# Curry County
# Agricultural Water Quality
# Management Area Plan

**Developed by**

**The Oregon Department of Agriculture**

**and**

**the Curry Soil and Water Conservation District**

**with assistance from**

**the Curry County Local Advisory Committee**

**2004**

**Revised**

**2006**
**2010**
**2012**

# Local Advisory Committee Members

## Current (2012) LAC Members

Linda Smith, Chair
Lee Riddle
Ted Fitzgerald
Harry Harms
Robert McKenzie
Mary Wahl
Jim Kamph
Joe Pestana
Tooz Wahl

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Walt Schroeder, Former Chair
Knute Andersson
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George Fleming
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Mike Knapp
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Angie Dillingham
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# An Open Letter from the LAC to the Curry Agricultural Community

The Curry Local Advisory Committee (LAC), after discussing the riparian rule at every meeting since February 2002, developed the following riparian statement at the March 12, 2003, meeting.

Riparian Management

A Riparian area is an edge or bank of a river, tributary, or other body of water.

A proper functioning riparian condition is one important component of clean water and healthy watersheds.

Agricultural management complements the proper functioning condition of a riparian area by allowing vegetation and biomass accumulation that benefits water quality.

Upon rule adoption, management activities in the riparian area of anadromous fish bearing streams, that are 303d listed for temperature, will be conducted in a manner that avoids increases in stream temperature.
Exemptions shall include stream crossings, access for irrigation equipment and other accepted water dependent agricultural uses when conducted in a manner that minimizes impacts on streambank stability.

The Oregon Department of Agriculture (ODA) rejected this suggestion as inadequate and vulnerable and has inserted its own wording for a riparian rule. A majority of the Curry LAC believes this rule to be adequate to protect watersheds and water quality, while at the same time protecting private property rights.

Sincerely,

Walt Schroeder, Chair, Curry LAC

# Foreword and Applicability

This Agricultural Water Quality Management Area Plan (Area Plan) provides guidance for addressing agricultural water quality issues in the Curry County Agricultural Water Quality Management Area (Management Area). The purpose of this Area Plan is to identify strategies to reduce prevent and control water pollution from agricultural lands to achieve applicable water quality standards through a combination of educational programs, suggested land treatments, management activities, and monitoring. The provisions of this Area Plan do not, by themselves, establish legal requirements or prohibitions. The ODA will exercise its enforcement authority for the prevention and control of water pollution from agricultural activities under administrative rules for the Curry County Area Plan and Oregon Administrative Rules (OAR) 603-090-0120 through 603-090-0180.

# Acronyms

AgWQM - Agricultural Water Quality Management

Area Plan - Curry County Agricultural Water Quality Management Area Plan

Area Rules - Curry County Agricultural Water Quality Management Area Rules

BLM – Bureau of Land Management

CAFO – Confined Animal Feeding Operation

Cfs – Cubic Feet Per Second

CZARA – Coastal Zone Act Reauthorization Amendments

DEQ - Oregon Department of Environmental Quality

EPA – Environmental Protection Agency

IPM – Integrated Pest Management

IR – Implementation Ready

LAC - Local Advisory Committee

LMA – Local Management Agency

Management Area – Curry County Ag Water Quality Management Area

NRCS - Natural Resource Conservation Service

NTU – Nephelometric Turbidity Units

OAR - Oregon Administrative Rule

ODA - Oregon Department of Agriculture

ODFW – Oregon Department of Fish and Wildlife

ORS - Oregon Revised Statutes

OSU - Oregon State University

OWT - Oregon Water Trust

PMP – Pesticides Management Plan

RM – River Mile

SB 1010 - Senate Bill 1010 (the Agricultural Water Quality Management Act)

SWCD - Soil and Water Conservation District

TA – Technical Assistance

TMDL - Total Maximum Daily Load

USFS – United State Forest Service

VOC - Volatile Organic Chemical

WQPMT – Water Quality Pesticides Management Team

# History of 303(d) list and Senate Bill 1010

In 1972, President Nixon signed into law the Clean Water Act. This was a time in our history when rivers were catching on fire (the Cuyahoga in Ohio), large lakes were completely sterilized (Lake Erie), and there were massive estuarine die-offs (Chesapeake Bay). Point source discharges from factories and treatment plants were targeted for clean up and Total Maximum Daily Loads (TMDLs) were established for contaminants that threatened the well being of our population and our natural resources. In 1999, Lake Erie and the Chesapeake Bay have a thriving fishery while the Cuyahoga River has people swimming and boating its waters. The problem is that there are still large amounts of pollutants entering waterways with no discrete source. This type of pollution is called non-point source pollution.

In Oregon, these non-point sources were the focal point of a suit filed in 1986 charging that Oregon was not enforcing the Clean Water Act standards, thus harming both fish and human populations. The court agreed and charged the Department of Environmental Quality (DEQ) with cataloging the waters of the state that were impaired as characterized by the beneficial uses they supported. The list became known as the 303(d) list (available at http://www.deq.state.or.us or local DEQ office 541-269-2721).

In an effort to ensure that the agricultural industry's unique concerns and constraints were addressed under state and federal water quality drivers, industry representatives lobbied the state legislature for a possible solution. The 1993 Oregon Legislature, in passing the Agricultural Water Quality Management Act, formerly known as Senate Bill (SB) 1010, provided for ODA to be the lead state agency to address water pollution coming from private agriculture land. Under the law, ODA is authorized to develop and carry out a water quality management plan for any agricultural or rural lands where a water quality management plan and its associated rules are required by state or federal law. TMDL development in a basin encompasses all the potential nonpoint pollution sources, of which agricultural is but one part.

# Geographic and Programmatic Scope

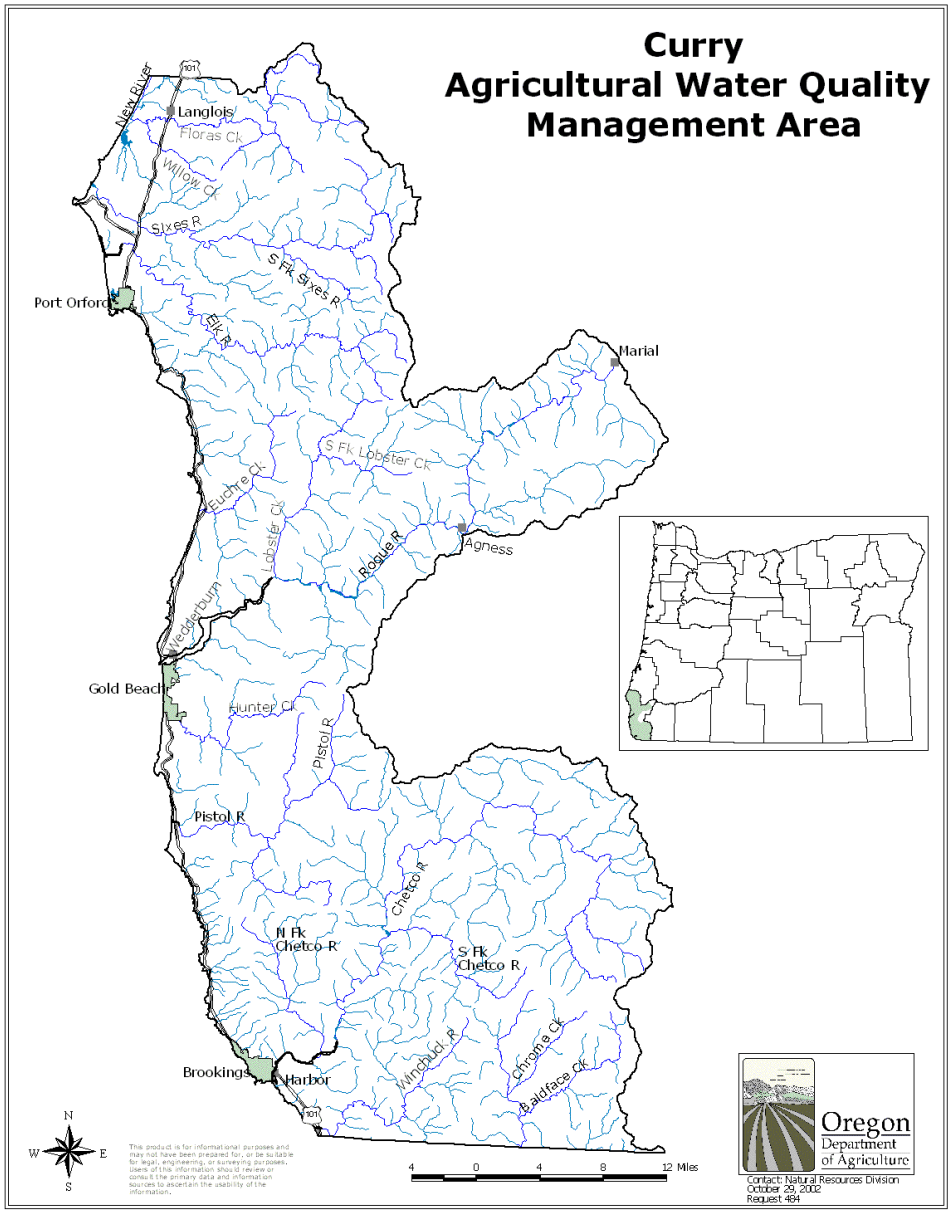
The Curry County Area Plan boundaries include the California border to the south, Josephine County boundary to the east, the Pacific Ocean on the west, and the southern watershed boundaries of the Coos/Coquille Management Area on the north. The northern boundary of the Curry County Plan includes parts of the county line but includes all of the Floras Creek drainage and none of the Two Mile and Four Mile Creek drainages.

The 1993 Oregon Agricultural Water Quality Management Act (AgWQM), was enacted by the Oregon Legislature in response to the Clean Water Act and the Coastal Zone Management Act. States were given the opportunity to develop for themselves a system for implementation that met federal guidelines. This bill was Oregon's response. Without it, the DEQ and/or the courts could have stepped in and imposed some kind of program upon the state.

SB 502 was adopted in 1995 to clarify the scope of the AgWQM Act. It authorized the ODA as the lead agency responsible to administer the water quality related regulations for agriculture in Oregon. However, ODA is subject to the standard setting and review authorities of other agencies, such as the DEQ and Oregon Health Division.

ORS 468B.010 to 468B.050 lays out a broad framework under which pollution is defined as both point and non-point sources which degrade water quality so as to be detrimental to beneficial uses. State water quality standards are based on those beneficial uses (i.e. 64 °F temperature standard, 406 colonies of *E. coli* bacterial standard). The broad nature of the statute places a heavy burden of responsibility and confusion on the private agricultural landowner. How was the landowner going to determine if his/her operations were harmful to the beneficial uses of a particular water body? Area plan and rule-making seeks to eliminate the confusion of landowners and identify the responsibility of the agriculture community by working with LACs to develop land conditions that describe to both ODA and the landowner what the land looks like that has a potential to cause a 468B violation. In this scenario, ODA retains its full authority to interact with agricultural landowners for resource protection but landowners are the ones who identify the unique conditions that can exist in a particular watershed thereby protecting their operations from unnecessary scrutiny even if local waters were in violation of water quality standards.

Map of Curry County Agricultural Water Quality Management Area



# Geographic Uniqueness within Curry County

## Agriculture

The first evidence of agriculture in Curry County was in 1851 when Captain William Tichenor, the founder of Port Orford, brought six horses and some swine and established a settlement at that place. The livestock and associated crops, as well as gardens to provide vegetables for the increasing number of settlers, increased rapidly.

The rich virgin soils in Curry County, year-around grazing, and mild climate were ideal for raising livestock and some crops. By 1880, the assessment roles showed 22,000 sheep and close to 4,000 cattle grazing the lush mountain prairies and river bottomlands. Close to 800 hogs ranged through the forests and mountain prairies feeding on roots and mast. (Tanoak acorns and Myrtle nuts). Lightning fires had burned much of the area. Some had been burned by the Native Americans to provide habitat for deer and elk. These open mountain prairies were ideal for sheep and cattle raising.

The river bottom lands and associated hill-grazing lands made dairy farming the number one farm enterprise in the county. Cheese factories in almost every community manufactured cheese and butter to ship to San Francisco and other markets. A nationally famous Blue Cheese factory was located in Langlois until destroyed by fire in 1957. Close to 400 dairy herds were existing in the county in 1938, though at that time, many were small herds that could be hand milked by the farmer and his children. Now there are only two dairy herds in the entire county. Both have waste management plans and are regulated under the ODA Confined Animal Feeding Operation program (CAFO).

The early sheep were raised primarily for their wool. Curry wool was prized for its consistent growth and long fiber. In the 1930s, Curry listed 25,000 head of mature sheep. But soon, with cross breeding and better management, the market lamb industry provided additional income to sheep producers. In recent years, predators and low prices for lamb and wool have closed down many sheep operations. Several sheep operations are now devoted only to cattle.

During World War II, the Easter lily enterprise greatly expanded when bulbs were no longer available from Japan. Hundreds of farmers and gardeners got into the lily business. The industry started in the Bandon area but over the years it centered on the rich deep soils and climate of the Harbor Bench and nearby Smith River delta in northern California. Growers have developed ponds or wells from which they irrigate their lilies. Easter lilies are a crop unique to the soils and climate of this area and are a stable industry, providing many jobs.

Cranberries were introduced to the south coast in 1885 at Hauser in Coos County and expanded to south Coos County in the Bandon area. Soon the most rapid cranberry acreage being developed was in north Curry County. In 1996, Curry County accounted for 25 percent of the production in Oregon. Cranberry production uses water for frost protection, irrigation, weed and pest control, temperature control, and for harvest. The preferred harvest method is to flood the beds and beat the vines to separate the berries from the vines. The berries float and are corralled for loading onto trucks. Dry harvest is also used but it is not a preferred method. Cranberry

growers possess water rights to apply water and most have constructed reservoirs to hold surplus winter rainfall. A majority of growers recycle water through a series of beds at slightly different elevations, reducing the use of water from springs and creeks.

The cranberry industry continues to weather a boom and bust economic cycle. The growers experience years when the price paid per barrel is high, and must endure other years when the price per barrel is devastatingly low. These economic concerns are in addition to the fluctuating yields resulting from weather and other factors.

Several other crops are grown on the rich soils of the county including hydrangeas, rhododendrons and blueberries. The largest hydrangea farm in the world is located on the Harbor Bench in Southern Curry County.

The agricultural history of northern Curry County is unique. Small streams in the lower portion of the watersheds were channelized and straightened from the mid 1920s through the 1950s. This work was done through various federal programs (such as Swampbuster) and by private landowners. The reason for stream alteration was to capitalize on the rich bottomlands that supported the many large dairies and livestock operations in North Curry. The affected streams include Langlois Creek, Morton Creek, Bethel Creek, Croft Lake outlet, New Lake outlet (Bono Ditch), and portions of Willow Creek. The lower portions of these streams function as agriculture drains. Historically, they have been cleaned and maintained as needed by the individual landowners.

Approximately two-thirds of the county is publicly-owned: U.S. Forest Service (USFS), Bureau of Land Management (BLM), state of Oregon, and County. With limited privately-owned land in the county, pressure from development is causing concern as homes and other structures are impinging on farmland.

**Fisheries**

Except for the streams with impassable barriers (such as the Harbor Bench area), all Curry County streams (from Floras Creek in the north to the Winchuck River in the south) are excellent producers of salmonids: Chinook salmon, steelhead, cutthroat trout, and Coho salmon. Local watershed councils, the Curry Soil and Water Conservation District (SWCD), and the Salmon Trout Enhancement Program are working to enhance most of these streams and address impacts created by past land use practices. Local agricultural producers have worked with these groups to enhance riparian and upland areas and proactively improve watershed health.

Changes in some native salmonid populations have occurred in Curry County rivers but not to the extent experienced in counties to the north and south. Factors influencing the changes vary between species and river systems, but include spawning and rearing habitat degradation, passage obstacles, overfishing, water demands for other uses, urban development, seasonally limited streamflow and probably most important, changing ocean habitat conditions (El Niños, upswelling, ocean oscillations). However, we should not judge yesterday's activities by today's standards, but only recognize that everyone has contributed to the declines and move forward to correct past mistakes.

The nine watershed councils in Curry County have contributed greatly to the enhancement of salmonid habitat through riparian fencing, planting, improving fish passage, instream structure development, habitat improvement, etc. Ranchers have fenced many stream miles voluntarily under the Hire the Fisher program and the Oregon Plan for Salmon and Watersheds.

Salmonids adapted in ecosystems that historically had a high degree of stream complexity including large woody debris, flood plains, good spawning gravel reserves, estuaries, and wetland refugia, meandering stream courses and in some cases lake systems in the watershed. Human activities had altered some of this traditional salmonid freshwater habitat.

El Nino - events relatively dry winters for four to five years and the past 20 years of altering ocean conditions have had an adverse effect on anadromous fish populations. In recent years, favorable ocean conditions and wet winter cycles have occurred and we are seeing quantum increases in salmonid returns to many Curry County streams. This suggests that ocean productivity is a long-term natural cycle that falls outside the realm of controllable fisheries management. Some declines in numbers of native fish have conflicted with increases in hatchery-raised stocks. Targeting hatchery fish while allowing native stocks to spawn naturally in the improved habitat may help to alleviate some of these concerns.

During periods when ocean productivity is low, it is critically important to protect and improve freshwater habitats so they do not become the "weak link" in the chain of salmonid production. Agricultural operators actions can have an important impact on salmonid production and its freshwater habitat and these actions will be discussed in detail in this Plan.

**The Watershed as an Ecosystem**

An ecosystem is an interdependent community of living and non-living organisms/elements including humans. Ecosystems do not always have defined boundaries. An ecosystem is a natural system composed of living and non-living elements working together to maintain conditions that support life.

A watershed is any area of land that drains water to a specific point such as a lake, river, or ocean. Like ecosystems, watersheds may be as large as the basin of the Mississippi River or as small as the water that flows into a pond. All land is in a watershed. In the hydrologic cycle, precipitation falls everywhere and drains somewhere. Energy inputs of sunlight, wind, and the hydrologic cycle interact with the landforms and the living species in ways that affect both the quality and quantity of water.

In an ideal condition, water is captured by infiltration into the spongy layer of duff and topsoil in the watershed. Some is held and by capillary *action* is available to plants. The remainder percolates down through the soil profile to recharge ground water supplies. The primary watershed process is the capture, storage, and slow release of water. This process helps to prevent excessive flooding during heavy winter rainfall and provides water in times of low rainfall. Where there is no topsoil, or where topsoil has been compacted, eroded, covered over by asphalt, buildings or concrete, or over-saturated, water is not captured but is allowed to run

off over the surface of the ground and into watercourses. Flooding and turbidity is increased and water may not be available when needed during drier times of the year. The quality of water is improved by passage through the topsoil, which acts as a filter and serves as storage to increase base flow in summer.

Different landscape types within the watershed have different roles in the capture, storage, and slow release of water. Wetlands and flood plains slow down the movement of water allowing time for groundwater recharge. Wetlands also serve the purpose of filtering out possible contaminants. Vegetation helps hold topsoil in place and is an important source of humus in the form of decaying plant material. Healthy topsoil is not only our source of food; it also helps provide clean and abundant water.

Major fires historically occurred in the Klamath mountains eco-region on about 50-year intervals. Native Americans and ranchers both used fires to maintain grasslands and prairies. From the 1920s to 1987, the USFS adopted a policy to aggressively fight forest fires. Although no official policy change had taken place prior to 2002, current forest service practice is to allow fires to burn until they threaten private homes and structures. This first came to light with the Silver Fire in 1987, which burned thousands of acres in Curry County. In 2002, the Biscuit Fire confirmed this new practice as nearly 500,000 acres were consumed. Both national forest and private forest holdings were destroyed in that fire. Sufficient resources to stop this fire were not employed until substantial private residences and structures were put at risk. This watershed management practice is mentioned in the document only because the LAC feels that it has direct impact on stream temperature and sedimentation. We also feel that it has potential for substantially more long-range impact on fish populations in our watersheds.

**Climate**

Temperatures in Curry County are mild throughout the year because of the moderating influence of the Pacific Ocean. Along the coast, the difference between January and August average temperatures is only 14°F.

Annual rainfall averages vary from 75 or 80 inches along the coast to more than 100 inches on the upper slopes of the Coast Range. More than 70 percent of the annual precipitation falls between November and March, with an average of only three inches of rain falling during June, July, and August. During the winter, storms can produce intense rainfall; at least once per year, nearly four inches of rainfall can be expected during a 24-hour period.

Along the coast, there is less than one inch per year average snowfall. Inland, as many as 12 inches of snow have been recorded in a year, but there is frequently little to no snow accumulation. Snow usually melts within a few hours or days.

Strong winds occur frequently in Curry County. Peak gusts between 60 and 100 miles per hour can be expected a few times every year. During the summer, strong easterly winds bring warm, dry air to parts of the county, depleting soil moisture and often creating severe fire danger (Buzzard and Bowlsby, 1970).

# Physical Settings of Curry County Watersheds (north to south)

### Floras Creek

The Floras Creek Watershed is an 83 square mile area located at the north edge of Curry County. Floras Creek crosses Highway 101 immediately south of the community of Langlois. Floras Creek provides *the* public water supply at Langlois as well as stock and irrigation water for the agricultural activities in the lower portion of the watershed. The upper portion of the watershed, most of the area east of Highway 101, is devoted to timber production and livestock grazing. Agricultural activities in the watershed area include livestock grazing, a dairy operation, and cranberry production. Over 90 percent of the land in the watershed is privately managed. The Bureau of Land Management manages five percent and the state of Oregon manages one percent.

The Floras Creek system includes five tributaries and Floras Lake. Boulder Creek, Willow Creek, Joe Cox Creek, Dwyer Creek, and White Rock Creek feed the north, east, and main forks of Floras Creek. Rainfall ranges from 70 to 80 inches along the coast and 90 to 115 inches at the higher elevations. Most of the rainfall comes as short intense storms from November through March. Less than ten percent of the rainfall occurs during the summer. These rainfall patterns, relatively small watershed, and limited water storage capacity result in large fluctuations in stream flow.

Extreme flooding is a defining feature of the watershed with floods occurring on a regular basis. High intensity rainfall events caused major floods in 1955, 1964, and 1983 and again in late 1996. The mouth of Floras Creek fluctuates in location almost annually. Floras Creek hits a foredune and flows north from zero to nine miles before breaching the foredune and exiting to the ocean. The fluctuating outlet location and the high flow events have contributed to severe separation of the stream (down-cutting) from its riparian area in the lower portion of the watershed. This separation and high flow events have contributed to streambank erosion, the cutting of wide stream cross-sections, and excessive deposition of gravel bars. The stream fluctuates between a meandering gravel-sand bed stream (Rosgen C4-5) to a straight entrenched stream (Rosgen F4-5) (Rosgen, 1996). During the dry summer months, these same highly eroded stream channels result in a relatively small stream flowing in a large channel. Thus, wide, shallow conditions contribute to low velocities and severe stream warming.

A large portion of the Floras Creek watershed is managed for timber and regulated under the Oregon Forest Practices Act. Most of this land was logged within the past forty years and consists of younger timber stands. Douglas fir is the most common tree used in reforestation and plantations. Some of these areas were left to naturally regenerate resulting in alder dominated stands. Some of the upland areas are managed for livestock grazing and these practices encourage vegetated cover throughout the year. There are also a few rural home sites.

Soils in the uplands are naturally steep, highly erodible, and prone to landslides. These natural geologic conditions in combination with historic logging practices and road construction (prior to Forest Practices Act), and various historic state, county, and private land and road management

have contributed to an overall sediment load in the system. Present forest practices and other land and road management minimize upland erosion.

The lower portion of the watershed tends to be coarse to medium textured soils that are level and used for agricultural production. Extensive areas of these soils are allocated to improved pastures for ranching. Cranberries and some row crops are also grown. There is one dairy on Floras Creek. When the dairy is in use, the cows graze the pastures and are brought to the barn for milking. The highly erodible alluvial material presents streambank erosion problems for local landowners. Conservation minded landowners attempt to control loss of pasture and agricultural land by placing riprap, rock groins, bank barbs, or spruce trees along the banks. Unfortunately, these steps sometimes prove inadequate and the control structure is removed by floodwaters at times of severe flooding and down cutting. The landowners, in cooperation with the Bureau of Land Management, have submitted permits to mechanically breach the foredune in three locations to create a more consistent outlet for Floras Creek. A more consistent outlet and good vegetative conditions will help stabilize lower Floras Creek and prevent excessive erosion.

Some cranberry production exists in the Floras Lake sub-watershed and lower mainstem of Floras Creek. Cranberry production requires irrigation in the summer and flooding at harvest time in October. Both groundwater and surface water are used. The producers build storage ponds and recycle as much water as possible. The Oregon Water Resources Department and cranberry organizations in the area are cooperating on a water use study analyzing the relationship between ground water and surface water in the area. This study will help determine the potential impacts of groundwater use in cranberry production on low flow stream conditions.

Floras Creek and its tributaries are home to four species of anadromous fish and several species of freshwater stream, estuarine and marine fish species. Most of the species are native to the region, but some; large mouth bass and rainbow trout were introduced to enhance recreational fishing in Floras Lake. Coho salmon, Fall Chinook salmon, Winter Steelhead, and Cutthroat trout have historically spawned in the Floras Creek watershed (Maguire, 2001a).

**Sixes River**

The Sixes River is one of the larger watersheds in the Southern Oregon coastal area, draining approximately 85,650 acres or 134 $mi^2$. Elevations in the watershed range from sea level to 3,315 ft. Major tributaries include the North, Middle and South forks, and Dry, Edson, and Crystal creeks. The upper portion of the basin is characterized by steeply sloped forested land with narrow valleys and tributary streams that have moderately steep to very steep gradients. The predominant land use in the middle and upper portions of the watershed is commercial timber production. The lower few miles of the river are relatively low gradient coastal floodplain. Rural residential development, grazing, and other agricultural uses are the dominant land uses in the lower basin.

Approximately 92 percent of the Sixes River watershed is located in the Southern Oregon Coastal Mountains ecoregion, which is characterized by complex geology; steep, high gradient streams; and seasonally abundant precipitation. Watersheds in this ecoregion have high stream densities due to heavy precipitation during winter months. Extensive erosion can result from

fractured geology, extremely variable stream flows, and a naturally high incidence of landslides in this ecoregion. The remaining eight percent of the Sixes River drainage is located in the Coastal Lowlands ecoregion and is characterized by low gradient streams that are predominantly underlain by marine terrace deposits and flow through deep soils that range from silty clay loams to sandy loams. Streams in the Coastal Lowlands ecoregion are also susceptible to high erosion rates due to extreme fluctuations between summer and winter stream flows, easily eroded soils, incised channels and historic loss of riparian vegetation.

The predominant vegetation types found in the Sixes River watershed are listed in the table below. Natural disturbances that are capable of removing vegetation range from relatively frequent high winds and floods, to relatively infrequent forest fires, and even less frequent earthquakes. Potential riparian vegetation on low gradient lands may include dense thickets of wind-stunted shore pine, Sitka spruce, and other brush species. Beaver are commonly found in low gradient channels of the Sixes River, and may significantly alter both vegetation and channel morphology.

| | |
|---|---|
| Conifers | Sitka spruce, shore pine, grand fir, Douglas fir, western hemlock, Port Orford cedar and Monterey cypress |
| Hardwoods | Red alder, big-leaf maple, myrtle, and madrone |
| Shrubs | Rhododendron, holly, wax myrtle, willows, and Ceanothus spp. |
| Understory | Azalea, Ribes spp, iris, sea watch, huckleberry, salal, ferns, skunk cabbage, rushes, sedges, and grasses |
| Noxious | Gorse, Himalayan blackberry, tansy, scotch broom, European beach grass, and thistles |

The Sixes River watershed has the greatest diversity of channel habitat types and more miles of low and moderate gradient channels than any watershed surveyed in Curry County. However, 41 percent of the watershed is composed of steep to moderately steep gradient channels. The risk ratings for increased erosion from roads within the Sixes River watershed range from low to high, with Dry Creek having the highest proportion (100 percent) of roads on slopes greater than 50 percent of any drainage on the South Coast of Oregon.

Approximately 69 percent of the land in the Sixes River basin is in private ownership, with 42 percent of the land owned and managed by private industrial timber companies and 27 percent owned by small-acreage, private landowners. Public lands comprise almost 29 percent of the lands in the basin, with management responsibility for these lands falling mostly on the U.S. Forest Service. Less than three percent of the land in the Sixes River watershed is in state, city, or county ownership.

Forestry is the dominant land use in the Sixes River watershed, accounting for 93 percent of the total land area. The remaining seven percent of the watershed is used for agriculture, animal range, and rural residential development. Rangelands are managed for livestock grazing, with cows and sheep comprising the majority of livestock grazed.

Riparian habitats in Sixes River are characterized by a scarcity of large conifers near the surveyed channels and a relatively low incidence of bank erosion. Aquatic habitat complexity is low, primarily because of the lack of secondary channels and large wood throughout the drainage. Sixes River and/or it's tributaries are 303d listed for the parameters spawning dissolved oxygen and temperature. EPA proposes to add additional 303d listings for biological criteria and juvenille rearing dissolved oxygen.

Out-of-stream water rights for the Sixes River watershed consist of both storage rights (approximately 426 acre-feet) and in-stream rights (120 cubic feet per second [cfs]), and the majority of those rights are senior to the 1964 in-stream water right of 30 cfs in July and 25 cfs in August and September. Out-of-stream water rights currently exceed the flow in Sixes River from May to October, with the water rights allocated for mining (75 cfs), agriculture (23 cfs), and irrigation (21 cfs) use. Water Storage Rights within the Sixes River watershed total 426 acre-feet and are entirely allocated for agricultural and irrigation use. Many of these rights are not exercised resulting in year-round flow.

An estimated 1,373 acres of wetlands have been assessed in the Sixes River drainage. Most of the wetlands in the drainage are found in the lower gradient sections along the lower mainstem of Sixes River. Approximately 124 of these acres have been highly modified, 837 acres have been moderately modified, and the remaining 412 acres are not significantly altered. Wetlands within the Sixes River watershed are bordered primarily by forest and agricultural land, with a small proportion bordering rural residential, and other developed lands.

Chinook and Coho salmon, steelhead, and cutthroat trout are all native to the Sixes River drainage. The historic abundance and distribution of these salmonids within the watershed are not known. Chinook salmon and steelhead are thought to occupy most of their historic habitat in the Sixes River watershed. Coho salmon are listed coast-wide as threatened under the Endangered Species Act. Little is known about the historic distribution and abundance of cutthroat trout, but currently they are thought to fully utilize the available habitat. There are no hatcheries on the Sixes River yet the Sixes River continues to provide a thriving recreational fishery (Maguire, 2001b).

**Elk River**

The Elk River Watershed encompasses 59,520 total acres. The area has a maritime climate with annual precipitation from 90 inches at Anvil Creek to 130 inches in the headwaters. Approximately 80 percent of the precipitation occurs from October to March, and four percent during June, July, and August. A small portion of the watershed lies between 2,400 and 4,600 feet in elevation, within a transient snow zone. Elk River and/or it's tributaries are 303d listed for the parameter temperature. EPA proposes to add a 303d listing for biological criteria.

The Elk River leaves the Siskiyou National Forest through a broad valley, and enters the ocean through a small estuary. Coastal lowlands make up 11 percent of the basin. Gradients are fairly low, fog and strong winds are common, and rainfall averages 60-90 inches per year. The average annual water yield is estimated to be 267,000 acre-feet. Low mean monthly flows of 20-100 cfs occur between June and October, and high flows of 1,000-6,000 cfs occur between

November and April. Peak flows of a magnitude greater than the 10-year return interval occurred in 1944, 1955, 1964, 1971, 1982, and 1995-96. The December 1964 flow was estimated to have an 80-150 year interval.

The Elk River watershed is comprised of Rocky Point sandstones and siltstones, Humbug Mountain conglomerate, shales of the Galice Formation, diorite intrusions, and ultramafic rocks. Vegetation in the watershed includes forested land with a hardwood/conifer mixture of Douglas fir, western hemlock, Port Orford cedar, Jeffrey pine, Sitka spruce, tanoak, red alder, madrone, myrtle, and bigleaf maple. The understory is huckleberry, salal, rhododendron, vine maple, willow swordfern, poison oak, and others. The major plant communities vary in age from early seral stages to old growth.

Natural climatic events have played a dominant role in shaping the stream channels in the watershed. Evidence from the 1955 and 1964 floods are contained on aerial photographs. Gravel bars were measured along the mainstem of Elk River on 1940-1986 aerial photos. The number of gravel bars on the whole watershed increased by 77 percent overall. In the upper segment which is wider and lower gradient, gravel bars increased more in size than in number. In the lower segment, which is narrower and steeper, a greater increase in the number of bars was observed.

Below the National Forest boundary, comparisons of the Elk River channel from 1940-1986 aerial photos show increased numbers and sizes of gravel bars. The unconfined channel flows through the valley floor show a change in pool geometry and frequency where new flood plains have been established over 46 years of flooding.

Elk River is recognized for its role in maintaining the viability of native salmonid stocks. The Elk River watershed produces anadromous steelhead trout, Coho salmon, Chinook salmon, and cutthroat trout. Resident rainbow and cutthroat trout populations are also present. Oregon Department of Fish and Wildlife operate a fish hatchery that was established in 1968 on the river just below Anvil Creek.

Adult Elk River Chinook salmon are characteristically three and four-year-old fish that return primarily from November through January. This is a departure from many other coastal stocks, most of which return earlier in the fall. It is thought that the delay in adult spawning migration is an environmental adaptation to low-water conditions that persist on the Southern Oregon Coast during the fall months. The Elk River also appears to be the southern boundary between north-migrating and south-migrating coastal Chinook stocks (Maguire, 2001c).

**Hubbard Creek**

Hubbard Creek is located one mile southeast of Port Orford, Oregon. The watershed encompasses approximately 5,340 acres or 8.34 square miles and is the primary water source for the city of Port Orford.

Basin Description:

- Boundaries: Elk River Watershed on the north and east

- Garrison Lake Watershed on the north & west
- Rocky Point on the south
- Pacific Ocean on the southwest
- Elevation: Sea Level to 1,200 feet

Description: Hubbard Creek is composed of three main branches, the north, middle, and south forks. The south fork is the longest having a reach of approximately five miles. The south fork joins the middle fork approximately one mile from the mouth, which then becomes the mainstem and the north fork joins the mainstem approximately one quarter mile from the mouth.

The north fork, at approximately one mile from the mainstem, has an impoundment, which serves as a reservoir for the city of Port Orford. This is the primary water source for this municipality (Maguire, 2001d).

Fish:
- North Fork – Cutthroat
- Middle Fork – Cutthroat
- South Fork – Cutthroat, Steelhead, Coho Salmon

**Euchre Creek**

Euchre Creek is only 14 miles long and drains from one of the smallest watersheds of any river in south coastal Oregon (23,831 acres/37 $mi^2$). Elevations in the watershed range from sea level to approximately 3,080 ft. Major tributaries include Cedar and Boulder creeks. The upper portion of the basin is characterized by steeply sloped forested land with narrow valleys and tributary streams that have moderate to very steep gradients. The predominant land use in the middle and upper portions of the watershed is commercial timber production. The lower few miles of the river are relatively low gradient coastal floodplain. Rural residential development, grazing, and other agricultural uses are the dominant land uses in the lower basin.

Approximately 75 percent of the Euchre Creek watershed is located in the Southern Oregon Coastal Mountains ecoregion, which is characterized by complex geology; steep, high gradient streams; and seasonally abundant precipitation. Watersheds in this ecoregion tend to have high stream densities due to the potential for heavy precipitation during the winter months. Extensive erosion can result from fractured geology, high peak stream flow rates, and a high incidence of landslides in this ecoregion. The remaining 25 percent of the Euchre Creek drainage is located in the Coastal Uplands ecoregion, and is characterized by moderate to low gradient streams which are generally underlain by sandstone, and flow through predominantly deep silt loam soils. Although peak precipitation rates are slightly lower than in the Southern Oregon Coastal Mountains, streams in the Coastal Uplands ecoregion are also susceptible to high erosion rates due to extreme fluctuations between summer and winter stream flows, easily eroded soils, and the prevalence of diked and channelized stream reaches. The risk ratings for increased erosion from roads within the Euchre Creek watershed ranged from moderately low to moderate.

Over three-fourths of the land in the Euchre Creek basin is in private ownership, with almost 49 percent of the land owned and managed by private industrial timber companies, and 29 percent

owned by small-parcel, private landowners. Public lands comprise almost 22 percent of the lands in the basin, with management responsibility for these lands split almost evenly between the Bureau of Land Management and the U.S. Forest Service. There are only 25 acres of state land in the Euchre Creek watershed.

Forestry is the most dominant land use in the Euchre Creek watershed, accounting for 94 percent of the total land area. The remaining six percent of the watershed is used for agriculture, animal range, and rural residential development. Rangelands are mostly managed for livestock grazing, with cows being the primary type of livestock grazed. To a lesser extent, sheep, llamas, goats, horses, and other small animals also use rangeland.

Riparian habitats in Euchre Creek are characterized by a scarcity of large conifers near the surveyed channels and a relatively low incidence of bank erosion. Shade is within or very close to the desirable range for all reaches. Aquatic habitat complexity is low, primarily because of the lack of large wood everywhere except Boulder Creek. Euchre Creek is 303d listed for the parameter temperature.

There are relatively few out-of-stream water rights for the Euchre Creek watershed. However, the majority of those rights are senior to the 1964 in-stream water right of 10 cfs in the summer months. Out-of-stream water rights currently exceed the flow in Euchre Creek from May to October of most years, with the majority of these water rights allocated for irrigation use. Water storage rights within the Euchre Creek watershed total 179 acre-feet, and are almost entirely allocated for industrial use. Most of these rights are not used but still active.

An estimated 90 acres of wetlands have been assessed in the Euchre Creek drainage. Most of the wetlands in the drainage are found in the lower gradient sections along the lower mainstem of Euchre Creek. Approximately 40 of these acres have been highly modified, 17 acres have been moderately modified, and the remaining 33 acres are not significantly altered. Wetlands within the Euchre Creek watershed are bordered primarily by agricultural land, but are bordered to a lesser extent by forested, rural residential, and other developed lands.

Chinook and Coho salmon, steelhead, and cutthroat trout are all native to the Euchre Creek drainage, although the historic abundance and distribution of these salmonids within the watershed are poorly understood (Maguire, 2001e).

**Rogue River**

The Rogue River basin extends from the west slope of Crater Lake on the east to the northernmost portion of California on the south to the Pacific Ocean on the west. The Basin covers 5,160 square miles and lies in the Klamath Mountain Province. The Rogue River is the third largest river in Oregon and is approximately 200 miles long. This Plan covers that portion of the basin that lies within Curry County. The lower Rogue River is 303d listed for the parameter temperature.

Precipitation ranges from 80 inches per year at the coast to 130 inches at Signal Buttes. Before 1977, the annual discharge of the Rogue was 5.66 million acre-feet. After the completion of the

Lost Creek Dam in 1977 and the Applegate Dam in 1980, the annual discharge fell to 3.97 million acre-feet. At the Agness gauge, the highest recorded flow was 290,000 cfs in 1964 and the lowest was 608 cfs in 1968. The principal tributaries within Curry County are Shasta Costa Creek (river mile [RM] 29), Illinois River (RM 27), and Lobster Creek (RM 11).

The Rogue estuary extends from the ocean to Ferry Hole (RM 5) with several sloughs and multiple channels found in this reach. The substrate is primarily gravel with some areas of sand or mud bottom. There is almost no large woody debris present in the estuary because of the stream power. The river mouth and the Port of Gold Beach are protected by jetties constructed in 1960. Many wetlands and riparian terraces in the lower 15 miles of the river canyon have been converted to agriculture since 1850 when European settlers began arriving in the county.

The majority of the watershed consists of steep, forested slopes that are used for timber production. Grazing livestock on the meadows scattered through the forest was formerly common, but is now confined primarily to the coastal area. Ownership is primarilyUSFS in the interior with a fairly narrow strip of private lands along the coast and the river below Agness. Of that portion of the watershed between Agness and the mouth, 44,600 acres (54 percent) is USFS, and the remaining 38,000 acres are private (timber companies, rural residential, urban, and county lands).

A variety of anadromous and resident salmonids use the watershed including Chinook, winter and summer steelhead, Coho, cutthroat, and rainbow trout. The Rogue and Illinois mainstems are used as migration habitat while Lobster and Quosatana creeks provide the majority of the spawning and rearing habitat. The smaller, steeper tributary streams provide cool water to help lower summer water temperatures in the mainstem. Other species utilizing the estuary and river include sturgeon (green and white), shad, and lamprey.

The human population of the Lower Rogue watershed is concentrated in the towns of Gold Beach (population 2000), Agness (population approximately 500), and in rural residential along the lower 10 miles of the Rogue and on Squaw Creek. The Rogue River continues to support a thriving recreational and commercial fishery as well as other aquatic activities (Weinhold, 1995).

**Hunter Creek**

The Hunter Creek watershed can be divided into five subwatersheds: Upper Hunter mainstem (North Fork confluence to headwaters), Middle Hunter mainstem (North Fork confluence down to Section 21), Lower Hunter mainstem (Section 21 to the mouth), North Fork Hunter, and Big South Fork Hunter. The whole watershed encompasses 44.4 square miles or 28,405 acres. Hunter Creek and/or it's tributaries are 303d listed for the parameters pH and temperature. The Environmental Protection Agency (EPA) proposes to add an additional 303d listing for the poarameter juvenille rearing dissolved oxygen.

The watershed is divided between public (38 percent) and private lands (62 percent). The public lands are administered by the USFS, the BLM, and the state. Ownership of the private lands is dominated by approximately 81 ownership by forest industry. Forestry uses account for 97

percent of the land in the watershed on both private and public lands. The remaining three percent of the watershed is divided between urban, agriculture/range and rural residential uses.

Precipitation ranges from 80 inches per year at the coast to 130 inches per year in the interior mountains. The majority of the watershed receives approximately 110 inches per year. Elevations range from sea level in the Lower Hunter mainstem sub-watershed to 3,558 feet on Sugarloaf Mountain in the Upper Hunter mainstem sub-watershed and 3,512 feet near Signal Buttes in the North Fork Hunter sub-watershed. The rain-on-snow zone encompasses 15 percent of the watershed - primarily in the Upper Hunter mainstem and North Fork Hunter sub-watersheds.

The majority of the watershed consists of steep, forested slopes that are used for timber production. Grazing livestock on the meadows scattered through the forest was formerly common, but is now confined primarily to the coastal valley area. Ownership is primarily USFS and BLM in the interior with the private timberlands owned by South Coast Lumber Company, Crook Estate, and Menasha Corporation.

A variety of anadromous and resident salmonids use the watershed including Chinook, winter steelhead, Coho, and cutthroat trout. The lower mainstem is used as migration habitat while the forks and tributaries provide the majority of the spawning and rearing habitat. The smaller, steeper tributary streams provide cool water to help lower summer water temperatures in the mainstem. Coho populations in Hunter Creek were smaller than Chinook due to the steep, confined high-energy streams. Cutthroat are thought to use most of the streams in the watershed, while steelhead use the lower section of each fork and the mainstem (Maguire, 2001f).

**Pistol River**

The Pistol River watershed drains approximately 67,275 acres or 105 square miles of land. Pistol River, situated entirely within Curry County, is an average sized watershed on the Southern Oregon Coast. Flowing in a westerly direction, Pistol River crosses Highway 101 and drains into the Pacific Ocean about ten miles south of the community of Gold Beach. Elevations in the watershed range from sea level to approximately 4,220 feet on Snow Camp Mountain. Major tributaries include the North Fork, East Fork, and South Fork. The upper portion of the watershed is characterized by steeply sloped forested areas with narrow valleys and tributary streams that have moderately steep to very steep gradient. Forestry is the dominant land use in the upper portion of the watershed.

At one time, there were six active lumber mills in the Pistol River area; a series of dairies in the lowlands; and a cheese factory. During the past forty year, some of these industries have left the area, but ranching, rural residential development, and other agricultural uses still thrive in the lower portion of the watershed. Over 55 percent of the watershed is in public ownership.

Southern Oregon Coastal Mountains make up 14 percent of the watershed with steep to very steep gradients, high rates of erosion, and high stream densities. Rainfall averages 79-140 inches per year.

The Coastal Siskiyous make up 82 percent of the watershed, with habitat very similar to Southern Oregon Coastal Mountains. Coastal Uplands cover less than one percent of the watershed and roughly follow the historic Sitka spruce distribution. High and low gradient habitats are present, with slow moving earth flows common on the hill slopes.

Approximately 177 acres of wetlands are found in this watershed. All the wetlands in the Pistol River watershed are in the Lower mainstem.

The Pistol River mainstem is listed on the 303(d) list for fecal coliform, pH, and water temperature. Temperatures range from the mid-to-high 60s in the mainstem Pistol River above East Fork, the East Fork, North Fork and Deep Creek. Temperatures range from high 60s to low 70s in the mainstem Pistol River above the South Fork, Crook Creek, and the South Fork Pistol. Temperatures range from mid to high 70s at the Oregon Department of Fish and Wildlife (ODFW) trap on the mainstem Pistol River.

Chinook distribution covers all of the mainstem Pistol River, up to two-thirds of Sunrise Creek, approximately half of the South Fork, and the lower portions of several mainstem Pistol River tributaries. No Chinook have been reported on the Upper Pistol and East Fork. Coho distribution is similar to Chinook with less use of the South Fork and no use of the Sunrise Creek. Steelhead utilize nearly all of the mainstem, all of South Fork, one-third of the North Fork, one-third of the East Fork, and all three major mainstem tributaries (Maguire, 2001g).

**Chetco River**

The Chetco River is the second largest coastal watershed south of the Coquille drainage, and drains approximately 352 square miles, or 225,000 acres. It flows west out of the Siskiyous and empties south into the Pacific Ocean about six miles north of the California/Oregon state line between the cities of Brookings and Harbor, Oregon. The mainstem of the Chetco River is about 56 miles long, with the first 28 miles located within the Kalmiopsis Wilderness area. Elevations in the watershed range from 5,098 feet to sea level, and much of the watershed is characterized by steeply sloped forested valleys with moderately steep to very steep gradient. More than 80 percent of the watershed is public land, and the primary land manager is the USFS. Private land only occurs in the lowest 11 miles of the river, and the predominant land use is industrial and non-industrial forestry. Agriculture/grazing, rural residential development, and urban development together occupy less than three percent of the land use in the Chetco River drainage. The Chetco River estuary is short (< 2 miles in length) and is highly modified from its original condition by construction of a boat basin and jetties that extend into the Pacific Ocean.

Precipitation in the Chetco River watershed is lowest near the coast and increases to the north and east. Annual precipitation on the coast averages 75 inches, whereas the peaks in the Coast Range receive as much as 170 inches. Flows in the Chetco River are highly variable due to the seasonality of precipitation in southwestern Oregon and because there is little snowmelt to boost the river's flow in the spring and summer. Summer flows are often less than 100 cfs, whereas winter flows have exceeded 40,000 cfs in five of the last 30 years. Rain-on-snow events are common during the winter in the high steep mountains in the headwaters of the Chetco River, and can result in large day-to-day variability in flows. Due to minimal winter snow pack and the

warm southwestern climate, the Chetco is consistently warmer than 65 degrees in the summer. DEQ modeling efforts confirm this.

Major fires historically occurred in the Klamath Mountains ecoregion on about 50 year intervals. Native Americans and ranchers both used fires to maintain grasslands and prairies. Prior to 2002, modern fire suppression policy had severely reduced the incidence of wildfire in this region leading to the 2002 Biscuit fire. Severe windstorms occur regularly in the Chetco basin, and can topple large patches of mature trees. High intensity rainfall events on steep slopes can result in many landslides and earth flows into the Chetco River.

Forestlands and their charred remains account for 97 percent of the Chetco watershed. Urban use accounts for almost one percent of the land use in the Chetco River basin, but is confined to the lower few miles of the river. The remaining two percent of the watershed is used by rural residential development, animal range, and a small amount of agriculture. Rangelands are managed for livestock grazing, whereas agricultural lands are primarily used for producing hay or gardening. The majority of the livestock on grazing lands are sheep and cattle. To a lesser extent, rangelands are also used by llamas, goats, horses, and other small animals.

The Chetco River has been placed on the 303d list for the parameter temperature. Even though water flowing directly from the Kalmiopsis wilderness exceeds the temperature criteria, downstream tributaries contribute cooler water.

The out-of-stream water rights for the Chetco River total approximately 59 cfs. The majority (60 percent) of these water rights are allocated to municipal water use, and 73 percent of the rights are junior to the in-stream water right (80 cfs) established by the ODFW for wildlife in 1964. Water storage rights total 370 acre feet in the Chetco watershed, with the majority of those rights allocated to municipal water storage. Out-of-stream water rights currently exceed flows in the Chetco River from July to October, and no additional water rights are available during those months. Water allocated for livestock and irrigation comprise less than 11 percent of the total out-of-stream water rights for the Chetco River.

An estimated 93 acres of wetlands have been assessed in the Chetco River watershed, with most of them found in the lower gradient sections along the lower mainstem, Jack Creek, and the North Fork of the Chetco River.

Chinook and Coho salmon, steelhead, and cutthroat trout are all native to the Chetco River watershed. The historic abundance and distribution of these salmonids within the watershed is poorly understood. Historic numbers of Coho are thought to have been low in most south coast basins, including the Chetco River, due to relatively steep topography which results in high gradient, confined drainages which are not conducive to Coho spawning or rearing. Chinook salmon and steelhead are thought to occupy most of their historic habitat in the Chetco River watershed. Little is known about the historic distribution and abundance of cutthroat trout, but currently they are thought to fully utilize the available habitat. The Chetco River continues to support a healthy recreational and commercial fishery (Maguire, 2001h).

**Winchuck River**

The Winchuck River watershed is one of the smaller watersheds on the Southern Oregon coast. The Winchuck flows into the Pacific Ocean just north of the Oregon-California border. Its watershed is primarily within Curry County with some tributaries in California's Del Norte County (South Fork, Middle Winchuck mainstem, and upper Bear Creek).

The Winchuck River drains approximately 45,600 acres (71.4 square miles of land). Steep forested areas and narrow valleys characterize the upper portion of the basin. Approximately 70 percent of the Winchuck watershed is in public ownership (USFS and some state parks).

The lower basin receives 50-70 inches of annual rainfall and the upper basin can receive 100-150 inches with winter snow accumulations. Rain-on-snow run-off occurs frequently and can have an influence on peak flow periods. Tidal movements affect the lower 1.5 miles of the Winchuck River. However, this river system has a very short estuarine system for juvenile salmonid rearing and exhibits sandbar closings at the mouth during late summer months.

The majority of the watershed is in timberland (95 percent) and is managed as a late successional reserve. The Winchuck system was heavily logged in the 1950's and 1960's. Present logging on private land includes Douglas fir thinning, alder management, and reversion back to fir stands.

Agricultural uses in the basin are livestock grazing (cattle) and some lily bulb production and are limited to the lower Winchuck River mainstem and South Fork. The agricultural uses involve less than 500 acres.

Rural residential areas account for less than two percent of the private lands and have been increasing in recent years. Water uses within the basin include residential, limited irrigation, livestock management, and in-stream uses (fish, wildlife, etc.). Residential landowners utilize groundwater wells, springs, and surface water holding tanks.

The Winchuck River system hosts an anadromous fish population that includes Chinook salmon, winter steelhead, coastal cutthroat trout, and Coho salmon. The winter steelhead runs and cutthroat trout stocks are considered healthy by American Fisheries Society standards. The Chinook salmon population had been slowly decreasing since the 1970's, but in recent years has shown an increase (ODFW). Coho salmon populations have historically been limited and a small sustaining run exists in the South Fork watershed.

The Winchuck system is on the 303(d) list for temperature impairment and spawning period dissolved oxygen. EPA proposes to add additional 303d listings for biological criteria and juvenille rearing dissolved oxygen.

This watershed has a characteristic that allows it to clear faster than any river in Curry or Del Norte counties (including the Chetco and Smith rivers) after major storm events.

Wetland areas in the lower Winchuck basin are estimated at 42 acres. Approximately 88 percent of these wetlands have a moderate to high degree of alteration with 61 percent located near residential development and 27 percent adjacent to agriculture (Maguire, 2001i).

**Other Curry County 303d listings**

- Garrison Lake is 303d listed for the parameter aquatic weeds.
- Curry County beaches (Harris, Mill, and Meyers) are 303d listed for the parameter bacteria.
- Fourmile Creek is proposed for 303d listing by EPA for the parameters biological criteria and temperature.
- Boulder Creek/Floras Lake is proposed for 303d listing by EPA for the parameter chlorophyll a.
- Bethel, Butte, Davis, Morten, and Twomile creeks are proposed for 303d listing by EPA for the parameter temperature.
- North Fork Smith River is 303d listed for the parameter temperature.

# Mission

**Goal, Objective, Responsibility, and Intent**

Goals:

Goals of the Committee

- To set forth agricultural management opportunities that result in the continued protection of water quality in the watersheds of Curry County.

Goals of the Area Plan

- Prevent and control water pollution from agricultural activities and soil erosion and achieve applicable water quality standards.
- Achieve the following land conditions on agricultural lands throughout the management area that contribute to good water quality (LAC and ODA can discuss how to adapt these to the management area):
  - Streamside vegetation provides stream bank stability, filtration of overland flow, and moderation of solar heating, consistent with site capability.
  - Minimize sediment loss from cropland through precipitation or irrigation induced erosion to waters of the state.
  - No significant bare soils within 50 feet of streams on pasturelands and/or rangelands.
  - Livestock manure is stored under cover during the winter and in a location that minimizes risk to surface and groundwater.
  - Implement restoration projects.

Objectives: (OBJECTIVES NEED TO BE MEASUREABLE)

Objectives of the Committee

- To raise public awareness of agriculture's contribution in protecting water quality.
- To provide public involvement opportunities to share information about positive agricultural management practices.
- To have a plan that is developed locally, supported by the local people, implemented voluntarily, and which achieves regulatory water quality mandates for agricultural practices.
- To protect water quality by limiting, to the extent feasible, undesirable contributions from agricultural practices.

Objectives of the Area Plan

Watershed Scale Assessment of Streamside Vegetation - By the 2014 biennial review, a rough watershed scale assessment of streamside vegetation conditions along agricultural lands in the entire management area will be complete. This assessment will be completed by the Curry SWCD or ODA. This assessment can be used to track and report progress in streamside vegetation improvements over time and to identify areas to focus work. Assessment results will be considered at the 2014 biennial review and may be used to revise the goals below.

Focus Area - SWCDs across the state are beginning the process of working in Focus Areas. In 2010, a small geographic area was identified in the Curry Management Area to serve as the Curry Focus Area. Two meetings were held with staff from the Curry SWCD, ODA, DEQ, and OSU Extension. Other invitees not in attendance included Curry SWCD board members and agricultural landowners. Watersheds and subwatersheds throughout the county were discussed and ranked based on water quality condition (information provided by Curry SWCD/Watershed Council water quality monitoring program and DEQ LASAR database), potential willingness of landowners to work with the SWCD, prior work in the watershed, and the number of beneficial uses. Through this process, the Floras/New River Watershed was prioritized. Analysis of this watershed provided a prioritized list of subwatersheds. The Langlois Creek subwatershed was ranked as the highest priority (by a small margin) and was determined to be the area in which to focus work. With funding from an ODA Technical Assistance/Local Management Agency (TA/LMA) grant, the Curry SWCD has been providing outreach and technical assistance to landowners in the Langlois Creek Focus Area.

- In 2011, the Curry SWCD completed an assessment in the Langlois Creek sub-watershed that identifies
    - The amount of streamside areas meeting functions described in the Area Rules,
    - Streamside areas that are improving, and
    - Streamside areas that need work.

  Objectives and timelines were established for the areas needing work. ODA and the LMA will report back to the LAC on the status of land conditions, and outreach and technical assistance efforts in the area, at the 2014 biennial review.
- By the 2014 biennial review, the Curry SWCD, serving as the LMA, will have offered technical assistance to all landowners in the area with lands where agricultural activities appear to prevent streamside vegetation from establishing. By the 2014 biennial review, the LMA will report back to the LAC and ODA on the amount of lands where

landowners accept voluntary assistance to allow streamside vegetation to establish and develop.
- By the 2014 biennial review, ODA and/or the LMA will complete a follow-up assessment in the area and evaluate land condition changes over the two-year period.

The second Focus Area was determined to be the Morton Creek subwatershed. The Curry SWCD began focusing efforts in the Morton Creek area in 2012. Consecutive focus areas will be determined by reconvening a group of SWCD staff, agencies representatives, agricultural landowners, Curry SWCD board members, and LAC members.

Responsibility of the Committee:

- OAR 603-090-0003 - Create an Agricultural Water Quality Management Area Plan that comprehensively outlines measures that will be taken to prevent and control pollution from agricultural activities...
- OAR 603-090-0024(b) - Recommend strategies necessary to achieve water quality goals and objectives...
- OAR 603-090-0030 - Describe a program to achieve water quality goals and standards necessary to protect beneficial uses related to water quality, as required by state and federal law. An Area Plan shall include, but not be limited to the following:
    - Description of the geographic area to which the Area Plan applies,
    - A listing of water quality issues of concern,
    - A listing of current beneficial uses being adversely affected,
    - A statement that the goal is to prevent and control water pollution from agricultural activities and to achieve water quality standards,
    - A statement of water quality objectives of the Area Plan,
    - A description of the pollution prevention and control measures deemed necessary to achieve the goal,
    - A schedule for implementation adequate to meet dates described by law,
    - Guidelines for public participation,
    - Implementation and enforcement strategies.

# Water Quality Issues of Concern

### Introduction

Agricultural presence in the Curry County is not new to the human population of this area. Cattle, dairy operations, and some row crops have been present in the Curry County basins for over 125 years. Today, actual agricultural acreage has dramatically declined and human populations and residential watershed impacts have increased. In no way does the following discussion single out agriculture as the sole contributor to water quality problems in Curry County. On the contrary, agricultural management can have a positive impact on water quality relative to many other potential land uses in these coastal basins.

We wish to make it clear that there are numerous natural, uncontrollable influences on the listed parameters within Curry County. Headwater streams coming out of the wilderness areas have periods when they are above the temperature criteria for Oregon. Tidal influences, wildly variable stream flows, climatic variables, and geologic factors all influence surface water heating rates. It has been recognized by DEQ that there are many streams in the state that will never meet the seven day maximum moving average 64°F criteria. There is nothing agricultural operations (all in the lower part of the watersheds) can do to **meet** that biological temperature numeric criteria. Instead, we are asked by the state of Oregon to reduce or eliminate our contribution to the rate of heating.

**Contributing Factors**

As stated earlier, there are background water quality problems that are not due to human activities. Bacteria reside in streamside soils. Water temperature can be warmed by air temperatures and stream channel substrate. Sediment and bank erosion are part of the natural hydrologic and geologic system. Nutrients, such as phosphorus, can be dissolved from parent rock material. Background sources of pollutants can be very hard and costly to identify and distinguish from management related sources.

Population increases, and their resulting environmental impacts, have changed the face of several stream systems within Curry County. Changes in fire frequency, the severity of peak and low stream flows, waste inputs, flood plain encroachment, degraded riparian areas, and airborne pollutants are all consequences of human population expansion into aquatic and terrestrial habitat. These are consequences that can be buffered but never eliminated. We are now an integral part of the landscape and environment.

The following narrative, tables, and lists focus on the mandate of the AWQM program legislation. Agriculture activities are only a small part of the land use in these basins. The conditions identified by the farmers and ranchers of the LAC will meet the stewardship and conservation needs on private agriculture lands to help alleviate the cumulative effects of our human impacts in all Curry County basins.

**303(d) list -Addressing 303(d) listed Parameters**

A number of waterbodies within the Management Area are water quality limited (do not meet water quality standards) for one or more parameters. The DEQ is required to submit a list of impaired waterbodies to the EPA every two years under section 303(d) of the Federal Clean Water Act. This list is commonly referred to as the "303d list".

While this Area Plan applies to all agricultural nonpoint water pollution, it focuses specifically on parameters on the 303d list in the Management Area. On March 15, 2012, the EPA proposed that some additional waterbodies be included on the 303d list. If these proposed listings result in additions to the 303d list in the Management Area, this Area Plan will add strategies to address the new listings during the next biennial review.

Appendicies D-E provide tables summarizing the 2010 303d listed waterbodies, those waterbodies proposed for 303d listing by EPA, and water quality criteria and standards for

identified parameters. More information is available in the 2010 integrated report and 303d list database on the DEQ website (www.deq.state.or.us/wq/assessment/2010Report.htm).

As of 2010, the most prevalent water quality issue in Curry County is the exceedence of the 64°F water numeric biological temperature criterion. Table 1 below illustrates the percentage of the Curry County Basins stream segments listed on the 303(d) list that exceed the federal Clean Water Act standards for temperature and other parameters for which valid data sets are available**. These are NOT listed because of agricultural activity in the basin. In many, stream segments are listed as temperature limited without any human induced factors present at all.**

**Table 1**

| Parameter (from 2002 303(d) list) | Stream Segments Exceeding Standard |
|---|---|
| Temperature [64º F average daily maximum] | 26/27 = 96% |
| Dissolved Oxygen [less than 90% saturation or 11 mg/l or 8.0 mg/l intergravel] | 3/27 = 11% |
| pH [6.5-8.5 range] | 1/27 = 4% |
| Aquatic Weeds or Algae [...having a deleterious effect on stream bottoms, fish or other aquatic life or ...injurious to health recreation or industry...] | 1/27 = 4% |

**The Coastal Zone Act**

On November 5, 1990, Congress enacted the Coastal Zone Act Reauthorization Amendments (CZARA). This law mandated that all states and territories with approved coastal zone management programs develop and implement coastal nonpoint source pollution control programs. In response to these CZARA Amendments, Oregon identified coastal area plans as the state's strategy to address certain agricultural measures. The exact text of the approved management measures is included in Appendix B. The CZARA management measures provide guidance when developing a plan for streams in the coastal zone of Oregon.

**Pesticide Management**

**Pesticide Management Plan**

The Pesticides Division of ODA holds the primary responsibility for pesticide registration and use regulation within the state of Oregon under the Federal Insecticide Fungicide Rodenticide Act. Because EPA designated the state as the lead agency for pesticides, ODA led the development and implementation of a Pesticide Management Plan (PMP) for the state of Oregon. The PMP, completed in 2011, strives to protect drinking water supplies and the environment from pesticide contamination, while recognizing the important role that pesticides have in maintaining a strong state economy, managing natural resources, and preventing human disease. The PMP sets forth a process for preventing and responding to pesticide detections in Oregon's ground and surface water resources by managing the pesticides that are currently approved for use by EPA in both the agricultural and non-agricultural settings. Pesticides that are no longer

marketed, also called “legacy” pesticides, are not regulated through the PMP, and are instead regulated through a separate process under the Clean Water Act. More information about the PMP is available at www.oregon.gov/ODA/PEST/water_quality.shtml.

**Water Quality Pesticide Management Team**

In 2007, the interagency Water Quality Pesticide Management Team (WQPMT) was formed to expand efforts to improve water quality in Oregon related to pesticide use. The WQPMT includes representation from the ODA, Forestry, Human Services, and DEQ. The WQPMT facilitates and coordinates water quality / pesticide activities such as monitoring, analysis and interpretation of data, effective response measures, and management solutions. The WQPMT developed the PMP.

# Prevention and Control Measures

The focus of the AgWQM Program is on voluntary and cooperative efforts by landowners and others to protect water quality. However, the AgWQM program also provides for a regulatory backstop to ensure prevention and control of water pollution from agricultural sources in cases where landowners or operators refuse to correct problem conditions. Area Rules serve as this backstop while allowing landowners flexibility in how they protect water quality. Area Rules are goal-oriented and describe characteristics that should be achieved on agricultural lands, rather than practices that must be implemented.

ODA appointed the LAC to assist in developing Area Rules (Prevention and Control Measures) to protect water quality and prevent and control water pollution from agriculture. On an eight to four vote, the LAC submitted a riparian rule to ODA. The rule submitted was not consistent with legislative direction, so it was left to ODA to develop the rules that apply to the Curry Management Area. To do this, ODA looked to work developed by other LACs in similar planning areas for a model rule to address riparian conditions. The Rules listed below are modified to reflect the unique circumstances found in Curry County.

**OAR 603-095-3540**
(1) All landowners or operators conducting activities on lands in agricultural use must comply with the following criteria. A landowner is responsible for only those conditions resulting from activities controlled by the landowner. A landowner is not responsible for conditions resulting from actions by another landowner on other lands. A landowner is not responsible for conditions resulting from unusual weather events or other exceptional circumstances that could not have been reasonably anticipated. A landowner is not responsible for natural increases in nutrient or temperature loading.

**Definitions**

Oregon Administrative Rule 603-095-0010(4) defines agricultural use as "the use of land for the raising or production of livestock or livestock products, poultry or poultry products, milk or milk products, fur-bearing animals, or for the growing of crops such as, but not limited to, grains, small grains, fruit, vegetables, forage grains, nursery stock, Christmas trees, or any other agricultural or horticultural use or animal husbandry or any combination thereof. Wetlands, pasture, and woodlands accompanying land in agricultural use are also defined as in agricultural use."

The following Rules apply to any agricultural use exceeding 10,000 square feet in area, including, but not limited to tilling, clearing, grading, excavating, grazing, and feedlot usage; and excluding minor land disturbing activities such as home gardens and individual landscaping and maintenance (OAR 603-095-0010(43)).

## Statutes Addressing Water Pollution

In 1995, the Oregon legislature recognized potential confusing authorities that belonged to both ODA and DEQ regarding the enforcement of water quality statutes. To clarify authorities granted to ODA in SB 1010, the state legislature passed SB 502, which was codified into ORS 561.191. This statute states that ODA shall develop and implement any program or rules that directly regulate farming practices that are for the purpose of protecting water quality. A 1996 opinion from the Oregon Attorney General's office states that **ODA has the statutory responsibility to regulate agriculturally related water pollution**. That same opinion also recognized the need to define that authority by developing water quality plans and rules that specifically address agricultural practices and land conditions and achieve the standards adopted by the Environmental Quality Commission.

To implement SB 502, ODA incorporated ORS 468B.025 and ORS 468B.050 into all of the basin Agricultural Water Quality Management Administrative Rules in the state. ORS 468B.025 and ORS 468B.050 were incorporated by including the following language in individual basin administrative rules:

**OAR 603-95-3540**
(2) Effective on rule adoption, no person subject to these rules shall violate any provision of ORS 468B.025 or ORS 468B.050.

Upon adoption of this Rule, ODA assumed responsibility for implementing ORS 468B.025 and 468B.050.

This Rule references current State Law (ORS 468B.025 and ORS468B.050). ORS 468B.025 states that no person shall:

(1)(a) Cause pollution of any waters of the state or place or cause to be placed any wastes in a location where such wastes are likely to escape or be carried into the waters of the state by any means.

(b) Discharge any wastes into the waters of the state if the discharge reduces the quality of such waters below the water quality standards established by rule for such waters by the Environmental Quality Commission.

(2) Violate the conditions of any waste discharge permit issued under ORS 468B or ORS 568.

ORS 468B.050 refers to situations when permits are required, such as for certain confined animal feeding operations (CAFOs).

Compliance with this Rule ensures that concentrated nutrients, pathogens associated with high animal density areas, high sediment concentrations in run-off, toxics, or other potential pollutants are not readily transported to waters of the state.

*Livestock wastes* can include manure from pastures draining to or bisected by irrigation ditches and any other situations not already covered by Oregon's CAFO laws. Indicators of potential noncompliance include: 1) runoff flowing through areas of livestock usage and entering waters of the state, 2) livestock waste located in drainage ditches or areas of flooding, or 3) *E. coli* counts that exceed state water quality standards. Livestock facilities located near streams should employ an adequate runoff control and waste management system.

Wastes can also include *excess sediment discharges*. Indicators of potential noncompliance with Rule (3) include: 1) visible active erosion scars, 2) sediment-laden runoff, or 3) obvious deposits of sediment on the stream or canal bottom that can be traced to a specific source.

**Definitions:**

*Wastes* include manure, commercial fertilizers, soil amendments, composts, vegetative materials, or *any other substances* that will or may cause water pollution (ODA's OAR 603-095-0010(53)). Therefore, 'wastes' also include sediment.

*Waste discharge* means the discharge of waste, either directly or indirectly, into waters of the state (ODA's OAR 603-095-0010(54)).

*Water pollution* means such alteration of the physical, chemical or biological properties of any waters of the state, including change in temperature, taste, color, turbidity, silt or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive or other substance into any waters of the state, which will or tends to, either by itself or in connection with any other substance, create a public nuisance or which will or tends to render such waters harmful, detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational or other legitimate beneficial uses or to livestock, wildlife, fish or other aquatic life or the habitat thereof (State Statute for Water Quality: ORS 468B.005(7)).

*Waters of the state* include lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, marshes, inlets, canals, and all other bodies of surface or underground waters, natural or artificial, public or private (except those private waters which do not connect to natural surface or underground waters) within Oregon (from state statute for water quality: ORS 468B.005(8)).

## Riparian Areas

OAR 603-95-3540
(3) Effective June 3, 2007, agricultural management activities in the riparian area of perennial streams will be conducted in a manner that allows for the establishment, growth, and maintenance of riparian vegetation consistent with vegetative site capability so as to provide streambank stability and shade.
(a) Exemptions from OAR 603-095-3540(3) are:
(A) Stream crossings, access for irrigation equipment and other accepted water dependent agricultural uses when conducted in a manner that minimizes impacts on streambank stability
(B) Streams that do not support native trout and are inaccessible to anadromous fish because of barriers at their junction with the Pacific Ocean.
(C) This rule is not intended to prohibit riparian grazing where it can be done while meeting the above vegetative conditions.

This Rule was developed to clearly show that landowners are not required to have mature riparian vegetation immediately but only that they must allow for the establishment, growth and maintenance. For guidance on management activities that promote the growth and establishment of riparian vegetation, please contact the Curry SWCD. Streamside area condition can improve several water quality parameters by providing shade (temperature, aquatic weeds / algae, and

dissolved oxygen) and streambank stability (mercury, pesticides, and dissolved oxygen). For more information on the effects of riparian vegetation on water quality, please consult the References section.

This Rule specifies that "agricultural activities" must allow for riparian vegetation to develop to make it clear that landowners are not responsible for the impacts of browsing activities of wildlife such as elk, geese, and beaver.

**Definitions:**

A riparian area is an edge or bank of a river, tributary, or other body of water.

"Site capability" means the ability of a site to provide for the development of potential structural and functional properties. Structural properties include, among other things, vegetation and soil characteristics. Functional properties include processes such as energy and nutrient flow. Capabilities to produce and sustain these properties are site-specific (Barrington et al, 2001). For additional references on site capability and related concepts, please consult the following in the references section: Gregory et al, 1991; Hunsaker and Levine, 1995; Leonard et al, 1992; Montgomery, 1999; Palik et al, 2000; Prichard, 1998; Winter, 2001; Winward, 2000.

ODA is responsible for determining site capability. This determination is based on soils, topography, climate, and other site characteristics that are described in U.S. Department of Agriculture soil surveys and through on-site visits.

## Pesticides

Pesticide control is presently regulated by ODA under ORS 634 and OARs 603-057. Waterbodies in this basin have not been identified on the 303(d) list for pesticide contamination. Thus, potential pesticide issues are addressed under existing statute and no additional measures are needed.

# Strategies for Implementation

The Curry SWCD can provide direct assistance to landowners in developing Area Plans for individual landowners. The Curry SWCD, as the designated local management agency, will provide specific landowner education and support for this Area Plan. Currently, the following activities are proposed by the SWCD:

- A regular SWCD newsletter containing articles on positive management practices, outstanding District cooperators and their management practices, and articles about the status of the Curry County Area Plan and Rules;
- Workshops, presentations, and seminars that will relate to the unacceptable conditions and positive management practices that are found in the Curry County Area Plan;
- Press releases, and meeting announcements concerning Curry area activities;
- Coordination between other agencies and associations such as DEQ, OSU Extension, Watershed Councils, etc.;
- Serve as a general clearinghouse of information for the public about the Agrilcultural Water Quality Management Act and also an archive for the Curry LAC;
- Provide technical assistance and assistance obtaining financial cost-share opportunities to assist agricultural landowners in their efforts to comply with the AgWQM Plan and Rules in the Curry Area;
- Employ staff to facilitate the implementation of the AgWQM program in the Curry area.
- Identify, and focus outreach and technical assistance work in small geographic areas to help demonstrate the effectiveness of the area plan. The following process will be followed for each consecutive Focus Area:
    - Determine list of future focus areas, after seeking input from LAC, LMA, and other partners.
    - Identify water quality parameter(s) of concern within the area, and compile available baseline data.
    - Assess baseline land conditions within the area(s).
    - Conduct educational programs and one-on-one landowner contacts in the area(s) to promote public awareness of water quality issues and their solutions.
    - Provide one-on-one voluntary technical assistance to landowners in the area(s) to achieve land conditions that contribute to good water quality.
    - Secure necessary resources to help landowners in the area(s) achieve land conditions that contribute to good water quality.
    - Asssess land conditions within the area(s) again prior to the next biennial review of the Area Plan, and quantify changes from the baseline.

**Public involvement in the Area Plan and Rules development process**

This Area Plan in draft form was presented and made available to the public for public comment. Testimony presented at public hearings and collected during public comment periods were reviewed by the ODA and the LAC, and recommended modifications to the Area Plan were presented to the Board of Agriculture and the director of the ODA for their review and comment. The final OARs resulting from this process were adopted through the Administrative Rules process by the director of the ODA.

This Area Plan and the associated Area Rules are subject to a two-year review process. Two years after adoption, ODA, in cooperation with the Curry SWCD and the Curry LAC will assess the progress of Area Plan implementation toward achievement of Area Plan goals and objectives. Any new water quality information and programs, including TMDLs, affecting agriculture will be reviewed and considered during this review process. As needed, recommendations to the State Board of Agriculture and director will be made regarding modifications to the Area Plan that may be necessary to achieve water quality goals and objectives. Any future amendments to the administrative rules will be subject to public participation process as defined in Oregon law.

## Monitoring and Evaluation

Monitoring is an important activity as part of the implementation phase of AgWQM Area Plans. When effectively used, monitoring and data analysis can provide valuable information to:

- Establish baseline information;
- Evaluate trends in water quality improvement;
- Help understand whether water quality improvement activities are achieving their intended goals; and
- Assist with adjustments in implementation activities and priorities to gain maximum effects on improving water quality and watershed conditions.

Landowners interested in monitoring can find help locally through OSU, the Curry SWCD, the South Coast and Lower Rogue Watershed councils, DEQ, and other public and private sources.

Monitoring and assessment are also important information gathering activities during site-specific determinations of compliance as part of an investigation. For the purposes of Area Plans, there are four important types of monitoring or assessment that may be conducted.

### Baseline Condition Monitoring

Baseline condition monitoring provides a starting point for assessing water quality trends and for future evaluation of the effectiveness of water quality improvement efforts. Baseline condition monitoring typically includes identification and analysis of data previously and currently collected in the area according to accepted protocols. The Oregon Plan Water Quality Monitoring Technical Guide Book is the recommended guide for baseline condition monitoring.

### Water Quality Trend Monitoring

Water quality trend monitoring can help to track how water quality (typically on a watershed or sub-watershed scale) is changing over time, including after implementation of an Area Plan. It is recommended that trend monitoring follow recommendations in the Oregon Plan Water Quality Monitoring Technical Guide. This Water Quality Monitoring Technical Guide Book describes accepted procedures and protocols for most activities that would be used to conduct baseline condition and trend monitoring on a watershed scale, including development of quality assurance/quality control plans to assure quality of data. Protocols described in the Water Quality Monitoring Technical Guide Book meet DEQ standards for data collection.

**Effectiveness Monitoring**

Effectiveness monitoring can be used to:

a) Evaluate the effectiveness of specific management practices in reducing losses or loadings of components such as sediment or nutrients. The Natural Resources Conservation Service has a good amount of information about the effectiveness of various practices in protecting surface and groundwater quality.
b) Evaluate the net effect of the implementation of an Area Plan and watershed improvement activities on water quality trends.

**Site-Specific Rule Compliance Monitoring and Assessment**

Conducted as a part of a compliance investigation, this type of monitoring is specific to individual sites. It is performed to assess compliance with conditions in a rule, and to assess the contribution of land management activities or land conditions to rule or standards violations attributable to the landowner's activities. Site-specific information and data is collected to characterize and quantify the physical setting and land management conditions that relate to a potential rule or standards violation. Photographic documentation of the suspected problem is typically also included in the assessment. Water samples may be taken for analyses.

**Current and future monitoring and assessment efforts**

Monitoring of various water quality parameters is presently being done by several entities, including the Watershed Councils, the DEQ, ODFW, and individual landowners. The data from these monitoring efforts can be analyzed and used for baseline condition monitoring, water quality trend monitoring, and effectiveness monitoring.

**Statewide monitoring and evaluation of water quality and streamside conditions on agricultural lands**

ODA conducts monitoring at a statewide level and analyzes other agencies' and organizations' monitoring data to answer several monitoring questions related to agriculture and water quality.

- What are current water quality and landscape conditions in agricultural areas in Oregon?
- What are water quality trends?
- How well does the existing monitoring network assess agricultural water quality trends and streamside conditions in Oregon?
- What are riparian vegetation trends along agricultural lands in Oregon?
- How do riparian conditions compare with site capabilities?
- How do riparian vegetation conditions change in aerial photos of selected stream reaches?
- How do changes in riparian vegetation condition compare with trends in water quality in monitored watersheds?

To answer these questions, ODA evaluates water quality data from existing sites in DEQ's LASAR database (http://deq12.deq.state.or.us/lasar2) that reflect agricultural influence on water

quality. In 2011, ODA received funding from the Oregon Legislature to fund water quality sampling at 19 additional sites around Oregon. These data, once sampling begins, will also be published in the LASAR database and evaluated at the statewide level to determine trends in water quality at agricultural sites statewide. (See "water quality data assessment" below.)

In addition, ODA evaluates aerial photos of stream segments in each management area that are selected at random along agricultural lands. Based on the streamside vegetation present at the time of the assessment, each stream segment receives a score. The same stream segments are re-photographed and re-scored every five years to track changes in streamside vegetation conditions. By itself, a score does not tell whether streamside vegetation is in good or poor condition. A score provides some idea of the mixture of bare ground, grasses, shrubs, and trees present at a site, but it does not compare the vegetation that is there with the types of vegetation that can be expected given the site capability. In the Curry Management Area, monitored stream segments are located in the New River, Elk River, and Sixes River watersheds. Data were first collected in these watersheds in 2006, and the second round of data collection occurred in 2011. (See "Streamside vegetation assessments" below.)

**Water quality data assessment**

For each Management Area, ODA currently evaluates other agencies' and organizations' water quality data to answer the following questions.

- What water quality and land condition data from agricultural watersheds are available?
- What are trends in available water quality and land condition data in agricultural watersheds since Area Plan and Rule adoption?
- What is the status of water quality in the management area since the last biennial review?

ODA reviewed water quality data collected between June 2010 and April 2012 for five sites in Curry County in the DEQ's LASAR database. Each of these sites appeared to have some agricultural influence. These are the Elk River upstream of Highway 101; the Elk River at Hwy. 101; Floras Creek at Hwy. 101; the Pistol River at Pistol River Loop Road; and the Chetco River at the USGS gage.

ODA also reviewed ten-year Oregon Water Quality Index score status and trends published by the Oregon DEQ for the five sites for water years 2001-2010. The Oregon DEQ uses the Oregon Water Quality Index to characterize water quality at its long-term monitoring sites. The index analyzes water quality variables and produces a score describing general water quality. The index is unitless, with scores ranging from 10 (very poor) to 100 (excellent).

Between June 2010 and April 2012, LASAR data for the Pistol River included one low dissolved oxygen reading in September at 63 percent. This reading may represent low flow conditions. The Pistol also had three high turbidity readings, up to 46 nephelometric turbidity units (NTU). The Oregon Water Quality Index ten-year status score for this site was 70 (poor), with no significant improving or decreasing trend.

The Elk River at Highway 101 had one high turbidity reading of 33 NTU between June 2010 and April 2012. The Oregon Water Quality Index ten-year status score for this site was 93 (excellent), with no significant improving or decreasing trend.

No significant problems were noted in the Floras Creek samples from 2010 to 2012. The ten-year Oregon Water Quality Index score for this site was 83 (fair) with no significant improving or decreasing trend.

There were no recent data for the Elk River upstream of Highway 101 site, and the site was not included in the Oregon Water Quality Index 2001-2010 analysis.

The Chetco River site received a ten-year Oregon Water Quality Index score of 90 (excellent) with no significant improving or decreasing trend.

**Streamside vegetation assessments**

2006 analysis

The New River, Elk River, and Sixes River were all very similar in terms of physical setting, though they did possess different landscape cover percentages. The New River had the smallest percentage of tree cover, with no bands having more than 5 percent trees. This stream also had the greatest percentage of bare agricultural land, and the lowest riparian index score (33.13). It should be noted that nearly all of the right bank of this stream was located along the beach, and ocean waves appeared to overtop the right bank of the stream on a regular basis. Because of this, it is not likely that riparian vegetation could be established there. Most of this area was described as bare land. The Elk River had the highest percentage of tree cover, with percentages up to 62 percent in the 30-foot bands.

All three streams had large sandbars in the channels, and they all had channel widths of up to 120 feet wide.

2011 analysis

The 2011 photos show significant improvement in the New River. The right bank of the river produced more riparian vegetation, indicating that the stream and stream bank have been relatively stable from 2006 to 2011. The riparian score for 2006 was 33.15, increasing to 34.99 in 2011. The main difference was an increase in shrub growth on the right bank, and reduced bare land along the same bank.

The monitored segments of Elk River and Sixes River remained relatively unchanged from 2006 to 2011.

In 2011, Langlois Creek was assessed for the first time. Langlois Creek is shrub dominated, with an engineered channel through most of the reach (straightened, ditched, 90° turns). Its riparian score was 45.44. There were no more than 20.21 percent trees along any band.

**Land condition assessment**

ODA is planning to work with LMAs to conduct land condition assessments at the management area level. These assessments will allow ODA and partners to track improvements in land conditions over time. Often, improvements in land conditions are detectable much earlier than changes in water quality. For example, when a landowner restores a streamside area, land conditions improve rapidly, even though it may take 20 years for streamside vegetation to reach the height that can positively affect stream temperatures.

ODA will work with LMAs and other partners to design and conduct an assessment of streamside areas along agricultural lands in the management area prior to the next biennial review.

**Implementation activities assessment**

In addition, during the biennial review process, ODA, the LMA, and the LAC assess activities that have occurred to help achieve plan goals and objectives, including the following.

- Outreach and education activities conducted to promote awareness of water quality issues and encourage agricultural land conditions that protect water quality, and the level of participation in these activities
- Voluntary conservation projects installed by agricultural landowners and managers in cooperation with the LMA and other agencies and organizations
- Number of complaint investigations, the result of each complaint investigation, and corrections of violations

**Effectiveness monitoring in small geographic areas**

Many of ODA's current efforts are focused on evaluating program effectiveness in small geographic areas, such as small watersheds. ODA water quality staff work with LMAs to select a small area, based on land condition and water quality concerns. ODA and the LMAs develop action plans with identified milestones and corresponding timelines to improve streamside vegetation and/or other land conditions. A reporting mechanism is identified in the action plan, which includes assessments provided to LACs at their biennial reviews.

Small area assessments include:

- Baseline and two-year post-baseline conditions with respect to parameters of concern identified in the area.
- A report on the level of progress that was made in land condition changes through voluntary outreach, education, and technical assistance.
- Evaluation of changes in water quality in the area, if appropriate and if data are available.

**Local Monitoring Efforts**

Edson and Ranch Creek Ranch Runoff Source Detection

The South Coast Watershed Council conducted water quality sampling in Edson and Ranch Creeks, two tributaries to the Rogue River Estuary, to characterize the relative effects of livestock grazing, livestock grazing with riparian exclusion fence, and elk herd grazing on water

quality. The council selected these streams for further monitoring after earlier storm event sampling found them among the four streams with highest bacteria levels.

Ten sample sites were located along stream reaches of Ranch and Edson Creeks to isolate pasturelands grazed by elk, from fenced pastures having both excellent and poor riparian buffers. The sites were sampled during a relatively intense spring storm, and a second spring storm.

Results of the sampling indicate that *E. coli* sources occur in the uplands of both Edson and Ranch Creeks. In both watersheds, *E. coli* concentrations were elevated above state standards at sites draining upland areas grazed by livestock (and possibly elk herds). In Edson Creek, a site located upstream of grazing was lower than the other sites. Limited sampling also supports an observation from a previous ranch runoff study, which found that *E. coli* runoff contributed by bottomland pastures is less than from upland pastures.

Livestock exclusion among major streams adjacent to bottomland pastures has been a priority for restoration programs; the results of this study suggest that upland pastures need more attention in the future to address runoff of *E. coli*. The council's report from the sampling recommended targeting technical assistance towards areas contributing the highest levels of *E. coli*, including North Fork Edson, upper Ranch Creek, West Fork of Ranch Creek, and other upland tributaries draining into the reach between the West Fork of Ranch and one of the Ranch Fork sampling sites.

Crook Creek Water Quality Restoration Monitoring

After a ranch in the Crook Creek watershed implemented road erosion control and pasture management projects, the South Coast Watershed Council and Curry SWCD conducted monitoring to determine the water quality benefits of the projects. Monitoring determined that the road improvements and livestock exclusion in the vicinity of 14 road-stream crossings and seeps, improved water quality in Crook Creek.

The water quality improvement was measured in decreased turbidity during storm events. Prior to changes in grazing management and road treatment, the average turbidity level in tributaries to Crook Creek was 257 NTU; after improvements were implemented, the mean turbidity was 53 NTU.

Prior to the projects, only one stream had the same or lower turbidity downstream of the road crossing, compared with upstream. During the largest storm in the second year after improvements, eight crossings had the same or lower turbidity downstream. Of the remaining crossings that had higher turbidity downstream, turbidity increased the most at two crossings where discharge was low. For the remaining crossings, turbidity increased an average of 11 percent.

Results indicated that road drainage relief at some of the crossings needed more control. However, the overall decrease in sedimentation, documented by turbidity measurements as well as photo points, is so compelling that all participants were proud of the outcome.

## Education and Outreach

ODA coordinated the development of the AgWQM program education projects within the Curry County with the Curry SWCD. They worked hand in hand with US Department of Agriculture's Natural Resources Conservation Services (NRCS), the OSU Extension Service, and the South Coast and Lower Rogue Watershed councils to carry out an effective water quality education program.

To define, implement, and measure the success of the Curry County education effort, the following quantifiable tasks can be pursued:

1. Conduct education programs to promote public awareness of water quality issues.
    - Hold workshops on water quality issues and the conservation practices that will help improve water quality.
    - Develop demonstration projects to highlight successful conservation practices and systems.
    - Organize tours of demonstration projects for agricultural managers and producers.
    - Produce and distribute brochures about water quality issues.
    - Prepare standard presentations for agricultural producer groups.
    - Develop detailed, one-page Curry County fact sheets for erosion control, nutrient and waste management, livestock and grazing management, and riparian and streambank management.
    - Conduct one-on-one and small group visits with landowners to discuss the Curry County Area Plan and adaptive management solutions.

2. Conduct a media program to inform Curry County agricultural operators, rural landowners, and the public of conservation issues and events.
    - Submit news articles and public service announcements to area newspapers, radio stations, and newsletters.
    - Invite media to conservation tours and workshops.
    - Include updates on the status of the Curry County Area Plan and water quality data in Curry County SWCD, OSU Extension, and watershed council newsletters.

3. Involve the agricultural community in conservation education.
    - Create and maintain a list of experienced agricultural operators willing to share management solutions with other interested people by speaking, leading tours, and providing tour sites.

4. Build partnerships with commodity groups to promote conservation.
    - Co-sponsor workshops and tours among the commodity groups, watershed councils, and the Curry County SWCD.
    - Share education materials with commodity groups and their representatives.
    - Develop educational materials in conjunction with commodity groups and watershed councils.

- Partner with other agricultural and natural resource agencies, watershed councils, and commodity groups to access and acquire the material and financial resources to implement the Curry County Area Plan and its educational component.
- Meet with other agencies and organizations, and develop a strategy to obtain funding from traditional and nontraditional sources.

We believe that the vast majority of landowners want to do the things that will benefit the land and their production. A great deal of effort and resources should be used to inform landowners of the management strategies that will improve both their land and the quality of their water.

# Administrative Roles and Responsibilities

### Total Maximum Daily Loads

The Oregon DEQ, in accordance with the Federal Clean Water Act, is required to establish TMDLs for waterbodies on the 303(d) list. TMDLs will identify the maximum amount (load) of each pollutant that a listed waterbody can receive and still meet state water quality standards. Once a TMDL is established for a particular pollutant, each source of pollution in the area will be assigned a portion of that load, and each source must develop or modify pollution control plans and programs designed to achieve their load.

TMDLs are scheduled to be completed for Curry County in 2013-2014. ODA will seek to review these TMDLs in 2015 to incorporate additional information sufficient to meet the goals of Implementation Ready (IR) TMDLs.

As part of the TMDL process, DEQ identifies the Designated Management Agencies or parties responsible for submitting TMDL implementation plans. An agreement between ODA and DEQ establishes that Agricultural Water Quality Management Area Plans serve as TMDL implementation plans. This Area Plan is the implementation plan for the agricultural component of the TMDLs that apply to the Management Area. Area Plan biennial reviews and revisions will address any new pollutant load allocations assigned to agriculture in future TMDLs.

The Area Plan and Rules seeks to satisfy agriculture's load in the TMDLs for these waterbodies. Once TMDLs are completed for the Management Area, ODA and DEQ will compare the TMDLs and Area Plan and Rules to determine if any adjustments need to be made to the Area Plan and Rules to achieve agriculture's load allocations.

### Designated Management Agency/Local Management Agency

The ODA is the "Designated Management Agency" for nonpoint source pollution control activities on agricultural and rural lands in the Curry County basins. In turn, through Memoranda of Agreement, ODA has designated the Curry SWCD as its LMA to assist with the development and implementation of the water quality management area plan and projects in the South Coast Basin. Implementation priorities will be established on a periodic basis through

annual work plans developed jointly by the Curry SWCD and ODA, depending on available funding.

The director of ODA appointed a Curry LAC representing local agricultural producers, local landowners, local environmental interests, and the Curry SWCD for the purpose of assisting with the development of this Area Plan and the associated draft OARs to implement core elements of the plan. The draft Area Plan and Rules have been presented to the Oregon Board of Agriculture for their review and consultation.

The LMA and the LAC will participate in biennial review of Plan implementation progress. Any future amendments to the administrative Rules will be subject to the public participation process outlined in Oregon law.

### Monitoring and Evaluation of the Plan's Effectiveness

The progress and success of implementation efforts will be assessed through determination of changes in land management systems and the measurement of water quality improvement over time. The number of private and public groups doing water quality trend monitoring will insure the LAC's awareness of water quality trends throughout the basin. ODA plans to conduct land condition assessments and outreach evaluations in addition to funded water quality monitoring projects.

## Complaints and Inspections

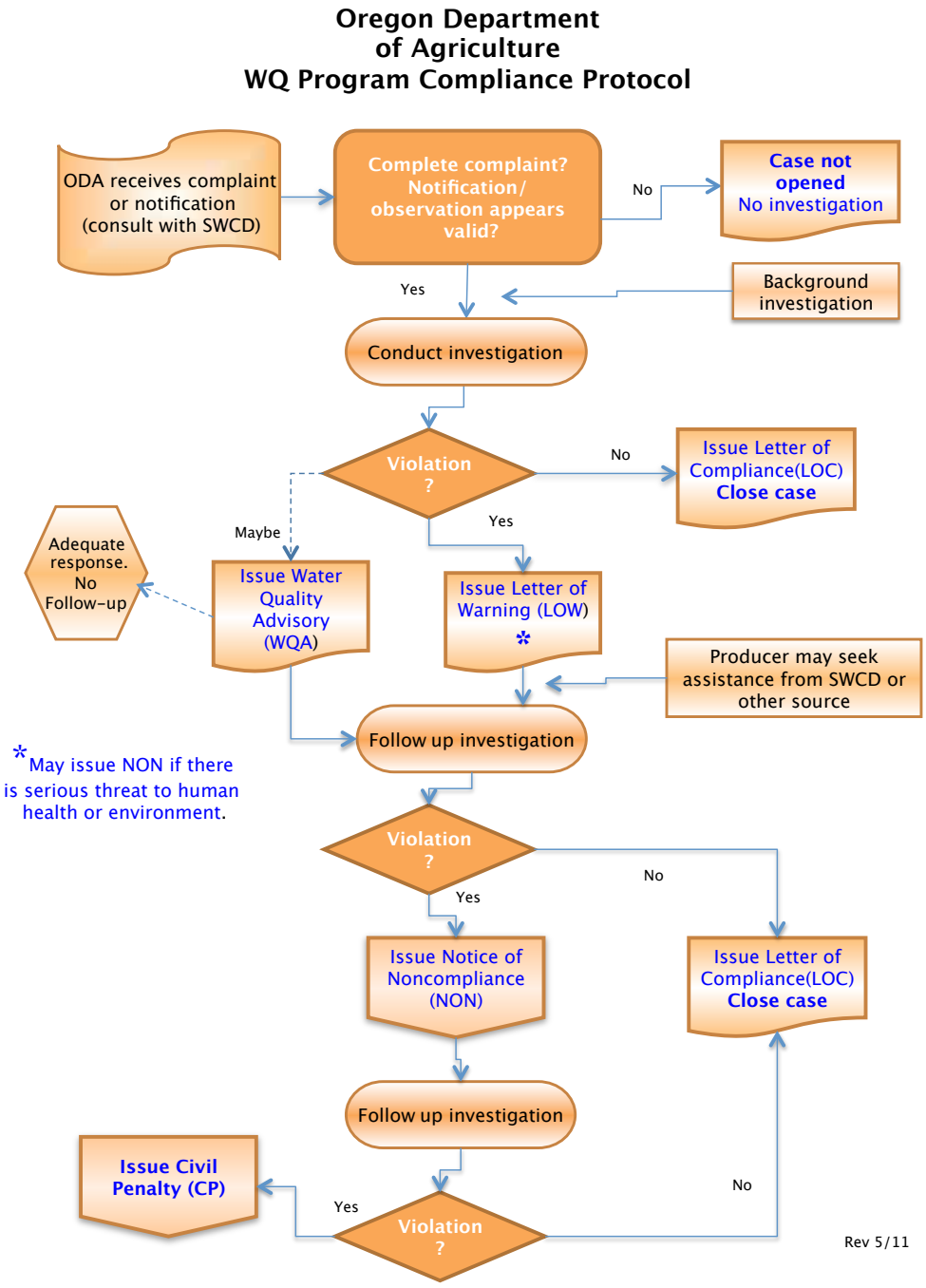
It is the intent of this Plan that ODA consider severe weather conditions when evaluating compliance with unacceptable conditions adopted in the rules. The ODA recognizes that every farm and situation is different and will take into account each individual situation when evaluating compliance with unacceptable conditions listed in the Rules.

### Compliance Procedures

Written complaints against operators or landowners alleged to be out of compliance with the Rules associated with this Area Plan would be investigated by ODA. The complaint must identify the site, the specific information related to the undesirable condition, and be filed with ODA. Copies of the complaint are available to the party alleged to be in violation. Based on the investigation, ODA will determine if a condition violation exists and describe appropriate action to remedy the condition that violates the associated rules.

It is the policy of ODA to direct the landowner to available assistance through local, state, and federal partners so as to achieve a resolution rather than an enforcement action.

When a Notice of Noncompliance is issued for an AgWQM Area Rule conditions violation, the landowner/operator will be directed by ODA to remedy the condition under provisions in OAR 603-090-0060 through 603-090-0120. Authority for any enforcement action rests with the ODA.




## Review Period

The ODA, Curry SWCD, the LAC, and the Oregon Board of Agriculture will consider making appropriate modifications to the basin Plan and/or the associated OARs on a biennial basis.

The Curry LAC reconvenes every two years. The purpose of reconvening is to address the implementation, language, or newly listed 303(d) parameters of concern to agriculture in the basin.

Area Plan and Rules Effectiveness Evaluation

The LAC, ODA, and the LMA will evaluate the effectiveness of the area plan in improving water quality and land conditions, include the evaluation results in the next update of the area plan, and summarize the results in a biennial report to the Oregon Board of Agriculture. ODA, the LMA, and the LAC will discuss the monitoring and evaluation results at the next biennial review, what these results mean in terms of area plan effectiveness, and modifications to the area plan and rules. Some of the questions to consider in the discussions include:

- Are all of our goals and objectives measurable?
- Were the activities that we committed to do over the previous two years in our goals, objectives and strategies accomplished?
- Were all violations that were found during investigations resolved or are they in the process of being resolved?
- Were our goals and objectives for land condition improvements met?
- Are water quality data from agricultural lands showing improvement?
- How do water quality and land condition data trends compare? Do we need to start collecting other kinds of land condition data?

As described on page 29, the agricultural water quality program at ODA is working with LACs and LMAs to identify small geographic areas to focus efforts for the two-year period before the next biennial review. ODA and the LMA then develop action plans to work on a voluntary basis with agricultural landowners in the small area to improve land conditions over the two-year period.

Based on the water quality concerns in the small geographic area, ODA and the local management agency will select one to two land conditions or "measures" to evaluate before and after the two-year action plan period. Land conditions are classified as

- Agricultural activities need modification to allow conditions to improve,
- Conditions improving but not yet achieving the goals of the plan,
- Achieving the goals of the plan.

ODA plans to work with the LMAs to answer the following questions over the next two years for the area, and report to the LAC at the next biennial review.

- What are the agricultural water quality concerns in the small geographic focus area, and what land conditions relate to those concerns?
- What percentage of agricultural land in the area is in a condition that achieves the goals of the plan, in improving condition, or in a condition that needs improvement?

- What is the percent change in land in these respective conditions during a two-year period?
- Can land conditions of concern in the focus area be eliminated purely through voluntary outreach, education and technical and financial assistance over a two-year period?
- How do water quality conditions change in the area as agricultural land conditions change?
- Are positive land condition changes in the small area effective in improving water quality?

At the next biennial review, ODA, the LACs, and the LMA will discuss the results from the small geographic area assessment and voluntary conservation efforts, evaluate the effectiveness of the focused efforts in the area, and recommend next steps. Some of the questions to discuss include:

- How well did the small geographic area approach work in demonstrating the effectiveness of outreach and education efforts?
- Was the LMA able to contact and meet with all landowners in the area with potential concerns?
- Are all agricultural landowners with potential concerns working towards making improvements?

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# Appendix A. Available Technical and Financial Assistance

Many agricultural landowners are unable to make a living directly from their land-based enterprise. Financial incentives are essential to encourage basin-wide adoption of sound and sustainable management practices.

•CREP - Conservation Reserve Enhancement Program (541-396-4323) made available $250 million dollars to pay landowners to set aside areas immediately adjacent to anadromous fish-bearing streams. It is intended to protect water quality and enhance spawning, rearing, and habitat quality.

•OWEB - Oregon Watershed Enhancement Program (541-471-2886) provides funding for watershed enhancement projects under the general categories of education/public awareness, monitoring, management, and assessment/action planning.

•EQIP - Environmental Quality Incentives Program (541-396-4323) pays landowners a majority cost-share for on-farm projects that protect natural resources and improve wildlife (including fish) habitat. EQIP information can also be obtained from the Farm Service Agency.

•EPA 319 - Environmental Protection Agency administers the 1972 Clean Water Act section 319 grants through ODEQ (541-269-2721x27) to help meet their water quality mandates. The projects EPA likes to fund are those with directly measurable benefits for water quality and endangered species. Check out EPA's Ag Info Center: http://es.epa.gov/oeca/ag/index.html

•NRCS - Natural Resources Conservation Service (541-396-4323) can provide technical assistance and administers a number of cost-share programs for on-farm projects that improve farm production while protecting natural resources and improving wildlife (including fish) habitat.

•The Freshwater Trust (503-222-9091 in Portland) offers lease and buy-out options for abandoned or unused water rights. This market-based approach to increasing stream flow may also be used to fund irrigation system changes in watersheds identified as priorities for OWT.

•OSU Cooperative Extension (1-800-356-3986 in Curry County) offers a wide variety of levels of technical assistance and planning help. OSU has been instrumental in the Oregon Cattlemen's extremely successful Watershed Ecosystem Education Program. Since its inception, it has grown into several distinct natural resource related workshops that are offered to ranchers and farmers free of charge. The Watershed Ecosystem Education Program workshops help ranchers and farmers understand their watersheds and stream function better through assessments and monitoring. OSU has also been providing Proper Functioning Condition (PFC) Workshops and assessments with landowners. PFC assessment should be a major component of a conservation plan.

Watershed Councils and Soil and Water Conservation Districts are a primary resource for finding technical and financial assistance. Contact the Curry SWCD at 541-274-2755.

Curry County hosts several watershed councils unique to their basins of concern. A call to the Curry SWCD can give you contact information for those unique watershed councils.

# Appendix B. Coastal Zone Management Act Measures

In 1990, the Federal Coastal Zone Reauthorization Amendments were enacted. This law mandated that all states and territories with approved coastal zone management programs develop and implement coastal nonpoint pollution control programs. Listed below are the Coastal Zone Management measures that were developed for use in Oregon for coastal basins such as Curry County.

The following section contains the approved management measures for coastal nonpoint pollution in Oregon as developed for the Coastal Zone Reauthorization Amendments. For more detailed information on how to implement any of the recommendations below, consult one of the technical groups in Appendix A or publications included in the References section.

Sedimentation

- Apply the erosion component of a Resource Management System as defined in the Field Office Technical Guide of the U.S. Department of Agriculture, Natural Resources Conservation Service to minimize the delivery of sediment to surface waters.

- Design and install a combination of management and physical practices to settle the settleable solids and associated pollutants in runoff delivered from the contributing area for storms of up to and including a 10-year, 24-hour frequency.

Nutrients

- Develop, implement, and periodically update a nutrient management plan to: (1) apply nutrients at rates necessary to achieve realistic crop yields, (2) improve the timing of nutrient application, and (3) use agronomic crop production technology to increase nutrient use efficiency. When the source of the nutrients is other than commercial fertilizer, determine the nutrient value and the rate of availability of the nutrients. Determine and credit the nitrogen contribution of any legume crop. Soil and plant tissue testing should be used routinely.

Pesticides

- Evaluate the pest problems, previous pest management practices, and cropping history.
- Evaluate the soil and physical characteristics of the site, including mixing, loading, and storage areas for potential of leaching or runoff of pesticides. If leaching or runoff is found, steps should be taken to prevent further contamination
- Use integrated pest management (IPM) strategies that:
    - Apply pesticides only when an economic benefit to the producer will be achieved (i.e. application based on economic thresholds).
    - Apply pesticides efficiently and at times when runoff losses are unlikely.
    - When pesticide applications are necessary and a choice of registered materials exists, consider the persistence, toxicity, runoff potential, and leaching potential of products being used.
    - Periodically calibrate pesticide-spraying equipment.
    - Use anti-backflow devices on hoses used for filling tank mixtures.

Riparian Areas

- Exclude livestock from riparian areas that are susceptible to overgrazing and when there is no other practical way to protect the riparian area when grazing uplands.
- Provide stream crossings and hardened access areas for watering.
- Provide alternative drinking water locations.
- Locate salt and shade away from sensitive riparian locations.
- Include riparian areas in separate pastures with separate management objectives and strategies.
- Fence, or where appropriate, herd livestock out of areas for as long as necessary to allow vegetation and streambanks to recover.
- Control the timing of grazing to: (1) keep livestock off streambanks where they are most vulnerable to damage, and (2) coincide with the physiological needs of target plant species.

Irrigation

- Operate the irrigation system so that the timing and amount of water match crop water needs. This will require, at a minimum: (a) the accurate measure of soil water depletion and the volume of irrigation applied, and (b) uniform application of water.
- When chemigation is used, include backflow preventers for wells, minimize the harmful amounts of chemigated waters from the field, and control deep percolation.
- In cases where chemigation is performed with furrow irrigation systems, a tailwater management system may be needed.
- In some locations, irrigation return flows are subject to other water rights or are required to maintain stream flow(s). In these special cases, on-site use could be precluded and would not be considered part of the management measures for such locations.
- In some locations, leaching is necessary to control salt in the soil profile. Leaching for salt control should be limited to the leaching requirement for the root zone.
- Where leakage from delivery systems or return flows support wetlands or wildlife refuges, it may be preferable to modify the system to achieve a high level of efficiency and then divert the "saved water" to the wetland or wildlife refuge. This will improve the quality of water delivered to wetlands or wildlife refuges by preventing the introduction of pollutants from irrigated lands to such diverted water.
- In some locations, sprinkler irrigation is used for frost or freeze protection, or for crop cooling. In these special cases, applications should be limited to the amount necessary for crop protection, and applied water should remain on site.

Grazing Management

I. Riparian Areas: Implement one or more of the following as necessary to protect water quality, streambanks, stream channels, wetlands, estuaries, ponds, lakeshores, and riparian soils and vegetation:

A. For privately owned lands, implement (1) or (2) below:

(1) Implement one or more of the following:

a) Provide stream crossings or hardened watering access for drinking;

b) Provide alternative drinking water locations away from the stream channel and sensitive areas;
c) Locate salt and additional shade, if needed, away from sensitive areas;
d) Use improved grazing management techniques including the application of scientifically sound grazing systems. The following are some examples of such techniques:
    1. Include riparian areas in separate pastures and manage them under separate objectives and strategies, including periodic rest.
    2. Fence or, where appropriate, herd livestock out of riparian areas for as long as necessary to avoid negative impacts to streambanks.
    3. Control the timing of grazing in riparian areas to (1) protect streambanks when they are most vulnerable to damage; and (2) coincide with the physiological needs of key plant species.
    4. Add rest, as needed, to the grazing cycle to increase plant vigor and encourage more desirable plant species composition.
    5. Limit grazing intensity, frequency, and duration to a level that will maintain desired plant species composition and vigor.
    6. Manage livestock away from riparian areas that are at high risk or with poor recovery potential.

(e) Exclude livestock from sensitive areas.

2) Implement a Conservation Management System (CMS) as defined in the Field Office Technical Guide of the USDA Natural Resource Conservation Service (NRCS) by applying the progressive planning approach of the USDA NRCS.

B. For publicly owned or managed lands, maintain rangelands, pasturelands, and other grazing lands in accordance with plans established by the responsible agency such as the USDI Bureau of Land Management, the USDA Forest Service.

II. Uplands: To protect water quality from grazing impacts on upland areas that are not protected under (I),

(A) For privately owned lands, implement (1) or (2) below:

(1) Implement one or more of the following:

(a) Locate livestock watering facilities away from sensitive areas such as springs and seeps;

(b) Locate salt and additional shade, if needed, away from sensitive areas;

(c) Use improved grazing management techniques including the application of scientifically sound grazing systems. The following are some examples of such techniques:

1. Control the timing of grazing to (1) protect soils and vegetation when they are most vulnerable to damage; and (2) coincide with the physiological needs of key plant species.

2. Add rest to the grazing cycle to increase plant vigor, or encourage more desirable plant species composition.

3. Limit grazing intensity, frequency, and duration to a level that will maintain desired plant species composition and vigor.

(2) Implement a CMS as defined in the Field Office Technical Guide of the USDA NRCS by applying the progressive planning approach of the USDA NRCS.

(B) For publicly owned or managed lands, maintain rangelands, pasturelands, and other grazing lands in accordance with plans established by the responsible agency such as the USDI Bureau of Land Management, the USDA Forest Service.

# Appendix C. Enforcement Procedures

The ODA's primary mission is to support Oregon's agricultural industry and will have the responsibility for enforcing rules derived from the Curry County Area Plan. It is the intent of the LAC and ODA policy that fines and civil penalties be used as a last resort in the effort to improve water quality in Curry County. This is consistent with the direction given to the Department through the OARs for the Ag WQM Program (603-090-0000 through 603-090-0120). This Area Plan includes an enforcement policy because it is a required element of a Water Quality Plan and to provide a mechanism when reasonable attempts at voluntary solutions have failed.

The primary focus of the Curry Area Plan is education toward voluntary compliance with the plan. Even the enforcement procedure is designed to educate first and penalize only as a last resort. It is the policy of ODA to direct the landowner to available assistance through local, state, and federal partners so as to achieve a resolution rather than an enforcement action.

In the event that a situation comes to the attention of ODA that may be a violation of the Curry Agricultural Water Quality Administrative Rules, a prescribed procedure will be followed. EXCEPT FOR BLATANT POLLUTION OF WATERS OF THE STATE OR BLATANT DESTRUCTION OF ADEQUATE RIPARIAN VEGETATION ALONG PERENNIAL STREAMS, AT ANY POINT IN THE PROCESS, THE LANDOWNER MAY CHOOSE TO ADDRESS A PROBLEM AND NO CIVIL PENALTIES WILL BE LEVIED BY THE OREGON DEPARTMENT OF AGRICULTURE.

1. Any person alleging a violation of the Curry Agricultural Water Quality Administrative Rules may file a complaint with the ODA. ODA will evaluate or investigate a complaint filed by a person if the complaint is in writing, signed, and dated by the complainant, and indicates the location and description of the violation of the Curry Agricultural Water Quality Administrative Rules.

2. If the problem appears to be a violation of the Curry Agricultural Water Quality Administrative Rules an ODA representative will contact the landowner to schedule a meeting. NO ODA REPRESENTATIVE WILL ENTER PRIVATE PROPERTY *AT ANY TIME* WITHOUT THE OWNER'S PERMISSION OR A VALID SEARCH WARRANT.

3. The situation will be reviewed on-site by an ODA representative and the landowner. The on-site review will include an investigation by ODA, which may include collecting appropriate samples for testing and consultation with experts as appropriate, at ODA's expense. If no problem exists, the complaint would be dropped.

4. If ODA determines through the investigation that a violation of the Curry Agricultural Water Quality Administrative Rules exists, ODA will advise the landowner of the violation (i.e. issue a notice of noncompliance) and work with the landowner to develop a plan of correction to solve the problem. The plan of correction includes a timetable and

an agreement to revisit the site as necessary to confirm that progress is being made to correct the violation within the timetable agreed upon. This would complete the process.

5. If the landowner does not agree that a problem exists, the landowner may choose to do additional testing or consultation at their own expense and request a review by the department of the initial findings in light of any additional information collected.

6. If evaluation of the additional information by the ODA determines that no problem exists or that the violation is not the result of an agricultural practice by the landowner, the process is complete.

7. If there is a confirmed problem that a landowner refuses to address after ODA's on-site visit and attempts to work with the landowner to develop a mutually agreeable solution, civil penalties can be levied. Civil penalties are issued by the ODA director or the director's designee and will be based on the seriousness of the violation and the magnitude of the effect. OAR 603-090-0120(3) describes the civil penalty matrix for first violations which begins at $50 and ranges to $1,200, and the civil penalty matrix for repeat violations which begins at $100 and ranges to $5,000. ORS 568.933 states 'each day of violation continuing after the period of time for correction set by ODA shall be considered a separate violation unless ODA finds that a different period of time is more appropriate to describe a specific violation event.'

8. A landowner issued a civil penalty due to a violation of the Curry Agricultural Water Quality Administrative Rules may request a hearing with the director of ODA. The hearing provides for the director to hear the landowner's disposition from which the director determines appropriate action, which can include a modification of the civil penalty or other form of intermediate sanction.

9. A landowner issued a civil penalty due to a violation of the Curry Agricultural Water Quality Administrative Rules may request a formal hearing by a hearings officer assigned from the hearing officer's panel in accordance with applicable contested case procedures as described in ORS183.413 to 183.550. Upon conclusion of the hearings process, a hearings officer will prepare a proposed order that includes recommended findings of fact, conclusions of law, and appropriate action by the agency. If the order is in favor of the landowner, the process is complete. If not, the landowner becomes subject to procedures for payment of the civil penalty.

*THE PROCESS IS DESIGNED TO BE FAIR TO THE LANDOWNER AND TO ALLOW ENFORCEMENT OF THE CURRY AGRICULTURAL WATER QUALITY ADMINISTRATIVE RULES.*

# Appendix D. 2012 Impaired Waterbodies on the 303d List in the Curry County Agriculture WQMP Area

| Sixes Sub-basin 2010 303d Listings Requiring a TMDL | | | |
|---|---|---|---|
| **Waterbody (Stream/Lake)** | **River Miles** | **Parameter** | **Season** |
| Boulder Creek / Floras Lake | 0.8 to 2.1 | Aquatic Weeds | Undefined |
| Garrison Lake | NA | | |
| Sixes River | 4.4 to 29.4 | Dissolved Oxygen | October 15 - May 15 |
| Hubbard Creek Beach | NA | Enterococcus | Summer |
| Floras Creek | 12 to 12.8 | pH | |
| Garrison Lake* | NA | | Undefined |
| | | Phosphorus | Year Around |
| Bald Mountain Creek | 0 to 2.3 | Temperature | Year Around (Non-spawning) |
| Cedar Creek | 0 to 4.5 | | |
| Crystal Creek | 0 to 7.3 | | |
| East Fork Floras Creek | 0 to 7.5 | | |
| Edson Creek | 0 to 5.8 | | |
| Elk River | 0 to 29.9 | | |
| Euchre Creek | 0 to 12.8 | | |
| Floras Creek | 0 to 12.8 | | |
| North Fork Floras Creek | 0 to 10.9 | | |
| Sixes River | 0 to 30.1 | | |
| South Fork Floras Creek | 0 to 3.7 | | |
| Swamp Creek | 0 to 1.5 | | |
| Willow Creek | 0 to 6.9 | | |

**Point source only TMDL Approved*

| Chetco Sub-basin 2010 303d Listings Requiring a TMDL | | | |
|---|---|---|---|
| **Waterbody (Stream/Lake)** | **River Mile** | **Parameter** | **Season** |
| Harris Beach | NA | Enterococcus | Year Around |
| Mill Beach | | | |
| Pistol River | 0 to 19.8 | Fecal Coliform *Shellfish Growing* | Year Around |
| Winchuck River | 1 to 11.1 | Dissolved Oxygen | October 15 - May 15 |
| Pistol River | 0 to 19.8 | pH | Summer |
| Hunter Creek | 0 to 7.2 | | |
| South Fork Pistol River | 0 to 0.5 | Temperature | Year Around (Non-spawning) |
| Chetco River | 0 to 57.1 | | |
| Deep Creek | 0 to 2.1 | | |
| East Fork Winchuck River | 0 to 7.5 | | |
| Hunter Creek | 0 to 18.4 | | |
| Jack Creek | 0 to 1.2 | | |
| North Fork Chetco River | 0 to 12.1 | | |

| | | | |
|---|---|---|---|
| North Fork Hunter Creek | 0 to 4.8 | | |
| North Fork Smith River | 0 to 1.6 | | |
| Pistol River | 0 to 19.8 | | |
| Winchuck River | 0 to 11.1 | | |

# Appendix E. 2012 EPA Proposed Impaired Waterbodies on the 303d List in the Curry County Agriculture WQMP Area

| Chetco Sub-basin 2010 EPA Proposed Additional 303d Listing | | | |
|---|---|---|---|
| **Waterbody** | **River Mile** | **Season** | **Parameter** |
| Chetco River | 0 to 57.1 | Year Round | Biological Criteria |
| East Fork Winchuck River | 0 to 7.5 | | |
| Hunter Creek | 0 to 18.4 | May 16 - Oct 14 | Dissolved Oxygen |
| Winchuck River | 0 to 11.1 | | |
| Pistol River | 1.08 to 12.91 | | |
| Pistol River | 0 to 1.08 | Year Round | |
| Boulder Creek | 0 to 9.5 | Year Around Non Spawning | Temperature |
| Crook Creek | 0 to 2.3 | | |
| Eagle Creek | 0 to 6.8 | | |
| East Fork Pistol River | 0 to 4.6 | | |
| Emily Creek | 0 to 8.1 | | |
| Fourth of July Creek | 0 to 4.6 | | |
| North Fork Pistol River | 0 to 2.8 | | |
| Turner Creek | 0 to 1.5 | | |
| Wheeler Creek | 0 to 11 | | |

| Sixes Sub-basin 2010 EPA Proposed Additional 303d Listing | | | |
|---|---|---|---|
| **Waterbody (Stream/Lake)** | **River Mile** | **Season** | **Parameter** |
| Floras Creek | 0 to 12.8 | Year Round | Biological Criteria |
| Fourmile Creek | 0 to 9.3 | | |
| North Fork Sixes River | 0 to 5.1 | | |
| Sixes River | 0 to 13.1 | | |
| Sixes River | 15.1 to 30.1 | | |
| Sunshine Creek | 0 to 1.2 | | |
| Boulder Creek / Floras Lake | 0.8 to 2.1 | Fall-Winter-Spring | chlorophyll a |
| Boulder Creek | 0 to 2.6 | Oct 15 - May 15 | Dissolved Oxygen |
| Floras Creek | 1 to 9.2 | May 16 - Oct 14 | |
| Sixes River | 0 to 30.1 | | |
| North Fork Floras Creek | 0 to 10.9 | May 16 - Dec 31 | |
| Unnamed Boulder Creek Tributary | 0 to 1.4 | | |
| | 0 to 1.4 | Jan 1 - May 15 | |
| Boulder Creek / Floras Lake | 0 to 1.4 | Year Round | Iron |
| Bethel Creek | 0 to 5.9 | Year Around | Temperature |
| Butte Creek | 0 to 3.6 | | |
| Davis Creek | 0 to 4.2 | | |
| Fourmile Creek | 0 to 11.6 | | |
| Morten Creek | 0 to 6 | | |
| Twomile Creek | 0 to 9.1 | | |
| Pea Creek | 0 to 1.4 | | |
| Boulder Creek | 0 to 6.1 | | |

# Appendix F. Water Quality Standards for 303d Listed Parameters in the Curry County Agriculture WQMP Area

Oregon water quality standards include statewide narrative criteria established in OAR 340-041-0007. Oregon water quality standards for specific pollutants are established in OAR 340-041-0009 (Bacteria) through OAR 340-041-0036 (Turbidity). Oregon water quality standards for specific pollutants are summarized in the table below. These standards often are accompanied by information regarding how many samples are needed to apply the standard.

**Statewide Narrative Criteria**
(1) Notwithstanding the water quality standards contained in this Division, the highest and best practicable treatment and/or control of wastes, activities, and flows must in every case be provided so as to maintain dissolved oxygen and overall water quality at the highest possible levels and water temperatures, coliform bacteria concentrations, dissolved chemical substances, toxic materials, radioactivity, turbidities, color, odor, and other deleterious factors at the lowest possible levels.

(2) Where a less stringent natural condition of a water of the State exceeds the numeric criteria set out in this Division, the natural condition supersedes the numeric criteria and becomes the standard for that water body. However, there are special restrictions, described in OAR 340-041-0004(9)(a)(D)(iii), that may apply to discharges that affect dissolved oxygen.

(4) No discharges of wastes to lakes or reservoirs may be allowed except as provided in section OAR 340-041-0004(9).

(10) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or that are injurious to health, recreation, or industry may not be allowed;

(11) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish may not be allowed;

(12) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry may not be allowed;

(13) Objectionable discoloration, scum, oily sheens, or floating solids, or coating of aquatic life with oil films may not be allowed;

(14) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch may not be allowed;

(15) Radioisotope concentrations may not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

| Parameter | Beneficial Uses Affected | Criterion/Standard |
|---|---|---|
| **Aquatic Weeds or Algae** | Domestic and Industrial Water Supply, Irrigation, Livestock Watering, Fish and Aquatic Life, Fishing, Boating, Water Contact Recreation, Aesthetic Quality | The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or that are injurious to health, recreation, or industry may not be allowed. |
| **Bacteria - *Escherichia coli*** Freshwaters and Estuarine Waters Other than Shellfish Growing Waters | Water Contact Recreation *Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation, or otherwise injurious to public health may not be allowed.* | 30-day log mean of 126 *E. coli* organisms/100 mL; no single sample may exceed 406 *E. coli* organisms/100 mL. |
| **Bacteria - *Enterococci*** (Coastal Recreation Waters including Coastal Estuaries) | Water Contact Recreation | A geometric mean for samples collected over a seasonal sampling period below 35 Enterococci/100 mL |
| **Bacteria - Fecal Coliform** (Marine Waters and Estuarine Shellfish Growing Waters) | Shellfish Growing, Recreational Contact *Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation, or otherwise injurious to public health may not be allowed.* | A fecal coliform median concentration of 14 organisms/100 mL, with not more than 10% of the samples exceeding 43 organisms/100 mL. |
| **Biocriteria** | Aquatic Life *Data collected at a sampling site is used to generate a number for the observed versus expected (O/E) macroinvertebrate taxa. This number represents the "missing" taxa at a site, and can be expressed as "% taxa loss"* | Waters of the State must be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities. |
| **Chlorophyll a** (Nuisance Phytoplankton Growth) | Water Contact Recreation, Aesthetics, Fishing, Water Supply, Livestock Watering | Average Chlorophyll a values for (A) Natural lakes that thermally stratify: 0.01 mg/L; (B) Natural lakes that do not thermally stratify, reservoirs, rivers and estuaries: 0.015 mg/L |
| **Dissolved Oxygen** | Fish and Aquatic Life, Salmon Steelhead and Resident Trout Spawning, Cool-Water Aquatic Life, Warm-Water Aquatic Life, Estuarine Water | Spawning: Not less than 11.0 mg/L or 95% saturation. If minimum intergravel dissolved oxygen is 8.0 mg/L or greater, then the DO criterion is 9.0 mg/L.<br><br>Cold-water aquatic life: Not less than 8.0 mg/L absolute minimum or 90% saturation.<br><br>Estuarine water: Not less than 6.5 mg/L |

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| **pH** | Resident Fish and Aquatic Life<br>Water Contact Recreation | Estuarine and fresh waters 6.5 to 8.5 |
| **Temperature** | Salmon and Steelhead Spawning, Core Cold Water Habitat, Salmon and Trout Rearing and Migration, Salmon and Steelhead Migration Corridor | Seven-day-average maximum temperature may not exceed:<br><br>Salmon and steelhead spawning 13.0 degrees Celsius<br><br>Salmon and trout rearing and migration 18.0 degrees Celsius<br><br>Migration corridor 20.0 degrees Celsius<br><br>No increase in temperature is allowed that would reasonably be expected to impair cool water species. |
| **Toxic Substances** | Aquatic Life – Fresh Water and Marine Water, Human Health – Water and Fish Ingestion, Fish Consumption, Drinking Water | Levels of toxic substances in waters of the state may not exceed the applicable criteria listed in Tables 20, 33A, and 33B. |