

## CHAPTER 1 - INTRODUCTION

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# CHAPTER 1 - INTRODUCTION

## A. THE COQUILLE WATERSHED ACTION PLAN

This Action Plan is the second iteration of planning in the Coquille watershed and updates the *Phase 1 Watershed Action Plan* completed in November of 1994. The Plan is a working document characterizing watershed conditions from a landscape perspective, and is based on specific local issues. It was developed with information from, and participation of, the local Technical Advisory Group (TAG). Figure 1-1 depicts the Coquille watershed and adjoining areas' major rivers, streams, and towns.

This plan will provide the Coquille Watershed Association (CWA) with a framework for identifying and prioritizing restoration and enhancement actions. The plan will also help to coordinate local federal, state, and private efforts and funding to implement those actions on both private and public lands. This document will be extensively used by the CWA and represents the current understanding and available knowledge of conditions and needs in the Coquille River watershed.

### 1. SCOPE OF THIS ACTION PLAN

The primary issues today focus around declines in anadromous fish. Many factors have contributed to these declines including, but not limited, to:

Fishing	Road Building
Hatchery Operations	Water Diversions
Historic Logging Practices	Barriers: Culverts, Dams, etc.
Urbanization	Mining of Gravel From Streambeds
Agricultural Activities: Farming, Grazing, etc.	

**Factors which may have influenced the current situation in the Coquille watershed, but are beyond local ability to control and/or restore, are outside the scope of this plan.**

These include:

- Factors related to incidental, recreational, and commercial harvest - i.e., management activities pertinent to control of fishing-related mortality, including: ocean fisheries, in-river fisheries, direct harvest effects, indirect fishery effects and effects on adults and juveniles.
- Factors related to hatchery management - activities pertinent to the use of artificial propagation, including decisions related to: species and brood stocks used; numbers and locations of fish stocked; expansion or reduction in stocking programs; and criteria for smolt sizes.
- Factors affecting environmental conditions - Climate factors are large scale processes that affect ocean, estuarine, and freshwater environments. These climate conditions appear to

be cyclic in nature (~20 - 30 year cycle), but it is not possible to accurately predict whether conditions will return to more favorable conditions in the near future<sup>1</sup>.

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<sup>1</sup>The 1997 Oregon Plan, Chapter 3.

**FIGURE 1-1  
COQUILLE WATERSHED: MAJOR RIVERS, STREAMS, AND TOWNS.**

- Predation by birds and marine mammals - Scientific studies and a recent review of Pacific Northwest salmon by the National Research Council and the Botkin Report have tended to assert that predation by coastal bird and marine mammal populations is not a major, underlying cause of the decline in coho or other regional salmonid populations.

This document focuses entirely upon inland watershed management and restoration potential. While the *Action Plan* focuses on the current needs of salmonids, it will conserve and restore crucial elements of natural systems that support other fish species, wildlife and people.

## **B. IMPETUS FOR ACTION**

Pacific-northwest regional and statewide issues including water quality, anadromous fisheries, and old-growth dependant species have had a major effect on management in the Coquille watershed.

A recent study of factors limiting natural production of native anadromous fish in Oregon coastal streams (USFWS, ODFW, USFS, BLM, HSU, 1992) indicates that spawning and rearing habitat are moderately-to-highly limiting in the Coquille system. The main stem river historically functioned as a rearing area for juvenile fish but current conditions have severely reduced rearing in this zone (Reeves *et al.*, 1992; Benner *et al.*, 1992; US Corps of Engineers, 1972; ODEQ, 1992; ODFW, 1992). These limiting factors reflect conditions resulting from both extreme natural events and the land management practices from post European settlement to modern day. These limiting factors will be discussed in detail in Chapter 3.

In 1993, the Forest Ecosystem Management Team (FEMAT) identified six "Key Watersheds" within the Coquille watershed which became part of an aquatic conservation strategy in the Northwest Forest Plan (USDA, 1994). These are Rowland, Baker, and Salmon Creeks, plus the upper South Fork area in the South Fork drainage, and the headwaters of Cherry Creek and the North Fork of the Coquille River in the North Fork drainage. Key Watersheds serve as refuge areas critical for maintaining and recovering habitat for at-risk stocks of anadromous salmonids on federally administered land. These six areas were further defined as Tier 1 watersheds, selected for directly contributing to anadromous salmonid conservation. Figure 1-2 depicts the Key Watersheds within the Coquille watershed.

In July of 1995, the National Marine Fisheries Service (NMFS) published a proposed rule (60 FR 38011) which identified six Evolutionarily Significant Units (or ESUs) of coho salmon and proposed to list three of these ESUs as "threatened" under the Federal Endangered Species Act (ESA). The ESU of coho salmon relevant to the Coquille River is the Northern Oregon Coast ESU. This ESU includes all coastal populations from the mouth of the Columbia south to Cape Blanco.

**FIGURE 1-2  
KEY WATERSHEDS**

In 1996 the Oregon Department of Environmental Quality (ODEQ) submitted its biennial water quality report to the Environmental Protection Agency (EPA). The report lists rivers, streams, and parameters which do not meet water quality standards under Section 303(d) of the Clean Water Act. Also listed are rivers, streams, and their parameters for which supporting data is needed to make a listing determination. Together, there are 37 streams or stream segments in the Coquille River system plus Twomile and Fourmile Creeks with current or potential water quality problems.

In February, 1997, a revised and updated draft of the Oregon Coastal Salmon Restoration Initiative (OCSRI or "the Oregon Plan") was presented at Legislative hearings. The Legislature addressed concerns and made needed changes to the Oregon Plan and a final draft was completed March 10, 1997. The final draft was submitted to NMFS in late March, 1997. The Plan identified Core Areas (priority stream reaches) for coho salmon, fall and spring chinook salmon, and winter steelhead. Table 1-1 and Figure 1-3 contain additional information about these areas.<sup>2</sup>

On April 25, 1997, NMFS made a decision not to list the Northern Oregon Coast ESU of coho salmon. NMFS agreed to a three year trial of the Oregon Plan and will make a decision on its effectiveness at that time.

**TABLE 1-1  
CORE AREA MILES BY % ANADROMOUS SALMONID HABITAT & BASIN MILES**

Species/Race	Core Miles*	Major Sub-Watershed	Core Area Habitat	
			% Anadromous Salmonid Habitat	% of Basin
Coho Salmon	125.8	N, E, M, S	26	10
Fall Chinook Salmon	80.7	N, E, M, S	17	7
Spring Chinook Salmon	25.8	S	5	2
Winter Steelhead	66.4	S	14	5
<b>Total Core Miles</b>	<b>211.5*</b>		<b>44*</b>	<b>17*</b>

\* Species areas can overlap  
 N=North Fork      E=East Fork      M=Middle Fork S=South Fork

The above issues drove the need for the current update of the Coquille Watershed Action Plan, but were also influential in the development of the Coquille Watershed Association.

### **C. THE COQUILLE WATERSHED ASSOCIATION (CWA)**

A comprehensive watershed management program was initiated in Oregon in 1993 to address

<sup>2</sup>The 1997 Oregon Plan, Executive Summary Overview.

the complex natural resource issues facing Oregon. This strategy entails a long-term commitment by local, state, and federal land managers, private landowners, and private

**FIGURE 1-3**  
**COASTAL SALMON INITIATIVE - CORE SALMONID AREAS**

citizens to address watershed protection, enhancement, and restoration in an effort to restore watershed health throughout Oregon. The formation of cooperative partnerships to seek common solutions to protect and restore the health of Oregon's ecosystems, support sustainable resource use, and enhance local economies was essential. It was felt that the most effective means to mobilize, educate, and involve local citizens in this effort was through the creation and support of watershed councils.<sup>3</sup> The role of Watershed Councils (or Associations) statewide has been further defined in the Oregon Plan, Chapters 12 and 17A.

A brief summary of the roles and definitions of principal players in the watershed council process can be found in Appendix A.

## **1. MISSION, GOALS, AND OBJECTIVES<sup>4</sup>**

### **Mission Statement**

The Coquille Watershed Association is a nonprofit corporation. The Association is comprised of a broad array of participants with interests, livelihoods, or land ownership found in the Coquille watershed. It has the following mission:

The Coquille Watershed Association has a vision of the Coquille system in which commercial activities occur so that resource values are integrated. The vision includes the following:

- Create water quality conditions that will meet the Clean Water Act standards.
- Enhance native fish survival and production. Increase salmonid production in the basin.
- Create understanding and acceptance of the need for sustainable economic activities representing long-term resource conservation.
- Respect and protect private property rights during the implementation of projects designed to improve watershed productivity and health. The association will only engage in a project with the written permission of the landowner. Any commitments the landowner makes will be clearly defined and strictly on a voluntary basis. Adequate language will be added to agreements to assure property owners that no hidden claim to their land will result from the implementation of a project<sup>5</sup>.

### **Goals**

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<sup>3</sup>The 1997 Oregon Plan, Chapter 17A, pg 17A-3.

<sup>4</sup>The 1997 Oregon Plan, Chapter 17A, pg 17A-34&35.

<sup>5</sup>Bylaws of the Coquille Watershed Association, Article X, Resolutions.

Provide an organizational framework to coordinate the assessment of the watershed's conditions; implement and monitor proven management practices; and test new management practices that are designed to support environmental integrity and economic stability for the communities of the Coquille watershed and adjacent areas.<sup>6</sup>

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<sup>6</sup> Bylaws of the Coquille Watershed Association, Article 1, Purpose and Mission.

## **Objectives**

- To facilitate communication between affected landowners, citizens, political organizations, associations, and agencies within the Coquille watershed.
- To provide a framework to coordinate projects and management practices within the Coquille watershed that will improve its overall health.
- To coordinate comprehensive programs for the strategic management of the Coquille watershed.
- To provide the opportunity to resolve problems and conflicts arising over the management of, and management practices within the Coquille watershed.
- To provide opportunities for community-based education on the values and function of the Coquille watershed.
- To enhance and restore salmonids in the Coquille basin.
- To monitor and evaluate activities accomplished through the Coquille Watershed Association.
- To solicit funding and other resources to implement the objectives of the Coquille Watershed Association.

## **2. ADJOINING AREAS**

Landowners in the Twomile Creek and Fourmile Creek area have joined together as the "Southwest Coos Watershed Council". They petitioned for and gained membership in the CWA in April 1997. The two creeks flow into the New River, which currently empties into the ocean west of Laurel Lake, approximately 8 miles south of Bandon. Little data is available on the area at this time. As information is collected it will be incorporated as updates to the *Action Plan*.

## **D. SETTING**

### **1. THE COQUILLE RIVER AND MAJOR TRIBUTARIES**

The 1059 square mile Coquille River watershed is the third largest river system in Oregon. The majority of the Coquille watershed lies in Coos County, Oregon. The remainder is in Douglas County and a small area of Curry County. The Coquille's three major tributaries; the North (including the East Fork), Middle, and South Forks; join the main stem within a few miles up- and down-stream of the town of Myrtle Point and flow into the Pacific Ocean at Bandon. Table 1-2 below shows the length, average gradient, and drainage area of the Coquille River and its major forks.

### **Main Stem Coquille River and Estuary**

Although the watershed is large, the estuary of the Coquille river is one of the smaller in the state. The lower bay of the Coquille is long and narrow, measuring about 763 acres. The estuary contains over 380 acres of tidelands, and 383 acres of permanently submerged land. Eelgrass beds, wetlands, and tidal flats provide feeding, spawning, breeding, nesting, and

nursery areas for many species of terrestrial and aquatic life.<sup>7</sup>

Despite the historical diking and filling of many acres of wetlands, creek, and slough environments, the lower river area continues to be a very important rearing environment for anadromous fish such as shad and juvenile chinook salmon.

The main stem of the Coquille River stretches 36 miles from the confluence of the South Fork to the mouth, and drains an area of 172 square miles. It has a very low gradient of about one foot per mile. The City of Coquille at river mile (RM) 25 marks the observed limit of saltwater intrusion. The entire main stem is tidally influenced. The head of tide occurs at Spruce Street bridge in the town of Myrtle Point on the South Fork at RM 38.

**TABLE 1-2  
LENGTH, GRADIENT, AND DRAINAGE AREA  
OF THE COQUILLE RIVER AND ITS FORKS**

	Length (Miles)	Average Gradient		Drainage Area (Square Miles)
		(Feet/Mile)	Percent(%)	
<b>Main Stem</b>	36.3	1	0.02	172
<b>South Fork</b>	62.8	47	0.89	288
<b>Middle Fork</b>	40.3	35	0.66	310
<b>North Fork</b>	53.3	30	0.57	154
<b>East Fork</b>	33.8	70	1.33	135
<b>Total</b>	226.5			1059

**South Fork of the Coquille River**

The South Fork of the Coquille River is the longest fork with a length of 62.8 miles and an average gradient of 47 feet per mile. The longest reach in the Coquille system is 99 miles from the headwaters of the South Fork to the mouth of the Coquille River at Bandon. The South Fork subwatershed contains 288 square miles.

**Middle Fork of the Coquille River**

The Middle Fork of the Coquille River is actually a tributary to the South Fork with the confluence just south of Myrtle Point. It runs 40 miles in an easterly direction from its mouth to its headwaters near Camas Valley. It has an average gradient of 35 feet per mile and drains an area of 310 square miles,

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<sup>7</sup>Near Coastal Waters Pilot Project "Action Plan for Oregon Estuary and Ocean Waters" (Draft), ODEQ, 1990.



## **North Fork of the Coquille River**

The North Fork of the Coquille River drains 154 square miles and joins the main stem near Myrtle Point. Running southward from its headwaters some 53 miles to its mouth, the North Fork has a gradient of about 30 feet per mile.

## **East Fork of the Coquille River**

The East Fork of the Coquille River is tributary to the North Fork, and flows into it at Gravelford, about 9 miles from the mouth. The East Fork of the Coquille is 34 miles long with an average gradient of 70 feet per mile, making it the shortest and steepest fork of the Coquille. It runs west from its headwaters to its mouth east of Sitkum, and has a drainage area of 135 square miles.

## **2. TWOMILE CREEK AND FOURMILE CREEK AREA**

### **Twomile Creek**

Twomile Creek currently flows into the New River slightly northwest of Laurel Lake and approximately 800' from New River's mouth at the Pacific Ocean. The configuration of Twomile Creek and the New River has changed over the last 25 years. The mouth of New River has moved steadily northward. The mouth of Twomile Creek has been at the Pacific Ocean but has moved steadily southward until it met the New River in the last few years.

Twomile Creek is approximately six miles long and has three tributary streams: Lower Twomile Creek, South Twomile Creek, and Redibaugh Creek. The drainage area is approximately 27 square miles.

### **Fourmile Creek**

Four Mile Creek now flows into the New River slightly southwest of Laurel Lake and approximately one mile from the New River's mouth at the Pacific Ocean. Fourmile Creek is approximately ten miles long with two tributary streams: South Fork and North Fourmile. The drainage area is approximately 22 square miles.

## **3. CLIMATE AND RAINFALL**

The local climate is humid with a strong marine influence and moderate year-round temperatures. Average annual rainfall ranges from a low of 45 inches in the Camas Valley area to approximately 120 inches in the headwaters of the South Fork<sup>8</sup>. Seventy-five percent (75%) of annual precipitation occurs between the months of November and March, often in

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<sup>8</sup>Based on estimates by Oregon State Climatologist. Coquille Subbasin Working Atlas, pg 14.

heavy storm events. Rainfall is quite variable and appears to be a function of cyclical patterns occurring on 20- to 30-year intervals.

Due to the typically southern winter storm track and the orientation of the ridges in the drainage, the East Fork and South Fork of the Coquille receive the most rainfall. Between 75 and 120 inches fall annually east of China Creek in the East Fork and above Powers and including Dement, Rowland, and Baker Creeks in the South Fork. The headwaters of Myrtle and Rock Creeks in the Middle Fork drainage and the headwaters of Middle and Cherry Creeks in the North Fork also receive between 75 and 120 inches of rain annually. The rest of the basin receives between 50 and 75 inches per year with the exception of the Camas Valley area which receives somewhat less than 50.

#### **4. GEOLOGY**

The Coquille drains a geologically complex region of the Klamath and Coast Range Provinces characterized by a relatively narrow coastal plain and by narrow alluvial valleys extending into a mountainous interior. Elevations range from sea level to 4,075 feet at Ophir Mountain.

The Coquille watershed is naturally sediment productive due to the interplay of terrain, geology, and precipitation (ODEQ, 1992). Heavy seasonal rainfall combined with steep, thinly soiled slopes on unstable bedrock leave the drainage highly susceptible to earthflows, debris slides, erosion, and flash flooding.

The Coquille watershed lies within two major geologic provinces and is dominated by marine sedimentary rocks. The headwaters of the South Fork of the Coquille lie in the northwestern corner of the Klamath Mountain Province. This is a hard rock system composed of volcanics, diorite, and serpentine rocks. Fault contacts exist between the volcanic rocks leading to instability in the area and resulting in earthflows, debris slides, and slumps (State Water Resources, 1963; Ricks, 1992). The remainder of the basin lies in the southern part of the Coast Range Province. This province is primarily composed of steeply sloped sandstone (Non-point Source Effort, 1992). A major formation present within the Coast Range area of the basin is the Tyee, a formation composed of thick sequences of bedded sandstone, susceptible to mass movement, rapid erosion, flash flooding, and landslides. Appendix B lists the general geologic units and their common hazards in the Coquille drainage.

Fluctuating sea levels and continued uplifting and infilling of the river channel have resulted in marine and alluvial sediment deposition and terrace formation through the lower river drainage. The towns of Myrtle Point and Coquille are situated on these alluvial deposits while Bandon is perched on a marine terrace. The unconsolidated to semi-consolidated deposits that form these terraces are subject to severe stream bank erosion during high winter flows.<sup>9</sup>

#### **5. LAND USE AND OWNERSHIP**

Currently, the population within the watershed is estimated at 16,801 persons. The population

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<sup>9</sup>Near Coastal Waters Pilot Project "Action Plan for Oregon Estuary and Ocean Water, ODEQ, 1990, pg 3-16.

is concentrated in the valley areas with the majority clustered around the incorporated towns of Bandon, Coquille, Myrtle Point, and Powers.

The more densely populated valley areas are confined to the flood plains along the main stem, four forks, and larger order streams. Land uses in this area are predominantly residential and industrial sites, commercial and service businesses, crop and pasture lands, and gravel extraction.<sup>10</sup> Pasture land does extend into the hills above the flood plains in some areas.

The steep hill slopes above the valley areas are very sparsely populated. Timber production, agriculture, and some mining are the predominant land uses. Approximately 70% of the watershed is forested. The upper reaches of all four forks of the river and most tidewater streams are commercial forests.

Approximately 40% of the watershed is private industrial forest land. Federal, state, and county lands occupy about 30% of the watershed. The Bureau of Land Management (BLM) and U.S. Forest Service administer the largest of these public holdings. Another 30% of the basin is in smaller non-industrial private holdings.<sup>11</sup> Table 1-3 below breaks down the sub-watersheds by ownership and includes approximate stream mileage for third order streams.

**TABLE 1-3  
STREAM MILES\* AND AREA BY SUB-WATERSHED AND OWNERSHIP**

Sub-watershed	Federal Ownership				Other Ownership	
	BLM		USFS		% Total Acres	Stream Miles*
	% Total Acres	Stream Miles*	% Total Acres	Stream Miles*		
<b>Main Stem</b>	0	0	0	0	100	153
<b>North Fork (+East Fork)</b>	44	215	0	0	56	259
<b>Middle Fork</b>	22	97	0	0	78	344
<b>South Fork</b>	5	7	47	72	48	74
<b>Total</b>		320		72		850

\* 3rd order and greater

<sup>8</sup>Coquille Subbasin Working Atlas, pg 10-13.

<sup>9</sup>Coquille Subbasin Working Atlas, pg 7.