CONFEDERATED TRIBES OF THE COOS, LOWER UMPQUA, AND SIUSLAW INDIANS

NONPOINT SOURCE POLLUTION ASSESSMENT

31 OCTOBER 2014

VERSION 3.0

DEPARTMENT OF NATURAL RESOURCES
CONFEDERATED TRIBES OF THE
COOS, LOWER UMPQUA, AND SIUSLAW INDIANS
1245 FULTON AVENUE
COOS BAY, OREGON 97420

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31 OCTOBER 2014

NONPOINT SOURCE POLLUTION ASSESSMENT

1.0 INTRODUCTION

The Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians have created this report to undertake a nonpoint assessment of the water quality on its reservation, fee and trust lands. The assessment is meant to identify problems from nonpoint sources and to form the foundation for the nonpoint management plan. The report is intended to guide the Tribes through the process of adhering to the Clean Water Act, As Amended, as well as to ensure the health of members, neighbors and the land. The first version of this assessment was completed in December 2003. The Tribal non-point source pollution assessment is subject to annual review and revision as necessary, but should be revised no less frequently than once every five years.

According to the State of Oregon Department of Environmental Quality and data collected by the Confederated Tribes Department of Natural Resources, much of the tribal land includes or abuts waterways with significant nonpoint pollution. These conditions coupled with an increasing need to manage its resources and maintain active environmental monitoring make the assessment a critical part of the Tribes' overall goals. This document focuses on Tribal owned tracts and identifies the threats facing waterways on or adjacent to tribal lands. From the current situation, this assessment describes the process by which the Tribes will develop their best management practices (BMP), along with the Tribes' proposed use of those BMPs.

The most impactful nonpoint threats to tribal waterways and lands appear to be related to a loss of riparian habitat that would normally keep summer water temperatures lower. In addition, pollution in the form of fecal coliform contamination and low oxygen levels suggests that a comprehensive approach to managing overall land use would benefit water quality. This management will have to include addressing the disposal of human and animal wastes, coupled with control of fertilizer and other chemical use.

1.1 Overview

The work of the Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians to assess the nonpoint pollution threats and problems on tribal land is irrevocably linked to the Federal Clean Water Act. The Act established the parameters and requirements for the control, limitation, and remediation of water pollution. Water pollution was therein considered as resulting from both point and nonpoint sources. Unlike point sources that are relatively easy to location, monitor and control, nonpoint sources - those that are from indistinct, diffuse, and multiple sites - are much more difficult to identify and control.

Despite the difficulties associated with assessing and responding to nonpoint pollution sources, the original enabling legislation for the Clean Water Act did recognize nonpoint pollution as an area of particular concern. The importance of controlling this pollution was noted in the Act: "The national policy (is) that programs for the control of nonpoint sources pollution be developed and implemented in an expeditious (manner) so as to enable the goals of this Act to be met through the control of both point and nonpoint sources of pollution." Consequently, the Federal Government has made funding available to Indian Tribes to qualify for funding to implement nonpoint pollution management activities.

To assist Tribes, the Clean Water Act, as amended, includes section 319, "Nonpoint Source Management Programs," combined with Section 518, which allows up to one-third of one percent of appropriations for Sections 319 (j), (h) and (i), to be set aside for Indian Tribes treated in a manner similar to States. Together these sections constitute the statutory basis for the Tribes to implement nonpoint source programs. In addition, the above noted sections set forth the requirements that all Indian Tribes must meet to qualify for assistance. Section 319 identifies two things that the Tribes must complete to be eligible for Section 319 and Section 518(f) grants to control nonpoint source problems. The first of these requirements is a tribal assessment report and the second is a tribal management program.

This document was originally created, in part, to satisfy the first requirement. According to the Act, the assessment report is intended to provide an analysis of nonpoint source water quality problems. With the foundation created by this document, the management program will respond by identifying the Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians' process for correcting these problems. The Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians have developed the assessment and management plans as separate documents. Nonetheless, the two documents are intended to work together and be a combined firmament for decision-making. This assessment and the associated management plan will also be integrated into the Environmental Plan being developed by the Department of Natural Resources at the suggestion of the EPA and with EPA funding under the Indian General Assistance Program.

1.2 REQUIRED CONTENTS OF INDIAN TRIBES ASSESSMENT REPORT

[1] "Fort Peck Reservation Nonpoint Source Pollution Assessment Report," available at the EPA website: http://www.epa.gov/owow/nps/fortpeck/fprnspar.html (.) The entire section is mostly a direct quote from this source.

Section 319 (a) of the Clean Water Act, As Amended, is very specific in describing what needs to be included in assessment reports:

(a) Indian Tribes Assessment Reports
(1) Contents –Each Indian Tribe shall prepare and submit to the administrator for approval, a report which –

(A) identifies those navigable waters within the Reservation, which, without additional action to control sources of pollution, cannot be reasonably expected to attain or maintain applicable water quality standards or the goals and requirements of this Act;

(B) identifies those categories and subcategories of nonpoint sources or, where appropriate, particular nonpoint sources which add significant pollution to each portion of the navigable waters identified under subparagraph (A) in amounts which contribute to such portions not meeting such water quality standards or such goals and requirements;

(C) describes the process, including intergovernmental coordination, for identifying best management practices and measures to control each category and subcategory of nonpoint sources and where appropriate particular nonpoint sources identified under subparagraph (3) and to reduce to the maximum extent practicable, the level of pollution resulting from such category, subcategory or source; and

(D) identifies and describes Tribal, State and local programs for controlling pollution added from nonpoint sources to, and approving the quality of, each portion of the navigable waters, including but not limited to those programs which are receiving Federal assistance under sections (h) and (i).

The requirements are clear. The report must identify waters on the Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians Reservation, as well as any other trust or fee lands, which cannot or will not meet water quality standards; are not supporting beneficial uses; will not support these uses due to pollution from nonpoint sources; and the types of activities or specific sources which cause these problems. The report must also describe the Tribes' process for identifying best management practices and the programs and sources of funding for controlling nonpoint sources of pollution. The Confederated Tribes will use the State of Oregon Water Quality standards in the reports for assessing impacts to water quality from nonpoint source pollution.

2.0 ASSESSMENT METHODOLOGY

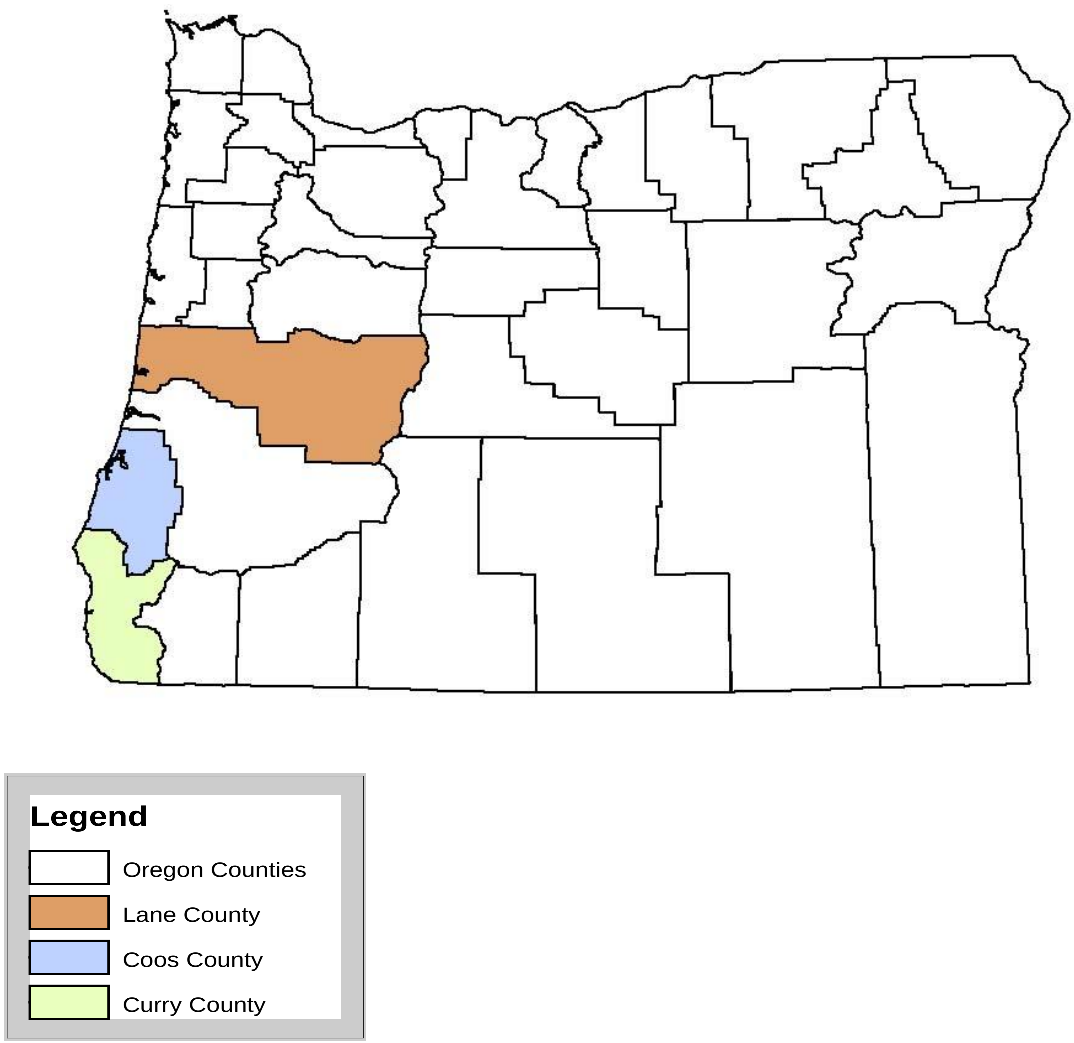
2.1 GENERAL SETTING

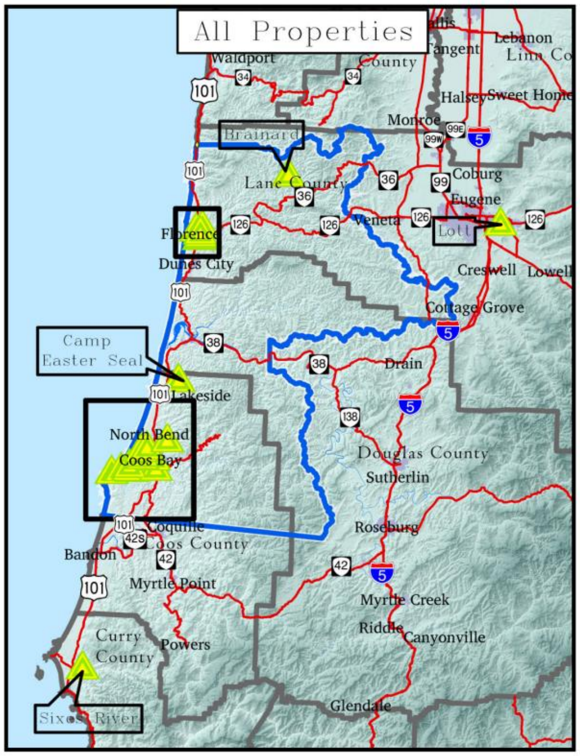
The Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians Ancestral Territory included the central and south-central coast of Oregon. This homeland included the coast, estuaries, tributaries, lakes, and upland forests of the Coos, lower Umpqua Smith, and Siuslaw Rivers, and other coastal tributaries. The Federal Government terminated official recognition of the Tribes in 1954, however, after thirty years of struggle, the federal recognition of the Tribes was restored in 1984. The Tribes today have 1094 members, approximately half of whom live in the Tribes' five-county service area. Today, the Tribes have a total of 530 acres of land, 152 acres of which are in trust and 378 acres of which are in the process of being transferred into trust status. This assessment focuses on the reservation and trust land, as well as the acreage currently being transferred to trust. Additionally, the assessment will provide a basis for examining other lands once they have attained trust status.

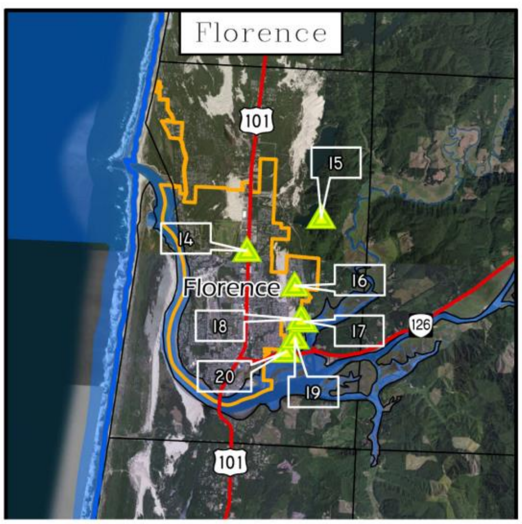
2.1.1 Tribal Reservation, Trust & Fee to Trust Land Holdings

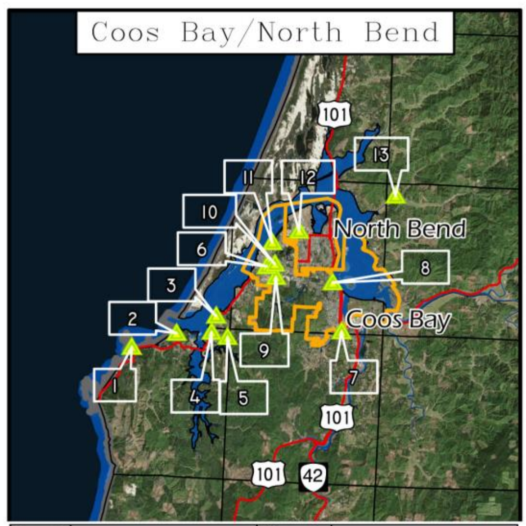
The Tribes hold land in three Oregon counties in a patchwork of unconnected tracts. The holdings are located in Coos, Curry and Lane Counties and consist of mostly wetlands, forestlands, economically and residentially developed lands, and historic sites of cultural significance. Figure one highlights the three Oregon Counties in which the Tribes hold land.

Figure 1. Map of Oregon counties & the three counties in which the Tribes hold land.









Property Index #	Tract	Property Index #	Tract
14	Windward Inn	18	Peterman
15	Munsel Lake	19	Hatch/Casino
16	Dunes Golf Course	20	Duman/Gateway
17	Severy		

Property Index #	Tract	Property Index #	Tract
1	Gregory Point/Chief's Island	8	Alishanee
2	Coos Head	9	Administration Building
3	Milluk Village	10	Tribal Hall Properties
4	Tabernig	11	Pioneer Cemetery/Wulach
5	Eason	12	Qaxas Heights
6	909 Flanagan	13	Kentuck Way
7	KCBY		

Properties of the Confederated Tribes
of the Coos, Lower Umpqua and Siuslaw Indians

CTCLUSI Ancestral Territory — Property — County — Cities — Township and Range — Highway

N W E S

This data is for display purposes only. No liability is assumed as to the data delineated hereon.

M:\ArcMap\Boundary\bnd_d.mxd 10/13/2010

TABLE 1. CONFEDERATED TRIBES OF COOS, LOWER UMPQUA AND SIUSLAW INDIANS LAND

Tract Name	County	Acres	Adjacent Water Body
SIXES RIVER	CURRY	1.25	SIXES RIVER
GREGORY POINT	COOS	24.0	BIG CREEK; PACIFIC OCEAN
KENTUCK SLOUGH	COOS	0.02	KENTUCK SLOUGH
EMPIRE (TRIBAL HALL)	COOS	6.07	N/A
OCEAN BLVD	COOS	0.66	N/A
MELVILLE	COOS	1.83	N/A
EICHLER	COOS	0.33	N/A
1308 NEESE	COOS	0.21	N/A
1325 NEESE	COOS	0.23	N/A
WALLACE/OCEAN	COOS	0.24	N/A
1351 OCEAN BLVD	COOS	0.35	N/A
1415 OCEAN BLVD	COOS	0.32	N/A
FLANAGAN (WUALACH)	COOS	3.32	COOS BAY
909 FLANAGAN	COOS	0.16	N/A
CONNETICUT AVE (QAXAS)	COOS	3.50	N/A
CALIFORNIA AVE (QAXAS)	COOS	0.50	N/A
ELKS	COOS	3.31	N/A
FULTON	COOS	9.77	N/A
MILUK VILLAGE (FOSSIL POINT)	COOS	3.75	COOS BAY
ALISHANEE	COOS	1.43	N/A
FISHER (KCBY)	COOS	2.24	COALBANK SLOUGH
EASON	COOS	18.8	N/A
COOS HEAD	COOS	43.38	COOS BAY; PACIFIC OCEAN
CAMP EASTER SEALS	COOS	14.00	TENMILE LAKE
TABERNIG	COOS	0.12	N/A
WINDWARD	LANE	2.03	N/A
OCEAN DUNES	LANE	135.7	NORTHFORK SIUSLAW RIVER
BRAINARD (DEADWOOD)	LANE	35.59	MISERY CREEK
MUNSEL LAKE & MUNSEL VILLAGE	LANE	120.14	MUNSEL LAKE; MUNSEL CREEK
LOTT	LANE	0.25	N/A
PETERMAN	LANE	0.06	N/A
HATCH (QAAICH)	LANE	97.31	MAINSTEM & N.FORK SIUSLAW R
SEVERY	LANE	0.56	N/A
DUMAN	LANE	1.65	MAINSTEM SIUSLAW RIVER
Total		**530.01**	

The Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians currently have a patchwork of land holdings within Lane, Coos, and Curry counties. Much of this land base is reserved as wetland, forestland, or as historic sites. In Lane County, one holding adjoins the Siuslaw Estuary, and this holding contains small wetland areas and riparian areas. Another Lane County holding is in proximity to this property and includes the majority of a lake and its surrounding uplands. A third Lane County holding consists of a portion of Misery Creek, tributary to Deadwood Creek and the mainstream Siuslaw River. In Curry County, the Tribes hold a sliver of land along the Sixes River. In Coos County, the Tribes hold various small tracts of both reservation and trust lands, some of which have wetland characteristics or border streams. Three holdings border the Coos Estuary, one holding borders the estuary and the Pacific Ocean, and another borders the Pacific Ocean and is in close proximity to Big Creek. Four Tribal tracts are known to border properties on EPA's 2002 303(d) list. Over the past five years, our Tribal land base has increased by half, with much of the new land either bordering the Pacific Ocean creeks, lakes or rivers. Since Restoration of federal recognition, the Tribe has worked to recover a larger portion of our homelands. The Tribes continue to pursue the restoration of a significant acreage of forest land to be established as a Tribal Forest.

The Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians desire to fully develop their environmental management capabilities in order to preserve, protect and enhance the environmental, human health, and cultural values of the Tribes while demonstrating the compatibility of these goals with sustainable economic development of the Tribes' resources. The Tribes have completed and has received approval from EPA for their Quality Assurance Project Plan and are monitoring water quality on the waterways and water bodies within tribal ownership. The active monitoring sites, along with the property locations and 303(d) listings, are listed in Table 2.

TABLE 2. NAME, TYPE, TRACT STATUS, LOCATION AND 303(D) LISTING OF ACTIVE WATER QUALITY MONITORING SITES

Site ID	Tract	Site Type	BIA Tract Status	County	LAT & LONG (NAD 83/WGS 84 DATUM)	ODEQ 303 (d) Listing (source: Water Quality Assessment – Oregon's 2012 Integrated Report Database http://www.deq.state.or.us/wq/assessment/rpt2012/search.asp)
WQE02	Wualach/ Empire Docks	Estuary	Trust	Coos	43° 23' 39.19" N 124° 16' 49.42" W	**Water Body:** Coos River **4th Field HUC Record ID:** COOS 17100304 20478 **LLID River Mile:** Coos Bay 1241999433842 (0 to 7.8) **Parameter:** Fecal Coliform **Season:** Year-round **Prev. Assessment yr**: 2004 **Beneficial Use(s):** Shellfish growing **Status:** Water quality limited, 303(d) listed, TMDL needed. **Water Body:** Coos River **4th Field HUC Record ID:** COOS 17100304 8331 **LLID River Mile:** Coos Bay 1241999433842 (0 to 6.5) **Parameter:** Temperature **Season:** Summer **Prev. Assessment yr**: 2002 **Beneficial Use(s):** Anadromous fish passage; Salmonid fish rearing **Status:** Potential Concern
WQS07	Sixes River	Stream	Reservation	Curry	42° 48' 39.5" N 124° 26' 43.3" W	**Water Body:** Sixes River **4th Field HUC Record ID:** SIXES 17100306 12492 **LLID River Mile:** Sixes River 1245439428541 (4.4 to 29.4) **Parameter:** Dissolved Oxygen **Season:** Oct. 15 to May 15 **Prev. Assessment yr**: 2004 **Beneficial Use(s):** Salmon and steelhead spawning **Status:** Water quality limited, 303(d) listed, TMDL needed. **Water Body:** Sixes River **4th Field HUC Record ID:** SIXES 17100306 24839 **LLID River Mile:** Sixes River 1245439428541 (0 to 30.1) **Parameter:** Dissolved Oxygen **Season:** Year-round **Prev. Assessment yr**: 2010 **Beneficial Use(s):** Cold-water aquatic life **Status:** Water quality limited, 303(d) listed, TMDL needed. **Water Body:** Sixes River **4th Field HUC Record ID:** SIXES 17100306 13346 **LLID River Mile:** Sixes River 1245439428541 0 to 30.1 **Parameter:** Temperature **Season:** Year-round **Prev. Assessment yr**: 2004 **Beneficial Use(s):** Salmon and trout rearing and migration **Status:** Water quality limited, 303(d) list, TMDL needed. **Water Body:** Sixes River **4th Field HUC Record ID:** SIXES 17100306 24838 **LLID River Mile:** Sixes River 1245439428541 (0 to 15.1) **Parameter:** Biological Criteria **Season:** Year-round **Prev. Assessment yr**: 2010 **Beneficial Use(s):** Aquatic Life **Status:** Water quality limited, 303(d) list, TMDL needed **Water Body:** Sixes River **4th Field HUC Record ID:** SIXES 17100306 4921 **LLID River Mile:** Sixes River 1245439428541 (0 to 30.1) **Parameter:** Fecal Coliform **Season:** Summer **Prev. Assessment yr**: 1998 **Beneficial Use(s):** Water contact recreation **Status:** Attaining **Water Body:** Sixes River **4th Field HUC Record ID:** SIXES 17100306 4822 **LLID River Mile:** Sixes River 1245439428541 (0 to 30.1) **Parameter:** pH **Season:** Summer **Prev. Assessment yr**: 1998 **Beneficial Use(s):** Water contact recreation; Salmonid fish spawning; Resident fish & aquatic life; Anadromous fish passage; Salmonid fish rearing **Status:** Attaining some criteria/uses

TABLE 2. CONTINUED

Site ID	Tract	Site Type	BIA Tract Status	County	LAT & LONG (NAD 83/WGS 84 DATUM)	ODEQ 303 (d) Listing (source: Water Quality Assessment – Oregon's 2012 Integrated Report Database http://www.deq.state.or.us/wq/assessment/rpt2012/search.asp)
WQE09	Qaaich/ Cox Island	Estuary	Trust	Lane	43° 58' 27" N 124° 04' 16" W	**Water Body:** Siuslaw River **4th Field HUC Record ID:** SIUSLAW 17100206 12441 **LLID River Mile:** Siuslaw River 1241338440157 (0 to 106) **Parameter:** Dissolved Oxygen **Season:** Year-round **Prev. Assessment yr**: 2004 **Beneficial Use(s):** Cold-water aquatic life **Status:** Insufficient data **Water Body:** Siuslaw River **4th Field HUC Record ID:** SIUSLAW 17100206 21144 **LLID River Mile:** Siuslaw River 1241338440157 (0 to 19.7) **Parameter:** Dissolved Oxygen **Season:** Year-round **Prev. Assessment yr**: 2004 **Beneficial Use(s):** Esruarine water **Status:** Attaining some criteria/uses **Water Body:** Siuslaw River **4th Field HUC Record ID:** SIUSLAW 17100206 2764 **LLID River Mile:** Siuslaw River 1241338440157 (5.7 to 105.9) **Parameter:** Dissolved Oxygen **Season:** Jun. 1- Sep. 14 **Prev. Assessment yr**: 2002 **Beneficial Use(s):** Anadromous fish passage Salmonid fish rearing **Status:** 303(d) **Water Body:** Siuslaw River **4th Field HUC Record ID:** SIUSLAW 17100206 2908 **LLID River Mile:** Siuslaw River 1241338440157 (5.7 to 105.9) **Parameter:** Dissolved Oxygen **Season:** September 15-May 31 **Prev. Assessment yr:** 2002 **Beneficial Use(s):** Salmonid fish spawning **Status:** 303(d) **Water Body:** Siuslaw River **4th Field HUC Record ID:** SIUSLAW 17100206 2753 **LLID River Mile:** Siuslaw River 1241338440157 (5.7 to 105.9) **Parameter:** Fecal Coliform **Season:** FallWinterSpring **Prev. Assessment yr:** 1998 **Beneficial Use(s):** Water contact recreation **Status:** Attaining **Water Body:** Siuslaw River **4th Field HUC Record ID:** SIUSLAW 17100206 2901 **LLID River Mile:** Siuslaw River 1241338440157 (5.7 to 105.9) **Parameter:** Fecal Coliform **Season:** Summer **Prev. Assessment yr:** 1998 **Beneficial Use(s):** Water contact recreation **Status:** Attaining **Water Body:** Siuslaw River **4th Field HUC Record ID:** SIUSLAW 17100206 20315 **LLID River Mile:** Siuslaw River 1241338440157 (5.7 to 105.9) **Parameter:** Fecal Coliform **Season:** Year-round **Prev. Assessment yr:** 2004 **Beneficial Use(s):** Shellfish growing **Status:** Water quality limited, 303(d) listed, TMDL needed **Water Body:** Siuslaw River **4th Field HUC Record ID:** SIUSLAW 17100206 2833 **LLID River Mile:** Siuslaw River 1241338440157 (5.7 to 105.9) **Parameter:** pH **Season:** FallWinterSpring **Prev. Assessment yr:** 2004 **Beneficial Use(s):** Resident fish and aquatic life; Anadromous fish passage; Salmonid fish rearing; Water contact recreation; Salmonid fish spawning **Status:** Attaining some criteria/uses **Water Body:** Siuslaw River **4th Field HUC Record ID:** SIUSLAW 17100206 2900 **LLID River Mile:** Siuslaw River 1241338440157 (5.7 to 105.9) **Parameter:** pH **Season:** Summer **Prev. Assessment yr:** 2004 **Beneficial Use(s):** Water contact recreation; Salmonid fish spawning; Resident fish and aquatic life; Anadromous fish passage; Salmonid fish rearing; **Status:** Attaining some criteria/uses **Water Body:** Siuslaw River **4th Field HUC Record ID:** SIUSLAW 17100206 13310 **LLID River Mile:** Siuslaw River 1241338440157 (0 to 106) **Parameter:** Temperature **Season**: Year-round **Prev. Assessment yr:** 2004 **Beneficial Use(s):** Salmon and trout rearing and migration **Status:** Water quality limited, 303(d) listed, TMDL needed.
WQE10	Wualach /BLM Boat Ramp	Estuary	Trust	Coos	43° 24' 50" N 124° 16' 44" W	**Water Body:** Coos River **4th Field HUC Record ID:** COOS 17100304 20478 **LLID River Mile:** Coos Bay 1241999433842 [0 to 7.8] **Parameter:** Fecal Coliform **Season:** Year-round **Prev. Assessment Yr**: 2004 **Beneficial Use(s):** Shellfish growing **Status:** Water quality limited, 303(d) listed, TMDL needed. **Water Body:** Coos River **4th Field HUC Record ID:** COOS 17100304 8331 **LLID River Mile:** Coos Bay 1241999433842 [0 to 6.5] **Parameter:** Temperature **Season:** Summer **Prev. Assessment Yr**: 2002 **Beneficial Use(s):** Anadromous fish passage; Salmonid fish rearing **Status:** Potential Concern
WQE12	Qaaich	Estuary	Trust	Lane	43° 58' 40" N 124° 04' 48" W	**Water Body:** North Fork Siuslaw River **4th Field HUC Record ID:** SIUSLAW 17100206 13297 **LLID River Mile:** North Fork Siuslaw River 1240795439719 (0 to 27.3) **Parameter:** Temperature **Season**: Year-round **Listed**: 2004 **Beneficial Use(s):** Salmon and trout rearing and migration **Status:** Water quality limited, 303(d) list, TMDL needed.

2.1.2 Nonpoint Source Programs

The Tribes have had a Nonpoint Source Pollution Management Program in place since 2004. This program is charged with implementing the Confederated Tribes Nonpoint Source Pollution Management Plan. The strategy identified in this plan is to engage with stakeholder groups such as watershed associations to advocate for the implementation of projects which will remediate nonpoint sources of pollution which are contributing to the impairment of the waters of the reservation and the beneficial uses of these waters. Currently available funding to operate this program is limited to the $33,333 per year provided by the US EPA. While this base funding provides the Confederated Tribes the support to basically implement the Nonpoint Source Pollution Management Plan and complete periodic review of the Assessment and Plan, it falls far short of what is required to fully meet the Trust responsibility of the federal government to the Tribe and to provide the support necessary to fully implement the Nonpoint Source Pollution Management Plan.

2.2 Problem Statement

The Tribes seek to control and mitigate the effects of nonpoint pollution on their land and waters, as well as on adjacent lands and water. Moreover, the Tribes seek to comply with the objectives and goals of Section 319, which are to improve water quality and restore impaired uses in waters affected by nonpoint source pollution. Significantly, the Tribes seek to not only eliminate or prevent nonpoint source pollution they also desire to restore harmed and affected waters, so that they will be suitable to all potential uses.

According to the EPA[2], Nonpoint Source Pollution is caused by diffused sources that are not regulated as point sources and normally is associated with agricultural, silvicultural and urban runoff, runoff from construction activities, etc. Such pollution results in the human-made or human-induced alteration of the chemical, physical, biological, and radiological integrity of water. In practical terms, nonpoint source pollution does not result from a discharge at a specific, single location (such as single pipe) but generally results from land runoff, precipitation, atmospheric deposition or percolation. Pollution from nonpoint sources occurs when the rate at which pollutant materials entering water courses or the ground water exceeds natural levels.

The EPA provides a clear definition of nonpoint source pollution. That definition is related to process and emphasizes results, rather than specific source. “Nonpoint Source Pollution (NPS) occurs when water runs over the land or through the ground, picks up pollutants, and deposits them in surface waters or introduces them into the groundwater.”[3]

2.2.1 CONTRIBUTORS TO NONPOINT SOURCE POLLUTION

As part of this assessment, the Confederated Tribes have gathered the existing information regarding nonpoint source pollution. The information comes from the Oregon Department of Environmental Quality. Table 3 below contains the assembled information.

Table 3 is helpful in identifying the challenges and areas of concern, however, it is important to understand that the Tribes have a widely dispersed pattern of relatively small ownerships. Unlike other tribes with large tracts of contiguous land and in cases significant parts of watersheds, the Confederated Tribes are minority owners on almost every waterway, with the exception of the Munsel Lake shoreline. Moreover, the impacts of pollution in the table are expressed as they affect miles of stream, estuary shoreline and acres of lake. Missing from this is a relative analysis of each problem in relationship to each other.

TABLE 3. SUMMARY OF SOURCE CATEGORIES

Tract/Location	Pollutant: Season	Potential Sources
Qaaich (Hatch) / North Fork and Mainstem Siuslaw River	*North Fork Siuslaw River* Temperature: Year-round Sedimentation: Undefined Season	Riparian Degradation, Storm-water Runoff, Agricultural Activities, Failing Septic Systems, Urban Development
	Mainstem Siuslaw River Dissolved Oxygen: Jun. 1st - Sep. 14th and Sep.15th - May 31st. Fecal Coliform: Year-round Temperature: Year-round	
Munsel /Munsel Lake & Creek	No Listing	N/A
Miluk Village (Empire Cemetery)/ Coos Bay	Fecal Coliform: Year-round pH: Year-round Sedimentation: Undefined Season	Riparian Degradation, Storm-water Runoff, Agricultural Activities, Failing Septic Systems, Urban Development
Kentuck/ Kentuck Slough	Fecal Coliform: Year-round Dissolved Oxygen: Year-round	Riparian Degradation, Storm-water Runoff, Agricultural Activities, Failing Septic Systems, Urban Development
Fisher (KCBY) / Coalbank Slough	Fecal Coliform: Year-round Temperature: Oct.1st – May 31st & Summer	Riparian Degradation, Storm-water Runoff, Agricultural Activities, Failing Septic Systems, Urban Development
Sixes River/ Sixes River	Temperature: Year-round Dissolved Oxygen: Year-round Biological Criteria: Year-round Fecal Coliform: Year-round pH: Year-round	Slope Destabilization, Riparian Degradation, Agricultural Activities

TABLE 3. SUMMARY OF SOURCE CATEGORIES – CONTINUED

Coos Head/ Coos Bay & Pacific Ocean	Fecal Coliform: Year-round pH: Year-round Sedimentation: Undefined Season	Storm-water Runoff, Urban Development
Baldich (Gregory Point)/ Big Creek & Pacific Ocean	pH: Summer Temperature: Year-round Dissolved Oxygen: Undefined	Storm-water Runoff, Urban Development
Wualatch (Flanagan Pioneer Cemetery)/ Coos Bay	Fecal Coliform: Year-round pH: Year-round Sedimentation: Undefined Season	Riparian Degradation, Storm-water Runoff, Agricultural Activities, Failing Septic Systems, Urban Development
Camp Easter Seals/ TenMile Lake	pH: Summer Dissolved Oxygen: Year-round Temperature: Undefined	Storm-water Runoff, Agricultural Activities, Failing Septic Systems, Urban Development
Ocean Dunes/ North Fork of Siuslaw River	Temperature: Year-round Sedimentation: Undefined Season	Riparian Degradation, Storm-water Runoff, Agricultural Activities, Failing Septic Systems, Urban Development
Brainard (Deadwood)/ Misery Creek	No listing	N/A
Duman/ Mainstem of Siuslaw River	Dissolved Oxygen: Jun. 1st - Sep. 14th and Sep.15th - May 31st. Fecal Coliform: Year-round Temperature: Year-round	Riparian Degradation, Storm-water Runoff, Agricultural Activities, Failing Septic Systems, Urban Development

2.2.2 Method for Conducting Nonpoint Source Assessment

This assessment relies on the guidance of the EPA. For its part, the EPA notes that the assessment is case specific and that no two assessments or places are the same. Consequently, this document relies on a range of data, sampling sources, experts, agencies and sources. The EPA's guidance is quoted in the Fort Peck Nonpoint Source Pollution Assessment Report as follows:

"[There are] two levels of assessment reflecting conclusions based on ambient monitoring data and conclusions based on other information. One level is "monitored" waters in which the assessment is based on current site-specific ambient data. The other level is "evaluated" waters in which the assessment is based on information other than current site-specific ambient data, such as data on sources of pollution, predictive modeling, fishery surveys, and ambient data which is older than five years. In the NPS area, best professional judgment and various evaluation techniques will play an important role."

Using the EPA distinction between "monitored" (M) assessments and "evaluated" (E), the Tribe will assess their parcels of land in Section 3. The significance of the EPA guidelines for the Confederated Tribes is that it announces the Tribes' need to be collaborative and comprehensive in its assessment. In particular, it means that the Tribes need to draw on all available data and sources. From that point the Tribes must analyze the data into a "best fit" model that accounts for variation, sampling methods, omissions and most importantly, changing conditions. Indeed the objective of the assessment is to produce an understanding of the nonpoint source pollution problems that is as sophisticated and helpful as possible, while retaining flexibility of response and understanding the limits of the methodology. The assessment must be a guide for policy makers and the management plan, not a controlled experiment without any margin for error. The assessment is therefore conducted in good faith with support from partners and the tribal members who all recognize a problem and the need to address nonpoint source pollution.

2.3. Goals and Objectives

The goal of this process is assess nonpoint source inputs to waters of the reservation which impair or are likely to impair the quality of the water and interfere with the beneficial uses of these waters, and to identify alternate management practices and to implement measures to reverse the impairments. The objective of this process is to identify specific water bodies in Tribal holdings which are impaired and to the extent possible identify the processes contributing to the impairments. Meeting this objective is a necessary step in reversing the impairments. The Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians consider the beneficial use of water as those defined and which are protected by adopted law by the Tribes, by the State of Oregon, and by the Federal Government when appropriate. The beneficial uses include the state's classifications and water quality standards. If conditions exceed the state maximum standards, this assessment presumes that beneficial uses are impaired.

2.4 ASSESSMENT PROCESS

As noted above, this assessment of the Confederated Tribes relies on data and analysis from many sources. These sources include reports generated by the Confederated Tribes, State and Federal Government reports, Watershed Associations, and individuals knowledgeable about local water quality conditions. Included in this list are water quality management plans, water quality assessment (303d) reports, and watershed assessments prepared by watershed associations and State and Federal agencies. Included also are the Confederated Tribes' Water Quality Monitoring Strategy, Quality Assurance Project Plan (QAAP), Unified Watershed Assessment; and annual Water Quality Data Summaries for the Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians Reservation. Finally, the assessment also uses and relies on the professional judgment of water quality and land management professionals.

In 2004, he Confederated Tribes initiated independent sampling of waterways or land of and pertaining to the reservation. This sampling has confirmed Oregon Department of Environmental Quality (ODEQ) for data and preliminary analysis.
As per the EPA approved QAPP, the Confederated Tribes sample, test and document six core water quality parameters for estuarine sites. These parameters include pH, dissolved oxygen, temperature, turbidity, salinity, and conductivity. For stream sites, staff will not collect data on water salinity. Bacteria and nutrients are also sampled, and where applicable, the Tribes also complete habitat assessments and macroinvertebrate sampling. These six parameters have helped to establish a better understanding of possible water quality impairments. The Tribes understand this basis is not comprehensive. Indeed, the sampling regimen is not designed or intended to answer all questions regarding water quality conditions on Tribal properties, but instead it will provide important baseline data that will help direct future efforts and strategies necessary to monitor changes in water quality condition. This monitoring helps identify areas of water quality concern on Tribal properties and provides direction for future water quality improvement projects.
Groundwater is monitored at two tracts. At the Hatch Tract, ambient groundwater is monitored. Parameters monitored include conductivity, nutrients, and bacteria. Groundwater on the upgradient and entering the property is monitored, as is groundwater downgradient and leaving the property immediately adjacent to the North Fork Siuslaw River. At the Coos Head Tract, ambient and impacted groundwater is being monitored by the Air National Guard under the supervision of the Confederated Tribes as part of thea ssessment and remediation of contaminants of concern at known and suspected areas of concern which are a legacy of past use by the US Navy and Air National Guard of this tract.

The methods employed within this project are structured to provide an initial understanding of the Tribe's water resources. For any parameter or any additional parameters that stand out as areas of concern, more comprehensive methods, sampling frequency, and sampling duration may be developed to acquire a more detailed understanding for the parameter in question.

As part of the Tribal Water Quality Monitoring Strategy and this document, the Tribes assessed thirty-two parcels of reservation and trust land, including seven waterways. The monitoring sites are delineated above, and include freshwater streams, a lake, and estuary waters. Several of the seven assessed water bodies have identifiable nonpoint source pollution problems. Based on these findings, the Tribes plan to continue to use other agencies data, along with their own evaluation methods and techniques. These techniques include on-site monitoring devices, fish and wildlife surveys, public comments and observations, and comparison of current conditions with the information contained in the Oral History and Traditional Knowledge of the Tribes.

As the Tribal personnel gather data, the information will be entered into the Tribe's GIS database that tracks each body of water. As the Tribes gain land, or more data is available, the Tribes will be able to compare individual reaches of a stream or estuary to compare water quality. This information will help the Tribes establish management practices and interventions to maximize the quality of the water and the health of the ecosystem. The data will also facilitate tribal reporting of conditions and cooperation with other regulatory bodies and stakeholders. Date is also summarized in annual Water Quality Data Summaries.

As the Tribes gather data and compare that which they gather themselves with state and federal data, it is essential to have a standard against which they can measure the water quality. Indeed, many pollutants may occur rarely, if at all, in the tribal watersheds. Moreover, the Tribes to date have not had the time or resources to promulgate extensive, unique standards and some pollutants do not have absolute standards, but instead are relative measures. To determine when beneficial uses are impaired and when water quality crises exist, the Tribes will use a water quality matrix to make these decisions. The matrices in Tables 4 and 5 include the standards as established by the Oregon Department of Environmental Quality.

Significantly, the standards elaborated below are a starting point for the Tribes and their assessment activities. The EPA is in the process of revising many of its standards, as is the State of Oregon. If state and EPA standards conflict, the Tribes use and adhere to EPA standards. Therefore, the data and standards in Tables 4 and 5, is undergoing review and the thresholds will be altered as the EPA promulgates its standards.

SEE <u>APPENDIX A</u> FOR STATE OF OREGON WATER QUALITY CRITERIA FOR TOXIC POLLUTANTS

Table 4. Surface Water Quality Standards Protective of Beneficial Uses in Tribal Waters

Parameter	Criteria	Beneficial Use
Fecal Coliform	Fecal coliform median of 14 organisms per 100 ml; no more than 10% > 43 organisms per 100 ml	Shellfish growing
e.coli	Freshwaters and Estuarine Waters: 126 E. coli/100 ml (30-day log mean—minimum 5 samples) 406 E. coli/100 ml (no single sample can exceed the criteria)	Water contact recreation
enterococcus	No more than 158 colony forming units (158 MPN) per 100 milliliters of marine water	Water contact recreation
Dissolved Oxygen	ODEQ Spawning Standard: not less than 11 mg/l ODEQ Cold Water Standard: not less than 8.0 mg/l ODEQ Estuarine Standard: not less than 6.5 mg/l	Salmonid fish spawning, Anadromous fish passage, Salmonid fish rearing
Water Temperature	Estuarine and Fresh Water: 18 □C	salmon and trout rearing and migration
pH	Estuarine and Fresh Water: 6.5 - 8.5	Resident fish and aquatic life, Salmonid fish rearing, Salmonid fish spawning, Anadromous fish passage
Nutrients	Total Phosphorus Indicator: 0.05 mg/l Total Nitrate Indicator: 0.30 mg/l	Aesthetics
Turbidity	5 NTU Low Flow; 50 NTU High Flow	Aesthetics, Resident fish and aquatic life, Water Supply
Sedimentation (tribes do not measure current criteria	The formation of appreciable bottom sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life and the impact to the beneficial use of resident fish and aquatic life.	Resident fish and aquatic life, Salmonid fish rearing, Salmonid fish spawning

3.0 RESULTS AND DISCUSSION

The objective of this assessment by the Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians is to characterize impairments to the quality of Tribally held waters as step towards remediating any sources on Tribally held lands of those impairments while working with other landowners and managers in the watersheds to address water quality impairments. The relatively young Environmental Program of the Confederated Tribes, and the relatively small slivers of widely dispersed land holdings, lead to the reliance on general observations of the factors present on Tribal holdings which may or may not be contributing to water quality impairment, and lead to the reliance on secondary sources of information regarding water quality in the watershed from sources such as the Oregon Department of Environmental Quality, Portland State University, and various watershed assessments. Evaluation and best professional judgment applied to the physical and biological conditions of these slivers for the most part reflect the conditions which dominate the portions of the watersheds in which the Tribal holdings are located, or reflect the processes conditions in the larger watershed outside of the Tribal slivers, justifying reliance on these secondary sources of information and evaluations based on best professional judgment. Surface water quality and impairments, especially impairments which adversely affect beneficial uses (especially salmonid production) are the issues which drive water quality monitoring throughout most of the Oregon Coast. Thus little or no attention has been paid to monitoring ground water quality in the vicinity of Tribal holdings and, with the possible exception of the Munsel Lake, ground water quality is unlikely to be an issue. Ultimately, assessing the water quality and nonpoint sources of pollution in major coastal Oregon watersheds will be a collaborative effort with each stakeholder contributing according to their ability and priorities.

3.1 REPORTING FORMAT

The assessment information in the tables below are broken down by watershed, sub-basin, tract name, location, county, name of water body or stream, known pollution or problem, extent of the problem, and source if known. In addition to water quality data, the Tribes have worked to make use of biological data as well. Using resources from NOAA Fisheries and the Oregon Department of Fish and Wildlife, the tables below include relevant data on threatened or endangered species and other species of concern.

3.2 WATERS IMPACTED BY NONPOINT SOURCES

3.2.1 COOS WATERSHED

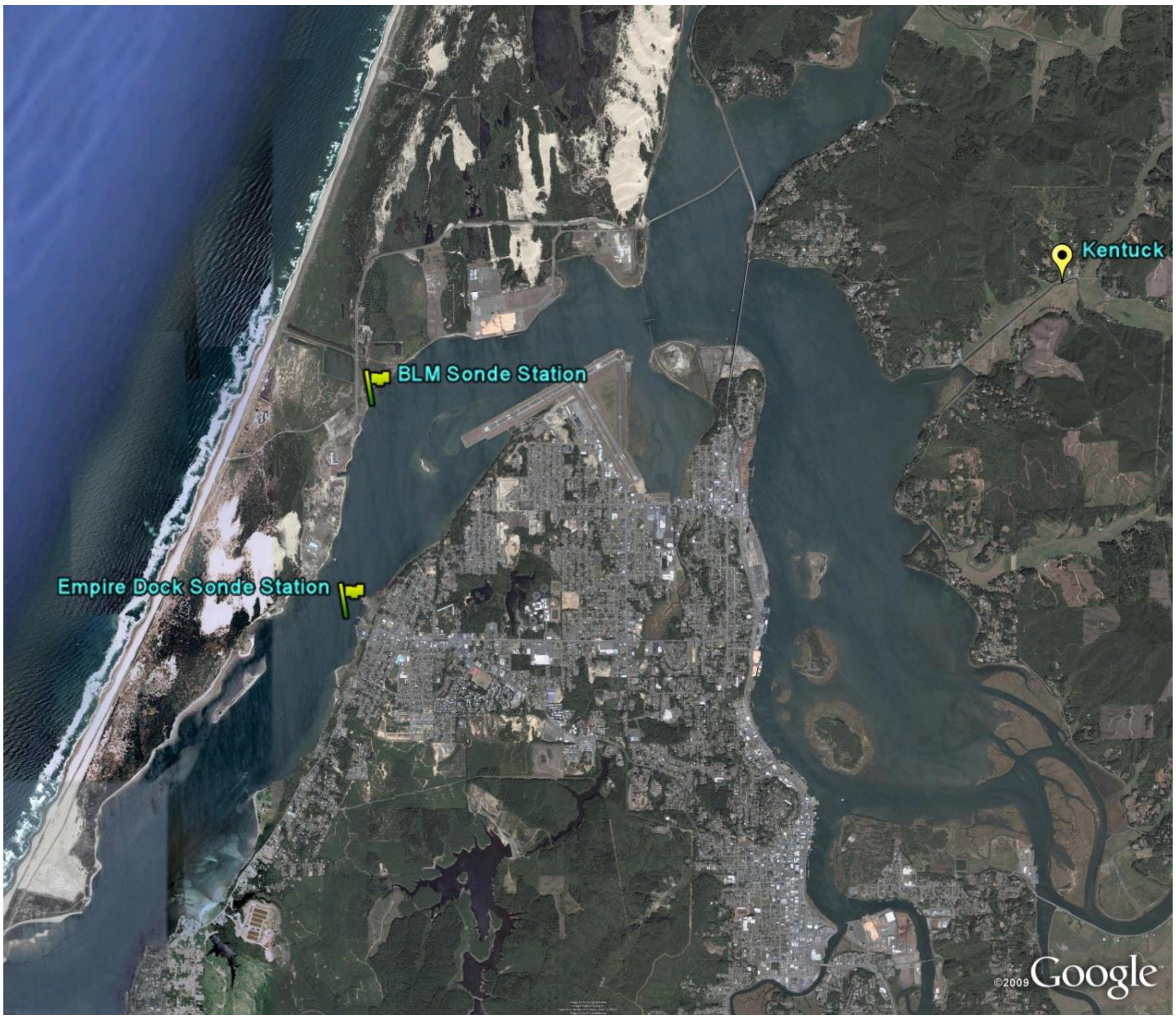
The Coos Watershed has since time immemorial held great cultural significance for the Tribes and provided for the Tribes' subsistence. Among the sites held by the Tribes that adjoin or are crossed by a waterway, the Coos watershed and in particular the Coos Estuary contains four.

The Coos River headwaters in the Oregon Coast Range and flows into the Pacific Ocean near Coos Bay, Oregon. Land use in the Coos Watershed varies as much as any estuary in Oregon. Two cities, multiple communities, and the Oregon International Port of Coos Bay are located on the Coos Estuary: these contribute a wide variety of nonpoint source pollutants including automobile oil, refuse, sewage, and pesticides, much of this input coming from storm-water runoff. Most of the watershed is devoted to forestry. Other activities in the watershed include the fishing industry and other maritime commerce, manufacturing, and ranching. According to the Oregon Department of Environmental Quality, major nonpoint pollution issues include elevated temperature, turbidity and fecal coliform levels, and depressed dissolved oxygen levels.

The water quality in several portions of the Coos Watershed is impaired or is of potential concern, according to the ODEQ 303(d) list. Impairments in headwater tributaries include elevated temperature and depressed dissolved oxygen, while impairments in the estuary include fecal coliform. (Potential concerns include sedimentation and, near industrial sites, synthetic hydrocarbons and heavy metals.)

The 2001 BLM South Fork Coos [River] Watershed Analysis states that removal of vegetation along headwater tributaries, in particular the narrower tributaries, is the main anthropogenic contributor to elevated steam temperatures under recent or current forest management practices. The 2003 Oregon Department of Forestry Elliott State Forest Watershed Analysis indicates that insufficient instream structure to retain bedload can also contribute to elevated temperature as a result of the lost potential for water to cool as it flows subsurface. Elevated temperature, along with elevated biological oxygen demand, can contribute to depressed dissolved oxygen levels. Impairments in the estuary and estuarine tributaries including Tribally held tracts include fecal coliform. The 2001 Lower Pony Creek Watershed Committee Watershed Assessment and Potential Action Plan indicates wildlife and domestic animals as being the most likely primary nonpoint source of fecal coliform in this lower Coos Estuary tributary, with septic systems being a potential contributor. Sewage treatment pump station and plant discharges are point sources are known to episodically affect Pony Creek and the mainstem of the estuary, but such discharges would by considerably diluted before reaching any of the impaired Tribal tracts. No additional formal watershed assessment have been completed which are available and pertinent to the impairments of the Tribal tracts. Evaluation and best professional judgment, including close familiarity with the Kentuck Slough and Coalbank Slough watersheds, point in the direction of livestock as the primary source for fecal coliform in these waterbodies, with wildlife also contributing and septic systems potentially contributing. Tribal land uses of the Kentuck Slough Tract (undeveloped and naturally vegetated) and the Coalbank Slough Tract (mostly saltmarsh with an old television station built atop a small area of fill and surrounded by a naturally vegetated dike) are unlikely to be contributing to the impairment by fecal coliform. Similarly, the two other Tribal tracts bordering the estuary (but not along an impaired reach,) the Empire Cemetery and Miluk Village (an undeveloped strip of land along the estuary) are unlikely to be contributing to water quality impairments.

COOS BAY SONDE STATIONS & SAMPLE SITES



LOWER COOS SURFACE WATER QUALITY MONITORING DATA: WATER YEAR 2013

(Oct 2012 to Sept 2013)*

BLM Discrete Data Summary							
BLM Grabs Wet Season: 10/01/12 to 05/31/13	**Temp (°C)**	**Sp.Cond. (ms/cm)**	**Salinity (ppt)**	**Dissolved Oxygen (%)**	**Dissolved Oxygen (mg/l)**	**pH**	**Turbidity (NTU)**
Mean	11.15	38.67	24.61	97.60	9.23	7.83	3
Median	11.08	39.30	24.98	97.90	9.22	7.84	3
Minimum	8.30	28.05	17.17	91.10	8.10	7.72	2
Maximum	14.79	48.90	31.92	101.00	10.56	7.92	4
Count	7	7	7	7	7	7	7
BLM Grabs Dry Season: 06/01/13 to 09/30/13	**Temp (°C)**	**Sp.Cond. (ms/cm)**	**Salinity (ppt)**	**Dissolved Oxygen (%)**	**Dissolved Oxygen (mg/l)**	**pH**	**Turbidity (NTU)**
Mean	14.34	47.51	30.92	106.05	8.98	7.95	3
Median	14.34	47.51	30.92	106.05	8.98	7.95	3
Minimum	13.53	46.25	29.97	104.30	8.63	7.87	3
Maximum	15.15	48.77	31.86	107.80	9.32	8.03	3
Count	2	2	2	2	2	2	2

BLM Continuous Data Summary							
BLM Sonde Wet Season: 10/01/12 to 05/31/13	**Temp (°C)**	**Sp.Cond. (ms/cm)**	**Salinity (ppt)**	**Dissolved Oxygen (%)**	**Dissolved Oxygen (mg/l)**	**pH**	**Turbidity (NTU)**
Mean	10.85	40.87	27.04	99.01	9.51	7.93	4
Median	10.84	41.95	27.49	98.77	9.47	7.97	3
Minimum	6.81	10.35	13.80	55.90	**5.28**	6.98	-1
Maximum	15.60	51.62	33.67	124.70	12.80	8.23	**781**
Count	23321	23321	17861	23321	23321	23321	22254
BLM Sonde Dry Season: 06/01/13 to 09/30/13	**Temp (°C)**	**Sp.Cond. (ms/cm)**	**Salinity (ppt)**	**Dissolved Oxygen (%)**	**Dissolved Oxygen (mg/l)**	**pH**	**Turbidity (NTU)**
Mean	14.38	47.84	31.18	93.16	7.92	7.83	8
Median	14.74	49.16	32.12	92.31	7.81	7.82	3
Minimum	8.24	0.99	0.49	38.53	**3.27**	7.39	-1
Maximum	20.36	52.18	34.24	149.32	13.26	8.32	**933**
Count	11709	8777	8777	10673	10673	8777	9178

* Values in **bold** represent instances where aquatic life criteria is not met, but are generally considered to be possible anomalies attributable to seasonal extremes (temp) or localized conditions (turbidity). ** Estuary habitat tends to have tidal (salinity/ temp) and open water characteristics (high temp/ low DO) that are not comparable to mainstem and side channel water quality parameters.

BLM Boat Ramp & Empire Dock Bacteria Data

The following tables list all bacteria data collected by our program for these sites during water year 2013. Our program currently compares single grab samples to ODEQ and EPA established numeric criteria for Freshwaters and Estuarine Waters of either 1) no single sample exceeding 406 *E. coli* organisms per 100 milliliters (406 MPN) or 2) The federal Environmental Protection Agency (EPA) recommendation of the safe standard for Enterococcus to be no more than 158 colony forming units (158 MPN) per 100 milliliters of marine water. Although there is a 303(d) listing for fecal coliform in waters pertaining to the Tribes' BLM & Empire Dock sonde stations and bacteria monitoring sites, no exceedances for either *E.coli* or Enterococcus have been measured by our program at both sites

Coos Bay: BLM & Empire Dock *E.coli* Data: Water Year 2013

Coos - BLM *E. coli*	
Sample Date	MPN/100 ml
10/02/12	25.5
11/07/12	46.5
01/03/13	<10
01/31/13	10.0
03/06/13	<10
04/18/13	<10
05/15/13	<10
06/18/13	<10
08/15/13	<10

Coos - Empire Dock *E. coli*	
Sample Date	MPN/100 ml
10/02/12	20.0
11/07/12	20.5
01/03/13	<10
01/31/13	20.5
03/06/13	<10
04/18/13	<10
05/15/13	<10
16/18/13	<10
08/15/13	<10

Coos Bay: BLM & Empire Dock *Enterococcus* Data: Water Year 2013

Coos - BLM Enterococci	
Sample Date	MPN/100 ml
10/02/12	116.5
11/07/12	<10
01/03/13	<10
01/31/13	<10
03/06/13	<10
04/18/13	<10
05/15/13	<10
06/18/13	<10
08/15/13	<10

Coos - Empire Dock Enterococci	
Sample Date	MPN/100 ml
10/02/12	41.0
11/07/12	<10
01/03/13	<10
01/31/13	<10
03/06/13	10.0
04/18/13	<10
05/15/13	<10
16/18/13	<10
08/15/13	<10

3.2.2 North Fork Siuslaw Watershed

The Siuslaw Watershed has since time immemorial held great cultural significance for the Tribes and provided for the Tribes' subsistence. The largest complex of Tribal fishing weirs in Oregon is located in the Siuslaw Estuary near the Siuslaw village site at the Confederated Tribes' Hatch Tract just upstream of the mouth of the North Fork Siuslaw River. After the reservation era, many members of all Tribes in the Confederated Tribes gathered or settled at this traditional village site or across the North Fork. This tract, as well as the Confederated Tribes' Munsel Lake Tract, has been Tribally held continuously from time immemorial to the present day.

The Siuslaw River headwaters in the Oregon Coast Range and flows into the Pacific Ocean at Florence, Oregon. Land use in the Siuslaw Watershed is dominated by forestry, with ranching, rural residences, and the City and Port of Florence also adding to the landscape. According to the Oregon Department of Environmental Quality, major nonpoint source pollution issues include elevated temperature and turbidity levels, and depressed dissolved oxygen levels. The water quality in several portions of the Siuslaw Watershed is impaired or is of potential concern, according to the ODEQ 303(d) list. Impairments in headwater tributaries include elevated temperature, sedimentation, and depressed dissolved oxygen, while impairments in the estuary include elevated temperature, sedimentation, and depressed dissolved oxygen levels. Potential issues include fecal coliform in the Estuary and River. The North Fork Siuslaw River is water quality impaired for temperature (September 15 – May 31) and sedimentation from river mile 0.4 (a point approximately halfway up the Hatch Tract,) and for summer temperature from the mouth. The USFS 1994 North Fork Siuslaw River Watershed Analysis indicate streambeds which have been scoured down to bedrock, and riparian forests reduced for pastures and home sites, as being the primary contributors to elevated stream temperatures. Two North Fork Siuslaw Tributaries – McLeod Creek and Drew Creek – are included on the ODEQ 303(d) list: Drew Creek is impaired by sedimentation, and McLeod Creek is impaired by both sedimentation and temperature.

Data on McLeod Creek and Drew Creek contained in the 2000 [USFS and BLM] Interagency Restoration Framework for the Siuslaw River Basin (IRFSRB,) in particular data available for McLeod Creek, may serve to illustrate the processes which are affecting water quality downstream at the Confederated Tribes' Hatch Tract. The IRFSRB reports that four landslides have occurred in the headwaters of the Drew Creek watershed in the reporting period. This document also reports that "The McLeod Creek drainage has had numerous landslides, mostly related to road failures. The Tributary at river mile 4.7 on McLeod Creek had 8 landslides … mostly related to road failure between 1968 and 1972. The tributary at river mile 5.6 had only [*sic*] two landslides…" Heavy sediment loads entering from a McLeod Creek tributary were reported to be resulting in bank erosion. Bedrock remained the dominant substrate in the lower reach of McLeod Creek, although "If any obstructions are present, such as fallen logs, gravels are deposited." McLeod Creek is representative of a vast number of coastal headwater tributaries on the central and northern Oregon coast. Slope destabilization has resulted in periodic pulses of sediment, notably fine sediment. These episodically large pulses of sediment have contributed to bank destabilization, as has removal of riparian vegetation by logging, grazing, and rural residential development. These processes have resulted in both increased turbidity and channel instability. The loss of instream structure from riparian logging and stream cleaning have also been a factor in increased turbidity and channel instability through the loss of the instream structure functions of energy dissipation and bedload storage. Temperature has increased as structure and thus bedload has been lost and streams have been scoured down to heat reflecting bedrock. Finally, potential structure has decreased and temperatures have increased as a consequence of a decrease in riparian canopy. McLeod Creek shows signs of recovery, but the legacy of past disturbances and the current disturbances of a channel equilibrating continue to contribute impairments to the water quality miles downstream at the Confederated Tribes' Hatch Tract.

Located at the confluence of the North Fork Siuslaw and mainstem Siuslaw Estuary, the waters of the Hatch Tract are subject to tidal inputs and mixing. Fecal coliform originating in the mainstem Siuslaw River from nearby and distant upriver sources may flow up the North Fork Siuslaw on flood tides. Flood tide waters with anthropogenically elevated temperature and turbidity may also contribute to impairments at the Hatch Tract. The mainstem Siuslaw River above river mile 5.7 is identified by ODEQ as being of potential concern over elevated temperature in its tidal reach and is impaired by elevated temperature in its upper reach; ODEQ reports insufficient data regarding sedimentation, and seasonally lists the mainstem above river mile 5.7 as impaired for dissolved oxygen. The 1998 USFS Lower Siuslaw Watershed Analysis (LSWA) identifies five lower Siuslaw tributaries which exceed the seven-day average maximum temperature of 64° F in 1996, only two of which are currently listed as water quality limited by ODEQ. The relationship between shade in forested reaches and temperature is inconclusive, although the essential absence of canopy cover along lower reaches of some tributaries is considered to have the greatest potential to elevate temperature: channel aspect and substrate are also considered to have effects on temperatures. The LSWA identifies forest roads (inappropriately located or inadequately drained) as being a major issue and contributor of sediment to the watershed. The LSWA identifies "known general impacts" to lower Siuslaw tributaries as including roads, riparian grazing, riparian logging, splash damming, stream cleaning, and a municipal water diversion.

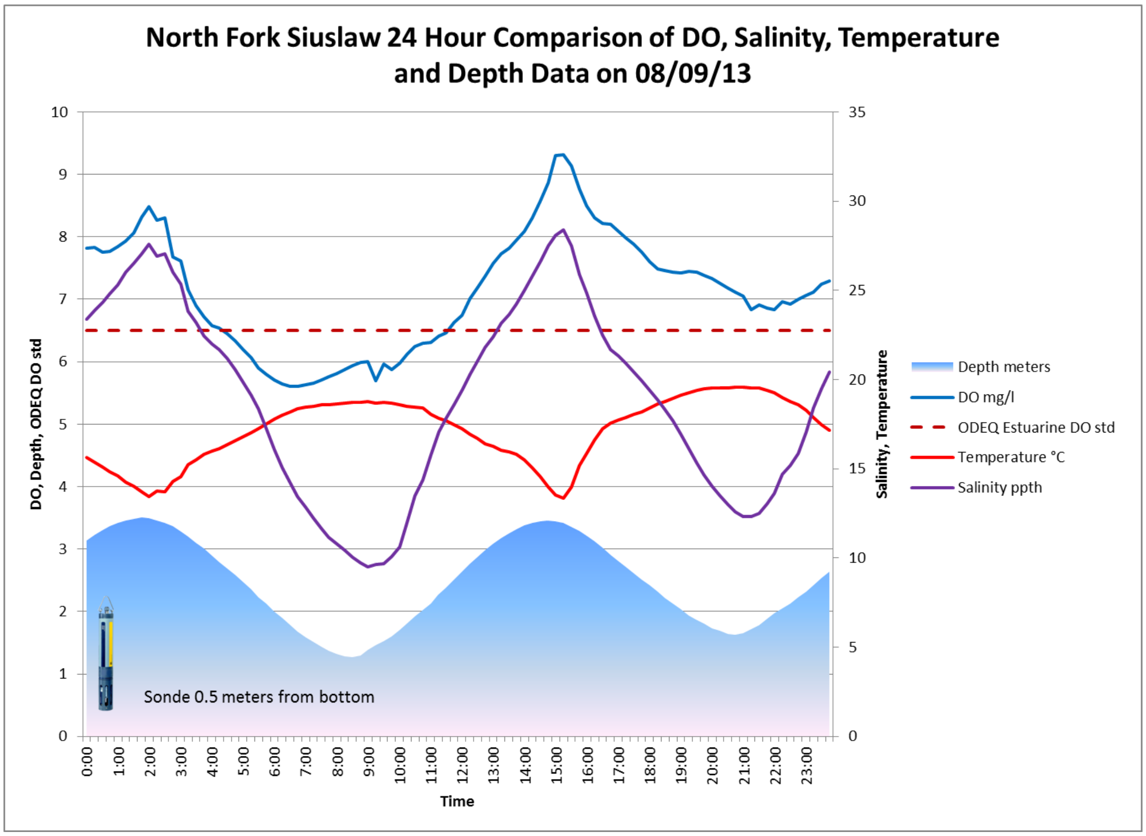
The Hatch Tract, in addition to being a traditional village site, was the site of a bridge crossing and a lumber mill during the middle 20th century. A mill pond which has mostly filled in, and the former mill site underlain by densely compacted ground and which is vegetated mostly with non-native species adapted to a disturbed and harsh growing environment, dominate the wetland and riparian habitats respectively. A significant saltmarsh fringes the southern half of the tract. Evaluation and best professional judgment indicate that there is no input of sediment from this tract, and opportunities to increase canopy are limited by topography and current and planned land use. The North Fork Siuslaw County Road runs near the edge of the Hatch Tract along the North Fork Siuslaw, thus eliminating most opportunity for riparian reforestation. The Hatch Tract is the site of the Confederated Tribes Three Rivers Casino and Hotel, along with administrative offices including the offices of the Tribal Police. Best management practices such as straw bale check dams, filter cloth sediment fences, and swales were incorporated into the site development and ongoing operations to prevent or minimize discharges to a seasonal lake and to the North Fork and to assure compliance with the EPA Construction General PermitAmbient groundwater monitoring has detected no influence of development or operational activities at the downgradient monitoring well adjacent to the North Fork Siuslaw River. Conservation of existing high quality wetland (the millpond and saltmarsh) will be a priority in the eventual site development. Riparian revegetation opportunities at this site will be balanced by the imperative of Tribal economic self-sufficiency, however, it will also be a priority to retain ecologically or culturally significant riparian vegetation (large trees and indigenous underbrush around the millpond and on the river side of the road) in order to minimize solar exposure of the North Fork and for other biological and cultural reasons.

The Emil and Grace Memorial Homestead on Misery Creek provides significant spawning and rearing habitat for coho salmon. Past agricultural practices have removed significant riparian vegetation and reduced the associated bank stability. Temperature data has not indicated an excedence of a seven-day average maximum of 64 degrees Fahrenheit. Turbidity data has not been collected. However, simply form a habitat perspective, riparian and instream habitat and water temperature and turbidity could be improved through riparian revegetation, invasive species management, and instream large wood placement.

COOS BAY SONDE STATIONS & SAMPLE SITES

NORTH FORK SIUSLAW CONTINUOUS/SONDE DATA ANALYSIS

The following table and graph displays sonde; temperature, conductivity, salinity, dissolved oxygen, pH and turbidity data collected by the CTCLUSI water quality monitoring program at this site. The graphs have been produced with the appropriate ODEQ standards and/or 303(d) listing in an attempt to facilitate rapid visual understanding of the trends occurring at the site. The data presented indicate that the majority of continuous temperature data collected at CTCLUSI's North Fork sonde station throughout July and August exceeded the salmon and trout rearing and migration beneficial use criteria of 18°C 7-day average maximum temperature and therefore support the 303(d) listing for temperature within the North Fork Siuslaw River.



In addition to supporting the 303(d) listing for the site, dissolved oxygen data collected at this site indicate an additional impairment to water quality is occurring in waters pertaining to the site. Our ongoing analysis of the continuous data collected by our program at the North Fork Siuslaw sonde station indicates that impairments to dissolved oxygen similar to those listed for the Mainstem Siuslaw River are occurring within the North Fork Siuslaw River

NORTH FORK SURFACE WATER QUALITY MONITORING DATA: WATER YEAR 2013

(Oct 2012 to Sept 2013)*

North Fork Discrete Data Summary							
N.F. Grabs Wet Season: 10/01/12 to 05/31/13	**Temp (°C)**	**Sp.Cond. (ms/cm)**	**Salinity (ppt)**	**Dissolved Oxygen (%)**	**Dissolved Oxygen (mg/l)**	**pH**	**Turbidity (NTU)**
Mean	9.93	3.54	2.01	95.57	10.73	7.04	4
Median	9.33	0.48	0.24	95.95	10.91	7.12	4
Minimum	5.09	0.05	0.02	92.00	9.14	6.71	2
Maximum	13.50	14.65	8.55	98.50	12.11	7.32	7
Count	6	6	6	6	6	6	6
N.F. Grabs Dry Season: 06/01/13 to 09/30/13	**Temp (°C)**	**Sp.Cond. (ms/cm)**	**Salinity (ppt)**	**Dissolved Oxygen (%)**	**Dissolved Oxygen (mg/l)**	**pH**	**Turbidity (NTU)**
Mean	16.28	16.30	9.92	86.50	8.06	7.12	4
Median	16.03	17.41	10.29	79.40	6.89	7.12	4
Minimum	15.83	0.92	0.45	74.10	6.85	6.98	2
Maximum	16.97	30.56	19.03	106.00	10.43	7.26	7
Count	3	3	3	3	3	3	3

North Fork Continuous Data Summary							
N.F. Sonde Wet Season: 10/01/12 to 05/31/13	**Temp (°C)**	**Sp.Cond. (ms/cm)**	**Salinity (ppt)**	**Dissolved Oxygen (%)**	**Dissolved Oxygen (mg/l)**	**pH**	**Turbidity (NTU)**
Mean	10.48	8.26	4.95	96.21	10.49	7.11	5
Median	10.06	1.85	0.94	96.66	10.75	7.02	3
Minimum	4.31	0.05	0.02	57.57	**4.99**	**6.36**	-1
Maximum	**18.39**	46.39	30.04	120.84	13.67	8.28	**958**
Count	23320	23320	23320	23320	23320	21644	23050
N.F. Sonde Dry Season: 06/01/13 to 09/30/13	**Temp (°C)**	**Sp.Cond. (ms/cm)**	**Salinity (ppt)**	**Dissolved Oxygen (%)**	**Dissolved Oxygen (mg/l)**	**pH**	**Turbidity (NTU)**
Mean	17.79	22.81	14.04	86.36	7.55	7.40	6
Median	17.90	23.98	14.58	87.23	7.61	7.37	5
Minimum	9.90	0.09	0.04	19.20	**1.65**	6.71	-1
Maximum	**23.38**	47.82	31.06	154.40	13.57	8.36	**529**
Count	11707	10467	10467	10341	10341	7068	6457

* Values in **bold** represent instances where aquatic life criteria is not met, but are generally considered to be possible anomalies attributable to seasonal extremes (temp) or localized conditions (turbidity). ** Estuary habitat tends to have tidal (salinity/ temp) and open water characteristics (high temp/ low DO) that are not comparable to mainstem and side channel water quality parameters.

NORTH FORK & COX ISLAND DOCK BACTERIA DATA

The following tables list all bacteria data collected by our program for these sites during water year 2013. Our program currently compares single grab samples to ODEQ and EPA established numeric criteria for Freshwaters and Estuarine Waters of either 1) no single sample exceeding 406 *E. coli* organisms per 100 milliliters (406 MPN) or 2) The federal Environmental Protection Agency (EPA) recommendation of the safe standard for Enterococcus to be no more than 158 colony forming units (158 MPN) per 100 milliliters of marine water. Although there is a 303(d) listing for fecal coliform in waters pertaining to the Tribes' North Fork & Cox Island sonde stations and bacteria monitoring sitea, no exceedances for either *E.coli* or Enterococcus have been measured by our program at both sites.

SIUSLAW: NORTH FORK & COX ISLAND *E.COLI* DATA: WATER YEAR 2013

Siuslaw – North Fork *E. coli*	
Sample Date	MPN/100 ml
10/18/12	127.5
12/06/12	20.5
01/17/13	<10
02/13/13	20.5
03/21/13	221.5
04/25/13	35.5
06/12/13	36.0
08/08/13	<10
09/24/13	53.0

Siuslaw – Cox Island *E. coli*	
Sample Date	MPN/100 ml
10/18/13	193.0
12/06/12	46.5
01/17/13	<10
02/13/13	10.0
03/21/13	57.5
04/25/13	15.0
06/12/13	15.0
08/08/13	20.5
09/24/13	20.0

SIUSLAW: NORTH FORK & COX ISLAND *Enterococcus* DATA: WATER YEAR 2013

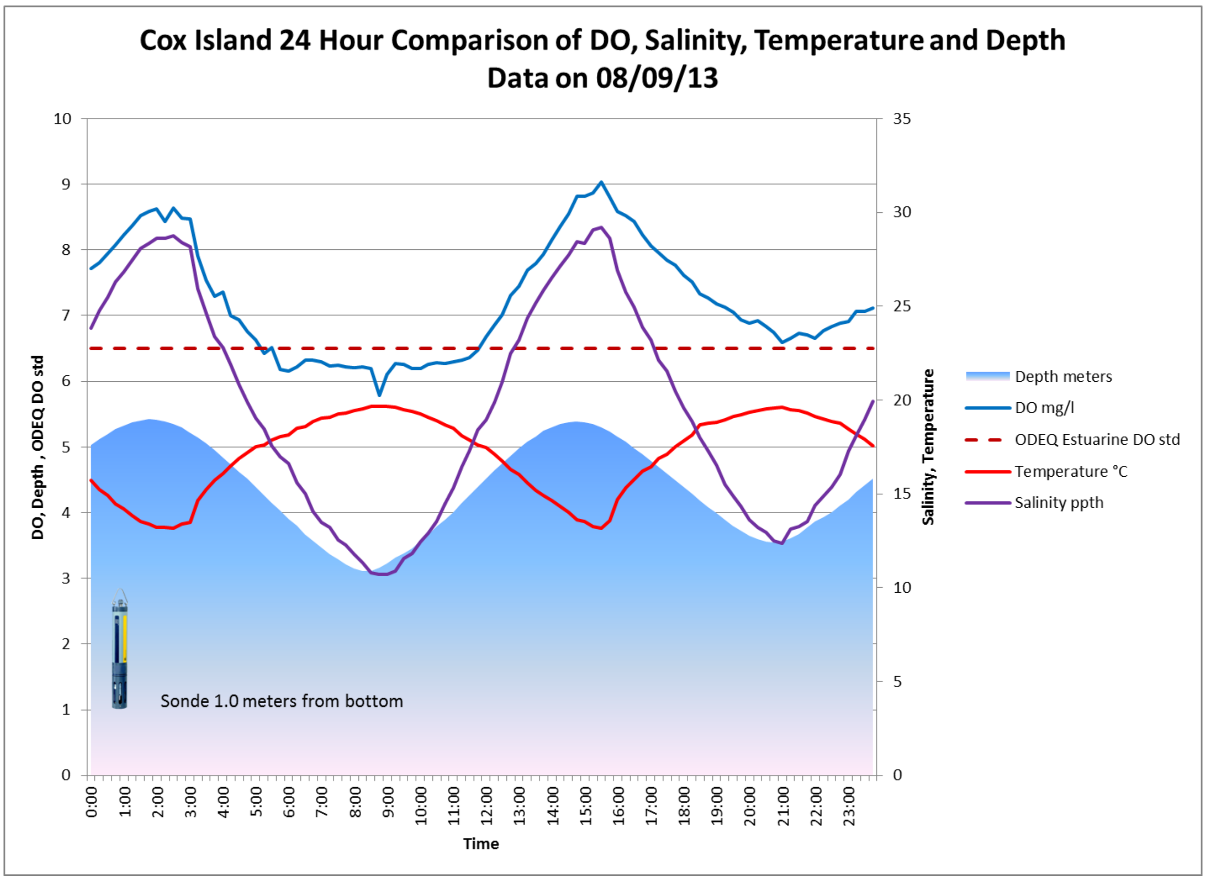
Siuslaw – N.F. *Enterococci*	
Sample Date	MPN/100 ml
10/18/12	41.0
12/06/12	<10
01/17/13	<10
02/13/13	<10
03/21/13	<10
04/25/13	<10
06/12/13	<10
08/08/13	<10
09/24/13	20.0

Siuslaw – Cox Is. *Enterococci.*	
Sample Date	MPN/100 ml
10/18/13	116.5
12/06/12	<10
01/17/13	<10
02/13/13	<10
03/21/13	<10
04/25/13	<10
06/12/13	<10
08/08/13	<10
09/24/13	<10

SIUSLAW RIVER COX ISLAND (MAINSTEM) CONTINUOUS/SONDE DATA ANALYSIS

The following table displays sonde temperature, dissolved oxygen, conductivity, pH, salinity and turbidity data collected at this site. The graph has been produced with the appropriate ODEQ dissolved oxygen standard listing in an attempt to facilitate rapid visual understanding of the trends occurring at the site. The data presented in the graphs and tables below indicate that nearly 50% of the continuous temperature data collected at CTCLUSI's Siuslaw River Mainstem sonde station throughout July and August exceeded the salmon and trout rearing and migration beneficial use criteria of 18□C 7-day average maximum temperature and therefore support the 303(d) listing for temperature within the Siuslaw River Estuary and Mainstem.

In addition to supporting the 303(d) listing for temperature at the site, dissolved oxygen data collected at the site by our program at the Mainstem Siuslaw sonde station support the 303(d) listing for dissolved oxygen in waters pertaining to this site.



COX ISLAND SURFACE WATER QUALITY MONITORING DATA: WATER YEAR 2013

(Oct 2012 to Sept 2013)*

Cox Island Discrete Data Summary							
C Island Grabs Wet Season: 10/01/12 to 05/31/13	**Temp (°C)**	**Sp.Cond. (ms/cm)**	**Salinity (ppt)**	**Dissolved Oxygen (%)**	**Dissolved Oxygen (mg/l)**	**pH**	**Turbidity (NTU)**
Mean	9.66	2.85	1.62	97.17	11.02	7.35	5
Median	9.46	1.07	0.58	98.60	11.18	7.35	5
Minimum	4.27	0.05	0.02	89.00	8.94	6.79	2
Maximum	13.39	12.50	7.24	99.80	12.80	7.93	8
Count	6	6	6	6	6	6	6
C Island Grabs Dry Season: 06/01/13 to 09/30/13	**Temp (°C)**	**Sp.Cond. (ms/cm)**	**Salinity (ppt)**	**Dissolved Oxygen (%)**	**Dissolved Oxygen (mg/l)**	**pH**	**Turbidity (NTU)**
Mean	17.86	17.58	10.66	82.10	7.32	7.14	6
Median	17.58	21.81	13.15	77.00	6.82	7.16	6
Minimum	16.81	3.81	2.13	76.20	6.64	7.01	5
Maximum	19.20	27.12	16.69	93.10	8.50	7.26	7
Count	3	3	3	39	3	3	3

Cox Island Continuous Data Summary							
CIsland Sonde Wet Season: 10/01/12 to 05/31/13	**Temp (°C)**	**Sp.Cond. (ms/cm)**	**Salinity (ppt)**	**Dissolved Oxygen (%)**	**Dissolved Oxygen (mg/l)**	**pH**	**Turbidity (NTU)**
Mean	10.45	8.61	3.21	100.28	11.32	7.25	6
Median	10.08	2.80	0.40	100.50	11.30	7.17	4
Minimum	3.73	0.04	0.02	43.40	**4.66**	**6.31**	0
Maximum	17.92	48.08	28.71	123.30	15.21	8.67	**989**
Count	23320	23320	15545	18906	18906	22863	21044
CIsland Sonde Dry Season: 06/01/13 to 09/30/13	**Temp (°C)**	**Sp.Cond. (ms/cm)**	**Salinity (ppt)**	**Dissolved Oxygen (%)**	**Dissolved Oxygen (mg/l)**	**pH**	**Turbidity (NTU)**
Mean	17.87	22.87	15.35	92.24	8.67	7.48	12
Median	18.15	23.07	15.03	91.70	8.49	7.41	5
Minimum	9.67	0.11	0.91	50.00	**2.70**	6.71	0
Maximum	**23.77**	49.69	32.30	141.70	13.39	8.88	**933**
Count	11651	10474	8744	4244	4244	11268	8093

* Values in **bold** represent instances where aquatic life criteria is not met, but are generally considered to be possible anomalies attributable to seasonal extremes (temp) or localized conditions (turbidity). ** Estuary habitat tends to have tidal (salinity/ temp) and open water characteristics (high temp/ low DO) that are not comparable to mainstem and side channel water quality parameters.

3.2.3 Sixes Watershed

The Sixes River holding of the Tribes was included in the reservation recognized in the Act which restored federal recognition to the Confederated Tribes in 1984. The Sixes River headwaters in the Klamath Mountains and flows into the Pacific Ocean north of Cape Blanco near Sixes, Oregon. The land uses in the watershed are dominated by forestry, ranching, and rural residences. The water quality of the Sixes River and many of its tributaries is listed by the ODEQ as impaired by elevated temperature, as is typical of larger streams, especially in southern Oregon, where the streams are considered to be naturally warm but still warmer than natural (for the most.) The 2001 South Coast Watershed Council Sixes River Watershed Assessment indicates that a portion of the Sixes River is rated as impaired with regard to nitrate, phosphate, and fecal coliform. This assessment indicates that the Tribal holding is included in the lower of two heating reaches of the river. This assessment also notes that dissolved oxygen impairment can be associated with high temperatures and low flows; nitrate, phosphate, and fecal coliform impairment can be associated with high stream discharge events, and these impairments can also contribute to elevated biological oxygen demand and thus depressed dissolved oxygen levels. Heavy metals associated with mining and sedimentation, are potential concerns. Third party monitoring, and Tribal evaluation and best professional judgment, including four years of work in Salmonid habitat restoration in the Sixes basin, point in the direction of channel aggradations and widening, arising from elevated sediment input from (mainly) past forestry activities into this already gravel-rich channel network, combined with banks devegetated and destabilized by grazing, along with over-allocated water withdrawals, as being the primary contributors to elevated summer temperatures. Tribal land use of the Sixes River Tract (undeveloped and naturally vegetated) is unlikely to be contributing greatly to the impairment by elevated temperature and depressed dissolved oxygen, however, active management to encourage the development of mature riparian canopy could contribute to the sheltering of this reach of the river from solar input.

SIXES HOBO STATION & SAMPLE SITE

Sixes: Sixes River Bacteria Data

The following tables list the bacteria data collected by our program for the site during water year 2013. Our program currently compares single grab samples to ODEQ and EPA established numeric criteria for Freshwaters and Estuarine Waters of either 1) no single sample exceeding 406 *E. coli* organisms per 100 milliliters (406 MPN) or 2) The federal Environmental Protection Agency (EPA) recommendation of the safe standard for Enterococcus to be no more than 158 colony forming units (158 MPN) per 100 milliliters of marine water. Although there is a 303(d) listing for fecal coliform in waters pertaining to the Tribes' sonde station and bacteria monitoring site, no exceedances for either *E.coli* or Enterococcus have been measured by our program at the site.

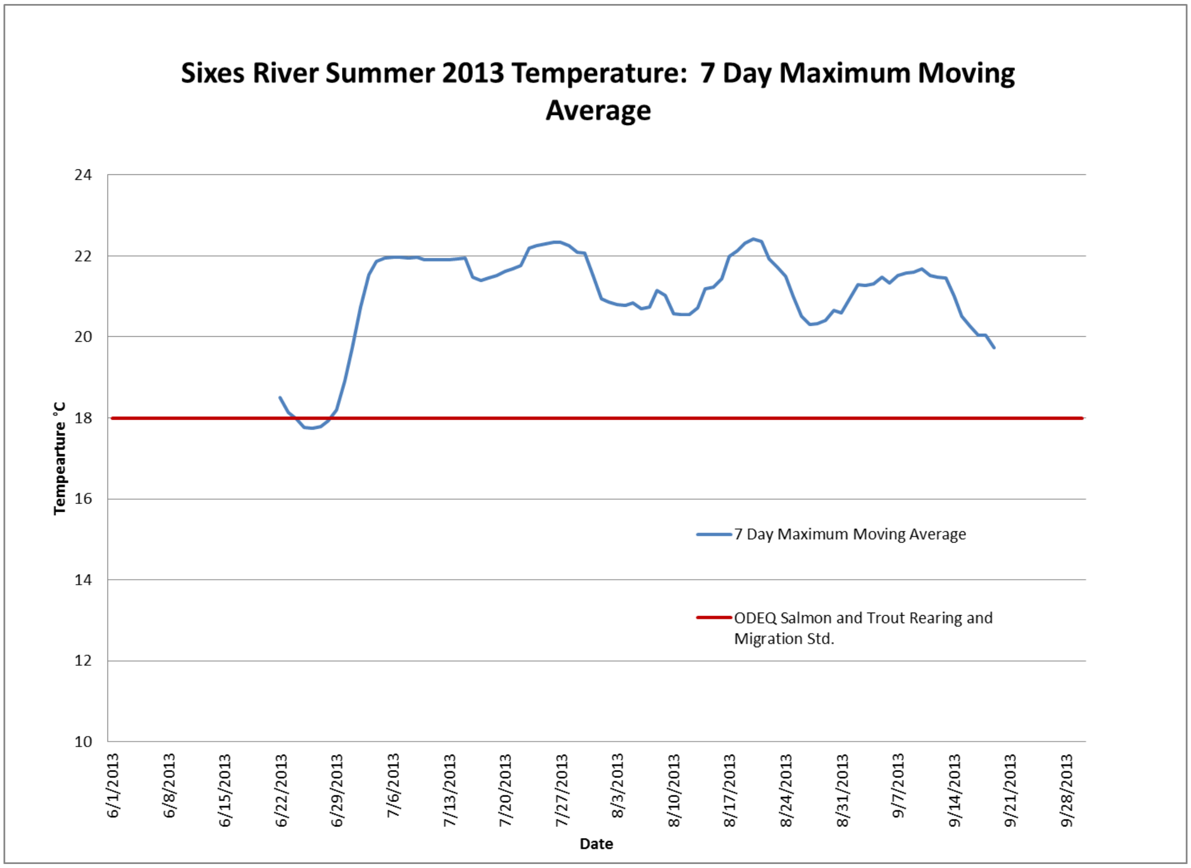
Sixes: Sixes *E.coli* & *Enterococcus* Data: Water Year 2013

Sixes River – *E.coli*	
Sample Date	MPN/100 ml
07/04/13	<10

Sixes River – *Enterococci.*	
Sample Date	MPN/100 ml
07/04/13	<10

SIXES RIVER TEMPERATURE STUDY

CTCLUSI deploys an automated HOBO temperature data logger at this site during the summer months. The HOBOs are used for long – term deployment and record the temperature at the site at 30 minute intervals. The maximum temperature measured at the Sixes River Site was 23.1 °C. The 2013 summer and early fall 7 day maximum average for temperature at this site exceeded the ODEQ summer/early fall water temperature standard for salmon and trout rearing and migration (18 °C), the designated fish use for the section of the Sixes River monitored by the Tribes' water quality monitoring program (WQMP). This data confirm the ODEQ 303(d) temperature listing in waters pertaining to the Tribes' Sixes River monitoring site.



3.2.4 Effects of Nonpoint Source Pollutants

The tribal waters demonstrate the consistent presence of common problems. Because the areas in which the tribal holdings are concentrated are similar, the commonality is not surprising. The waters represent a consistent environmental suite and consequently, as the Tribes add to their land base, the nonpoint source pollution problems are likely to be similar. Thus, the impacts will be familiar and the measures required to mitigate and restore water quality will be fairly consistent.

Fecal Coliform Bacteria:4 Fecal coliform bacteria are found in the intestines of warm-blooded animals. Their presence in waters indicates that pathogenic organisms may also be present. They are most commonly associated with failing septic tanks and drain fields from individual sewage disposal systems, agricultural feedlots, and grazing animals.

Total Dissolved Oxygen:5 Dissolved oxygen analysis measures the amount of gaseous oxygen (O2) dissolved in an aqueous solution. Oxygen gets into water by diffusion from the surrounding air, by aeration (rapid movement), and as a waste product of photosynthesis. Total dissolved gas concentrations in water should not exceed 110 percent. Concentrations above this level can be harmful to aquatic life. Fish in waters containing excessive dissolved gases may suffer from "gas bubble disease"; however, this is a very rare occurrence. The bubbles or emboli block the flow of blood through blood vessels causing death. External bubbles (emphysema) can also occur and be seen on fins, on skin and on other tissue. Aquatic invertebrates are also affected by gas bubble disease but at levels higher than those lethal to fish.

Adequate dissolved oxygen is necessary for good water quality. Oxygen is a necessary element to all forms of life. Natural stream purification processes require adequate oxygen levels in order to provide for aerobic life forms. As dissolved oxygen levels in water drop below 5.0 mg/l, aquatic life is put under stress. The lower the concentration of dissolved oxygen in the water, the greater stress it puts on aquatic life. Oxygen levels that remain below 1-2 mg/l for a few hours can result in large fish kills.

Sediment:6 Human activity, including tilling, irrigation, grazing, construction, urbanization, and forestry practices, accelerates natural sediment production. Excess sediment interferes with water treatment, irrigation, fish spawning and rearing, and the production of fish food organisms in streams. Other pollutants, such as nutrients and metals, may be absorbed on sediment particles and transported by them into and through aquatic systems.

Temperature: Temperature pollution refers to high temperatures, which leads to mortality in cold-water aquatic species, such as salmon and trout. Typically, temperature problems arise when riparian habitat is degraded and denuded. The absence of shade, especially trees, allows more sunlight to get to the stream and this heats the water. Additionally, sedimentation and erosion, especially from concentrating the runoff period, scours streams and eliminates deep pockets and pools that traditionally allow cold-water aquatic species to find cover and cooler water in the heat of summer.

Additionally, temperature works with other variables to lessen or worsen their impact. For example, “Another physical process that affects dissolved oxygen concentrations is the relationship between water temperature and gas saturation. Cold water can hold more of any gas, including oxygen, than warmer water. Warmer water becomes "saturated" more easily with oxygen. As water becomes warmer, it can hold less and less. So, during the summer months in the warmer top portion of a lake, the total amount of oxygen present may be limited by temperature. If the water becomes too warm, even if 100% saturated, O_2 levels may be suboptimal for many species of trout.”7

3.3 Formulation of Best Management Practices

The EPA September 1997 Tribal Nonpoint Source Planning Handbook states that “The purpose of this section is to identify the established process for selecting best management practices (BMPs) on the Tribal Lands.” The general process for the development of BMPs for Tribal holdings is fairly uniform, although the details of the process will vary with the particular holding. In general, the Tribal Administration will draft BMPs based on research of pertinent existing local, county, state, federal, and other Tribal BMPs and statutes. Through the Tribal newspaper and through Tribal Council meetings, the Tribal Membership will be informed of the progress of BMP development and will be encouraged to provide input. After this scoping and public comment period is complete, the BMPs will be submitted in ordinance form to the Tribal Council. The Confederated Tribes requires that proposed ordinances have a first reading and be subject to comment for thirty days prior to a second reading and potential adoption at a Tribal Council meeting. Pending Tribal Council approval, the BMPs will be adopted as Tribal Ordinances.

The Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians have developed BMPs for activities relevant to Tribal trust land The Tribes will continue to develop and periodically review BMPs which will provide specific guidance to minimize adverse effects on water quality by activities including ground disturbing activities and storm-water runoff associated with site development; riparian vegetation buffers in forested, agricultural, residential, and commercial landscapes; and road construction and maintenance activities.

Silvicultural BMPs associated with the proposed Tribal Forest will be required to be consistent with the enabling legislation which leads to the enactment of the Tribal Forest. Such BMPs will be developed in a process similar to Tribal Ordinances and will be included in a Tribal Forest Resource Management Plan developed under the provisions of the enabling legislation, the National Indian Forest Resources Management Act, and Bureau of Indian Affairs policies and procedures. This Plan will be developed with input in a manner similar to the process for input on Tribal Ordinances. This Plan will be drafted by Tribal and BIA staff with the assistance of USFS staff, and will be subject to the provisions of NEPA. The Tribes have developed specific BMPs for silvicultural activities as part of Trial Forest Resource Management Strategies for both restoration and sustained yield forestry. A Tribal Forest Management Plan will be completed pending the enactment of and as per the statutory provisions of legislation which will return

federal forest land to the Confederated Tribes.
There is a wide selection of excellent sources for BMPs for the Confederated Tribes to consider as the Tribes' BMPs are developed for the various types of Tribal land uses. These sources, including referrals, include:

- US Environmental Protection Agency (EPA);
- Natural Resources Conservation Service (NRCS);
- US Fish and Wildlife Service (USFWS);
- NOAA Fisheries;
- US Army Corps of Engineers (USACOE);
- US Forest Service (USFS);
- Bureau of Land Management (BLM);
- Oregon Department of Environmental Quality (ODEQ);
- Oregon Department of Land Conservation and Development (OLCDC);
- Oregon Watershed Enhancement Board (OWEB);

- Oregon Department of Agriculture (ODA);
- Oregon Department of Forestry (ODF);
- The proposed Oregon Division of State Lands (ODSL) State Programmatic General Permit (SPGP).

Many of these agencies, directly or through local Watershed Associations, provide technical and financial assistance for a variety of programs including nonpoint source pollution control. Given the (currently) small and dispersed nature of Tribal holdings, the Confederated Tribes have identified cooperation and coordination with these entities, especially watershed associations, in addition to the development of our own Tribal Nonpoint Source Pollution Management Program, as the most promising path to reversing impairments of Tribal water quality.
Categories of nonpoint sources of pollution identified by the EPA include agriculture; forestry; hydromodification / habitat alteration; marinas / boating; roads, highways, and bridges; urban environments, including low-impact development; and wetland / riparian management. Of these categories, the following are the Tribal land uses which may contribute to water quality impairments:

- Forestry;
- Roads;
- Urban/low-impact development;
- Wetland/riparian management;

As discussed above, current Tribal land uses are considered to have little or no actual or potential adverse effect on water quality. And as discussed above, agriculture, forestry, hydromodification, roads, and low-impact development are considered to be the primary contributors throughout the watersheds to water quality impairment. The Tribal BMP development process will prioritize those current or likely Tribal land uses which have the potential to contribute to water quality impairments, such as site development and forestry. The Tribal BMP development process will then prioritize those categories which contribute to impairment of Tribal water quality but which are not currently found on Tribal lands but which may in the future as land is acquired, such as agriculture.

4.0 CONCLUSION

The Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians have struggled at least as hard as any federally-recognized Tribe in Oregon to retain their identity, culture, and sovereignty. Since restoration of federal recognition in 1984, the Confederated Tribes have expended the Tribes' scarce resources to meet the barest needs of the Tribal Government and Membership. The Confederated Tribes have slowly, carefully, and steadily built their administrative capacity with the goal of achieving self-governance and economic self-sufficiency. To this end, in the late 1990's, the Confederated Tribes established the Tribes' Environmental Program. In 2005, this program was expanded and combined with other programs into the Department of Natural Resources. The focus of the program to date has been to establish the basic government-to-government relationship, to develop the basic internal framework for the program, and to develop a Tribal water quality monitoring program. The Confederated Tribes have received EPA approval of the Tribes' Water Quality Monitoring Quality Assurance Project Plan and plans to begin to implement Tribal water quality monitoring in January 2004.

The Tribal holdings consist of several small and widely dispersed tracts. Significant land acquisition and development has occurred in the past five years, but there has been no observed input of nonpoint (or point) source pollution into waters of or pertaining to the reservation. Within the watersheds in which the Tribal holdings are located, water quality is impaired by significant, widespread, and difficult to manage sources of nonpoint source pollution, *i.e.* elevated levels of temperature, sediment, and fecal coliform bacteria, and depressed dissolved oxygen concentrations. Forest and agricultural practices are considered to be the primary categories of land uses contributing to these impairments.

Funds have been secured and work plans have been adopted to develop ordinances and BMPs addressing ground disturbing activities and storm-water runoff associated with site development; riparian vegetation buffers in forested, agricultural, residential, and commercial landscapes; road construction and maintenance activities; and silvicultural activities. Given the extremely limited current land base, the Confederated Tribes have had little or no opportunity until recently to potentially contribute nonpoint source pollution, let alone mitigate such contributions, for the slivers of holdings. Rather, the Confederated Tribes have engaged with other stakeholders in the Ancestral Watersheds, primarily through Watershed Associations, to seek solutions to impairments of water quality arising from Tribal and non-Tribally held lands and the consequent degradation of other aquatic resources, particularly the culturally significant resources of salmon, lamprey, and shellfish.

This Nonpoint Source Assessment Report will be used by the Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians to build on the administrative and technical capacity already established by the Confederated Tribes and the Tribes' Department of Natural Resources, and to build on the collaborative relationships between the Tribes and other stakeholders in the Ancestral Watersheds, so as to continue to operate the Tribal Nonpoint Source Pollution Management Program which will integrate Tribal technical, financial, and land resources with the technical expertise and stewardship commitment of our partners in these watersheds and their Watershed Associations. This direction provided by this report will guide and prioritize the development of ordinances and BMPs for controlling Tribal nonpoint sources of pollution and to minimize and reverse impairments of water quality from conditions on Tribal holdings. This Nonpoint Source Pollution assessment will also be used as a tool in our collaboration with other stakeholders to address nonpoint sources of pollution in the Ancestral Watersheds which pertain to Tribal waters.

5.0 REFERENCES

[1] "Fort Peck Reservation Nonpoint Source Pollution Assessment Report," available at the EPA website: http://www.epa.gov/owow/nps/fortpeck/fprnspar.html (.) The entire section is mostly a direct quote from this source.

[2] Ibid.
[3] "EPA website: "Polluted Runoff, Nonpoint Source Pollution from Forestry," http://www.epa.gov/owow/nps/facts/point8.htm

[4] "Fort Peck Reservation Nonpoint Source Pollution Assessment Report," available at the EPA website: http://www.epa.gov/owow/nps/fortpeck/fprnspar.html (.) The entire section is a direct quote from this source.

[5] The definition contained here comes from the Kentucky Water Watch website: http://www.state.ky.us/nrepc/water/wwhomepg.htm Another source for the same information is "Water on the Web" available at: http://wow.nrri.umn.edu/wow/under/parameters/oxygen.html

[6] "Fort Peck Reservation Nonpoint Source Pollution Assessment Report," available at the EPA website: http://www.epa.gov/owow/nps/fortpeck/fprnspar.html (.) The entire section is a direct quote from this source.

[7] "Water on the Web" available at: http://wow.nrri.umn.edu/wow/under/parameters/oxygen.html

APPENDIX A

DIVISION 41

WATER QUALITY STANDARDS: BENEFICIAL USES, POLICIES, AND CRITERIA FOR OREGON

340-041-0033

Toxic Substances

TABLE 30: Aquatic Life Water Quality Criteria for Toxic Pollutants

Effective April 18, 2014

Aquatic Life Criteria Summary

The concentration for each compound listed in Table 30 is a criterion not to be exceeded in waters of the state in order to protect aquatic life. The aquatic life criteria apply to waterbodies where the protection of fish and aquatic life are the designated uses. All values are expressed as micrograms per liter (µg/L). Compounds are listed in alphabetical order with the corresponding information: the Chemical Abstract Service (CAS) number, whether there is a human health criterion for the pollutant (i.e. “y”= yes, “n” = no), and the associated aquatic life freshwater and saltwater acute and chronic criteria. Italicized pollutants are not identified as priority pollutants by EPA. Dashes in the table column indicate that there is no aquatic life criterion.

Unless otherwise noted in the table below, the acute criterion is the Criterion Maximum Concentration (CMC) applied as a one-hour average concentration, and the chronic criterion is the Criterion Continuous Concentration (CCC) applied as a 96-hour (4 days) average concentration. The CMC and CCC criteria should not be exceeded more than once every three years. Footnote A, associated with eleven pesticide pollutants in Table 30, describes the exception to the frequency and duration of the toxics criteria stated in this paragraph.

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS Number	Human Health Criterion	Freshwater (µg/L) Acute Criterion (CMC)	Freshwater (µg/L) Chronic Criterion (CCC)	Saltwater (µg/L) Acute Criterion (CMC)	Saltwater (µg/L) Chronic Criterion (CCC)
1	Aldrin	309002	y	3 [A]	--	1.3 [A]	--
	[A] *See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.*						
2	*Alkalinity*		n	--	20,000 [B]	--	--
	[B] *Criterion shown is the minimum (i.e. CCC in water may not be below this value in order to protect aquatic life).*						

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS Number	Human Health Criterion	Freshwater (µg/L) Acute Criterion (CMC)	Freshwater (µg/L) Chronic Criterion (CCC)	Saltwater (µg/L) Acute Criterion (CMC)	Saltwater (µg/L) Chronic Criterion (CCC)
3	*Ammonia*	7664417	n	*Criteria are pH, temperature, and salmonid or sensitive coldwater species dependent--See document USEPA January 1985 (Fresh Water).* [M]		*Ammonia criteria for saltwater may depend on pH and temperature. Values for saltwater criteria (total ammonia) can be calculated from the tables specified in Ambient Water Quality Criteria for Ammonia (Saltwater)--1989 (EPA 440/5-88-004; http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm)*	
[M] *See expanded endnote M equations at bottom of Table 30 to calculate freshwater ammonia criteria*							
4	Arsenic	7440382	y	340 [C, D]	150 [C, D]	69 [C, D]	36 [C, D]
[C] *Criterion is expressed in terms of "dissolved" concentrations in the water column.* [D] *Criterion is applied as total inorganic arsenic (i.e. arsenic (III) + arsenic (V)).*							
5	BHC Gamma (Lindane)	58899	y	0.95	0.08 [A]	0.16 [A]	--
[A] *See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.*							
6	Cadmium	7440439	n	*See* **E**	*See* **C, F**	40 [C]	8.8 [C]
[C] *Criterion is expressed in terms of "dissolved" concentrations in the water column.* [E] *The freshwater criterion for this metal is expressed as "total recoverable" and is a function of hardness (mg/L) in the water column. To calculate the criterion, use formula under expanded endnote E at bottom of Table 30.* [F] *The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. To calculate the criterion, use formula under expanded endnote F at bottom of Table 30.*							
7	Chlordane	57749	y	2.4 [A]	0.0043 [A]	0.09 [A]	0.004 [A]
[A] *See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.*							
8	*Chloride*	16887006	n	860,000	230,000	--	--
9	*Chlorine*	7782505	n	19	11	13	7.5

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	**CAS Number**	**Human Health Criterion**	**Freshwater (µg/L)**		**Saltwater (µg/L)**	
				Acute Criterion (CMC)	**Chronic Criterion (CCC)**	**Acute Criterion (CMC)**	**Chronic Criterion (CCC)**
10	*Chlorpyrifos*	2921882	n	0.083	0.041	0.011	0.0056
11	Chromium III	16065831	n	*See* **C, F**	*See* **C, F**	--	--
[C] *Criterion is expressed in terms of "dissolved" concentrations in the water column.* [F] *The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. To calculate the criterion, use formula under expanded endnote F at bottom of Table 30.*							
12	Chromium VI	18540299	n	16 [C]	11 [C]	1100[C]	50[C]
[C] *Criterion is expressed in terms of "dissolved" concentrations in the water column.*							
13	Copper	7440508	y	*See* **E**	*See* **E**	4.8 [C]	3.1 [C]
[C] *Criterion is expressed in terms of "dissolved" concentrations in the water column.* [E] *The freshwater criterion for this metal is expressed as "total recoverable" and is a function of hardness (mg/L) in the water column. To calculate the criterion, use formula under expanded endnote E at bottom of Table 30.*							
14	Cyanide	57125	y	22 [J]	5.2 [J]	1 [J]	1 [J]
[J] *This criterion is expressed as µg free cyanide (CN)/L.*							
15	DDT 4,4'	50293	y	1.1 [A, G]	0.001 [A, G]	0.13 [A, G]	0.001 [A, G]
[A] *See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.* [G] *This criterion applies to DDT and its metabolites (i.e. the total concentration of DDT and its metabolites should not exceed this value).*							
16	*Demeton*	8065483	n	--	0.1	--	0.1
17	Dieldrin	60571	y	0.24	0.056	0.71[A]	0.0019[A]
[A] *See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.*							
18	Endosulfan	115297	n	0.22 [A, H]	0.056 [A, H]	0.034 [A, H]	0.0087 [A, H]
[A] *See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.* [H] *This value is based on the criterion published in Ambient Water Quality Criteria for Endosulfan (EPA 440/5-80-046) and should be applied as the sum of alpha- and beta-endosulfan.*							
19	Endosulfan Alpha	959988	y	0.22 [A]	0.056 [A]	0.034 [A]	0.0087 [A]

Table 30							
Aquatic Life Water Quality Criteria for Toxic Pollutants							
				Freshwater (µg/L)		**Saltwater (µg/L)**	
	Pollutant	**CAS Number**	**Human Health Criterion**	**Acute Criterion (CMC)**	**Chronic Criterion (CCC)**	**Acute Criterion (CMC)**	**Chronic Criterion (CCC)**
[A] See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.							
20	Endosulfan Beta	33213659	y	0.22 [A]	0.056 [A]	0.034 [A]	0.0087 [A]
[A] See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.							
21	Endrin	72208	y	0.086	0.036	0.037 [A]	0.0023 [A]
[A] See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.							
22	*Guthion*	86500	n	--	0.01	--	0.01
23	Heptachlor	76448	y	0.52 [A]	0.0038 [A]	0.053 [A]	0.0036 [A]
[A] See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.							
24	Heptachlor Epoxide	1024573	y	0.52 [A]	0.0038 [A]	0.053 [A]	0.0036 [A]
[A] See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.							
25	*Iron (total)*	7439896	n	--	1000	--	--
26	Lead	7439921	n	*See* **C , F**	*See* **C , F**	210 [C]	8.1 [C]
[C] Criterion is expressed in terms of "dissolved" concentrations in the water column. *[F] The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. To calculate the criterion, use formula under expanded endnote F at bottom of Table 30.*							
27	*Malathion*	121755	n	--	0.1	--	0.1
28	Mercury (total)	7439976	n	2.4	0.012	2.1	0.025
29	*Methoxychlor*	72435	y	--	0.03	--	0.03
30	*Mirex*	2385855	n	--	0.001	--	0.001
31	Nickel	7440020	y	*See* **C , F**	*See* **C , F**	74 [C]	8.2 [C]
[C] Criterion is expressed in terms of "dissolved" concentrations in the water column. *[F] The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. To calculate the criterion, use formula under expanded endnote F at bottom of Table 30.*							
32	*Parathion*	56382	n	0.065	0.013	--	--
33	Pentachlorophenol	87865	y	*See* **H**	*See* **H**	13	7.9

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS Number	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
[H] *Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH, and are calculated as follows: CMC=(exp(1.005(pH)-4.869); CCC=exp(1.005(pH)-5.134).*							
34	*Phosphorus Elemental*	7723140	n	--	--	--	0.1
35	Polychlorinated Biphenyls (PCBs)	NA	y	2 [K]	0.014 [K]	10 [K]	0.03 [K]
[K] *This criterion applies to total PCBs (e.g.* determined as Aroclors or congeners)							
36	Selenium	7782492	y	*See* **C** , **L**	4.6 [C]	290 [C]	71 [C]
[C] *Criterion is expressed in terms of "dissolved" concentrations in the water column.* [L] *The CMC=(1/[(f1/CMC1)+(f2/CMC2)]µg/L) * CF where f1 and f2 are the fractions of total selenium that are treated as selenite and selenate, respectively,and CMC1 and CMC2 are 185.9 µg/L and 12.82 µg/L, respectively. See expanded endnote F for the Conversion Factor (CF) for selenium.*							
37	Silver	7440224	n	*See* **C** , **F**	0.10 [C]	1.9 [C]	--
[C] *Criterion is expressed in terms of "dissolved" concentrations in the water column.* [F] *The freshwater acute criterion for this metal is expressed as a function of hardness (mg/L) in the water column. To calculate the criterion, use formula under expanded endnote F at bottom of Table 30.*							
38	*Sulfide Hydrogen Sulfide*	7783064	n	--	2	--	2
39	Toxaphene	8001352	y	0.73	0.0002	0.21	0.0002
40	*Tributyltin (TBT)*	688733	n	0.46	0.063	0.37	0.01
41	Zinc	7440666	y	*See* **C** , **F**	*See* **C** , **F**	90 [C]	81 [C]
[C] *Criterion is expressed in terms of "dissolved" concentrations in the water column.* [F] *The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. To calculate the criterion, use formula under expanded endnote F at bottom of Table 30.*							

Expanded Endnotes A, E, F, M

Endnote A: Alternate Frequency and Duration for Certain Pesticides

This criterion is based on EPA recommendations issued in 1980 that were derived using guidelines that differed from EPA's 1985 Guidelines which update minimum data requirements and derivation procedures. The CMC may not be exceeded at any time and the CCC may not be exceeded based on a 24-hour average. The CMC may be applied using a one hour averaging period not to be exceeded more than once every three years, if the CMC values given in Table 30 are divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines.

Endnote E: Equations for Hardness-Dependent Freshwater Metals Criteria for Cadmium Acute and Copper Acute and Chronic Criteria

The freshwater criterion for this metal is expressed as total recoverable with two significant figures, and is a function of hardness (mg/L) in the water column. Criteria values for hardness are calculated using the following formulas (CMC refers to the acute criterion; CCC refers to the chronic criterion):

$$\textbf{CMC} = (\exp(m_A*[\ln(\text{hardness})] + b_A))$$

$$\textbf{CCC} = (\exp(m_C*[\ln(\text{hardness})] + b_C))$$

Chemical	m_A	b_A	m_C	b_C
Cadmium	1.128	-3.828	N/A	N/A
Copper	0.9422	-1.464	0.8545	-1.465

Endnote F: Equations for Hardness-Dependent Freshwater Metals Criteria and Conversion Factor Table

The freshwater criterion for this metal is expressed as dissolved with two significant figures, and is a function of hardness (mg/L) in the water column. Criteria values for hardness are calculated using the following formulas (CMC refers to the acute criterion; CCC refers to the chronic criterion):

$$\textbf{CMC} = (\exp(m_A*[\ln(\text{hardness})] + b_A))*CF$$

$$\textbf{CCC} = (\exp(m_C*[\ln(\text{hardness})] + b_C))*CF$$

"CF" is the conversion factor used for converting a metal criterion expressed as the total recoverable fraction in the water column to a criterion expressed as the dissolved fraction in the water column.

Chemical	m_A	b_A	m_C	b_C
Cadmium	N/A	N/A	0.7409	-4.719
Chromium III	0.8190	3.7256	0.8190	0.6848
Lead	1.273	-1.460	1.273	-4.705
Nickel	0.8460	2.255	0.8460	0.0584
Silver	1.72	-6.59	--	--
Zinc	0.8473	0.884	0.8473	0.884

The conversion factors (CF) below must be used in the equations above for the hardness-dependent metals in order to convert total recoverable metals criteria to dissolved metals criteria. For metals that are not hardness-dependent (i.e. arsenic, chromium VI, selenium, and silver (chronic)), or are saltwater criteria, the criterion value associated with the metal in Table 30 already reflects a dissolved criterion based on its conversion factor below.

Conversion Factor (CF) Table for Dissolved Metals

Chemical	Freshwater		Saltwater	
	Acute	Chronic	Acute	Chronic
Arsenic	1.000	1.000	1.000	1.000
Cadmium	N/A	1.101672-[(ln hardness)(0.041838)]	0.994	0.994
Chromium III	0.316	0.860	--	--
Chromium VI	0.982	0.962	0.993	0.993
Copper	N/A	N/A	0.83	0.83
Lead	1.46203-[(ln hardness)(0.145712)]	1.46203-[(ln hardness)(0.145712)]	0.951	0.951
Nickel	0.998	0.997	0.990	0.990
Selenium	0.996	0.922	0.998	0.998
Silver	0.85	0.85	0.85	--
Zinc	0.978	0.986	0.946	0.946

Endnote M: Equations for Freshwater Ammonia Calculations

Acute Criterion

The 1-hour average concentration of un-ionized ammonia (mg/L NH_3) may not exceed more often than once every three years on average, the numerical value given by:

$CMC_{NH3} = 0.52/FT/FPH/2$ where:

FT = temperature adjustment factor
FPH = pH adjustment factor
TCAP = temperature cap

$FT = 10^{0.03(20-TCAP)}$; $TCAP \leq T \leq 30^\circ C$
$FT = 10^{0.03(20-T)}$; $0 \leq T \leq TCAP$

$FPH = 1$ $8 \leq pH \leq 9$
$FPH = \frac{1 + 10^{7.4-pH}}{1.25}$ $6.5 \leq pH \leq 8$

TCAP = 20 ˚C; Salmonids and other sensitive coldwater species present

TCAP = 25 ˚C; Salmonids and other sensitive coldwater species absent

Chronic Criterion
The 4-day average concentration of un-ionized ammonia (mg/L NH_3) may not exceed more often than once every three years on average, the average numerical value given by:

$CCC_{NH3} = 0.80/FT/FPH/RATIO$

where FT and FPH are as above for acute criterion and:

$RATIO = 16$ *where* $7.7 \leq pH \leq 9$

$RATIO = 24 \times \left[\frac{10^{7.7-pH}}{1 + 10^{7.4-pH}}\right]$ *where* $6.5 \leq pH \leq 7.7$

TCAP = 15 ˚C; Salmonids and other sensitive coldwater species present
TCAP = 20 ˚C; Salmonids and other sensitive coldwater species absent

TABLE 31: Aquatic Life Water Quality Guidance Values for Toxic Pollutants

Effective April 18, 2014

Water Quality Guidance Values Summary [A]

The concentration for each compound listed in Table 31 is a guidance value that can be used in application of Oregon's Toxic Substances Narrative (340-041-0033(2)) to waters of the state in order to protect aquatic life. All values are expressed as micrograms per liter (µg/L) except where noted. Compounds are listed in alphabetical order with the corresponding EPA number (from National Recommended Water Quality Criteria: 2002, EPA-822-R-02-047), corresponding Chemical Abstract Service (CAS) number, aquatic life freshwater acute and chronic guidance values, and aquatic life saltwater acute and chronic guidance values.

Table 31

Aquatic Life Water Quality Guidance Values for Toxic Pollutants

EPA No.	Pollutant	CAS Number	Freshwater		Saltwater	
			Acute	Chronic	Acute	Chronic
56	Acenaphthene	83329	1,700	520	970	710
17	Acrolein	107028	68	21	55	
18	Acrylonitrile	107131	7,550	2,600		
1	Antimony	7440360	9,000	1,600		
19	Benzene	71432	5,300		5,100	700
59	Benzidine	92875	2,500			
3	Beryllium	7440417	130	5.3		
19 B	BHC (Hexachlorocyclohexane-Technical)	319868	100		0.34	
21	Carbon Tetrachloride	56235	35,200		50,000	
	Chlorinated Benzenes		250	50	160	129

Table 31						
Aquatic Life Water Quality Guidance Values for Toxic Pollutants						
			Freshwater		**Saltwater**	
EPA No.	**Pollutant**	**CAS Number**	**Acute**	**Chronic**	**Acute**	**Chronic**
	Chlorinated naphthalenes		1,600		7.5	
	Chloroalkyl Ethers		238,000			
26	Chloroform	67663	28,900	1,240		
45	Chlorophenol 2-	95578	4,380	2,000		
	Chlorophenol 4-	106489			29,700	
52	Methyl-4-chlorophenol 3-	59507	30			
5a	Chromium (III)	16065831			10,300	
109	DDE 4,4'-	72559	1,050		14	
110	DDD 4,4'-	72548	0.06		3.6	
	Diazinon	333415	0.08	0.05		
	Dichlorobenzenes		1,120	763	1,970	
29	Dichloroethane 1,2-	107062	118,000	20,000	113,000	
	Dichloroethylenes		11,600		224,000	
46	Dichlorophenol 2,4-	120832	2,020	365		
31	Dichloropropane 1,2-	78875	23,000	5,700	10,300	3,040
32	Dichloropropene 1,3-	542756	6,060	244	790	
47	Dimethylphenol 2,4-	105679	2,120			
	Dinitrotoluene		330	230	590	370
16	Dioxin (2,3,7,8-TCDD)	1746016	0.01	38 pg/L		
85	Diphenylhydrazine 1,2-	122667	270			
33	Ethylbenzene	100414	32,000		430	
86	Fluoranthene	206440	3,980		40	16
	Haloethers		360	122		
	Halomethanes		11,000		12,000	6,400
89	Hexachlorobutadiene	87683	90	9.3	32	
90	Hexachlorocyclopentadiene	77474	7	5.2	7	
91	Hexachloroethane	67721	980	540	940	
93	Isophorone	78591	117,000		12,900	

Table 31

Aquatic Life Water Quality Guidance Values for Toxic Pollutants

EPA No.	Pollutant	CAS Number	Freshwater		Saltwater	
			Acute	Chronic	Acute	Chronic
94	Naphthalene	91203	2,300	620	2,350	
95	Nitrobenzene	98953	27,000		6,680	
	Nitrophenols		230	150	4,850	
26 B	Nitrosamines	35576911	5,850		3,300,000	
	Pentachlorinated ethanes		7,240	1,100	390	281
54	Phenol	108952	10,200	2,560	5,800	
	Phthalate esters		940	3	2,944	3.4
	Polynuclear Aromatic Hydrocarbons				300	
	Tetrachlorinated Ethanes		9,320			
37	Tetrachloroethane 1,1,2,2-	79345		2,400	9,020	
	Tetrachloroethanes		9,320			
38	Tetrachloroethylene	127184	5,280	840	10,200	450
	Tetrachlorophenol 2,3,5,6					440
12	Thallium	7440280	1,400	40	2,130	
39	Toluene	108883	17,500		6,300	5,000
	Trichlorinated ethanes		18,000			
41	Trichloroethane 1,1,1-	71556			31,200	
42	Trichloroethane 1,1,2-	79005		9,400		
43	Trichloroethylene	79016	45,000	21,900	2,000	
55	Trichlorophenol 2,4,6-	88062		970		

The following chemicals/compounds/classes are of concern due to the potential for toxic effects to aquatic organisms; however, no guidance values are designated. If these compounds are identified in the waste stream, then a review of the scientific literature may be appropriate for deriving guidance values.

- Polybrominated diphenyl ethers (PBDE)
- Polybrominated biphenyls (PBB)
- Pharmaceuticals

- ❑ Personal care products
- ❑ Alkyl Phenols
- ❑ Other chemicals with Toxic effects

Footnotes:

A Values in Table 31 are applicable to all basins.

B This number was assigned to the list of non-priority pollutants in National Recommended Water Quality Criteria: 2002 (EPA-822-R-02-047).

TABLE 40: Human Health Water Quality Criteria for Toxic Pollutants

Effective April 18, 2014

Human Health Criteria Summary

The concentration for each pollutant listed in Table 40 was derived to protect Oregonians from potential adverse health impacts associated with long-term exposure to toxic substances associated with consumption of fish, shellfish, and water. The “organism only” criteria are established to protect fish and shellfish consumption and apply to waters of the state designated for fishing. The “water + organism” criteria are established to protect the consumption of drinking water, fish, and shellfish, and apply where both fishing and domestic water supply (public and private) are designated uses. All criteria are expressed as micrograms per liter (µg/L), unless otherwise noted. Pollutants are listed in alphabetical order. Additional information includes the Chemical Abstract Service (CAS) number, whether the criterion is based on carcinogenic effects (can cause cancer in humans), and whether there is an aquatic life criterion for the pollutant (i.e. “y”= yes, “n” = no). All the human health criteria were calculated using a fish consumption rate of 175 grams per day unless otherwise noted. A fish consumption rate of 175 grams per day is approximately equal to 23 8-ounce fish meals per month. For pollutants categorized as carcinogens, values represent a cancer risk of one additional case of cancer in one million people (i.e. 10^{-6}), unless otherwise noted. All metals criteria are for total metal concentration, unless otherwise noted. Italicized pollutants represent non-priority pollutants. The human health criteria revisions established by OAR 340-041-0033 and shown in Table 40 do not become applicable for purposes of ORS chapter 468B or the federal Clean Water Act until approved by EPA pursuant to 40 CFR 131.21 (4/27/2000).

Table 40

Human Health Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS Number	Carcinogen	Aquatic Life Criterion	*Human Health Criteria for the Consumption of:* Water + Organism (µg/L)	Organism Only (µg/L)
1	Acenaphthene	83329	n	n	95	99
2	Acrolein	107028	n	n	0.88	0.93

Table 40

Human Health Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS Number	Carcinogen	Aquatic Life Criterion	*Human Health Criteria for the Consumption of:* Water + Organism (µg/L)	Organism Only (µg/L)
3	Acrylonitrile	107131	y	n	0.018	0.025
4	Aldrin	309002	y	y	0.0000050	0.0000050
5	Anthracene	120127	n	n	2900	4000
6	Antimony	7440360	n	n	5.1	64
7	Arsenic (inorganic) [A]	7440382	y	y	2.1	2.1 (freshwater) 1.0 (saltwater)
	[A] The arsenic criteria are expressed as total inorganic arsenic. The "organism only" freshwater criterion is based on a risk level of approximately 1 x 10^{-5}, and the "water + organism" criterion is based on a risk level of 1 x 10^{-4}.					
8	Asbestos [B]	1332214	y	n	7,000,000 fibers/L	--
	[B] The human health risks from asbestos are primarily from drinking water, therefore no "organism only" criterion was developed. The "water + organism" criterion is based on the Maximum Contaminant Level (MCL) established under the Safe Drinking Water Act.					
9	*Barium* [C]	7440393	n	n	1000	--
	[C] The human health criterion for barium is the same as originally published in the 1976 EPA Red Book which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value was also published in the 1986 EPA Gold Book. Human health risks are primarily from drinking water, therefore no "organism only" criterion was developed. The "water + organism" criterion is based on the Maximum Contaminant Level (MCL) established under the Safe Drinking Water Act.					
10	Benzene	71432	y	n	0.44	1.4
11	Benzidine	92875	y	n	0.000018	0.000020
12	Benz(a)anthracene	56553	y	n	0.0013	0.0018
13	Benzo(a)pyrene	50328	y	n	0.0013	0.0018
14	Benzo(b)fluoranthene 3,4	205992	y	n	0.0013	0.0018
15	Benzo(k)fluoranthene	207089	y	n	0.0013	0.0018
16	BHC Alpha	319846	y	n	0.00045	0.00049
17	BHC Beta	319857	y	n	0.0016	0.0017
18	BHC Gamma (Lindane)	58899	n	y	0.17	0.18
19	Bromoform	75252	y	n	3.3	14
20	Butylbenzyl Phthalate	85687	n	n	190	190
21	Carbon Tetrachloride	56235	y	n	0.10	0.16
22	Chlordane	57749	y	y	0.000081	0.000081
23	Chlorobenzene	108907	n	n	74	160
24	Chlorodibromomethane	124481	y	n	0.31	1.3

Table 40

Human Health Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS Number	Carcinogen	Aquatic Life Criterion	*Human Health Criteria for the Consumption of:* Water + Organism (µg/L)	Organism Only (µg/L)
25	Chloroethyl Ether bis 2	111444	y	n	0.020	0.053
26	Chloroform	67663	n	n	260	1100
27	Chloroisopropyl Ether bis 2	108601	n	n	1200	6500
28	*Chloromethyl ether, bis*	542881	y	n	0.000024	0.000029
29	Chloronaphthalene 2	91587	n	n	150	160
30	Chlorophenol 2	95578	n	n	14	15
31	*Chlorophenoxy Herbicide (2,4,5,-TP)* [D]	93721	n	n	10	--
	[D] *The Chlorophenoxy Herbicide (2,4,5,-TP) criterion is the same as originally published in the 1976 EPA Red Book which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value was also published in the 1986 EPA Gold Book. Human health risks are primarily from drinking water, therefore no "organism only" criterion was developed. The "water + organism" criterion is based on the Maximum Contaminant Level (MCL) established under the Safe Drinking Water Act.*					
32	*Chlorophenoxy Herbicide (2,4-D)* [E]	94757	n	n	100	--
	[E] *The Chlorophenoxy Herbicide (2,4-D) criterion is the same as originally published in the 1976 EPA Red Book which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value was also published in the 1986 EPA Gold Book. Human health risks are primarily from drinking water, therefore no "organism only" criterion was developed. The "water + organism" criterion is based on the Maximum Contaminant Level (MCL) established under the Safe Drinking Water Act.*					
33	Chrysene	218019	y	n	0.0013	0.0018
34	Copper [F]	7440508	n	y	1300	--
	[F] *Human health risks from copper are primarily from drinking water, therefore no "organism only" criterion was developed. The "water + organism" criterion is based on the Maximum Contaminant Level (MCL) established under the Safe Drinking Water Act.*					
35	Cyanide [G]	57125	n	y	130	130
	[G] *The cyanide criterion is expressed as total cyanide (CN)/L.*					
36	DDD 4,4'	72548	y	n	0.000031	0.000031
37	DDE 4,4'	72559	y	n	0.000022	0.000022
38	DDT 4,4'	50293	y	y	0.000022	0.000022
39	Dibenz(a,h)anthracene	53703	y	n	0.0013	0.0018
40	Dichlorobenzene(m) 1,3	541731	n	n	80	96
41	Dichlorobenzene(o) 1,2	95501	n	n	110	130
42	Dichlorobenzene(p) 1,4	106467	n	n	16	19
43	Dichlorobenzidine 3,3'	91941	y	n	0.0027	0.0028

Table 40

Human Health Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS Number	Carcinogen	Aquatic Life Criterion	*Human Health Criteria for the Consumption of:*	
					Water + Organism (µg/L)	**Organism Only (µg/L)**
44	Dichlorobromomethane	75274	y	n	0.42	1.7
45	Dichloroethane 1,2	107062	y	n	0.35	3.7
46	Dichloroethylene 1,1	75354	n	n	230	710
47	Dichloroethylene trans 1,2	156605	n	n	120	1000
48	Dichlorophenol 2,4	120832	n	n	23	29
49	Dichloropropane 1,2	78875	y	n	0.38	1.5
50	Dichloropropene 1,3	542756	y	n	0.30	2.1
51	Dieldrin	60571	y	y	0.0000053	0.0000054
52	Diethyl Phthalate	84662	n	n	3800	4400
53	Dimethyl Phthalate	131113	n	n	84000	110000
54	Dimethylphenol 2,4	105679	n	n	76	85
55	Di-n-butyl Phthalate	84742	n	n	400	450
56	Dinitrophenol 2,4	51285	n	n	62	530
57	*Dinitrophenols*	25550587	n	n	62	530
58	Dinitrotoluene 2,4	121142	y	n	0.084	0.34
59	Dioxin (2,3,7,8-TCDD)	1746016	y	n	0.00000000051	0.00000000051
60	Diphenylhydrazine 1,2	122667	y	n	0.014	0.020
61	Endosulfan Alpha	959988	n	y	8.5	8.9
62	Endosulfan Beta	33213659	n	y	8.5	8.9
63	Endosulfan Sulfate	1031078	n	n	8.5	8.9
64	Endrin	72208	n	y	0.024	0.024
65	Endrin Aldehyde	7421934	n	n	0.030	0.030
66	Ethylbenzene	100414	n	n	160	210
67	Ethylhexyl Phthalate bis 2	117817	y	n	0.20	0.22
68	Fluoranthene	206440	n	n	14	14
69	Fluorene	86737	n	n	390	530
70	Heptachlor	76448	y	y	0.0000079	0.0000079
71	Heptachlor Epoxide	1024573	y	y	0.0000039	0.0000039
72	Hexachlorobenzene	118741	y	n	0.000029	0.000029
73	Hexachlorobutadiene	87683	y	n	0.36	1.8
74	*Hexachlorocyclo-hexane-Technical*	608731	y	n	0.0014	0.0015

Table 40

Human Health Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS Number	Carcinogen	Aquatic Life Criterion	*Human Health Criteria for the Consumption of:* Water + Organism (µg/L)	Organism Only (µg/L)
75	Hexachlorocyclopentadiene	77474	n	n	30	110
76	Hexachloroethane	67721	y	n	0.29	0.33
77	Indeno(1,2,3-cd)pyrene	193395	y	n	0.0013	0.0018
78	Isophorone	78591	y	n	27	96
79	*Manganese* [H]	7439965	n	n	--	100
	[H] *The "fish consumption only" criterion for manganese applies only to salt water and is for total manganese. This EPA recommended criterion predates the 1980 human health methodology and does not utilize the fish ingestion BCF calculation method or a fish consumption rate.*					
80	*Methoxychlor* [I]	72435	n	y	100	--
	[I] *The human health criterion for methoxychlor is the same as originally published in the 1976 EPA Red Book which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value was also published in the1986 EPA Gold Book. Human health risks are primarily from drinking water, therefore no "organism only" criterion was developed. The "water + organism" criterion is based on the Maximum Contaminant Level (MCL) established under the Safe Drinking Water Act.*					
81	Methyl Bromide	74839	n	n	37	150
82	Methyl-4,6-dinitrophenol 2	534521	n	n	9.2	28
83	Methylene Chloride	75092	y	n	4.3	59
84	Methylmercury (mg/kg) [J]	22967926	n	n	--	0.040 mg/kg
	[J] *This value is expressed as the fish tissue concentration of methylmercury. Contaminated fish and shellfish is the primary human route of exposure to methylmercury.*					
85	Nickel	7440020	n	y	140	170
86	*Nitrates* [K]	14797558	n	n	10000	--
	[K] *The human health criterion for nitrates is the same as originally published in the 1976 EPA Red Book which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value was also published in the 1986 EPA Gold Book. Human health risks are primarily from drinking water, therefore no "organism only" criterion was developed. The "water + organism" criterion is based on the Maximum Contaminant Level (MCL) established under the Safe Drinking Water Act.*					
87	Nitrobenzene	98953	n	n	14	69
88	*Nitrosamines*	35576911	y	n	0.00079	0.046
89	*Nitrosodibutylamine, N*	924163	y	n	0.0050	0.022
90	*Nitrosodiethylamine, N*	55185	y	n	0.00079	0.046
91	Nitrosodimethylamine, N	62759	y	n	0.00068	0.30
92	Nitrosodi-n-propylamine, N	621647	y	n	0.0046	0.051
93	Nitrosodiphenylamine, N	86306	y	n	0.55	0.60
94	*Nitrosopyrrolidine, N*	930552	y	n	0.016	3.4

Table 40

Human Health Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS Number	Carcinogen	Aquatic Life Criterion	*Human Health Criteria for the Consumption of:* Water + Organism (µg/L)	Organism Only (µg/L)
95	*Pentachlorobenzene*	608935	n	n	0.15	0.15
96	Pentachlorophenol	87865	y	y	0.15	0.30
97	Phenol	108952	n	n	9400	86000
98	Polychlorinated Biphenyls (PCBs) [L]	NA	y	y	0.0000064	0.0000064
	[L] *This criterion applies to total PCBs (e.g. determined as Aroclors or congeners).*					
99	Pyrene	129000	n	n	290	400
100	Selenium	7782492	n	y	120	420
101	*Tetrachlorobenzene, 1,2,4,5-*	95943	n	n	0.11	0.11
102	Tetrachloroethane 1,1,2,2	79345	y	n	0.12	0.40
103	Tetrachloroethylene	127184	y	n	0.24	0.33
104	Thallium	7440280	n	n	0.043	0.047
105	Toluene	108883	n	n	720	1500
106	Toxaphene	8001352	y	y	0.000028	0.000028
107	Trichlorobenzene 1,2,4	120821	n	n	6.4	7.0
108	Trichloroethane 1,1,2	79005	y	n	0.44	1.6
109	Trichloroethylene	79016	y	n	1.4	3.0
110	Trichlorophenol 2,4,6	88062	y	n	0.23	0.24
111	*Trichlorophenol, 2, 4, 5-*	95954	n	n	330	360
112	Vinyl Chloride	75014	y	n	0.023	0.24
113	Zinc	7440666	n	y	2100	2600