairies in the Salmon Creek basin have been inspected once. Agriculture will continue to develop policy and procedures to assist in the control of runoff from dairy farms.

Washington State Department of Ecology

Ecology has been delegated authority under the Federal Clean Water Act by EPA to establish water quality standards, administer the NPDES program, and enforce water quality regulations.

In order to gauge the progress of this TMDL, Ecology will convene a meeting of watershed partners no less than annually in order to share information on the state of water quality in the watershed and status of implementation activities. Water quality data, trends (where applicable), regulatory changes, new and innovative concepts, and funding sources will be discussed to evaluate the overall status of the TMDL. Ecology will solicit input from the partners at this time in order to help direct the adaptive management of this TMDL.

In conjunction with the Washington State Department of Agriculture, Ecology has been working on a dairy nutrient control program. All dairies in the watershed have developed farm plans and Agriculture is in charge of inspection of the dairies to obtain compliance with the farm plans. If voluntary compliance is not obtained from the dairy operators, enforcement and fines may be assessed by Ecology under, Chapter 90.48 and the Clean Water Act.

As development of real estate to meet the annual ten percent growth in population has continued, a major focus for Ecology has been development of stormwater control plans. Several major enforcement actions have been taken, and a cooperative effort with Clark County Public Works

and the city of Battleground to help the development community understand their erosion control needs has occurred.

Washington State Department of Fish and Wildlife

The Washington State Department of Fish and Wildlife (DFW) implements the Washington State Hydraulic Code (RCW 77.55), which requires approval of actions by landowners in waterways of the state. The DFW assists DNR in implementing the Forest and Fish Rules with regard to Road Maintenance and Abandonment Plans (RMAPs). This is one of the major controls for turbidity in Salmon Creek.

Washington State Department of Natural Resources

The Washington State Department of Natural Resources (DNR) is responsible for implementing the Forest and Fish Report (FFR). The DNR and Ecology are committed to working together to identify those site-specific situations where reduction of shade has the potential for or could cause material damage to public resources. They work with the private timberland owner to develop BMPs for maintaining roads and other silvicultural practices. If BMPs effective for implementing this plan are not in place by 2009, Ecology will notify the State Forest Practice Board for further action. Resource Maps (RMAPS) for each landowner are developed and reviewed on an annual basis to determine effectiveness.

U.S. Department of Agriculture, Natural Resource Conservation Service

The USDA Natural Resource Conservation Service (NRCS) provides the guidance and general standards and specifications used in developing farm plans. NRCS also does research used to develop the best management practices (BMP) used on farms to protect water quality. The NRCS administers cost-share money that is frequently used by farmers to do farm improvements. Many of the costly farm improvements required for water quality protection, such as lagoons, are constructed according to designs approved by NRCS and funded in part by grants administered by NRCS. NRCS assistance is provided in conjunction with CCD efforts. The NRCS will help Ecology and the CCD evaluate the effectiveness of implemented BMPs in the Salmon Creek Watershed.

Management Roles, Activities, and Schedules

Implementation actions have been identified for all of the entities with jurisdictional responsibility in the Salmon Creek watershed (Table 7). Implementation of action items is the responsibility of the entity, and efforts will be expended to track the status toward completion of the action items.

Table 7. Implementation Actions and Time Table

Agency	Implementation Measure	Sources	Performance Measures	Target	Schedule
Clark Conservation District	Education and providing technical assistance for developing farm plans	Bacteria and turbidity from farm operations	Mud and manure workshops; septic tank workshops; and distribution of informational brochures for livestock owners	60 Work shops	1/1/2020
			Farm plannings	225	1/1/2020
Clark County	Implement the 1999 National Pollution Discharge Elimination Permit (NPDES) for stormwater	Turbidity from roads new construction, and that generated by flooding due to undersized stormwater facilities	Continued implementation of the NPDES permit for stormwater discharges	Annual Report	Each year until 2020
Clark County Health Department	Identify failing septic tank drainfield systems in the normal manner and will use reasonable effort to determine new failures. (RCW 70.118.030) A. Identify sources <ul style="list-style-type: none"> • Phased approach • Develop complete and accurate list of septic systems in basin • Septic maintenance inspection program (statewide requirement for homeowners) • Use monitoring results to focus efforts 	Septic tanks	Apply for Centennial funding to inventory systems and establish a septic system operations and maintenance program	9000 septic tanks	1/1/2020
			Use Centennial funding to identify septic systems that need repairs, replacement or connection to sewer within the watershed. Focus on septic systems within 100 feet of the riparian area, use Centennial funding to survey and inspect homes and businesses in the watershed.	10 systems	250 homes and businesses

Agency	Implementation Measure	Sources	Performance Measures	Target	Schedule
Clark County Health Department continued	<ul style="list-style-type: none"> • Hold educational meetings for communities in various sub-basins of the Watershed. <p>B. Identify control measures</p> <ul style="list-style-type: none"> • Develop list of certified/licensed inspection contractors • Develop list of certified pumpers and repair contractors • Provide educational materials • Require repairs/replacements when necessary 				
Clark Public Utilities	<p>Continue implementing The Salmon Creek Basin Monitoring & Management Implementation Plan.</p> <p>Develop implementation steps for the Salmon Creek watershed Assessment (Oct 2002)</p>	Multiple sources of turbidity and bacteria.	Number of stream feet per year involved in restoration efforts	300 Projects	1/1/2020 6/30/2007
Lower Columbia Fish Recovery Board	<p>During development of the various fish recovery strategies provide data on stream restoration needs.</p> <p>Prioritize and fund projects for stream restoration.</p>	Maintain suitable width to depth ratios by managing sediment bed load in stream.	Number of stream restoration projects completed.	45	1/1/2020
Washington State Department of Agriculture	Inspects dairy farms and manages dairy permit	Fecal Coliform from cows.	Number of dairies with farm plans implemented.	All dairies inspected on a regular basis	1/1/2022
Washington State Department of Ecology	<p>Convene adaptive management meetings.</p> <p>Technical assistance to municipalities for stormwater programs.</p>	Storm water and non-permitted agriculture	<p>Annual reports on Plan implementation</p> <p>Requests for technical assistance</p>	<p>15</p> <p>12</p>	<p>Annually in spring of year</p> <p>1/1/2020</p>

Agency	Implementation Measure	Sources	Performance Measures	Target	Schedule
Washington State Department of Ecology continued	Facilitate and coordinate grant/loan funding opportunities Revolving Loan Funds.		Annual funding cycles	16	Annually
	Issue NPDES permits under Clean Water Act.		Individual and general permits	N/A	On-going
	Enforce state Water Pollution Control Act (RCW 90.48)		Enforcement actions where appropriate	N/A	On-going
Washington State Department of Fish and Wildlife	Implement the Washington State Hydraulic Code (RCW 77.55).	Turbidity from construction projects conducted within waters of the state; turbidity from forest road runoff.	Approvals issued with BMPs for turbidity	100 percent	1/1/2020
	Provide technical assistance to the public and other agencies		Response to technical assistance requests	80 percent	1/1/2020
	Implement the Forest and Fish Rules with regard to Road Maintenance and Abandonment Plans (RMAPs).		Large landowner RMAPs reviews and approvals issued with BMPs for turbidity	95 percent	1/1/2020
Washington State Department of Natural Resources	Implement Forest and Fish Act requirements with private forest landowners. Develop RMAPs	Sediment delivered to stream by forest practice activities.	Forest practice BMPs in place and judged effective in improving water quality. This may include miles of road removed from riparian areas or miles of stream riparian areas with appropriate shade function	Forest Practice BMPs in place including RMAPS	1/1/2009
U.S. Department of Agriculture, Natural Resource Conservation Service	Provides technical guidance for CCD.	Animal and field overuse.	Assistance to Clark Conservation District with farm planning	225 plans	1/1/2020
	Provides technical and financial assistance to farmers.		Number of farm assistance programs implemented.	Assistance from applicable farm programs	1/1/2006

Effectiveness Monitoring Plan

The purpose of effectiveness monitoring is to provide assurance that control measures put in place during TMDL implementation achieve the expected load reductions. Ecology is responsible for determining, through effectiveness monitoring, the status of water bodies subsequent to the development and implementation of each TMDL. The timing of this monitoring will be dependent upon the pollution parameters addressed in the TMDL, the period after which positive results should be identifiable, and the availability of resources. Effectiveness monitoring priorities will be selected by each regional office and verified through the annual scoping process.

As noted in the Organizational Responsibilities Section of this DIP, Clark County and Clark Public Utilities, jointly, are monitoring water quality in the Salmon Creek Watershed. Ecology, using their data will conduct the Effectiveness Monitoring Plan.

In order to be thorough in accomplishing this task, monitoring personnel will follow a review sequence. The sequence will include consultations with the original TMDL modeler to determine critical parts of the implementation plan and to verify critical locations. They will also contact the regional office TMDL coordinator to learn the results of implementation monitoring and the status of the TMDL implementation plan. Both monitoring and regional staff will make an effort to identify a local partnership to assist with the actual data collection. On completion of these steps, an examination of the resulting data will be made, and a water quality status determination will be announced for the water body in an advisory memorandum or technical report.

Adaptive Management

Evaluation of water quality monitoring data and status reports from each organization responsible for achieving reductions in fecal coliform will be required annually toward the goal of meeting water quality standards as soon as funding will allow. The evaluation criteria and possible outcomes are summarized below:

- State I: Both water quality and implementation goals are met, no change in scheduled activities is needed.
- State II: Ambient water quality goals are not being met, but implementation goals are being met: the immediate response will be to accelerate implementation activities. If after three subsequent years, accelerated implementation proves insufficient to meet water quality goals, additional control measures will be developed and implemented.
- State III: Ambient water quality goals are being met, but implementation goals are not being met; implementation will be accelerated to meet implementation goals by the next year. This is consistent with the goal of meeting water quality standards as soon as possible.

- State IV: Neither ambient water quality nor implementation goals are being met; an accelerated implementation schedule or additional control measures will be required. Decisions will be made based on results of source identification monitoring.

The annual water quality goals are based on a decrease in the geometric mean of fecal coliform density. Due to significant variations in fecal coliform densities and in environmental conditions at a given point in time, Ecology believes implementation activities should continue, even when annual targets are met.

Ecology will convene an annual meeting (early spring) of the partners identified in this DIP to review progress in achieving action items, and to review water quality data from the previous field season (if available). The purpose of this meeting will be to review activities, check to see that annual goals are being met or exceeded, and if not, to make changes to the plan as required to meet water quality standards. Progress in meeting action items will be documented using the checklists found in Appendix A. Efforts will be made to convey water quality data gathered by the partners for incorporation into Ecology's Information Management System. This will allow all data to be available to the public via a Web Page.

Enforcement

The Water Pollution Control Act (Chapter 90.48 RCW) provides broad authority to issue permits and regulations for all discharges to water. The act openly declares that it is the policy of the state to maintain the highest possible standards to ensure the purity of all waters of the state and to require the use of all known, available, and reasonable means to prevent and control water pollution. The act defines waters of the state and pollution and authorizes the Department of Ecology to control and prevent pollution, to make and enforce rules, including water quality standards. The act also designates Ecology as the state water pollution control agency for all the purposes of the federal Clean Water Act.

Reasonable Assurances

The EPA requires some assurances that TMDL implementation measures will actually occur. To that end, responsible parties, regulatory authorities, detailed implementation measures and schedules, and funding mechanisms must be identified. To provide this assurance, this DIP specifically details the people, actions, timelines, and funding to accomplish the stated goals. While it must be acknowledged that Ecology is authorized under Chapter 90.48 RCW to impose strict requirements or issue enforcement actions to achieve compliance with state water quality standards, it is the goal of all participants in the Salmon Creek TMDL process to achieve clean water through voluntary control actions.

Local involvement in restoring Salmon Creek is considerable. The following list is a summary of actions currently under way or scheduled to occur soon. This list is based on the detailed information in Table 7.

- If on-site septic systems (OSS) failures are identified, the owners will be referred to CCHD. CCHD will implement the provisions of their OSS program.
- Clark Public Utilities will continue stream restoration measures such as tree planting and public education.
- Clark Public Utility has contracted with the Corps of Engineers to conduct a Limiting Factors Analysis in conjunction with the Conservation Commission. This plan was completed in 2003. It provides some assistance in setting priorities for stream restoration projects.
- The LCFRB has received a grant from Ecology to carry out the watershed planning authorized by RCW 90.82. This law established the watershed planning process including water quantity, quality, habitat, and in-stream flow issues. The Planning Unit is currently preparing a draft plan for public review. Following completion of that process in December 2005, the plan will go to the respective County Commissioners for adoption.
- Clark County will continue to implement their stormwater program as required by their Phase 1 Stormwater Permit under NPDES.
- Clark Conservation District will continue to implement their small farm outreach program.

Public Involvement

For the past three years, Ecology has been holding individual meetings with all the local and federal governments listed as organizations in the Management, Roles, Activities, and Schedules Section of this document. These meetings have provided these partners with a good understanding of what is required to improve water quality in Salmon Creek. The Salmon-Washougal and Lewis River Watershed Planning Unit has provided considerable assistance in developing an understanding among all the members of the work that is needed to carry out this Water Cleanup Plan. The Unit consists of representatives of local governments, public interest organizations and federal agencies. A draft of this document was provided to all interested parties in late 2004 and comments were incorporated.

Funding Opportunities

All of the partners are concerned that funding will not be available to meet the commitments made in this document. This is a realistic concern and will need to be addressed on a year-to-year basis at the annual evaluation meeting that Ecology will convene each year to assess results.

The following is a brief summary of possible funding sources beyond the general fund sources of the partners.

Centennial Clean Water Fund/Clean Water Act Section 319 Nonpoint Source Fund/Washington State Water Pollution Control Revolving Loan Fund. These three funding sources are managed by Ecology through one combined application program. Funds are available to public entities as grants or low-interest loans. Grants require a 25 percent match. They may be used to provide education/outreach, technical assistance for specific water quality projects, or as seed money to establish various kinds of water quality related programs or program components. Grant funds may not be used for capital improvements on private property. However, riparian fencing, riparian re-vegetation, and alternative stock water are grant eligible.

Low-interest loans are available to public entities for all the above uses. They have also been used as “pass-through money” to provide low-interest loans to homeowners for agricultural best management practices. Loan money can be used for a wide range of improvements on private property, for instance:

Conservation Reserve Enhancement Program. This program provides incentives to restore and improve salmon and steelhead habitat on private land. This is a voluntary program to establish forested buffers along streams where streamside habitat is a significant limiting factor for salmonids. In addition to providing habitat, the buffers improve water quality and increase stream stability. Land enrolled in the Conservation Reserve Enhancement Program is removed from production and grazing under 10-15 year contracts. In return, landowners receive annual rental, incentives, maintenance, and cost-share payments. The annual payments can equal 100 percent of the weighted average soil rental rate (incentive is 110 percent in areas designated by Growth Management Act).

Conservation Reserve Program. This is a voluntary program that offers annual rental payments, incentive payments for certain activities, and cost-share assistance to establish approved cover on eligible cropland. Assistance is available in an amount equal to not more than 50 percent of the participant’s costs in establishing approved practices; contract duration between 10-15 years. The Conservation Reserve Program is administered through the Clark Conservation District.

Environmental Quality Incentives Program. This federally funded program is administered by the U.S. Natural Resources Conservation Service. This program:

- Provides technical assistance, cost share payments, and incentive payments to assist crop and livestock producers with environmental and conservation improvements on the farm.
- Provides \$5.8 billion over the next 6 years (nationally).
- Allows 75 percent cost sharing but allows 90 percent if producer is a limited resource or beginning farmer or rancher.
- Distributes program funding 60 percent for livestock-related practices, 40 percent for cropland.
- Supports contracts that are 1 to 10 years in duration.
- Sets no annual payment limitation; sum not to exceed \$450,000 per individual or entity.

Forestry Riparian Easement Program. This voluntary program is administered through the Washington State Department of Natural Resources Small Forest Landowner Office. The easement program acknowledges the importance of small landowners and their contribution to protect wildlife habitat. The intent of the program is to help small forest landowners keep their land in forestry. The Forestry Riparian Easement Program (FREP) partially compensates landowners for not cutting or removing qualifying timber under a 50-year easement. The landowner still owns the property and retains full access, but has “leased” the trees and their associated riparian function to the state. Requirements for FREP include:

- Land is owned individually or as part of a partnership, corporation, or other nongovernmental legal entity.
- Parcels consist of: a) more than 20 continuous acres, or b.) a parcel of less than 20 acres can be considered as part of a total ownership of multiple parcels in Washington State that together total more than 80 acres.
- Timber is next to a river, stream, lake, pond, or wetland that is proposed for harvest.
- The landowner has not harvested an average of more than 2 million board feet of timber each year for all land in ownership.
- The state has access to the property by foot or vehicle.
- There are no hazardous substances on the property.

2514 Planning Unit for Water Resource Inventory Area (WRIA) 27/28. Through this planning process, citizens and agencies are evaluating and making recommendations for the water resources in WRIA 28. Implementation funding was provided by the last session of the Washington legislature for various purposes, including some funds for water quality related projects.

Riparian Open Space Program. This is a voluntary program administered by the Washington State Department of Natural Resources (DNR) to acquire (through purchase or donation) an interest in lands within unconfined avulsing channel migration zones (CMZs). The DNR may acquire the fee interest of the CMZ land or a permanent conservation easement over such lands.

Wetland Reserve Program. This is a voluntary program to restore and protect wetlands on private property (including farmland that has become a wetland as a result of flooding). Landowners can receive financial incentives to enhance wetlands in exchange for retiring marginal agricultural land. Landowner limits future use of the land, but retains ownership, controls access, and may lease the land for undeveloped recreational activities and possibly other compatible uses.

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Appendix A

Schedules and Tracking

Schedules and Tracking

In an attempt to predict and project future successes in the Salmon Creek watershed, the following tables contain elements that take a conservative estimate of implementation that is reasonably expected to occur during the life of the TMDL (2005-2020), based on planning and funding sources that have been identified at the time this document was completed. Much of the “goal” column has been left unfilled in several tables as future funding sources are unknown; these columns should be filled in over time, as plans develop and funds are located.

Additionally, note that all projections for voluntary stewardship actions are dependent on availability of appropriate funding to complete implementation at the level estimated; should, in a given year, all funding for any type of voluntary implementation become unavailable after reasonable efforts have been made to secure such funding, then that type of voluntary implementation may be considered unavailable for that year. Changes to this plan will occur after an annual review conducted by Ecology and the partners as identified in the section on organizational responsibilities.

Table A-1: Clark Conservation District Workshops

Year	Number of Workshops Held		Percent Achievement
	Goal	Result	
2005	4		
2006	4		
2007	4		
2008	4		
2009	4		
2010	4		
2011	4		
2012	4		
2013	4		
2014	4		
2015	4		
2016	4		
2017	4		
2018	4		
2019	4		
2020	4		

Table A-2: Clark Conservation District Farm Planning

Year	Number of Farm Plans Completed		Percent Achievement
	Goal	Result	
2005	15		
2006	15		
2007	15		
2008	15		
2009	15		
2010	15		
2011	15		
2012	15		
2013	15		
2014	15		
2015	15		
2016	15		
2017	15		
2018	15		
2019	15		
2020	15		

Table A-3: Clark County Education Output

Year	Number of Landowners Reached		Percent Achievement
	Goal	Result	
2005	5000		
2006	5000		
2007	5000		
2008	5000		
2009	5000		
2010	5000		
2011	5000		
2012	5000		
2013	5000		
2014	5000		
2015	5000		
2016	5000		
2017	5000		
2018	5000		
2019	5000		
2020	5000		

Table A-4. Clark County Illicit Stormwater Discharges

Year	Number of discharges stopped		Percent Achievement
	Goal	Result	
2005	12		
2006	12		
2007	12		
2008	12		
2009	12		
2010	12		
2011	12		
2012	12		
2013	12		
2014	12		
2015	12		
2016	12		
2017	12		
2018	12		
2019	12		
2020	12		

Table A-5. Clark Public Utilities Monitoring Data Collection Reports

Year	Monitoring Reports		Percent Achievement
	Goal	Result	
2005	1		
2006	1		
2007	1		
2008	1		
2009	1		
2010	1		
2011	1		
2012	1		
2013	1		
2014	1		
2015	1		
2016	1		
2017	1		
2018	1		
2019	1		
2020	1		

Table A-6: Clark Public Utilities Stream Restoration

Year	Stream Restoration Projects		Percent Achievement
	Goal	Result	
2005	20		
2006	20		
2007	20		
2008	20		
2009	20		
2010	20		
2011	20		
2012	20		
2013	20		
2014	20		
2015	20		
2016	20		
2017	20		
2018	20		
2019	20		
2020	20		

Table A-7: Clark County Health Department Septic Tank Renovation

Year	Number of Septic Tanks Renovated		Percent Achievement
	Goal	Result	
2005	30		
2006	30		
2007	30		
2008	30		
2009	30		
2010	30		
2011	30		
2012	30		
2013	30		
2014	30		
2015	30		
2016	30		
2017	30		
2018	30		
2019	30		
2020	30		

Table A-8. Ecology Adaptive Management Meetings

Year	Number of Meetings Held		Percent Achievement
	Goal	Result	
2005	1		
2006	1		
2007	1		
2008	1		
2009	1		
2010	1		
2011	1		
2012	1		
2013	1		
2014	1		
2015	1		
2016	1		
2017	1		
2018	1		
2019	1		
2020	1		

Appendix B

Memorandum of Agreement

APPENDIX B

MEMORANDUM OF AGREEMENT
Between the
SOUTHWEST WASHINGTON HEALTH DISTRICT
And the
WASHINGTON STATE DEPARTMENT OF ECOLOGY
To
IMPLEMENT PROVISIONS OF THE GIBBONS CREEK AND SALMON CREEK TMDLS
FOR
MEETING RESPONSIBILITIES UNDER THE FEDERAL CLEAN WATER ACT

This Memorandum of Agreement (MOA) is entered into by and between the Southwest Washington Health District (hereinafter referred to as the SWWHD) and the Washington State Department of Ecology (hereinafter referred to as Ecology). This MOA represents the intention to implement a plan for identification and control of sources of fecal coliform bacteria from residential on-site septic systems in the Gibbons Creek and Salmon Creek Watersheds in Clark County, Washington. The SWWHD and Ecology agree that this MOA is the formal agreement for execution of the implementation plans identified in the Gibbons Creek and Salmon Creek Total Maximum Daily Loads (TMDLs) as submitted to the federal Environmental Protection Agency (July 2000), and is a priority within their organizations. Timely implementation will prevent duplication of effort and provide coordination to meet Federal Clean Water Act (CWA), state Water Pollution Control Act, and State Health Act and the Washington Administrative Codes and the goals of both agencies.

PURPOSE

The purposes of this MOA are to:

1. Define the scope of work and roles and responsibilities of the respective agencies in identifying and controlling sources of fecal coliform bacteria from residential on-site septic systems in the Gibbons Creek and Salmon Creek Watersheds.
2. Attain joint Ecology and SWWHD commitment to the responsibilities to be performed by each agency to accomplish water quality protection, management, and restoration in the Gibbons Creek and Salmon Creek Watersheds.
3. Encourage and enhance communication, coordination and working relationships between Ecology and the SWWHD.

AUTHORITIES

The U.S. Environmental Protection Agency (EPA) delegated implementation of the CWA to the states. In the State of Washington, Chapter 90.48 Revised Code of Washington (RCW) gives Ecology authority and responsibility to protect and manage water quality.

Section 303(d) of the CWA lists water bodies and outlines a program for addressing water body segments having limitations on their quality that preclude them from meeting or exceeding standards designated for beneficial uses. Both Gibbons Creek and Salmon Creek fail to meet water quality standards for fecal coliform bacteria. Ecology is the lead agency for development of Total Maximum Daily Loads (TMDLs) for 303(d) listed waterbodies. Ecology has developed TMDLs for fecal coliform bacteria for the Gibbons

Creek and Salmon Creek Watersheds. Those TMDLs identify failing septic systems as a likely source of fecal coliform bacteria found in the watersheds.

The Southwest Washington Health District is delegated authority to implement Washington Administrative Code 246-272, the On-Site Sewage System Rules and Regulations of the State Board of Health. Implementation of this program is likely to result in the reduction of failing septic systems in the Gibbons Creek and Salmon Creek watersheds.

EXISTING POLICIES AND DIRECTION

Ecology and the SWWHD recognize the need to address failing septic systems to reduce impacts to water resources and restore beneficial uses of water bodies in Washington State. It is current policy of the agencies to gain compliance through education and technical assistance. Both agencies take a cooperative approach to achieving this goal, yet maintain the right and ability to enforce applicable laws governing the discharge of polluting matter and proper maintenance and repair of septic systems.

SOUTHWEST WASHINGTON HEALTH DISTRICT RESPONSIBILITIES

The SWWHD will conduct the following activities as part of this agreement:

1. Mail maintenance notices to all property owners within each watershed that may have septic systems. Notices shall be sent within one year.
2. Process maintenance reports.
3. Develop and maintain an updated database of septic system locations, conditions and ownership.
4. Provide educational and technical assistance to septic system owners as appropriate.
5. Take appropriate corrective action to remedy instances where failing septic systems are identified and require septic system maintenance, repair or replacement as necessary.
6. Notify Ecology when water quality problems are noted.
7. Assist with presentations to the public and meetings or information sessions.
8. Provide a quarterly progress report and provide an annual report summarizing results.

ECOLOGY RESPONSIBILITIES

Ecology will conduct the following activities as part of this agreement:

1. Define the watersheds' boundaries.
2. Provide map(s) of tax lots within the watershed boundaries.

3. Provide listing of tax or parcel number, owner and address for those tax lots. Items 1-3 shall be completed by March 31, 2001.
4. Assist with presentations to the public and meetings or information sessions.
5. Review quarterly and annual reports.

Ecology reserves all of its authority to enforce state and federal laws concerning water quality, and nothing in this MOA shall be construed to limit that authority. Should SWWHD's efforts fail to gain compliance and correct failing septic systems, Ecology may use appropriate enforcement mechanisms under state and/or federal law to require compliance with water quality laws. This authority includes, but is not limited to, agency orders issued pursuant to RCW 90.48, and injunctive or other court-ordered relief, including penalties.

ADMINISTRATIVE

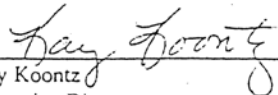
1. This MOA shall go into effect upon signing by both parties. This MOA will remain in effect unless replaced by another MOA, terminated by mutual written consent of the parties, or canceled by 30 days' written notice from one party to the other party.
2. This MOA may be periodically revised, updated, or refined as necessary, by mutual written agreement by both the SWWHD and Ecology.
3. Both agencies are committed to acquiring the resources necessary to implement this MOA. Nothing in this MOA shall be construed to obligate either party to payment of money in excess of appropriations authorized by law and administratively available for the work. However, nothing in this MOA shall be construed as an agreement by either agency that lack of appropriations or funding excuses the other agency from compliance with any requirements of state or federal law.
4. Nothing in this MOA detracts from obligations of any other MOA by either agency.
5. This MOA does not constitute an explicit or implicit agreement by Ecology or SWWHD to subject itself to the jurisdiction of any state or federal court. Nor shall this MOA be construed as creating any right or benefit, substantive or procedural, enforceable at law or in equity, by any person or entity against Ecology or SWWHD. This MOA shall not be construed to create any right to judicial review involving the compliance or noncompliance of Ecology or SWWHD with this MOA.

We the undersigned officials responsible for implementing this MOA hereby commit the necessary resources to the extent possible to effectively implement all aspects of this MOA.

We understand that successful implementation of the MOA will: 1) satisfy state and federal nonpoint source pollution control requirements; 2) contribute to water quality protection in the Gibbons Creek and Salmon Creek Watersheds; 3) will constitute the basis for successful implementation of the Gibbons Creek and Salmon Creek TMDLs, and 4) serve as a model for similar programs or activities within the agencies' overlapping jurisdictions as well as other areas in Washington State.

This Memorandum of Agreement shall take effect immediately upon signing. All undesignated timeframes will begin as of the date of signing.

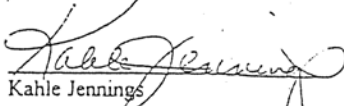
SOUTHWEST WASHINGTON HEALTH
DISTRICT



Kay Koontz
Executive Director

Date: 11-21-00

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY



Kahle Jennings
Acting Southwest Region Manager
Water Quality Program

Date: November 8, 2000