

REPORTING WATERSHED IMPROVEMENT

Based on Statistical Evidence of Watershed-wide Improvement (Option 2a)

Chehalis River Basin, Washington

May 2011

Watershed Identification

a	Organization	Washington Department of Ecology, Southwest Region
b	Point of Contact	David Rountry, Water Cleanup Lead Phone: 360-407-6276 E-mail: drou461@ECY.WA.GOV
c	Project Title	"Reducing fecal coliform bacteria levels in the Chehalis River watershed, Washington"

Description of 2002 Baseline Condition

d	Watershed(s)	<p>Data show that, in 30 HUC-12 watersheds within Water Resource Inventory Areas (WRIAs) 22 and 23, one or more of the impairment causes identified in 2002 are eligible for removal for at least 40 percent of the impaired water bodies.</p> <p>In WRIA 22 (Lower Chehalis River): 171001040304, 171001040402, 171001040405, 171001040406, 171001040407, 171001050302</p> <p>In WRIA 23 (Upper Chehalis River): 171001030102, 171001030103, 171001030104, 171001030105, 171001030106, 171001030107, 171001030108, 171001030109, 171001030110, 171001030111, 171001030206, 171001030305, 171001030401, 171001030402, 171001030404, 171001030405, 171001030407, 171001030501, 171001030503, 171001030504, 171001030505, 171001030507, 171001030508, 171001030511</p>
e	2002 Impairments	<p>The Chehalis River watershed has been the subject of several water quality studies since 1990. Monitoring showed that many segments within the Chehalis River watershed failed to meet water quality standards for fecal coliform and were declared impaired as of 2002 (see list of Chehalis River-related TMDL assessment documents in section i, below). Washington did not create an official impaired waters list in 2002 (the state issued a list in 1998 and 2004). Therefore, the waters declared impaired as of 2002 (and consequently listed on the 2004 impaired waters list) are considered valid for this submission. Specific fecal coliform impairments listings in the 30 restored HUC-12 watersheds identified in section d, above, as well as other impaired segments within the Chehalis Basin, may be viewed in Attachment A.</p> <p>Numerous waterbodies in the Chehalis River are also impaired for temperature and dissolved oxygen (see Attachment A and</p>

www.ecy.wa.gov/programs/wq/tmdl/ChehalisRvrTMDLSummary.html for more information).

f Map (optional)

See Attachments A and B

Evidence of Watershed Approach

g Area of Effort

Watershed restoration efforts took place throughout the 2,600-square-mile Chehalis River Basin, which discharges into Grays Harbor in southwest Washington.

h Stakeholders Involved and Their Roles

- **Chehalis Basin Partnership (CBP):** Volunteer organization of citizens, cities, tribes, counties, and other local organizations—works on Chehalis Basin water resource issues.
- **Natural Resources Conservation Service (NRCS):** Works with landowners to implement agricultural and riparian BMPs.
- **County Conservation Districts:** Works with landowners to implement agricultural and riparian BMPs.
- **County Health Departments:** Manages upgrades and replacements to leaking or failing septic systems.
- **Cities of Chehalis, Centralia, and Aberdeen:** Monitors stormwater and implements stormwater controls
- **Chehalis Tribe:** Monitors on-site septic systems on the reservation, implements agricultural and riparian BMPs, and conducts some water quality monitoring
- **Grays Harbor Community College:** Provides venue for public participation processes.
- **Washington Department of Agriculture:** Oversees all dairy operations and administers the Dairy Nutrient Management Act (DNMA).
- **Washington State Department of Health:** Helps homeowners maintain their on-site septic systems properly. Offers local programs for education/outreach, financial assistance, or enforcement. Conducts pollution source surveys for shellfish protection.
- **Washington Department of Ecology:** Collects data, provides technical and financial assistance. Oversees non-dairy livestock-related water quality compliance.

More detailed roles for each stakeholder can be found in the watershed plans cited in section j (below).

i Watershed Plan

Partners in the Chehalis River watershed have been addressing pollution on a watershed level for almost three decades. Previous watershed-based planning efforts include:

(1) Watershed Planning Documents

- The Chehalis Basin Salmon Habitat Restoration and Preservation Work Plan for WRIAs 22/23, (2008): www.co.grays-harbor.wa.us/info/pub_svcs/ChehalisBasin/Docs/WRIA20080922-23.pdf

- Chehalis Basin Detailed Implementation Plan (2007): www.co.grays-harbor.wa.us/info/pub_svcs/ChehalisBasin/PhaseIV/index.htm
- Chehalis Basin Watershed Management Plan (2002): www.co.grays-harbor.wa.us/info/pub_svcs/ChehalisBasin/Index.html
- Chehalis Watershed Monitoring Plan and Quality Assurance Project Plan Framework (2003): www.chehalisbasinpartnership.org/technical/monitoring/l1_p2_watershed_monitoring_plan_qapp_12-31-03.pdf
- Chehalis Best Management Practices Evaluation Project: Final Report for Water Quality Sites (2002): www.ecy.wa.gov/pubs/0203015.pdf
- Chehalis Basin Level I Assessment (2000): www.co.grays-harbor.wa.us/info/pub_svcs/ChehalisBasin/PhaseI
- Chehalis Best Management Practices Evaluation Project, 1996-97 Annual Report (1997): www.ecy.wa.gov/biblio/97305.html
- Upper Chehalis Watershed Initial Assessment (1995): www.ecy.wa.gov/biblio/95003.html
- Upper Chehalis Watershed Assessment Summary (1995): www.ecy.wa.gov/biblio/95150.html
- Multiple additional tributary-specific assessment and planning documents: www.ecy.wa.gov/biblio/wria23.html

(2) TMDL Documents:

- The Chehalis/Grays Harbor Watershed Dissolved Oxygen, Temperature, and Fecal Coliform Bacteria TMDL—Detailed Implementation (Cleanup) Plan (2004): www.ecy.wa.gov/biblio/0410065.html
- Upper Chehalis River Fecal Coliform Bacteria Total Maximum Daily Load Recommendations (2004): www.ecy.wa.gov/biblio/0403004.html
- Upper Chehalis River Fecal Coliform Bacteria Total Maximum Daily Load, Submittal Report (2004): www.ecy.wa.gov/biblio/0410041.html
- Grays Harbor/Chehalis Watershed Fecal Coliform Bacteria Total Maximum Daily Load Submittal Report (2001): www.ecy.wa.gov/pubs/0110025.pdf
- Grays Harbor Fecal Coliform Total Maximum Daily Load Study (2000): www.ecy.wa.gov/biblio/0003020.html
- Black River Wet Season Nonpoint Source Total Maximum Daily Load Study (1994): www.ecy.wa.gov/biblio/94104.html
- Upper Chehalis River Dry Season Total Maximum Daily Load Study (1994): www.ecy.wa.gov/biblio/94126.html

j Restoration Work

Complying with a 1998 statewide law, all watershed dairy farmers have developed and implemented nutrient management plans. Additional Chehalis River clean-up efforts have been underway since the early 1990s. Stakeholders have implemented numerous BMPs throughout the watershed, including planting riparian buffers, adding livestock exclusion fencing and alternative water sources, replacing and repairing septic systems, adopting nutrient management plans, building manure containment structures, restoring wetlands, controlling stormwater runoff, and educating landowners and the general public about water quality issues. See Attachment A for more details.

Evidence of Watershed-wide Improvement

k	Impairments Removed (if applicable)	<p>In 30 HUC-12 watersheds, data show that one or more of the impairment causes identified in 2002 are removed for at least 40 percent of the impaired water bodies in 2012.</p> <p>Two bacteria impairments have been removed to date (Listing IDs 7736 and 16755 were removed from the impaired waters list in 2008 for bacteria after data from Ecology's Ambient Monitoring Program showed compliance with bacteria water quality standards).</p> <p>Data collected from 2006 through 2009 as part of a large water quality study indicate that another 76 waterbodies <u>would have been eligible for removal</u> from the Washington's 2010 list of impaired waters for bacteria impairments. However, the state of Washington limited its 2010 water quality assessment to marine waters. Therefore, Washington expects to delist these waterbodies in 2012.</p>
l	Statistical Results	<p>Ecology's monitoring efforts throughout the Chehalis River watershed show that water quality has improved significantly. The original baseline and subsequent verification sampling data met the state's highest QA/QC levels (level 5). Each study followed prescribed QA/QC plans and the results are reported in Ecology's online Environmental Information Management database (www.ecy.wa.gov/eim).</p> <p>Ecology's 2006-2009 study data show that, in 36 HUC-12 Chehalis River basin watersheds, all previously impaired waters now meet applicable water quality standards for bacteria and will be proposed for removal from the impaired waters list in 2012 (or have already been removed). In 30 of these HUC-12 watersheds, one or more of the impairment causes identified in 2002 are removed for at least 40 percent of the impaired water bodies. See Attachment A, Table 1 for a complete list of HUC-12 waters, associated impairments and listing IDs, relevant monitoring sites, and percent of impairment causes removed. See Attachment A, Tables 2 for a list of all monitoring sites and associated data showing full compliance. See Attachment B for maps of monitoring site locations. In all cases, water samples now meet applicable water quality standards for bacteria. Compliance status in three HUC-12 watersheds is unknown because no representative follow-up monitoring has been conducted.</p> <p>Please note that because Washington restricted its 2010 water quality assessment report to marine waters only, the Chehalis River watershed segments that now meet standards will be proposed for delisting in 2012.</p>
m	Environmental Significance	<p>Water quality improvements to date indicate that the watershed plans in place have successfully reduced fecal coliform levels throughout the basin. By continuing to implement watershed-based restoration efforts, stakeholders expect to maintain low bacteria levels.</p>
n	Photos/Graphics (optional)	<p>See Attachments A and B</p>

Attachment A

Watershed Restoration Reduces Bacteria Levels and Improves Water Quality in Washington's Chehalis River Watershed

SP-12 Submission Option 2a, Supporting Documentation

1. Background

The Chehalis River drains a 2,660-square-mile watershed in western Washington (Figure 1). The Chehalis River is the second largest river in the state and originates from surface runoff in the Willapa Hills region near the city of Pe Ell and flows downstream to the Grays Harbor Estuary and its confluence with the Pacific Ocean. The Chehalis River Basin drains eight counties (Thurston, Lewis, Pacific, Cowlitz, Mason, Jefferson, Grays Harbor and Wahkiakum) and one tribal reservation (The Confederated Tribes of the Chehalis).

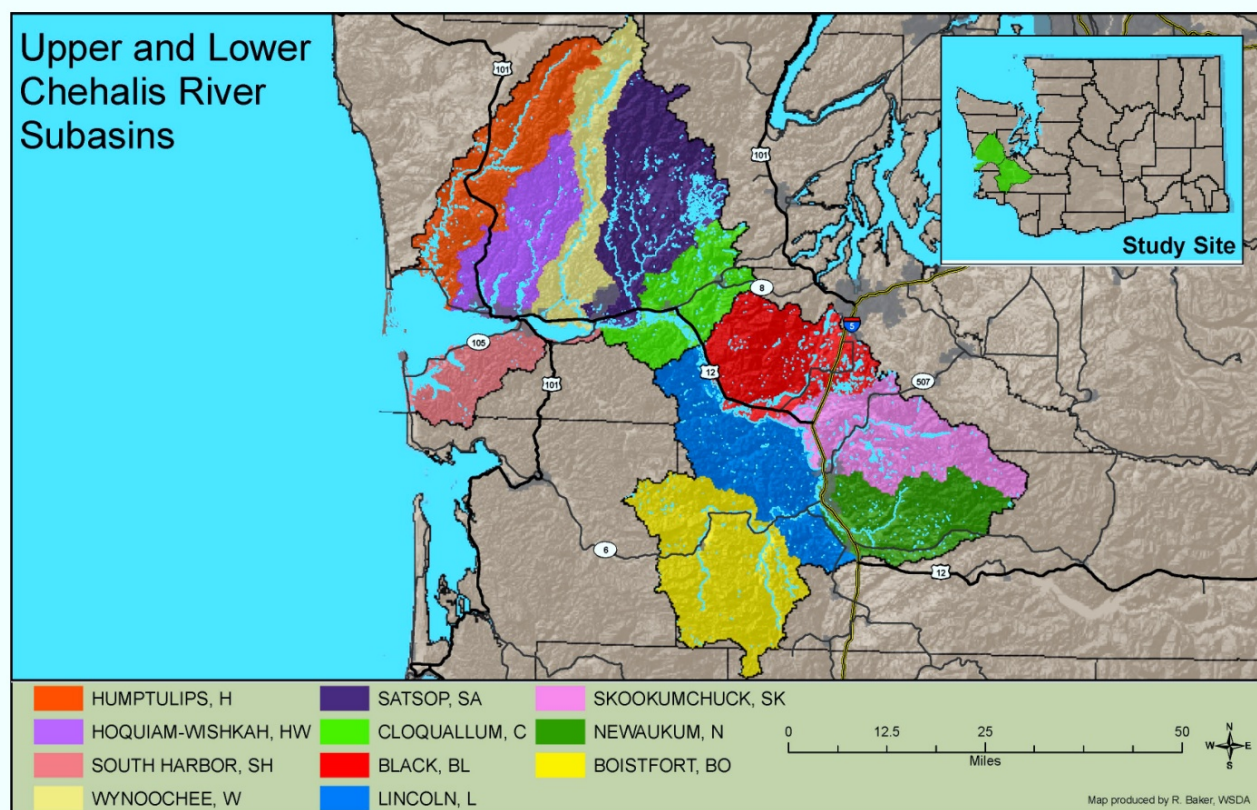


Figure 1. The Chehalis River Basin drains 2,660 square miles in western Washington.

Given its size, the Chehalis Basin is divided for management purposes. The Lower Chehalis River Basin is Watershed Resource Inventory Area 22 (WRIA 22), and the Upper Basin is WRIA 23. Although the Upper and Lower Basins are separated to clarify management objectives, the watershed processes in each Basin are intimately linked. Throughout both the Upper and Lower Chehalis Basins, forestlands

dominate the landscape, representing 85 percent of the total land coverage. These forestlands are primarily owned by private timber corporations, but significant land holdings are owned by the state of Washington or by small forest landowners. The remainder of the land within the basin is comprised of agricultural (9 percent), rangeland (2 percent) and urban land (2 percent).

Values and uses of water resources in the Chehalis Basin are widely varied. Surface and groundwater are the primary water sources for drinking, irrigation and municipal/industrial effluent treatment and dilution in the basin. Waters in the Chehalis River Basin and Grays Harbor estuary also support a variety of important recreation and valuable shellfish and finfish resources.

2. Pollution Problems and Water Quality Impairments as of 2002

Ecology completed a number of TMDL studies in different areas of the Chehalis River watershed beginning in the mid-1990s, including the Upper Chehalis River Fecal Coliform Bacteria Total Maximum Daily Load, Submittal Report (www.ecy.wa.gov/biblio/0410041.html), Grays Harbor/Chehalis Watershed Fecal Coliform Bacteria Total Maximum Daily Load Submittal Report (www.ecy.wa.gov/pubs/0110025.pdf), and the Grays Harbor Fecal Coliform Total Maximum Daily Load Study (www.ecy.wa.gov/biblio/0003020.html). These TMDL reports show that fecal coliform bacteria levels at multiple water quality monitoring sites exceeded the water quality standards for fecal coliform bacteria.

Based on the results of the TMDL reports, Washington added 93 waterbody segments within the upper (65 segments) and lower (28 segments) Chehalis River watershed to CWA section 303(d) list for fecal coliform impairments by 2002 (added in 1996, 1998 or to the proposed 2002 list, which was not finalized until 2004.) The impaired segments fall within 36 HUC-12 watersheds in the Chehalis River Basin, 30 of which show watershed-wide improvement. Numerous segments in the Chehalis River watershed are also impaired for temperature and dissolved oxygen.

3. Restoration Efforts Led to Declines in Bacteria Levels

A comprehensive monitoring network is in place on the Chehalis River (see Attachment B). The Chehalis Basin Partnership initiated a study in 2006 to collect and analyze water samples from 83 sites on a monthly basis for dissolved oxygen, pH, temperature, turbidity and fecal coliform. During 2008, the number of sites was expanded to 94. The objectives of the study were to (1) provide an overall view of water quality in the Basin, including relative condition of streams with regard to the analyzed parameters; (2) identify spatial patterns and temporal trends in water quality; and (3) provide information that can be used to prioritize restoration or conservation actions in the Basin. Ecology maintains another four ambient monitoring sites in the watershed.

Data show that bacteria levels have significantly decreased throughout the Chehalis River watershed since 1998. The original baseline and subsequent verification sampling data met the state's highest QA/QC levels (level 5). Each study followed prescribed QA/QC plans and the results are reported in Ecology's online Environmental Information Management database (www.ecy.wa.gov/eim).

Most Chehalis River Basin waters are designated for primary contact recreation use support. To meet this designation, the applicable fecal coliform bacteria standard requires a geometric mean of less than 100 colonies /100 mL with no more than 10 percent of samples greater than 200 colonies/100 mL. A few waters within the Chehalis River Basin are designated as extraordinary primary contact waters—this is

applied in human contact recreation areas needing extraordinary protection or in tributaries to extraordinary quality shellfish harvesting areas. The extraordinary primary contact water bacteria standard requires a geometric mean of fewer than 50 colonies /100 mL with no more than 10 percent of samples greater than 100 colonies/100 mL. Of all impaired waters addressed by this SP-12 submission, only a few are subject to the extraordinary contact standard (Skookumchuck River, Newaukum River and Rock Creek); all remaining impaired waters considered in this submission are subject to the less stringent primary contact recreation use water quality standard.

Data collected through Ecology's Ambient Monitoring Program (four stations) showed that two impaired segments (#7736 and #16755) complied with the bacteria water quality standards in 2004 and 2005, prompting Ecology to remove the two segments from the impaired waters list in 2008.

A larger, watershed-wide sampling study in 2006-2009 showed that all segments previously impaired for bacteria now consistently meet applicable bacteria water quality standards. Of the 93 waterbody segments originally listed as impaired for bacteria by 2002 (as noted in the 2004 integrated assessment report), data are available showing that at least 78 segments (76 segments plus the two segments that have already been delisted for bacteria) met water quality standards in 2006-2009. Based on this information, these 76 segments would have been eligible for removal from the impaired waters list in 2010. However, Washington limited its 2010 water quality assessment to marine waters. As a result, Ecology will remove the bacteria impairments on these segments in 2012.

The 93 segments listed as impaired for bacteria throughout the Chehalis River Basin are found within 36 separate HUC-12 watersheds. In 30 of these HUC-12 watersheds, most segments are impaired for bacteria (sometimes along with other impairments), so the reduction of bacteria levels allows the watersheds to meet the "one or more of the impairment causes...are removed for at least 40 percent of the impaired water bodies" SP-12 criteria.

Six other HUC-12 watersheds that contain bacteria impairments are not eligible for SP-12 at this time. In three watersheds, follow-up monitoring has not been completed at 15 additional sites that are associated with impaired segments. Based on evidence from elsewhere in the watershed, Ecology believes these impaired segments likely also meet standards. However, because of a lack of recent data, these 15 segments (within three separate HUC-12 watersheds) will remain listed as impaired for bacteria until future monitoring can confirm improvement. In three other HUC-12 watersheds, the segments listed for bacteria now meet bacteria standards; however, a number of additional segments within that same watershed are impaired for elevated temperatures, low dissolved oxygen (DO) levels or invasive species. These additional impairments prevent the three HUC-12 watersheds from meeting the SP-12 criteria at this time. Ecology continues to collect data on the Chehalis River's other impaired parameters, but does not yet have adequate data to identify improving trends.

Table 1 outlines the HUC-12 watersheds that contain bacteria impairments, the impaired segments within each (and links to bacteria listings), and the water quality status of each segment.

**Table 1. Impaired Segments in the Chehalis River Basin Sixth-Field (HUC-12) Watersheds:
Compliance with Bacteria Water Quality Standards**

HUC-12 Watershed Identification Number	Waterbody Name	Listed Impairments (as of 2002) and Listing IDs	Representative Bacteria Monitoring Site(s)	Do Site Data Meet Bacteria ¹ Standards?	Percent of Segments with Impairments Removed
WRIA22					
171001040304	WISHKAH RIVER	Bacteria: 8000	3262, 3263	Yes	1/1=100%
171001040402	WILDCAT CREEK	Bacteria: 6662 Ammonia: 8739 Chlorine: 8738 Temp: 7739 DO: 7740	3393, 3152	Yes	3/5=60%
	WILDCAT CREEK	Bacteria: 6663 DO: 7741	3393, 3152	Yes	
	WILDCAT CREEK	DO: 7743			
	WILDCAT CREEK	DO: 7742			
	WILDCAT CREEK	Bacteria: 6664	3393, 3152	Yes	
171001040405	CHEHALIS RIVER	Bacteria: 9952	3152, 3173	Yes	1/1=100%
171001040406	CHEHALIS RIVER	Bacteria: 9951	3173, 3153	Yes	1/1=100%
171001040407	CENTRAL PARK CREEK	Bacteria: 9948	None	Unknown	1/2=50%
	CHEHALIS RIVER	Bacteria: 7736	Ecology Ambient Station GYS004	Yes, delisted in 2008	
171001050106	HUMPTULIPS RIVER	Bacteria: 9960 Temp: 9482	3268, 3269	Yes	1/10= 10% Does Not Qualify (DNQ)
	HUMPTULIPS RIVER	Temp: 7737			
	HUMPTULIPS RIVER	Temp: 6581 DO: 10966 pH: 8040			
	HUMPTULIPS RIVER, W.F	Temp: 33667			
	HUMPTULIPS RIVER, W.F	Temp: 33668			
	HUMPTULIPS RIVER, W.F	Temp: 33673			
	HUMPTULIPS RIVER, E.F	Temp: 33659			
	HUMPTULIPS RIVER, E.F	Temp: 33660			
	HUMPTULIPS RIVER, E.F	Temp: 33661			
	HUMPTULIPS RIVER, E.F	Temp: 33662			
171001050107	CHENOIS CREEK	Bacteria: 9953	None	Unknown	Unknown
	GRASS CREEK	Bacteria: 9958	None	Unknown	DNQ

171001050301	CAMPBELL CREEK	Bacteria: 9947	None	Unknown	Unknown
	CHAPIN CREEK	Bacteria: 9949	None	Unknown	DNQ
	CHARLEY CREEK	Bacteria: 9950	None	Unknown	
	INDIAN CREEK	Bacteria: 9962	None	Unknown	
	NEWSKAH CREEK	Bacteria: 7992	None	Unknown	
	OLEARY CREEK	Bacteria: 7993	None	Unknown	
	STAFFORD CREEK	Bacteria: 7994	None	Unknown	
171001050302	JOHNS RIVER	Bacteria: 7990	3272	Yes	2/2=100%
	JOHNS RIVER	Bacteria: 9963	3272	Yes	
171001050303	ANDREWS CREEK	Bacteria: 9943	None	Unknown	1/6=Unknown
	ANDREWS CREEK	Bacteria: 9944	None	Unknown	DNQ
	ANDREWS CREEK, W.F.	Bacteria: 7996	None	Unknown	
	BARLOW CREEK	Bacteria: 9945	None	Unknown	
	DEMPSEY CREEK	Bacteria: 9954	3271	Yes	
	ELK RIVER	Bacteria: 9956	None	Unknown	
171001050400	GRAYS HARBOR (INNER)	Bacteria: 15746	Ecology Ambient Station GYS008	Yes	1/42=2%
	GRAYS HARBOR (INNER)	Invasive Species, 7 separate listings			DNQ
	GRAYS HARBOR (INNER)	Dioxin: 8733			
	GRAYS HARBOR (OUTER)	Bacteria: 40590	State DoH Shellfish site #s 27 and 34	Yes	
	GRAYS HARBOR (OUTER)	DO: 10332			
	GRAYS HARBOR (OUTER)	Invasive Species, 31 separate listings			
WRIA23					
171001030102	CHEHALIS RIVER	Bacteria: 10431	1101, 1102	Yes	1/1=100%
171001030103	CHEHALIS RIVER	Bacteria: 10430	1101, 1102	Yes	1/1=100%
171001030104	ELK CREEK	Bacteria: 10427	1102, 1103	Yes	1/1=100%
171001030105	LOST VALLEY CREEK	Bacteria: 14154	1391, 1206, 1205	Yes	3/6=50%
	LOST VALLEY CREEK	Bacteria: 14157	1391, 1206, 1205	Yes	
	LOST VALLEY CREEK	Bacteria: 14158	1391, 1206, 1205	Yes	
	STILLMAN CREEK	Temp: 35393			
	STILLMAN CREEK	Temp: 35394			

	STILLMAN CREEK	Temp: 35395			
171001030106	LAKE CREEK	Bacteria: 14153	1205	Yes	1/1=100%
171001030107	CHEHALIS RIVER, S.F.	Bacteria: 10423 Temp: 7750	1205, 1206, 1104	Yes	2/2=100%
	CHEHALIS RIVER, S.F.	Bacteria: 16761 DO: 10970	1205, 1206, 1104	Yes	
171001030108	CHEHALIS RIVER	Bacteria: 10429	1102, 1103, 1104	Yes	1/1=100%
171001030109	BUNKER CREEK	Bacteria: 9975	1307, 1308, 1104	Yes	4/4=100%
	BUNKER CREEK	Bacteria: 10422	1307, 1308, 1104	Yes	
	DEEP CREEK	Bacteria: 9978	1306, 1104	Yes	
	DEEP CREEK	Bacteria: 9979	1306, 1104	Yes	
171001030110	STEARNS CREEK	Bacteria: 14151 Temp: 14145 DO: 7780	1309, 1376	Yes	2/2=100%
	STEARNS CREEK	Bacteria: 14152	1376, 1309	Yes	
171001030111	CHEHALIS RIVER (bacteria,))	Bacteria: 16752 Temp: 10685 DO: 10686 Turbidity:15915	1104, 1110, 1112	Yes	1/2=50%
	CHEHALIS RIVER	DO: 5868			
171001030206	NEWAUKUM RIVER	Bacteria: 16758 Temp: 7770	1211, 1213, 1214, 1215	Yes	2/3=67%
	NEWAUKUM RIVER	Temp: 35938			
	NEWAUKUM RIVER	Bacteria: 16759 Temp: 11008	1211, 1213, 1214, 1215	Yes	
171001030305	SKOOKUMCHUCK RIVER	Bacteria: 10402 Temp: 7778	1217, 1181, 2218, 2219, 2277	Yes	1/1=100%
171001030401	COAL CREEK	Bacteria: 10408 DO: 7751	1320, 1378	Yes	9/13=69%
	COAL CREEK	Bacteria: 46504	1320, 1378	Yes	
	COAL CREEK	DO: 47765			
	SALZER CREEK	Bacteria: 6668 DO: 7773	1320, 1379, 1181	Yes	
	SALZER CREEK	Bacteria: 10406 Temp: 7772 DO: 7771	1320, 1379, 1181	Yes	
	SALZER CREEK	Bacteria: 10407 DO: 47769	1320, 1379, 1181	Yes	
	SALZER CREEK	Bacteria: 10409	1320, 1379, 1181	Yes	
	SALZER CREEK	Bacteria: 45788 DO: 47749	1320, 1379, 1181	Yes	
	SALZER CREEK	Bacteria: 45789 DO: 47758	1320, 1379, 1181	Yes	

	SALZER CREEK	Bacteria: 46506 DO: 47770	1320, 1379, 1181	Yes	
	SALZER CREEK	Temp: 7774 DO: 7775			
	SALZER CREEK	Temp: 35389			
	SALZER CREEK	DO: 47768			
171001030402	CHEHALIS RIVER	Bacteria: 10417 Temp: 35939 DO: 5867	1110, 1112, 1181	Yes	9/10=90%
	CHEHALIS RIVER	Temp: 5873 DO: 5880			
	BERWICK CREEK	Bacteria: 9966	1181, 1182	Yes	
	BERWICK CREEK	Bacteria: 9971	1181, 1182	Yes	
	BERWICK CREEK	Bacteria: 9972	1181, 1182	Yes	
	BERWICK CREEK	Bacteria: 9973	1181, 1182	Yes	
	DILLENBAUGH CREEK	Bacteria: 6669 Temp: 7755 DO: 7754	1181, 1380	Yes	
	DILLENBAUGH CREEK	Bacteria: 6670 Temp: 7757 DO: 7756	1181, 1380	Yes	
	DILLENBAUGH CREEK	Bacteria: 6671	1181, 1380	Yes	
	DILLENBAUGH CREEK	Bacteria: 6672	1181, 1380	Yes	
171001030403	LINCOLN CREEK	Bacteria: 7769	1327, 1326, 1141, 4143	Yes	2/8=25%
	LINCOLN CREEK	Bacteria: 10399 Temp: 35936 DO: 7762	1327, 1326, 1141, 4143	Yes	DNQ
	LINCOLN CREEK	DO: 7764			
	LINCOLN CREEK	Temp: 7763 DO: 7766			
	LINCOLN CREEK	DO: 7768			
	LINCOLN CREEK, N.F	Temp: 35387			
	LINCOLN CREEK	Temp: 35388			
	SPONENGERGH CREEK	DO: 7768			
171001030404	CHEHALIS RIVER	Bacteria: 16753 Temp: 5874 DO: 5881	1112, 1182, 1140	Yes	1/2=50%
	CHEHALIS RIVER	DO: 7749 Temp: 5875			
171001030405	SCATTER CREEK	Bacteria: 10393 Temp: 7776	2332, 2333, 2334, 1142	Yes	1/1=100%
171001030407	CHEHALIS RIVER	Bacteria: 16755 Temp: 10991 DO: 5865	1141 and Ecology Ambient Station 23A100	Yes, delisted for bacteria in 2008	1/1=100%

171001030501	BLACK RIVER	Bacteria: 6679	2236, 2237	Yes	2/2=100%
	DEMSEY CREEK	Bacteria: 7753 DO: 7752	2236, 2237	Yes	
171001030503	ALLEN CREEK	Bacteria: 8004 DO: 41432	2375, 2236	Yes	5/5=100%
	BEAVER CREEK	Bacteria: 6675	2374, 2375, 2237	Yes	
	BEAVER CREEK	Bacteria: 8006	2374, 2375, 2238	Yes	
	BEAVER CREEK	Bacteria: 9964 DO: 41430	2374, 2375, 2239	Yes	
	BEAVER CREEK	Bacteria: 9965 DO: 41431	2374, 2375, 2236	Yes	
171001030504	MIMA CREEK	Bacteria: 6683	4235, 4144	Yes	1/1=100%
171001030505	BLACK RIVER	Bacteria: 6666 Temp: 7746 DO: 7744	2236, 4235, 4144	Yes	10/10=100%
	BLACK RIVER	Bacteria: 6667 Temp: 35935 DO: 7745	2236, 4235, 4144	Yes	
	BLACK RIVER	Bacteria: 6673	2236, 4235, 4144	Yes	
	BLACK RIVER	Bacteria: 6674	2236, 4235, 4144	Yes	
	BLACK RIVER	Bacteria: 6676	2236, 4235, 4144	Yes	
	BLACK RIVER	Bacteria: 6677	2236, 4235, 4144	Yes	
	BLACK RIVER	Bacteria: 6678 Temp: 11000 DO: 10999	2236, 4235, 4144	Yes	
	BLACK RIVER	Bacteria: 6680	2236, 4235, 4144	Yes	
	BLACK RIVER	Bacteria: 6681	2236, 4235, 4144	Yes	
	LITTLE ROCK DITCH	Bacteria: 6682	2236, 4235, 4144	Yes	
171001030507	ROCK CREEK	Bacteria: 10405 DO: 11617	3392, 3145	Yes	1/1=100%
171001030508	CEDAR CREEK	Bacteria: 10403	3346, 3394	Yes	1/1=100%
171001030511	CHEHALIS RIVER	Bacteria: 9976 Temp: 9497	3145, 3152 (WRIA 22)	Yes	2/4=50%
	CHEHALIS RIVER	Temp: 5877			
	CHEHALIS RIVER	Temp: 5869			
	PORTER CREEK	Bacteria: 10398	3348, 3349, 3145	Yes	

¹ Compliance for parameters other than bacteria is not possible at this time due to insufficient data.

Data source: www.doh.wa.gov/ehp/sf/Pubs/gareports/grays.pdf

Because bacteria levels at all Chehalis River basin monitoring sites meet the applicable water quality standards, Ecology completed additional analyses to assess the relative water quality at each monitoring site. Ecology compared the 2006-2009 bacteria data to the most protective “extraordinary primary contact water” criteria of 50 colonies/100 mL. The results, seen in Table 2, show how few (if any) times bacteria levels exceeded 50 col/100 mL—this highlights the extreme reductions in bacteria levels seen in

the Chehalis River Basin. Ecology and local groups will use this information to help target future water quality improvement work. Attachment B includes maps that show HUC-12 watersheds, impaired segment locations, and the monitoring sites and their degree of compliance with the more conservative 50 colonies/100 mL level.

Table 2. Chehalis River Basin Bacteria Data Compliance with Extraordinary Contact Standards (October 2006 to June 2009)

Site #	Site Location	# of Records	# of Samples Exceeding 50 col/100 mL	Do Site Data Meet Extraordinary Fecal Coliform Standards ¹ ?
WRIA 22				
3152	CHEHALIS R. @ Wakefield Rd.	29	0	Yes
3153	CHEHALIS R. @ Hwy 107	28	1	Yes
3173	CHEHALIS R. @ Keys Rd.	29	0	Yes
3253	WF SATSOP R. @ MF Satsop Rd.	25	0	Yes
3254	SATSOP R. @ Monte Elma Rd.	24	0	Yes
3257	MF SATSOP R. @ Kelly Rd.	24	1	Yes
3259	WYNOOCHEE R. @ Devonshire Rd.	26	0	Yes
3260	WYNOOCHEE R. @ Geisler Rd.	25	0	Yes
3261	WYNOOCHEE R. near Wyn. Lake	18	0	Yes
3262	WISHKAH R. @ Hwy 12	21	1	Yes
3263	WISHKAH R. @ Hoquiam-Wishkah Rd.	23	0	Yes
3264	EF WISHKAH R. @ Wyn-Wishkah Rd.	23	0	Yes
3265	EF HOQUIAM R. @ Youmans Rd.	23	0	Yes
3266	HOQUIAM R. @ E Hoquiam Rd.	24	2	Yes
3267	WF HOQUIAM R. @ Dekay Rd.	28	0	Yes
3268	HUMPTULIPS R. @ Burrows	24	1	Yes
3269	HUMPTULIPS R. @ Newsom	24	0	Yes
3270	HUMPTULIPS R. @ Humpt. Hatchery	24	0	Yes
3271	ELK R. @ Plum St.	23	1	Yes
3272	JOHNS R. @ Boat Launch	26	0	Yes
3287	EF HUMPTULIPS R. @ Forest Rd. 22	16	0	Yes
3288	WF HUMPTULIPS R. @ Forest Rd. 22	15	0	Yes
3289	WF SATSOP R. @ Cougar Smith Rd.	11	0	Yes
3350	CLOQUALLUM CR. @ Hwy 12	27	2	Yes
3384	OCEAN SHORES CR. @ Discov. Ave. SE	12	1	Yes
3390	DELEZENE CR. @ Delezene Cr. Rd.	16	0	Yes
3393	WILDCAT CR. @ Heise Rd.	15	0	Yes
5256	MF SATSOP R. @ MF Satsop Rd.	25	0	Yes
5258	EF SATSOP R. @ Schafer Park	25	0	Yes
5351	CLOQUALLUM CR. @ Cloquallum Rd.	27	1	Yes

WRIA 23				
1101	CHEHALIS R. @ Pe Ell	29	0	Yes
1102	CHEHALIS R. @ Doty	28	0	Yes
1103	CHEHALIS R. @ Rainbow Falls S.P.	26	1	Yes
1104	CHEHALIS R. @ Adna	28	1	Yes
1110	CHEHALIS R. @ Hwy 603 Bridge	29	1	Yes
1112	CHEHALIS R. @ Chehalis	29	0	Yes
1140	CHEHALIS R. @ Galvin Rd.	25	0	Yes
1141	CHEHALIS R. @ Prather Rd.	29	0	Yes
1142	CHEHALIS R. @ Independence Rd.	25	0	Yes
1181	CHEHALIS R. @ Mellen St.	28	0	Yes
1182	CHEHALIS R. @ Borst Park	29	0	Yes
1205	SF CHEHALIS R. near Curtis	28	1	Yes
1206	SF CHEHALIS R. @ Lost Valley Rd.	29	1	Yes
1211	NEWAUKUM R. @ Shorey Rd.	29	3	Yes
1213	NF NEWAUKUM R. @ Tauscher Rd.	28	2	Yes
1214	MF NEWAUKUM R. @ Tauscher Rd.	28	2	Yes
1215	SF NEWAUKUM R. @ Middle Fk. Rd.	28	2	Yes
1216	SF NEWAUKUM R. @ Jorgenson Rd.	28	1	Yes
1217	SKOOKUMCHUCK R. @ mouth	16	0	Yes
1306	DEEP CR. @ Bunker Cr. Rd.	27	1	Yes
1307	BUNKER CR. @ Bunker Cr. Rd.	28	1	Yes
1308	BUNKER CR. @ Ingalls Rd.	24	0	Yes
1309	STEARNS CR. @ Twin Oaks Br.	29	1	Yes
1320	SALZER CR. @ Salzer Cr. Rd.	30	2	Yes
1321	CHINA CR. @ W. Plum St.	30	3	Yes
1322	HANAFORD CR. @ Schaefer Park	30	1	Yes
1323	HANAFORD CR. @ Big Hanaf. Rd. End	30	0	Yes
1324	S. HANAFORD CR. @ Teitzel Rd.	29	0	Yes
1326	LINCOLN CR. @ Lincoln Cr. Rd. Mile 1	25	2	Yes
1327	LINCOLN CR. @ Ingalls Rd.	24	1	Yes
1329	INDEPENDENCE CR. @ Indep. Cr. Rd.	21	0	Yes
1376	STEARNS CR. @ Pleasant Valley Rd.	24	1	Yes
1378	COAL CR. @ Coal Cr. Rd.	26	1	Yes
1379	SALZER CR. @ Alpha Centralia Rd.	28	1	Yes
1380	DILLENBAUGH CR. @ Macomber Rd.	27	1	Yes
1391	STILLMAN CR. @ McDonald Rd.	15	0	Yes
2218	SKOOKUMCHUCK R. @ Tono Rd.	26	2	Yes
2219	SKOOKUMCHUCK R. @ Skook. Rd.	24	1	Yes
2236	BLACK R. @ Littlerock Boat Launch	28	0	Yes
2237	BLACK R. @ 110th Ave.	27	0	Yes
2238	BLACK R. @ Black Lake	28	0	Yes

2277	SKOOKUMCHUCK R. @ Skook Hatchery	27	1	Yes
2325	WADDELL CR.	26	0	Yes
2332	SCATTER CR. @ James Rd.	30	1	Yes
2333	SCATTER CR. @ Case Rd.	8	0	Yes
2334	SCATTER CR. @ Tenino	17	1	Yes
2374	BEAVER CR. @ Hwy 121	24	1	Yes
2375	BEAVER CR. @ Littlerock Rd.	27	0	Yes
2385	SCATTER CR. @ Leitner Rd. SW	12	0	Yes
2386	SCATTER CR. @ Sargent Rd.	15	0	Yes
3145	CHEHALIS R. @ Porter Cr. Rd.	27	2	Yes
3328	INDEPENDENCE CR. @ mouth	23	0	Yes
3330	GARRARD CR. @ mouth	24	2	Yes
3331	GARRARD CR. @ Brooklyn Rd.	27	2	Yes
3346	CEDAR CR. @ Elma Gate Rd.	27	1	Yes
3347	GIBSON CR. @ Hwy 12	26	1	Yes
3348	PORTER CR. @ Hwy 12	27	1	Yes
3349	PORTER CR. @ Porter Cr. Camp Grd.	27	0	Yes
3392	ROCK CR. @ Norton Rd.	15	0	Yes
3394	CEDAR CR. @ Capital Forest Rd.	13	0	Yes
4143	CHEHALIS R. @ Bull Hole	29	1	Yes
4144	CHEHALIS R. @ Sickman Ford Rd.	25	0	Yes
4235	BLACK R. @ mouth	29	0	Yes

¹The extraordinary contact recreation use bacteria water quality standard requires a geometric mean of less than 50 colonies /100 mL with no more than 10 percent greater than 100 colonies/100 mL.

Data Source: D. Rountry, Ecology (2011) and www.chehalisbasinpartnership.org/technical/State-of-the-River%20JAG%2010-11-09.pdf

4. Evidence of Watershed Approach and Widespread Restoration Efforts

Water cleanup activities began in the early 1990s. Types of BMPs that have been implemented include removing livestock from stream areas, implementing dairy waste management plans, restoring riparian areas, and installing erosion control practices. In 2009, Ecology published a summary of financial assistance provided to support water protection efforts within the Chehalis basin. Between 1996 and 2008, project partners received almost \$96 million to address both point (\$91.5 million) and nonpoint source (\$4.3 million) pollution in the Chehalis River Basin. Point source project funding included \$75.5 million in state revolving fund loans and \$16 million in Washington's Clean Water Fund grants for wastewater treatment plant upgrades. Nonpoint source project funding included \$675,000 in CWA section 319 grants; \$2.2 million in Clean Water Fund grants to Thurston, Mason and Lewis County CDs; \$500,000 in Local Toxics Control Account grants (for stormwater improvements); \$400,000 in Aquatic Lands Enhancement Account grants for habitat improvement and vegetation control; and \$502,000 directed by the state Legislature for nonpoint source protection work. Landowners and project sponsors contributed an additional \$1 million toward the projects in cost-share funds.

In 2009, the CBP held a workshop to discuss recent implementation activities in the Chehalis basin. Implementation activities included but were not limited to: completing farm plans, installing riparian fencing and plantings, implementing nutrient management activities, improving septic system

management, acquiring land for perpetual protected status, and improving waste water treatment facilities. Workshop details including a summary of estimated restoration costs are available at ftp://www.ecy.wa.gov/wq/Chehalis_12-Yr_Implementation_Story/index.htm.

The Washington State Dairy Nutrient Management Act (DNMA) legislation was enacted and implemented in April 1998. All dairies in the Chehalis River watershed are now fully implementing farm management plans—these new plans have significantly reduced bacteria discharges to water. The NRCS used federal Environmental Quality Incentive Program (EQIP) funds to help dairy farmers with initial costs of implementing the DNMA requirements. Grants paid for capital improvements such as manure containment and dry-stacking that allows nutrients to be captured and used instead of wasted in runoff to surface water. Carefully timed and controlled rates of livestock nutrient applications have improved forage quality and quantity, improved land/soil health and reduced the need for commercial fertilizer purchases. EQIP Program participants were initially very skeptical of the potential value of the activities brought by the DNMP, but many have effectively applied the program on their farms for financial and ecological profit.

Table 3 outlines specific restoration activities completed by Chehalis River Basin stakeholders through 2008 as part of commitments made under the 2004 Chehalis River Watershed Detailed TMDL Implementation Plan.

Table 3. Chehalis River Basin Stakeholder Implementation Activities

Pollution Source	Responsible Agency	Activities	Funding
Animal-Livestock Waste	NRCS	<ul style="list-style-type: none"> Comprehensive Nutrient Management Plans (CNMP) and Livestock Conservation Plans: Contract participants have implemented 2 CNMP plans, 1 waste storage facility, 1 roof runoff structure with 450 feet of underground outlets, 1 animal mortality facility, 1,451 feet of fence, 2 manure transfer systems, 116 acres of nutrient management, 187 acres of prescribed grazing, 5 acres of livestock use exclusion, 2,500 feet of livestock pipeline and 3 livestock watering troughs. 	Environmental Quality Incentives Program (EQIP): Farm Bill Programs
Agrichemicals	NRCS	<ul style="list-style-type: none"> Cropland Conservation Plans implemented to treat water quality concerns: Contract participants have implemented 100 acres of drainage water management and 1061 acres of pest management. 	EQIP: Farm Bill Programs
Soil Erosion	NRCS	<ul style="list-style-type: none"> Forestry Conservation Plans implemented to treat soil erosion problems for water quality concerns: Forestry contract participants have implemented 16,241 feet of forest roads, seeded and mulched on 15 acres with critical area planting and 135 feet of streambank and shoreline protection. 	EQIP: Farm Bill Programs
Forestry Practices	NRCS	<ul style="list-style-type: none"> Forestry and Wetland Conservation Plans implemented to treat forest health concerns following the blowdown from Dec '07 wind storm, and riparian habitat concerns: Contract participants have implemented 21 acres of Upland wildlife habitat management, 1322 acres of forest stand improvement, 17 acres of forest harvest management, 339 acres of forest slash treatment, 467 acres of tree and shrub establishment, 1185 acres of tree and shrub site preparation, 2010 acres of restoration and management of rare and declining habitats, 371 acres of stream habitat improvement and management 	EQIP, Wetlands Restoration Program (WRP): Farm Bill Programs
Wetland Enhancement and Restoration	NRCS	<ul style="list-style-type: none"> Wetland and Wildlife habitat on agricultural lands Conservation Plans to enhance and/or restore wetland functions: Contract participants installed 10,849 feet of fence, 1805 ft of recreational trail and walkways, 136 acres of wetland enhancement, 1137 acres of wetland restoration, 599 acres of wetland wildlife habitat management, 23 acres of early successional habitat development and management, and 1098 acres of restoration and management of rare and declining habitats. 	WRP, Wildlife Habitat Incentives Program (WHIP): Farm Bill Programs

Table 3. Chehalis River Basin Stakeholder Implementation Activities (Continued)

Pollution Source	Responsible Agency	Activities	Funding
Animal-Livestock Waste	CD and NRCS	<ul style="list-style-type: none"> Farm planning and technical assistance on BMPs: Lewis CD (LCD) implemented 57 Plans (20 without cost-share) on 6,609 acres 	Centennial Clean Water Fund (CCWF)
		Riparian protection: <ul style="list-style-type: none"> Thurston CD: 4 contracts on 27.1 acres, 1.4 miles of shoreline planting. Fencing of 1.8 miles. Grays Harbor CD: 10 contracts on 87.1 acres, 4.3 miles of shoreline planting, 1.35 miles of fencing. LCD: installed 47.44 miles of riparian fence and planting 	Conservation Reserve Enhancement Program (CREP)
		<ul style="list-style-type: none"> BMP workshops to reduce the amount of manure reaching waterways: LCD holds County Fair demos each year and two watershed festivals 	Conservation Commission base funding allotment
	WA Dept. of Agriculture	<ul style="list-style-type: none"> Conduct routine inspection activity with all dairies approximately every 22 months. As of May 1, 2009, all dairies operating in the Chehalis watershed have had routine inspections within the last 12 months. One dairy was identified for additional follow up in summer 2009. No discharges reported. No enforcement actions necessary. Provides technical assistance to comply with water quality rules Takes enforcement when management practices are resulting in a potential to pollute waters of the state or when water quality standards have been violated. 	WA Dept. of Agriculture
	Volunteer, Non-Profit Groups	Actions ongoing in several priority sub-basins: <ul style="list-style-type: none"> Water quality sampling and study by college interns, riparian cover improvements South Fork Chehalis, monitoring, classroom and field education projects, landowner education, Drops-Of-Water monthly newsletter Basin wide sampling, sponsor Student Congress, install riparian and interpretive trail at Centralia Nine properties and 143 Acres of Conservation easements, Reforestation, Litter control at WDFW sites, sponsor of school projects Approximately 3,000 acres of surgeplain management-reforestation Easements for land and habitat protection, noxious plant mgmt. 	CCWF, 319 grants, private foundations
	Support Industries	<ul style="list-style-type: none"> Investigating potential approaches/technologies to reduce sources and delivery of manure to waterways. 	CCWF
	WA Dept. of Ecology	<ul style="list-style-type: none"> Technical assistance and enforcement (agricultural nonpoint sources other than permitted livestock facilities regulated primarily by WA. State Dept. of Agriculture), Water Quality Monitoring, Chehalis BMP Evaluation Project, Ambient Monitoring Program at four stations 	WA Dept. of Ecology, U.S. EPA, U.S.FWS

Table 3. Chehalis River Basin Stakeholder Implementation Activities (Continued)

Pollution Source	Responsible Agency	Activities	Funding
Septic Systems	Grays Harbor County Health	<ul style="list-style-type: none"> County-wide operation and maintenance program: Ongoing, level is dependent on permit fees Investigating commercial septage storage along waterways Conducts windshield surveys to identify high-risk septic systems. Oversees septic repairs: Average of 31 per year Evaluates existing systems: Evaluates an average of 82 systems per year Complete system evaluations for loan reports 	CCWF state loan program (household use), user fees by permittees, county fees
	Lewis County Health	<ul style="list-style-type: none"> Identifies high-risk sites, characterizes failures, problem sources Monitors conditions, offers technical assistance in high-risk sites. Coordinate w/ Lewis Cons. District follows up on high-risk sites. Collaborates w/CD on funding Develops/conducts community education, brokers financial assistance to fix failing systems 	County budget CCWF, 319 state loan
	Thurston County Health	<ul style="list-style-type: none"> Permits installation of new/expanded septic systems, oversees operations and maintenance program, and reviews land-use proposals to protect sensitive areas Thurston County's on-site sewage system (OSS) regulations, Article IV, were amended in 2007 and require regular evaluations. Establishing an on-line system to receive and manage records electronically. Renewable operational certificates are still required for large and complex OSS. Conducts technical assistance for system operators, provides education programs, investigates complaints, and conducts septic surveys in areas of high concern. Conducts 6 to 8 "Septic Sense" workshops each year to teach OSS owners how to properly operate and maintain their systems. These are conducted at locations throughout the county. Operates the "Septic Help Line" where OSS owners can call to receive assistance regarding septic system problems and questions. Maintains a web site (www.co.thurston.wa.us/health/ehoss/index.html) with program information, including workshops, loans and O&M. Investigate 150 to 200 OSS complaints each year. High priority complaints are responded to within one business day. Most complaints are investigated within one week. 	Department of Health (DOH) grant, fees and county funds
	Thurston Co. Health	<ul style="list-style-type: none"> Broker financial assistance to fix failing systems. Offer low interest loans for owners of failing OSS and a grant program that provides up to \$3,000 (depending on the cost of the repair) for owners of failing OSS. 	State Revolving Fund (SRF) and Ecology grants
	Chehalis Tribe, WA. DOH	<ul style="list-style-type: none"> Conduct survey of on-site septic systems on the reservation 	Tribe, state DOH assistance
	Cities of Chehalis and Centralia	<ul style="list-style-type: none"> Adopt stormwater management manual and implement BMPs, Ongoing infrastructure maintenance at both Cities New stormwater program established in 2008 Pilot project in Centralia developed using a \$178,000 grant 	SRF loans CCWF, stormwater grant program

Table 3. Chehalis River Basin Stakeholder Implementation Activities (Continued)

Pollution Source	Responsible Agency	Activities	Funding
Stormwater Management	City of Hoquiam	<ul style="list-style-type: none"> No Actions Have Been Reported 	SRF loans, CCWF
	City of Westport	<ul style="list-style-type: none"> Coordinate w/ GH County on survey of on-site septic sources One failed OSS at trailer park was rebuilt 2007, per GH Co. Health. 	CCWF
	City of Cosmopolis	<ul style="list-style-type: none"> Monitor stormwater for pollution sources and improvements, and coordinate w/GH County on other sources, connect an average of 6 homes/year to city sewer. Converted 92 homes from septic to sewer Installed catch basin filtration on city drains. New developments must build retention/treatment 	CCWF
	City of Aberdeen	<ul style="list-style-type: none"> Monitor stormwater for pollution sources and improvements Expand vector waste program 	City stormwater assessment
GENERAL	Chehalis Tribe And Grays Harbor College	<ul style="list-style-type: none"> Conduct stewardship, restoration, education comprehensive water quality monitoring Grays Harbor College: Fulltime outreach specialist for model watershed program, Oversee comprehensive monitoring, Developing GIS for water quality information management and broad community outreach Chehalis Tribe has an ongoing partnership w/ Gray Harbor College: 95 sites sampled monthly. Acquired \$3M of land, and replanted shorelines. (Enforce zoning of 300 ft on mainstem, 150' on tributaries). Harvest about 1300 pounds noxious aquatic weeds each summer. Seize cattle that repeatedly get into creeks 	Tribal budget, various grants: state water quality and watershed planning funds

Table 3. Chehalis River Basin Stakeholder Implementation Activities (Continued)

Pollution Source	Responsible Agency	Activities	Funding
Permitted Treatment Plants	City of Chehalis	<ul style="list-style-type: none"> New treatment plant completed in 2007, improved treatment for outlying areas. New agreement w/ Darigold to treat their discharge, lowers financial and admin permitting costs for business and agencies. 	SRF loan, 319 grants, User utility fees
	City of Chehalis	<ul style="list-style-type: none"> Plant poplar plantation for economic use of reclaimed wastewater during low-flow river conditions (Land developed, trees planted spring 2004. Irrigation system functional by 2008.) 	SRF Loan, 319 grants, User utility fees
	City of Centralia	<ul style="list-style-type: none"> New treatment plant completed April 2004 Decommissioned a problem overflow at old discharge to river. Acquired farmland enabling reclamation of water/biosolids. Partner w/ others on riparian restoration. 	SRF loan, User utility fees
	West Farm Foods	<ul style="list-style-type: none"> Implement wasteload allocation limits as set by DO TMDL and consent decree. Full achievement of TMDL responsibilities by 2008 Planning for the decommissioning of discharge and connection to Chehalis treatment plant. 	Company budget

Attachment B

Detailed Watershed Maps: Chehalis River Basin

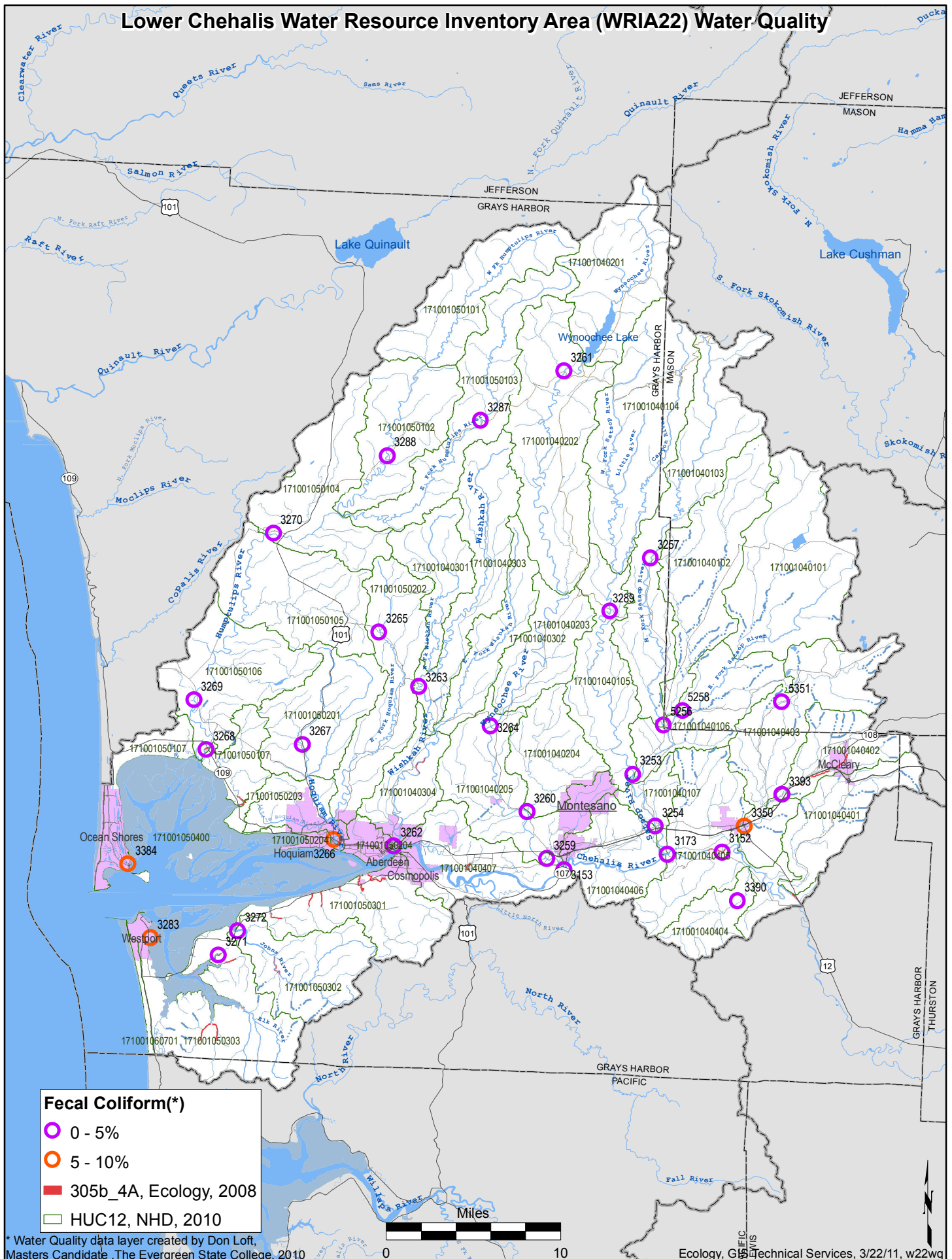
SP-12 Submission Option 2a, Supporting Documentation

Most Chehalis River Basin waters are designated for primary contact recreation use support. To meet this designation, the applicable fecal coliform bacteria standard requires a geometric mean of less than 100 colonies /100 mL with no more than 10 percent of samples greater than 200 colonies/100 mL. A few waters within the Chehalis River Basin are designated as extraordinary primary contact waters—this is applied in human contact recreation areas needing extraordinary protection or in tributaries to extraordinary quality shellfish harvesting areas. The extraordinary primary contact water bacteria standard requires a geometric mean of fewer than 50 colonies /100 mL with no more than 10 percent of samples greater than 100 colonies/100 mL. All but three of the impaired waters addressed by this SP-12 submission are subject to the less stringent primary contact recreation use water quality standard. Three segments (on the Skookumchuck River, Newaukum River and Rock Creek) are subject to the extraordinary primary contact use standard.

The Chehalis Basin Partnership began a study in 2006 to collect and analyze water samples from 83 sites on a monthly basis for dissolved oxygen, pH, temperature, turbidity and fecal coliform. During 2008, the number of sites was expanded to 94. The data show that all sites meet the applicable primary contact recreation use water quality standard for fecal coliform bacteria. In fact, most of the Chehalis sites sampled also meet the most protective “extraordinary primary contact water” criteria of 50 colonies/100 mL.

To assess the relative water quality at each site, Ecology compared the 2006-2009 data to the most protective “extraordinary primary contact water” criteria of 50 colonies/100 mL. The results will help Ecology and local groups target future water quality improvement work. Figures B-1 and B-2 show the Chehalis River Basin’s HUC-12 watersheds, pinpoint the location of impaired segments and monitoring sites, and include colored circles around the monitoring sites to depict the percentage of samples that exceeded 50 colonies/100 mL. (Keep in mind that all sites already meet applicable “primary contact recreation use” water quality criteria. The following maps indicate that most sites achieve considerably lower bacteria levels than that which is required by the applicable water quality standard.) Circles indicate that between 0 and 5 percent (purple circles) or 5 to 10 percent (orange circles) of samples exceeded the most conservative 50 colonies/100 mL level.

Lower Chehalis Water Resource Inventory Area (WRIA22) Water Quality



Upper Chehalis Water Resource Inventory Area (WRIA23) Water Quality

