Water Quality Restoration Plan

Southern Oregon Coastal Basin

Rogue River-Gold Hill Watershed
South of the Rogue River

Bureau of Land Management (BLM), Medford District
Ashland Resource Area

November 2005

Rogue River-Gold Hill Watershed (South of the Rogue River) at a Glance	
Hydrologic Unit Code Number	**1710030802**
WQRP Area/Ownership	Total: 41,029 acres BLM Ownership: 15,495 acres (38%) Private: 25,534 acres (62%)
303(d) Stream Miles Assessed	Total: 5.9 miles BLM Ownership: 0 miles
303(d) Listed Parameters	Temperature
Key Resources and Uses	Salmonids, domestic, aesthetic
Known Human Activities	Agriculture, forestry, mining, roads, urban and rural residential development, recreation
Natural Factors	Geology: metamorphic and granitic uplands with sedimentary deposits on lower slopes Soils: various series and complexes

Statement of Purpose

This water quality restoration plan is prepared to meet the requirements of Section 303(d) of the 1972 Federal Clean Water Act.

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Element 1. Condition Assessment and Problem Description

A. Introduction

This document describes how the Bureau of Land Management (BLM) will meet Oregon water quality standards for 303(d) listed streams on federal lands. It contains information that will support the Department of Environmental Quality's (DEQ) development of the Rogue Basin Total Maximum Daily Load (TMDL). Its organization is designed to be consistent with the DEQ's Water Quality Management Plan (WQMP) when it is completed. The area covered by this Water Quality Restoration Plan (WQRP) includes all lands managed by the BLM, Medford District within the Rogue River-Gold Hill Watershed south of the Rogue River, but does not include the Rogue River. This area is referred to as the plan area or Rogue River-Gold Hill Watershed South.

Beneficial Uses

The Oregon Environmental Quality Commission has adopted numeric and narrative water quality standards to protect designated beneficial uses (Table 1). In practice, water quality standards have been set at a level to protect the most sensitive uses. Cold-water aquatic life such as salmon and trout are the most sensitive beneficial uses (Table 2) in the Rogue Basin (ODEQ 2004). Seasonal standards may be applied for uses that do not occur year round.

Table 1. Beneficial Uses in the Rogue River-Gold Hill Watershed South (OAR 340-41-271 (ODEQ 2005))

Beneficial Use	***Occurring***	***Beneficial Use***	***Occurring***
Public Domestic Water Supply	✓	Anadromous Fish Passage	✓
Private Domestic Water Supply	✓	Salmonid Fish Spawning	✓
Industrial Water Supply	✓	Salmonid Fish Rearing	✓
Irrigation	✓	Resident Fish and Aquatic Life	✓
Livestock Watering	✓	Wildlife and Hunting	✓
Boating	✓	Fishing	✓
Aesthetic Quality	✓	Water Contact Recreation	✓
Commercial Navigation & Trans.		Hydro Power	✓

Table 2. Sensitive Beneficial Uses in the Rogue River-Gold Hill Watershed South

Sensitive Beneficial Use	***Species[1]***
Salmonid Fish Spawning & Rearing	Coho (t), summer steelhead trout (c)
Resident Fish & Aquatic Life	Resident Fish: Rainbow trout, cutthroat trout (c), sculpin, dace Other Aquatic Life: foothill yellow-legged frog (a), Pacific giant salamander, western pond turtle (s), beaver, and other species of frogs, salamanders, and snakes

1/ Status: (t) = threatened under Federal Endangered Species Act (ESA); (c) = candidate; (s) = sensitive; and (a) = assessment.

Listing Status

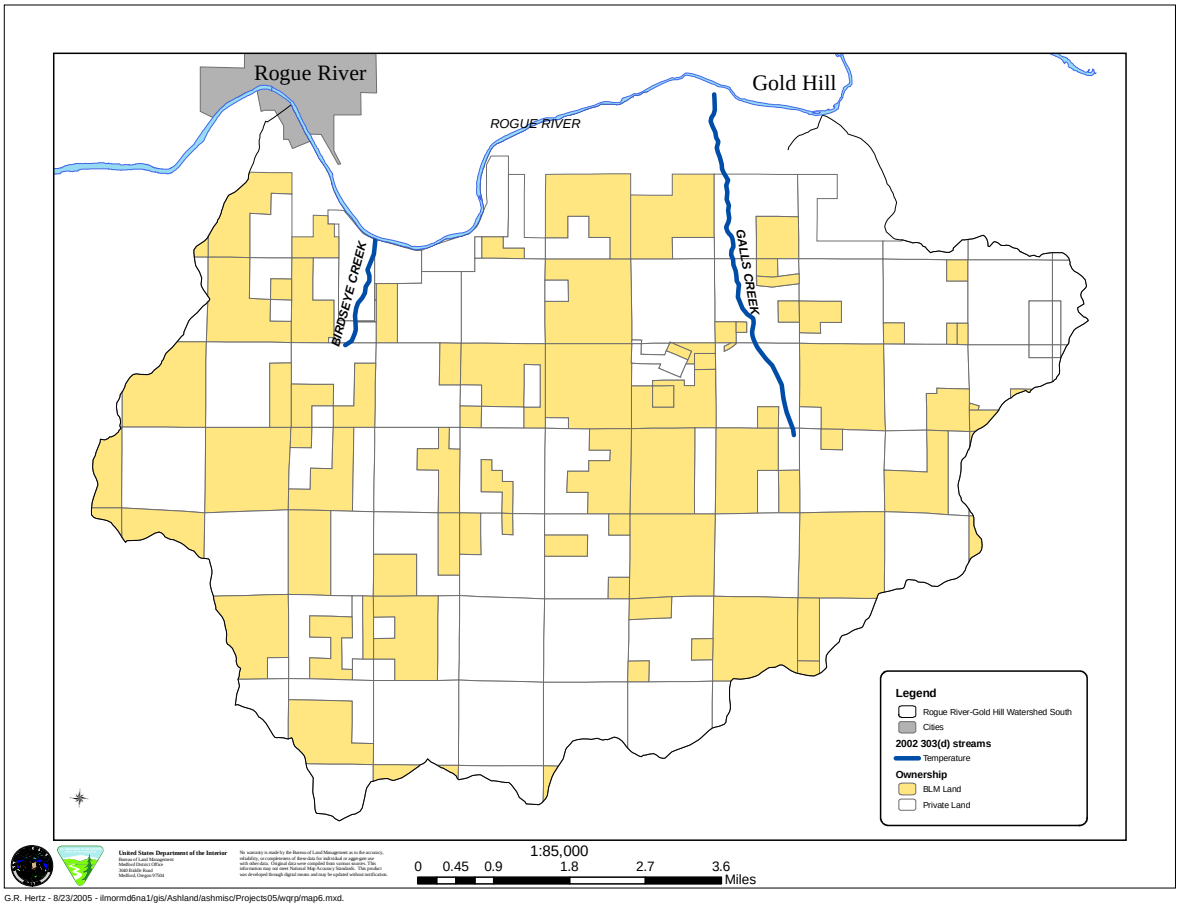
Section 303 of the Clean Water Act of 1972, as amended by the Water Quality Act of 1987, provides direction for designation of beneficial uses and limiting discharge of pollutants to waters of the state. The DEQ is responsible for designating streams that do not meet established water quality criteria for one or more beneficial uses. These streams are included on the state's 303(d) list, which is revised every two years, and submitted to the Environmental Protection Agency (EPA) for approval. Section 303 of the Clean Water Act further requires that TMDLs be developed for waters included on the 303(d) list. A TMDL defines the amount of pollution that can be present in the waterbody without causing water quality standards to be violated. A WQMP is developed to describe a strategy for reducing water pollution to the level of the load allocations and waste load allocations prescribed in the TMDL. The approach is designed to restore the water quality and result in compliance with the water quality standards, thus protecting the designated beneficial uses of waters of the state.

At the time of this writing, the draft 2004 303(d) list has been released and there are no changes from the 2002 303(d) list for streams in the plan area. This WQRP address all listings on the 2002 303(d) list for the plan area: two streams listed for exceeding the summer temperature criterion (Table 3). There are a total of 5.9 stream miles on the 2002 303(d) list (Table 3), of which 0 miles cross federal lands (Figure 1).

Table 3. 2002 303(d) Temperature Listings in the Rogue River-Gold Hill Watershed South (ODEQ 2003a)

303(d) List	Stream Segment	Listed Parameter	Applicable Rule (at time of listing)	Miles Affected
2002	Birdseye Creek	Summer Temperature	OAR 340-041-0365(2)(b)(A)	1.4
2002	Galls Creek	Summer Temperature	OAR 340-041-0365(2)(b)(A)	4.5
Total Stream Miles listed for Summer Temperature Criteria (June 1 to Sept 30)				**5.9**

Figure 1. Rogue River-Gold Hill Watershed South 303(d) Temperature Listed Streams



B. Watershed Characterization

The Rogue River-Gold Hill Watershed South covers approximately 64-square miles (41,029 acres) in the Klamath Mountains in southwestern Oregon (Figure 2). The plan area lies south of the Rogue River between Bear Creek and Evans Creek. The Rogue River is not covered by this plan. The Rogue River-Gold Hill Watershed South is located in the Middle Rogue River Subbasin (Figure 3). The southern ridges form the divide between the Middle Rogue and Applegate River Subbasins. The Middle Rogue Subbasin is subdivided into four watersheds: Bear Creek, Rogue River-Gold Hill, Evans Creek, and Rogue River-Grants Pass (Figure 4). The plan area is within the Rogue River-Gold Hill Watershed and the major streams are Kane Creek, Galls Creek, Foots Creek, and Birdseye Creek.

The Rogue River-Gold Hill Watershed South is within Jackson County and covers lands south of the towns of Rogue River and Gold Hill. Some of the peaks that define the southern edge of the plan area include Timber Mountain and Old Blue Mountain. The plan area includes a small portion of the town of Rogue River and is just south of the town of Gold Hill. Elevation in the plan area ranges from approximately 1,000 feet where the west edge of the analysis area intersects the Rogue River to 4,430 feet at Timber Mountain.

Figure 2. Location of the Rogue River-Gold Hill Watershed South

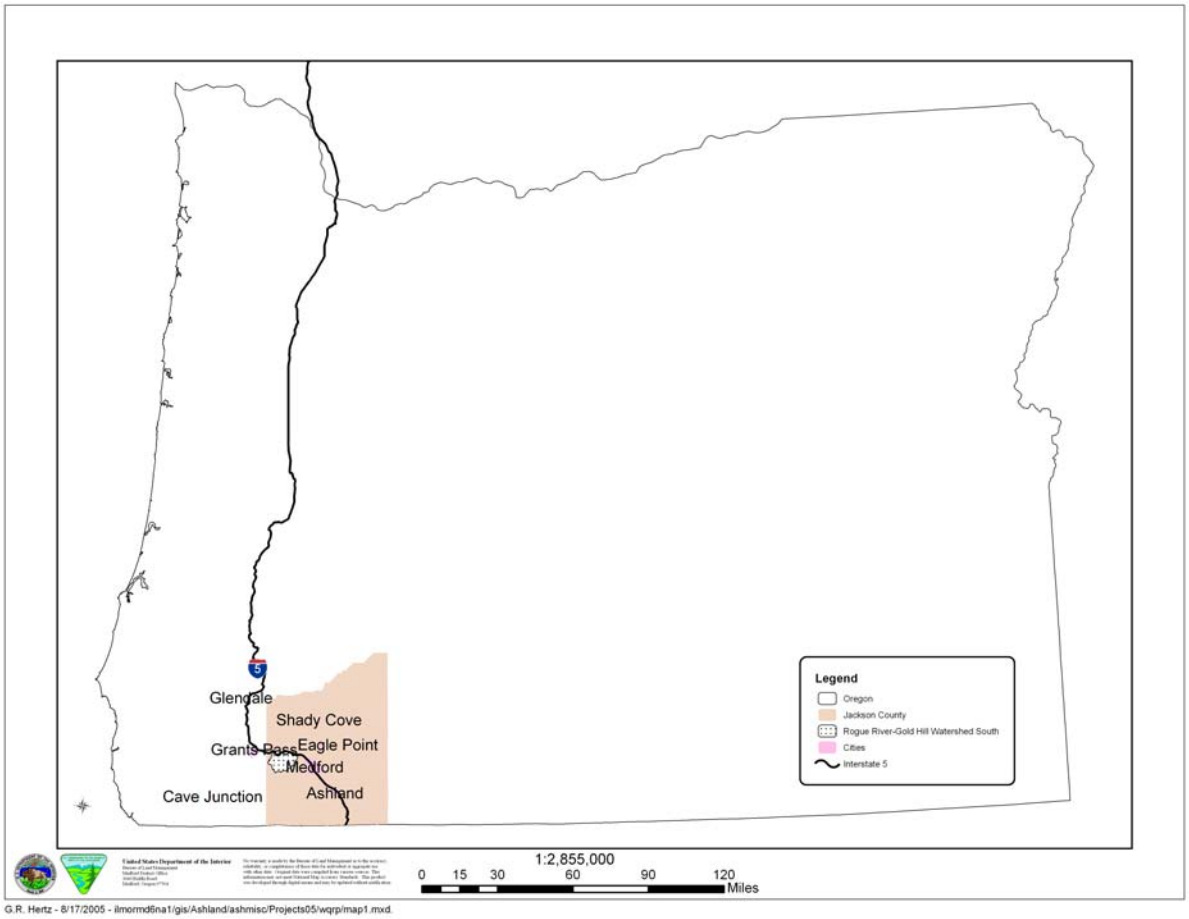


Figure 3. Rogue Basin and the Middle Rogue Subbasin

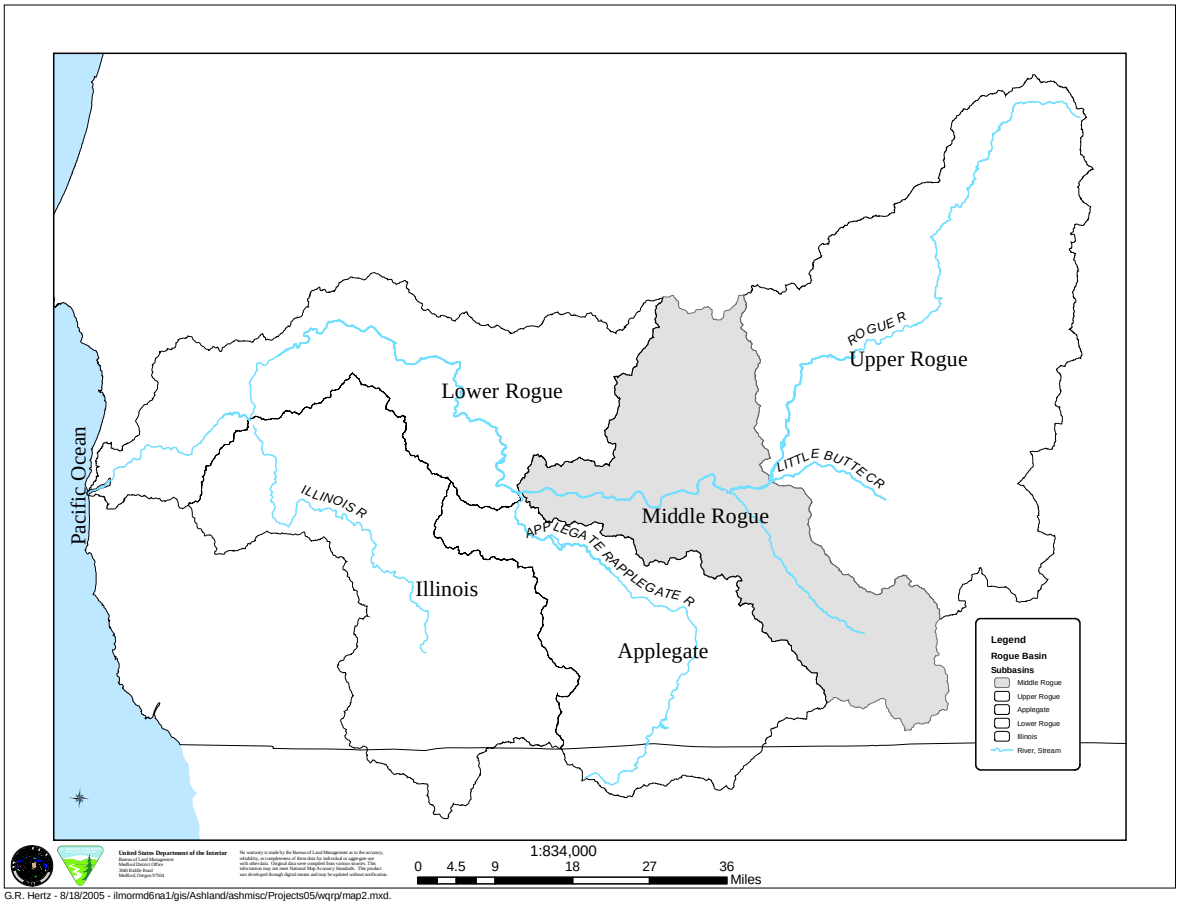
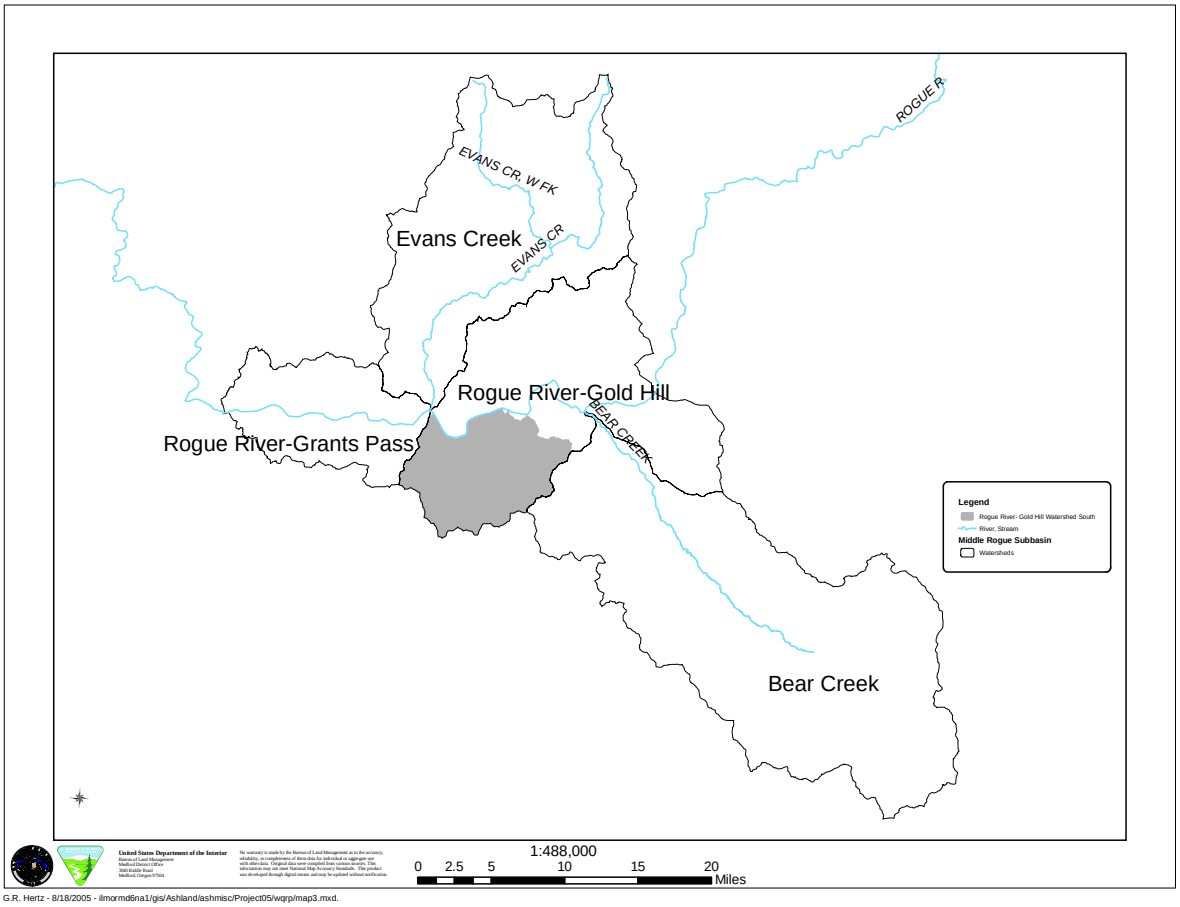


Figure 4. Watersheds within the Middle Rogue Subbasin



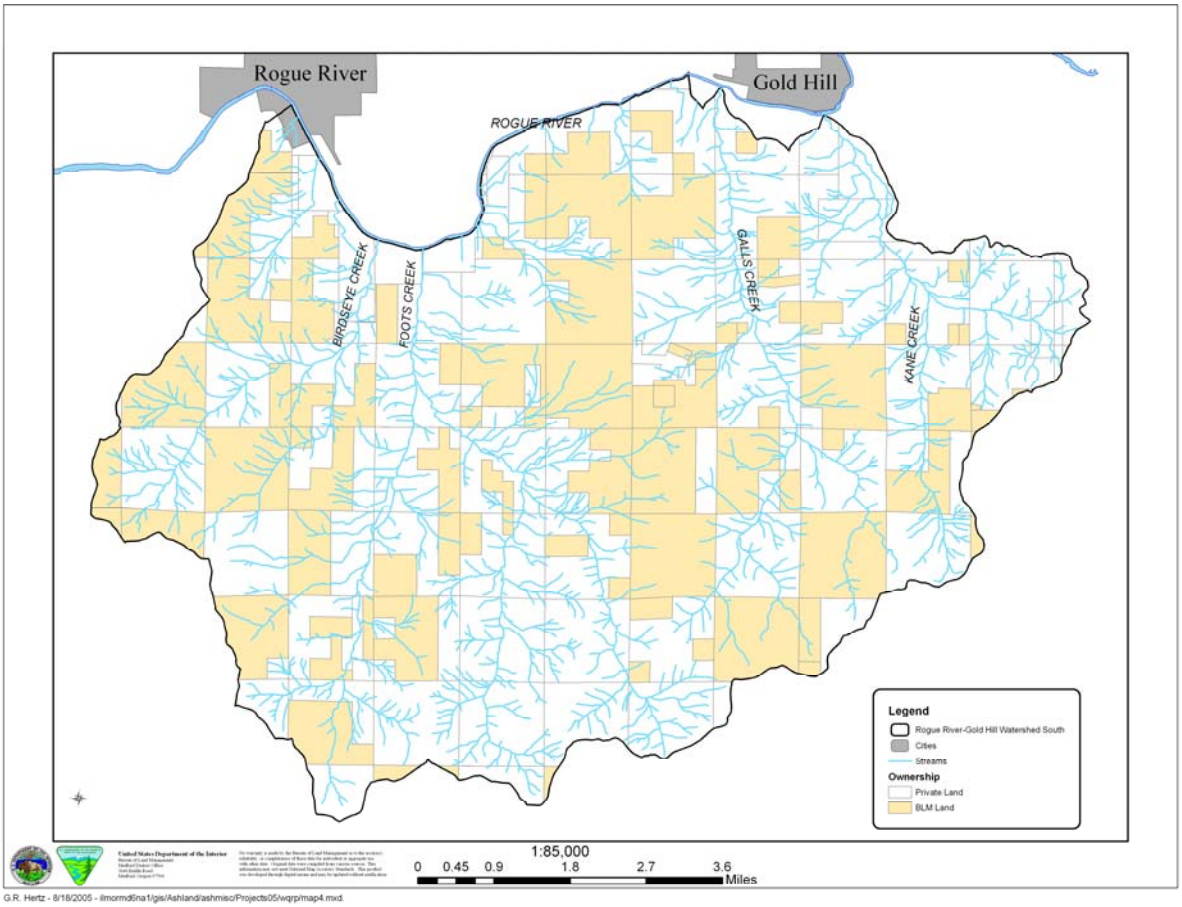
Land Ownership and Use

The BLM administers 38 percent of the lands within the Rogue River-Gold Hill Watershed South (Table 4 and Figure 5). BLM lands are intermingled with private lands. The remaining 62 percent of the plan area consists of private lands, of which approximately 28 percent are managed as industrial forest. Ownership of the remaining privately-held land in the watershed is typically held in relatively small parcel holdings along the major streams.

Table 4. Ownership within the Rogue River-Gold Hill Watershed South

Ownership	Acres	Percent
BLM – Ashland Resource Area	15,495	38%
Private	25,534	62%
Total	41,029	100%

Figure 5. BLM Land Ownership in the Rogue River-Gold Hill Watershed South



Major land uses in the Rogue River-Gold Hill Watershed South include agriculture, timber, mining, and recreation. Cattle operations are the largest non-forestry agricultural venture. The BLM manages six grazing allotments, of which only one (approximately 120 acres) is currently in use (Hackett 2005). Other agriculture in the plan area is varied and mostly small acreage, domestic farms and gardens located along the major streams. Logging has occurred in the plan area since the 1850s when timber was used by miners and settlers. It wasn't until the second half of the twentieth century that timber became a major commodity and logging occurred throughout the plan area. Approximately 7,500 acres of BLM-administered land have been entered for some type of timber harvest in the plan area since 1950. Historically, mineral production played a significant role in the development of this area. There is still considerable interest in mineral exploration and development as evidenced by the large number of mining claims on file. According to the *South Rogue-Gold Hill Watershed Analysis*, there were 55 mining claims on record in 2001 (USDI 2001). Due to the close proximity to the towns of Rogue River and Gold Hill as well as the cities of Grants Pass and Medford, the area receives a high degree of recreation use for hiking, fishing, dispersed camping, hunting, mountain biking, horseback riding, off-highway vehicle (OHV) use, and pleasure driving. A portion of the Timber Mountain/John's Peak OHV area is within the plan area. This OHV area was designated in the Medford District Resource Management Plan (USDI 1995) to be managed to provide for OHV use. Roads distributed throughout the plan area provide vehicle access to managed forestlands, residences, and recreational areas.

Geology

The Rogue River-Gold Hill Watershed South straddles the contact between the eastern edge of the Klamath Mountains Geologic Province (also called the Siskiyou Mountains), and the Western Oregon Interior Valleys (physiographic) Province. The geology of the plan area can be briefly described as eroding metamorphic and granitic uplands with minor amounts of sedimentary deposits draping the lower slopes.

The geologic materials have been subject to weathering, mass wasting and erosion processes controlled by past and present climatic conditions. Landforms in the plan area visible today are the result of continual interactions between climate and regional geology over eons of time. The various types of rock distributed throughout the watershed affect soils. Different mineralogy, structures, inherent strength of the bedrock, and resistance to erosion and mass wasting influence the landforms. Metamorphic and granitic rock and their associated soils are the predominant rock and soil types found in the analysis area.

Metamorphic rock types make up over 78 percent of the Rogue River-Gold Hill Watershed South. Metasedimentary and metavolcanic rocks found in the plan area are relatively resistant to erosion, and for this reason they are often found on steep slopes. Soils on these types of rock are shallow, composed of silts and clays with variable amounts of rock fragments. Generally, the upper fractured bedrock has only a thin weathering zone.

Granitic rocks constitute less than eight percent of the plan area and are the most erosive and unstable rock type found in the plan area. Soils formed from granitic rock are generally moderately deep over decomposed bedrock and are highly erosive because of low cohesive coarse textured particles. Rapid erosion on steep slopes keeps fresh granite near the surface, while transported decomposed granite increases embeddedness of streams by filling interstices (space between stream gravels) with coarse sand. Throughout the plan area, granite is found as discontinuous pods (less than two square miles each) in the headwaters of Kane Creek, midslope along Galls Creek, the headwaters of the Left and Middle Forks of Foots Creek, midslope of Right Fork of Foots Creek and the headwaters of Birdseye Creeks.

Climate

Mild, wet winters and hot, dry summers characterize the Rogue River-Gold Hill Watershed South. During the winter months, the moist, westerly flow of air from the Pacific Ocean results in frequent storms of varied intensities. Average annual precipitation in the analysis area ranges from approximately 24 inches at the lower elevations to 36 inches at the higher elevations in the western portion of the plan area. Winter precipitation is predominately in the form of rain, with the majority occurring in the late fall, winter, and early spring. A mixture of snow and rain occurs between approximately 3,500 feet and 5,000 feet and this area is referred to as either the rain-on-snow zone or transient snow zone. The snow level in this zone fluctuates throughout the winter in response to alternating warm and cold fronts. The rain-on-snow zone comprises a very small portion (three percent) of the plan area.

During the summer months, the area is dominated by the Pacific high pressure system, which results in hot, dry summers. Summer rainstorms occur occasionally and are usually of short duration and limited area coverage. Air temperatures can display wide variations daily, seasonally, and by elevation. The nearest NOAA weather stations with air temperature data are located at the Medford Experiment Station and Grants Pass. The highest average maximum monthly temperatures occur in July and August, where they reach 88.8^{o}F and 88.3^{o}F at the Medford Experiment Station and 90.1^{o}F and 89.8^{o}F at the Grants Pass NOAA station (USDI 2001).

Streamflows

Although no streamflow data exists for the unregulated Rogue River tributaries within the plan area, it can be assumed based on flow information from other unregulated streams in the Rogue Basin that flows

generally follow the seasonal precipitation pattern. Moderate to high flows generally occur from mid-November through April. Low flows normally coincide with the period of low precipitation from July through September or October.

Aquatic Wildlife Species

Coho (*Oncorhynchus kisutch*), a species listed as threatened under the Endangered Species Act (May 1997), are present in the Rogue River-Gold Hill Watershed South (Figure 6). ODFW 1993 spawning surveys show that coho spawn in the first 0.25 miles of Birdseye and 3.3 miles of Left Fork Foots Creek (Table 5 and Figure 6). Coho adults move up the stream to spawn as soon as flows are high enough to allow them, usually December.

The tributaries within the Rogue River-Gold Hill Watershed South support one of the largest runs of summer steelhead (*O. mykiss*) in Oregon (Figure 7). Tributaries in the plan area provide for an estimated 25 percent of the summer steelhead reproduction in the Rogue Basin. Like coho, summer steelhead adults enter the tributaries as soon as flow levels are sufficient, usually in December. Spawning occurs in December through February, fry emerge in April and May, and most fry migrate out in May and June, often only a few days before the streams become intermittent or dry (USDI 2001).

ODFW records show current summer steelhead use in approximately 3.25 miles of mainstem Birdseye, 3.3 miles of Left Fork Foots Creek and an additional 1.0 mile of Right Fork Foots Creek, 5.5 miles of Galls Creek, and 4.5 miles of Kane Creek (Table 5 and Figure 7). BLM fish distribution maps also show that steelhead use Miller Gulch, but it is unknown how far up they go. ODFW spawning records from 1976 to 1999 show a decline in numbers of steelhead redds. Although the declining trend is obvious, the reasons for the decline are not. The drought conditions during the 1980s and early 1990s, ocean conditions, an increase in roads and culverts, reduction of riparian vegetation, extensive clearcut timber harvesting, and irrigation withdrawals can affect natural flow patterns, impacting the ability of summer steelhead to use these tributaries for spawning (USDI 2001).

Non-anadromous fish species in the Rogue River-Gold Hill Watershed South include cutthroat trout (*Oncorhynchus clarki*), rainbow trout (*Oncorhynchus mykiss*), sculpin (*Cottus* sp.), and dace (*Rhinichthys sp.*). The upper limits for fish distribution have not been determined for rainbow trout, sculpin, or dace and only some of the tributaries have been surveyed for distribution of cutthroat trout. Cutthroat are found in 3.25 miles of mainstem Birdseye, 1.5 miles of Left Fork Birdseye, 5.5 miles of Left Fork Foots Creek and 1.25 miles of Right Fork Foots Creek, and 5.25 miles of Kane Creek (Table 5 and Figure 8). They are estimated to use 5.5 miles of Galls Creek. Fish use in Middle Fork Foots Creek and Millers Gulch is unknown.

Table 5. Approximate Stream Miles of Salmonid Use

Stream	Coho	Summer Steelhead	Rainbow Trout	Cutthroat Trout
Birdseye	0.25	3.25	3.25	3.25
Left Fork Birdseye	none	none	distribution unknown	1.5
Left Fork Foots Creek (from mouth)	3.3	3.3	3.3	5.5
Right Fork Foots Creek (from split w/ Left Fork)	none	1.0	1.25	1.25
Middle Fork Foots Creek	none	distribution unknown	distribution unknown	distribution unknown
Galls Creek	none	5.5	5.5	5.5
Miller Gulch	none	distribution unknown	distribution unknown	distribution unknown
Kane Creek	none	4.5	5	5.25

Several other species of introduced game fish also inhabit the Rogue River-Gold Hill Watershed South, as do native non-game species. Various species of amphibians and reptiles occur in the subbasin including sensitive species such as the foothill yellow-legged frog, Pacific giant salamander, and western pond turtle.

Figure 6. Coho Salmon Distribution in the Rogue River-Gold Hill Watershed South

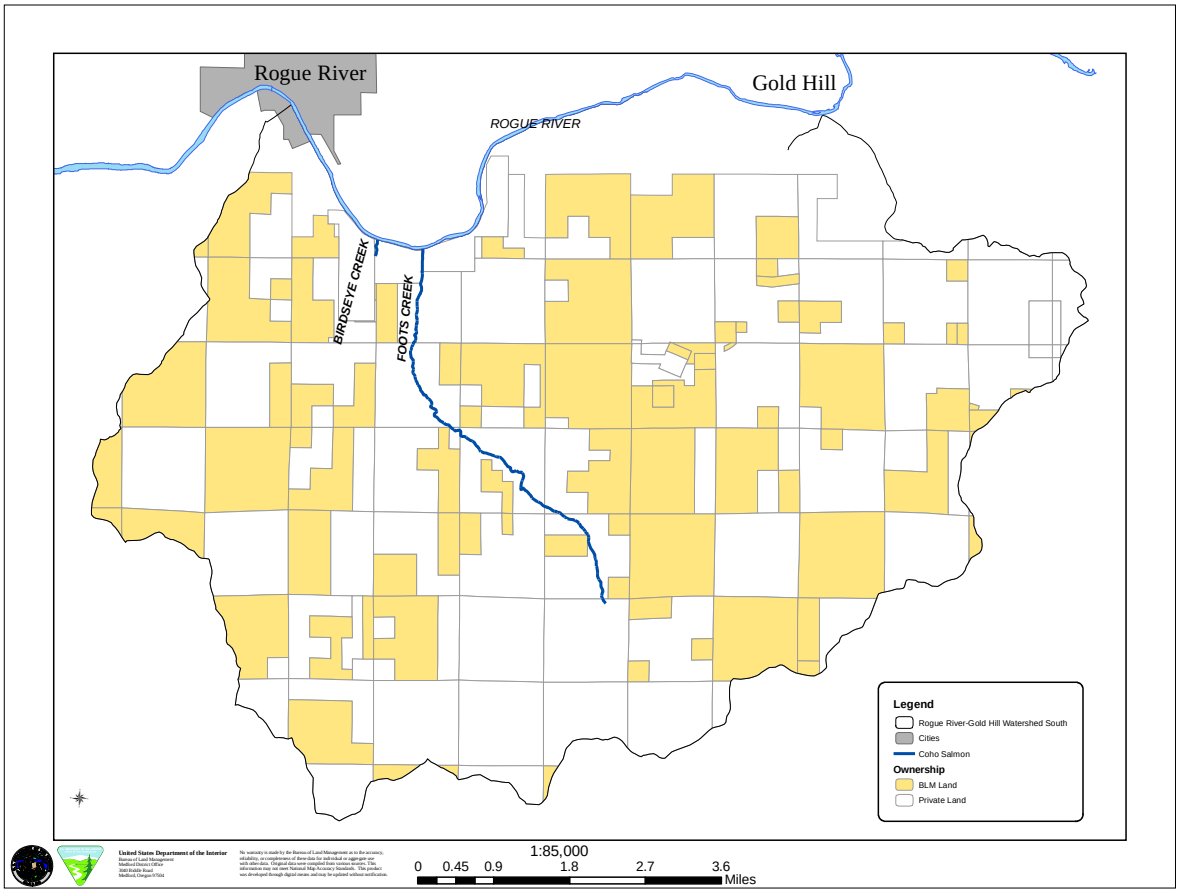


Figure 7. Summer Steelhead Distribution in the Rogue River-Gold Hill Watershed South

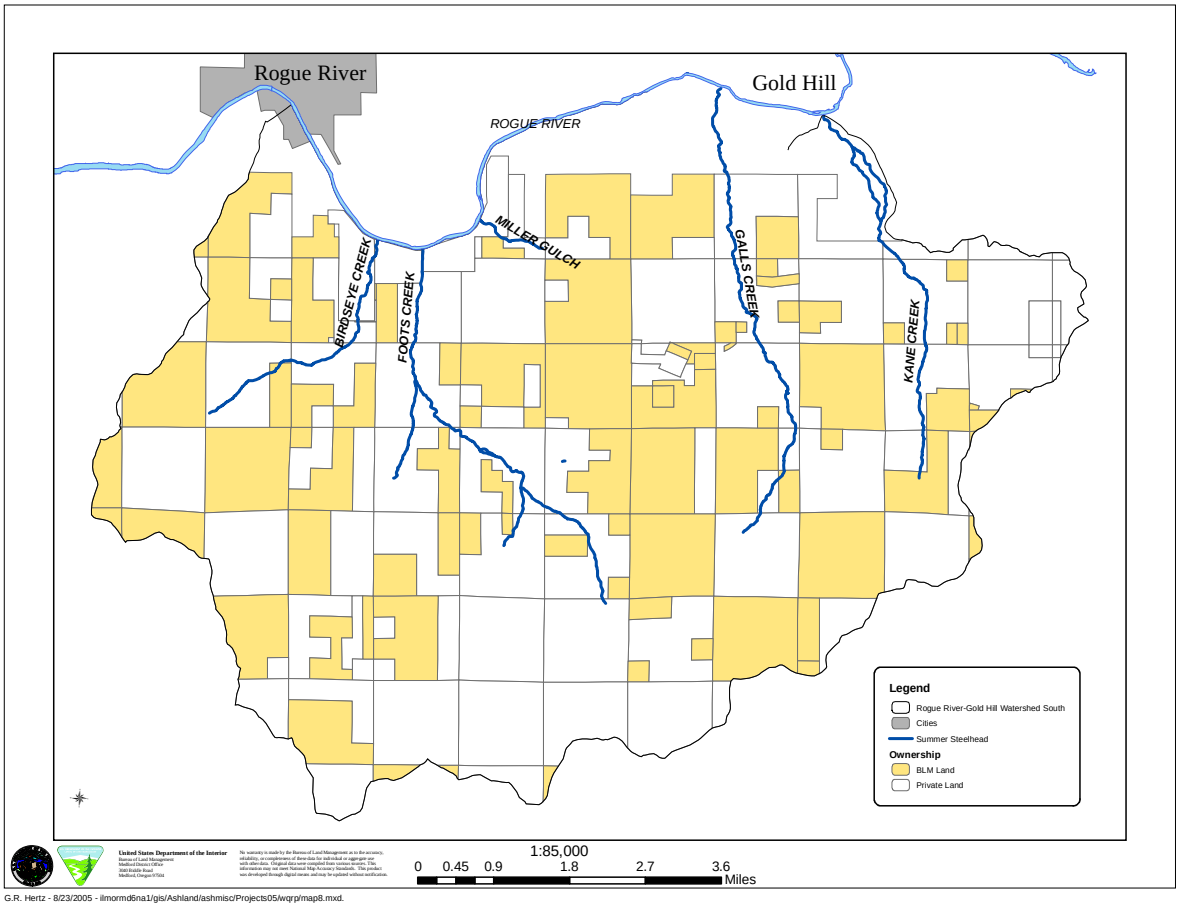
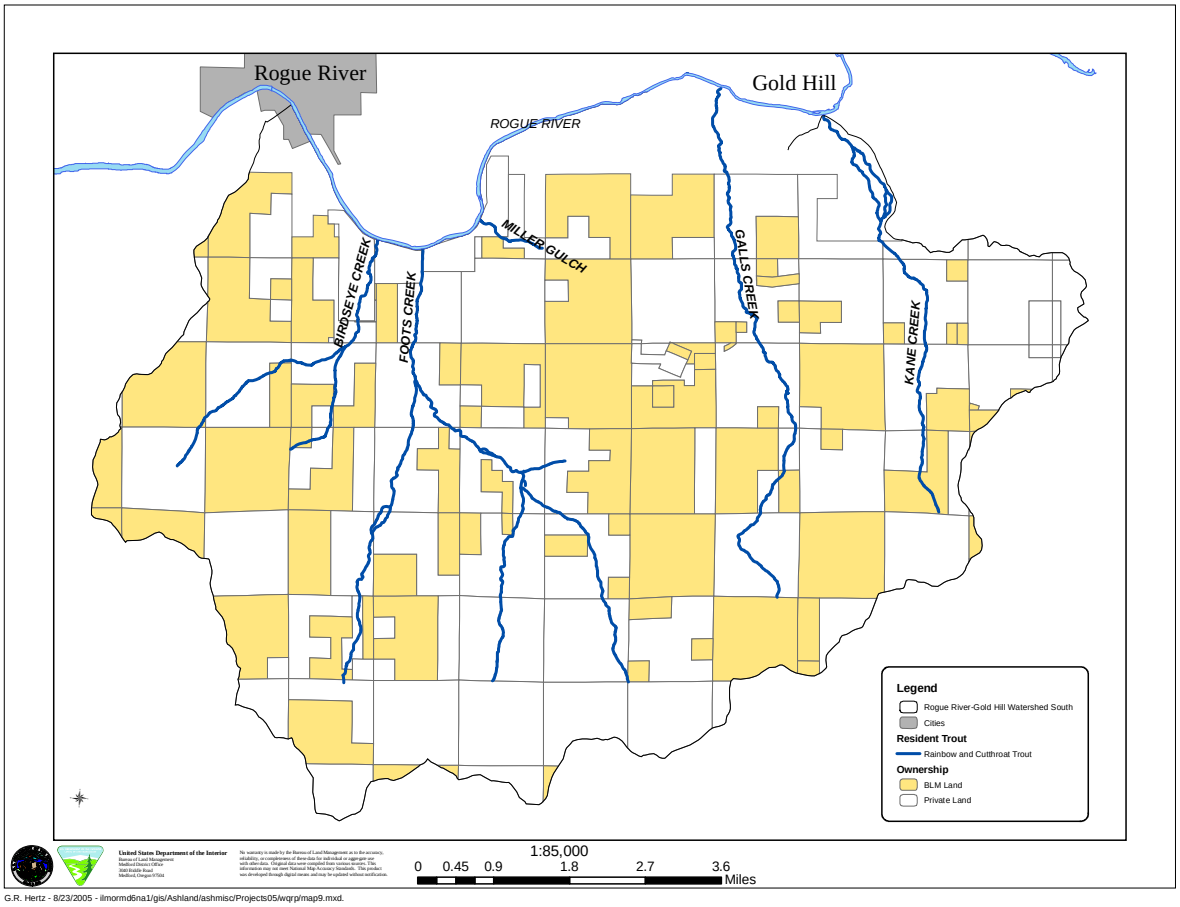


Figure 8. Resident Trout Distribution in the Rogue River-Gold Hill Watershed South



The lower reaches of the major tributaries are in highly developed areas of primarily rural residential use. Development, including residences, roads, and irrigation diversions encroach on the riparian corridor, resulting in bank destabilization and erosion problems, lack of shade, lack of large woody debris (LWD) and lack of recruitment for future LWD. The tributaries have become channelized, changing the available fish habitat. There are few pools that can be used for resting and rearing. Silt from active erosion both within the riparian corridor and in the uplands has embedded available gravels, limiting spawning and rearing habitat, as well as impacting macroinvertebrate production (USDI 2001).

The upper sections of the major tributaries provide better fish habitat. The primary impact comes from the roads and OHV trails paralleling them and/or crossing streams. The upper reaches have adequate shade, stable banks with little evidence of erosion, adequate supplies of LWD and potential for more. There are adequate pools in a substrate with high percentage of cobble and gravel for spawning. However, in many cases, the gravels in the upper sections are embedded with silt (USDI 2001).

Watershed Analysis

The Northwest Forest Plan (NWFP) Standards and Guidelines (USDA and USDI 1994) incorporate the Aquatic Conservation Strategy (ACS) (amended March 2004, USDA and USDI 2004) to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. Watershed analyses are a required component of the ACS under the NWFP. The *South Rogue-Gold Hill Watershed Analysis* was completed for the Rogue River-Gold Hill Watershed south of the

Rogue River in August 2001 (USDI 2001). This WQRP tiers to and appends the watershed analysis. A summary of historical and present watershed conditions in the Rogue River-Gold Hill Watershed South has been compiled from the watershed analysis (Table 6). The analysis and recommendations found in this WQRP use data from the watershed analysis. Additional analysis and recommendations have been included in this WQRP where the watershed analysis data were incomplete or new information was available.

Table 6. Summary of Watershed Conditions on BLM-Administered Lands in the Rogue River-Gold Hill Watershed South

Riparian Vegetation	
Historical Condition	• Late seral vegetation dominant. • Diverse mix of species and age classes.
Present Condition	• Mature hardwoods and conifers with dense understory.
Forest Health & Productivity	
Historical Condition	• Frequent, low intensity fires maintained low fuel levels and open under-story. • Forest stands had fewer trees per acre with trees of larger diameter. • Areas of open mature black oak forest.
Present Condition	• Fire exclusion resulting in high fuel loads. • High vegetation densities resulting in low vigor and/or poor growth. • Forest stands lack resiliency. • Forests experiencing mortality due to beetle infestations.
Large Wood	
Historical Condition	• Probably an abundant supply of large wood in the stream channels.
Present Condition	• Some stream reaches lack adequate large wood. • Road stream crossings disrupt transport of wood and sediment.
Roads	
Historic Condition	• Few roads before industrial timber harvesting began in the early 1950s.
Present Condition	• Areas with high road density. • Roads in riparian areas. • High number of stream crossings with many culverts undersized for 100-year flood. • Stream network extension (due to road ditch lines) increases winter peak flows.
Flow Regime	
Historic Condition	• Channel morphology developed in response to climatic conditions and natural ranges of streamflows. • Most likely, peak flows were lower in magnitude and frequency. • Summer low flows were directly related to the amount and timing of precipitation events.
Present Condition	• Winter peak flows possibly increased by roads and harvest. • Summer low flows reduced by water withdrawals.

C. Temperature

Introduction

The sensitive beneficial uses affected by excessive temperatures include resident fish and aquatic life, salmonid fish spawning, and rearing (ODEQ 2004).

The Oregon water quality temperature standard has been re-written. The standard that now applies to the Rogue River-Gold Hill Watershed South was approved by EPA on March 2, 2004 and is found in OAR 340-041-0028 (4) (a-c) (ODEQ 2005). Excerpts of the 2004 standard read as follows:

> *(4) Biologically Based Numeric Criteria. Unless superseded by the natural conditions criteria described in section (8) of this rule, or by subsequently adopted site-specific criteria approved by EPA, the temperature criteria for State waters supporting salmonid fishes are as follows:*
>
> *(a) The seven-day-average maximum temperature of a stream identified as having salmon and steelhead spawning use on subbasin maps and tables set out in OAR 340-041-0101 to OAR 340-041-0340: Tables 101B, and 121B, and Figures 130B, 151B, 160B, 170B, 220B, 230B, 271B, 286B, 300B, 310B, 320B, and 340B, may not exceed 13.0 degrees Celsius (55.4 degrees Fahrenheit) at the times indicated on these maps and tables;*
>
> *(b) The seven-day-average maximum temperature of a stream identified as having core cold water habitat use on subbasin maps set out in OAR 340-041-101 to OAR 340-041-340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 16.0 degrees Celsius (60.8 degrees Fahrenheit);*
>
> *(c) The seven-day-average maximum temperature of a stream identified as having salmon and trout rearing and migration use on subbasin maps set out at OAR 340-041-0101 to OAR 340-041-0340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 18.0 degrees Celsius (64.4 degrees Fahrenheit);*

Fish use maps 271A and 271B for the Rogue River-Gold Hill Watershed South temperature water quality standards can be found at: http://www.deq.state.or.us/wq/standards/WQStdsFinalFishUseMaps.htm. Perennial streams in the Rogue River-Gold Hill Watershed South are designated as salmon and trout rearing and migration use on fish use map 271A, therefore the seven-day-average maximum for these streams may not exceed 18.0°C (64.4°F) from May 16 through October 14. Map 271B shows salmon and steelhead spawning use designations for Kane, Galls, Foots, and Birdseye creeks within the plan area. The seven-day average maximum temperature for these streams may not exceed 13.0°C (55.4°F) from October 15 through May 15.

A stream is listed as water quality limited for temperature if there is documentation that the seven-day moving average of the daily maximums (7-day statistic) exceeds the appropriate standard listed above. This represents the warmest seven-day period and is calculated by a moving average of the daily maximums.

The 2002 303(d) listings for the Rogue River-Gold Hill Watershed South are based on the State of Oregon water quality standards adopted in 1996. Excerpts of the 1996 standard (OAR 340-041-0365(2)(b)) read as follows:

> *A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required*

under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In waters and periods of the year determined by DEQ to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iii) In waters determined by DEQ to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(iv) In waters determined by DEQ to be ecologically significant cold-water refugia;

(v) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vi) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(vii)In natural lakes.

Within the Rogue River-Gold Hill Watershed South, two stream segments (1.4 miles of Birdseye Creek and 4.5 miles of Galls Creek) are on the 2002 303(d) list for exceeding the 64.0°F 7-day statistic for rearing salmonids (Table 3). There are no temperature listed reaches on BLM-administered lands (Figure 1).

The BLM has collected summertime stream temperature data at several locations within Rogue River-Gold Hill Watershed South between 1994 and 2001 (Table 7). The 7-day statistics for Birdseye Creek and Galls Creek exceed both the 1996 and 2004 temperature criteria. The Birdseye Creek monitoring site is located on one of two short (less than 0.25 mile) reaches where the mainstem crosses BLM-administered land. The Galls Creek monitoring site is located on private land near the confluence with the Rogue River.

Table 7. Rogue River-Gold Hill Watershed South Temperature Summary

Stream Name	Data Source	Period of Record[1]	7-day Statistic (ave. for all years) (°F)	Range of 7-day Statistic (for all years)		Average # of times/yr 7-Day Statistic > 64 °F
				Minimum (°F)	Maximum (°F)	
Birdseye Creek (section 4)	BLM	1994-2001	65.1	63.2	67.0	8
Foots Creek, Right Fork (section 22)	BLM	2000	60.2	60.2	60.2	0
Galls Creek (near mouth)	BLM	1997-1999	73.8	71.7	75.6	77
Kane Creek (section 2)	BLM	2000	62.0	62.0	62.0	0

1/ Temperature measured from June to September

Nonpoint Source Temperature Factors

Stream temperature is influenced by riparian vegetation, channel morphology, hydrology, climate, and geographic location. While climate and geographic location are outside of human control, the condition of the riparian area, channel morphology and hydrology can be altered by human land use. Human activities that contribute to degraded thermal water quality conditions in the Rogue River-Gold Hill Watershed South are associated with agriculture, forestry, roads, urban development, and rural residential related riparian disturbance (ODEQ 2004). Forest and road management are the primary federal-managed activities that have the potential to affect water quality conditions. For the Rogue Basin temperature TMDL, there are four nonpoint source factors that may result in increased thermal loads: stream shade, stream channel morphology, flow, and natural sources (ODEQ 2004).

Temperature Factor 1: Stream Shade

Stream temperature is driven by the interaction of many variables. Energy exchange may involve solar radiation, long wave radiation, evaporative heat transfer, convective heat transfer, conduction, and advection (USDA and USDI 2005). While interaction of these variables is complex, some are much more important than others (USDA and USDI 2005). The principal source of heat energy for streams is solar energy striking the stream surface (USDA and USDI 2005). Exposure to direct solar radiation will often cause a dramatic increase in stream temperatures. Highly shaded streams tend to experience cooler stream temperatures due to reduced input of solar energy. Stream surface shade is dependent on riparian vegetation height, location, and density. The ability of riparian vegetation to shade the stream throughout the day depends on vegetation height and the vegetation position relative to the stream. For a stream with a given surface area and stream flow, any increase in the amount of heat entering a stream from solar radiation will have a proportional increase in stream temperature (USDA and USDI 2005).

Removal of riparian vegetation, and the shade it provides, contributes to elevated stream temperatures (ODEQ 2004). Activities in riparian areas such as timber harvest, residential and agricultural clearing, placer mining, and road construction, have reduced the amount of riparian vegetation in the Rogue River-Gold Hill Watershed South. Riparian areas in the plan area cover less area and contain fewer species than under historic conditions. They tend to be younger in age and dominated by hardwoods (USDI 2001). Large fir, pine, and cedar that existed along streams historically are often absent, especially in the lower reaches. Woodland stands are fragmented, creating a patchy, poorly connected landscape of simpler and less biologically productive habitat. These changes have resulted in less shade on stream surfaces and an increase in stream water temperatures (USDI 2001). Such altered riparian areas are not sources of large wood and they lack the cool, moist microclimate that is characteristic of healthy riparian zones.

The primary reason for elevated stream temperatures on BLM-managed lands is an increase in solar radiation reaching the stream surface following timber harvest or road construction that removed stream shading vegetation. Pre-NWFP management activities along streams on federal lands in the plan area have left a mosaic of vegetation age classes in the riparian areas. The amount of riparian area with late-successional forest characteristics has declined on federal lands primarily due to timber harvest and road construction within or adjacent to riparian areas. In some cases the large conifers have been replaced by young, small diameter conifer stands and in other cases, hardwoods have replaced conifers as the dominant species in riparian areas. In riparian areas where the trees are no longer tall enough to adequately shade the adjacent streams, the water flowing through these exposed areas is subject to increased solar radiation and subsequent elevated temperatures.

Temperature Factor 2: Stream Channel Morphology

Stream channel morphology can also affect stream temperature. Wide channels tend to have lower levels of shade due to simple geometric relationships between shade producing vegetation and the angle of the sun. For wide channels, the surface area exposed to radiant sources and ambient air temperature is greater, resulting in increased energy exchange between the stream and its environment (ODEQ 2004). Conversely, narrow channels are more likely to experience higher levels of shade. An additional benefit inherent to narrower/deeper channel morphology is a higher frequency of pools that contribute to aquatic habitat or cold water refugia (ODEQ 2004).

Large wood plays an important role in creating stream channel habitat. Obstructions created by large wood help to settle out gravel. The deposition of gravel helps to decrease thermal loading by reducing the amount of water exposed to direct solar input, as a portion of the water will travel sub-gravel and not be exposed to sun. The loss of large wood in the Rogue River-Gold Hill Watershed South has had a direct impact on stream channel morphology. Once the large wood was removed, the alluvial material held behind it washed out, causing channels to down-cut and eventually widen, allowing for increased thermal loading and stream heating.

Channel widening is often related to degraded riparian conditions that allow increased streambank erosion and sedimentation of the streambed. Both active streambank erosion and sedimentation correlate strongly to riparian vegetation type and age. Riparian vegetation contributes to rooting strength and floodplain/streambank roughness that dissipates erosive energies associated with flowing water. Established mature woody riparian vegetation adds the highest rooting strengths and floodplain/streambank roughness. Annual (grassy) riparian vegetation communities offer less rooting strength and floodplain/streambank roughness. It is expected that width to depth ratios would be lower (narrower and deeper channels) when established mature woody vegetation is present. Annual (grassy) riparian communities may allow channels to widen and become shallower.

Changes in sediment input can lead to a change in channel morphology. When sediment input increases over the transport capability of the stream, sediment deposition can result in channel filling, thereby increasing the width-depth ratio. During storm events, management-related sources can increase sediment inputs over natural and contribute to channel widening and stream temperature increases. Mass wasting and surface erosion (both natural and human-caused) and roads and are the primary sediment sources on BLM-administered lands in the Rogue River-Gold Hill Watershed South.

Temperature Factor 3: Streamflow

Streamflow can influence stream temperature. The temperature change produced by a given amount of heat is inversely proportional to the volume of water heated (USDA and USDI 2005). A stream with less flow will heat up faster than a stream with more flow given all other channel and riparian characteristics are the same.

The Rogue River-Gold Hill Watershed South experiences extreme flow conditions typical of southwest Oregon streams. Historical flows are a function of seasonal weather patterns: rain and snow in the winter months contribute to high flow volumes, while the summer dry season reduces flow.

Total quantities of water are not sufficient to satisfy all existing water uses in the plan area (USDI 2001). The majority of valid water rights issued by the Oregon Water Resources Department are for industrial purposes (mining) and irrigation. New water diversions are only being approved for stored water.

Water withdrawals have the potential and likely result in increased thermal loads within the Rogue River-Gold Hill Watershed South (ODEQ 2004). Analysis for this WQRP identified no federal water withdrawals in the plan area. There are numerous private water withdrawals from BLM-administered lands and they may contribute to elevated temperatures on some streams. The management of water withdrawals is within the jurisdiction of the Oregon Water Resources Department and as such the BLM has no authority in this area.

Temperature Factor 4: Natural Sources

Natural processes that may elevate stream temperature include drought, floods, fires, insect and disease damage to riparian vegetation, and blowdown in riparian areas. The gain and loss of riparian vegetation by natural process will fluctuate within the range of natural variability. The processes in which natural conditions affect stream temperature include increased stream surface exposure to solar radiation and decreased summertime flows (ODEQ 2004). These natural events and their effects on stream temperature are considered natural background and no attempt is made to quantify the impact or frequency of such events in this WQRP.

Temperature TMDL Loading Capacity and Allocations

Temperature monitoring within the Rogue River-Gold Hill Watershed South reveals that the numeric water quality criteria from the 1996 and 2004 standards (64°F and 64.4°F, respectively) are exceeded in two streams. In the absence of a completed TMDL and related analysis, this condition requires that the standard "no measurable surface water temperature increase resulting from anthropogenic activities is allowed" is met (ODEQ 2004).

Prior to the completion of the TMDL for the plan area, guidance from the DEQ assumes that streams at system potential will not meet the temperature criterion during the hottest time of year (ODEQ 2004). Therefore, 100 percent of the load allocation for the Rogue River-Gold Hill Watershed South is assigned to natural sources and the allocation for BLM-managed lands is zero percent. Any activity that results in anthropogenic-caused heating of the stream is unacceptable. This load allocation may be modified upon completion of the Rogue Basin TMDL (ODEQ 2004).

The TMDL temperature load allocation for BLM-managed lands is defined as system potential riparian conditions. System potential is the near stream vegetation community that can grow and reproduce on a site, given elevation, soil properties, plant biology, and hydrologic processes (ODEQ 2003b). System potential is an estimate of a condition without anthropogenic activities that disturb or remove near-stream vegetation (ODEQ 2003b).

The nonpoint source loading capacity is defined as the amount of solar radiation that reaches a stream surface when riparian vegetation and stream channels have achieved system potential. A TMDL allows for the use of surrogate measures to achieve loading capacity. Percent-effective shade serves as the surrogate measure for meeting the temperature TMDL. Percent-effective shade is defined as the percent reduction of solar radiation load delivered to the water surface (ODEQ 2003b). It can be measured in the field and relates directly to solar loading.

System potential shade targets (percent-effective shade) along with current shade were calculated for four streams within the Rogue River-Gold Hill Watershed South: Birdseye, Foots, Galls, and Kane creeks (Table 8). The data analysis method used for the shade assessment was the Shadow model (USDA 1993). The Shadow model determines the system potential targets and number of years needed to obtain shade recovery using forest growth curves for various tree species within southwestern Oregon. The growth curves project growth rates and maximum heights for the dominant riparian tree species. Target shade values represent the maximum potential stream shade based on the system potential tree height.

There are no BLM-administered lands adjacent to the assessed segments of Foots and Galls creeks and the BLM-administered lands along Birdseye and Kane creeks meet the target shade (Table 8).

Table 8. Percent-Effective Shade Targets for BLM-Managed Lands in the Rogue River-Gold Hill Watershed South (ODEQ 2004)

Stream	Stream Miles on BLM	Current Shade[1]	Target Shade[1]	Additional Shade Needed[2]	Time to Recovery
Birdseye Creek	0.2	95	95	0	0
Foots Creek	0				
Galls Creek	0				
Kane Creek	0.6	93	93	0	0

1/ Current shade and target shade refer to percent-effective shade defined as the percent reduction of solar radiation load delivered to the water surface.

2/ Additional shade needed is the increase in percent-effective shade required to meet the target shade.

Element 2. Goals and Objectives

The overall long-term goal of this WQRP is to achieve compliance with water quality standards for the 303(d) listed streams in the Rogue River-Gold Hill Watershed South. The WQRP identifies TMDL implementation strategies to achieve this goal. Recovery goals will focus on protecting areas where water quality meets standards and avoiding future impairments of these areas, and restoring areas that do not currently meet water quality standards.

The recovery of water quality conditions on BLM-administered land in the Rogue River-Gold Hill Watershed South will be dependent upon implementation of the BLM Medford District Resource Management Plan (RMP) (USDI 1995) that incorporates the NWFP (USDA and USDI 1994). The RMP includes best management practices (BMPs) that are intended to prevent or reduce water pollution to meet the goals of the Clean Water Act.

Paramount to recovery is adherence to the Standards and Guidelines of the NWFP (as amended, USDA and USDI 2004) to meet the ACS. This includes protection of riparian areas and necessary silvicultural treatments to achieve vegetative potential as rapidly as possible. The ACS was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems on public lands. The NWFP requires federal decision makers to ensure that proposed management activities are consistent with ACS objectives. The NWFP amendment in March 2004 clarified provisions relating to the ACS. It explains that the ACS objectives were intended to be applied and achieved at the fifth-field watershed and larger scales, and over a period of decades or longer rather than in the short-term. ACS objectives are listed on page B-11 of the NWFP Record of Decision (ROD) (USDA and USDI 1994). ACS objectives 3-8 contain guidance related to maintaining and restoring water quality. In general, the objectives are long range (10 to 100 years) and strive to maintain and restore ecosystem health at the watershed scale.

Recovery goals for temperature on federal land are specified in Table 9.

Table 9. Recovery Goals for BLM-Administered Land in the Rogue River-Gold Hill Watershed South

Element	Goal	Passive Restoration	Active Restoration
Temperature ***Shade***	• Achieve coolest water possible through achievement of percent effective shade targets (Table 8).	• Allow riparian vegetation to grow up to reach target values.[1]	• Use prescriptions that ensure long-term riparian vegetation health. • Implement prescriptions that increase growth rate and survival of riparian vegetation. • Plant native species from local genetic stock to create a stand that will result in increased tree height and density.[1]
Temperature ***Channel Morphology***	• Increase the amount of large wood in channels. • Improve riparian rooting strength and streambank roughness. • Decrease bedload contribution to channels during large storm events. • Maintain or improve channel types, focusing on width-to-depth ratios. • Increase the ratio of wood-to-sediment during mass failures.	• Follow NWFP Standards and Guidelines or watershed analysis recommendations for Riparian Reserve widths (including unstable lands). • Allow historic failures to revegetate. • Allow natural channel evolution to continue. (Time required varies with channel type.)	• Promote riparian conifer growth for future large wood recruitment. • Encourage woody riparian vegetation versus annual species. • Stabilize streambanks where indicated. • Maintain and improve road surfacing. • Reduce road densities by decommissioning non-essential roads. • Increase culverts to 100-yr flow size and/or provide for overtopping during floods. • Minimize future slope failures through stability review and land reallocation if necessary. • Ensure that unstable sites retain large wood to increase wood-to-sediment ratio.
Temperature ***Streamflow***	• Maintain optimum flows for fish life. • Maintain minimum flows for fish passage.		• Utilize authorized water storage facilities to avoid diverting streamflows during low flows.

1/ Passive versus active restoration of riparian areas. If current percent effective shade is greater than or equal to 80 percent, the stream is considered recovered in terms of percent effective shade and the riparian area should not be a candidate for active restoration for the purposes of temperature recovery (ODEQ 2004). If current shade is less than 80 percent, the site may benefit from active restoration and should be examined.

Element 3. Identification of Responsible Parties

The BLM is recognized by Oregon DEQ as a Designated Management Agency for implementing the Clean Water Act on BLM-administered lands in Oregon. The BLM has signed a Memorandum of Agreement (MOA) with the DEQ that defines the process by which the BLM will cooperatively meet

State and Federal water quality rules and regulations. The Director of DEQ and the BLM State Director are responsible for ensuring implementation of the agency's MOA.

This WQRP covers federal land in the Rogue River-Gold Hill Watershed south of the Rogue River and was prepared by the BLM, Medford District with the assistance of the DEQ. The BLM will be responsible for implementing the management actions contained in this plan. The Field Manager for the Ashland Resource Area within the BLM, Medford District is responsible for the creation, implementation, and maintenance of this WQRP.

This WQRP will be submitted to the DEQ and it will be inserted in the Middle Rogue Subbasin WQMP, which has not yet been initiated. The WQMP will cover all land within the Middle Rogue Subbasin regardless of jurisdiction or ownership.

It must be noted that 100 percent of the 303(d) listed stream miles in the plan area are located on lands under private jurisdiction. While partnerships with private, local, and state organizations will be pursued, the BLM can only control the implementation of this WQRP on public lands. Other organizations or groups that are (or will be) involved in partnerships for implementing, monitoring, and maintaining the Middle Rogue Subbasin WQMP include the Middle Rogue, Seven Basins, and Bear Creek Watershed Councils, Jackson and Josephine counties, Oregon Department of Forestry (ODF), Oregon Department of Agriculture (ODA), Oregon Department of Transportation (ODOT), Oregon Department of Fish and Wildlife (ODFW), Oregon Water Resources Department (WRD), and Oregon DEQ.

Element 4. Proposed Management Measures

The NWFP ACS describes general guidance for managing Riparian Reserves to meet the ACS objectives. The Riparian Reserves, Key Watersheds, watershed analysis, and watershed restoration components of the ACS are designed to operate together to maintain and restore the productivity and resiliency of riparian and aquatic ecosystems.

Specific NWFP Standards and Guidelines (USDA and USDI 1994, pp. C-31-C-38) direct the types of activities and how they will be accomplished. These Standards and Guidelines effectively serve as general BMPs to prevent or reduce water pollution in order to meet the goals of Clean Water Act compliance. Riparian Reserve widths are determined from the Standards and Guidelines (USDA and USDI 1994, p. C-30). The minimum reserve width for fish-bearing streams, lakes, and natural ponds is 300 feet slope distance on each side of the stream or waterbody. Perennial nonfish-bearing streams, constructed ponds and reservoirs, and wetlands greater than 1 acre receive a minimum reserve width of 150 feet slope distance on each side of the stream or waterbody. Intermittent streams receive a minimum reserve width of 100 feet slope distance on each side of the stream and Riparian Reserves for wetlands less than 1 acre include the wetland and extend to the outer edges of the riparian vegetation.

The Medford District RMP includes BMPs that are important for preventing and controlling nonpoint source pollution to the "maximum extent practicable" (USDI 1995, pp. 149-177). BMPs are developed on a site-specific basis and presented for public comment during the National Environmental Policy Act (NEPA) process. One element of BMP implementation includes effectiveness monitoring and modification of BMPs when water quality goals are not being achieved.

Passive restoration will be the primary means to achieving the stream shade goal (Table 9), since streams on BLM-managed lands have current shade that is greater than 80 percent (Table 8). The *Northwest Forest Plan Temperature TMDL Implementation Strategies* (USDA and USDI 2005) provides a tool for

analyzing the effect of silvicultural practices within Riparian Reserves on effective shade. Shade nomographs were computed based on stream width, vegetation height, hill slope, and orientation factors and provide no-cut buffer widths to maintain stream shade while applying vegetation treatments to improve and restore riparian conditions.

The primary means to achieving the channel morphology goals (Table 9) on federal lands will be through passive restoration and protection of unstable areas. Active restoration measures will focus on promoting riparian conifer growth for future large wood recruitment through silvicultural practices, maintaining and improving road surfaces, and reducing road densities. The highest priority areas for road treatments will be in the Riparian Reserves and unstable areas.

Element 5. Time Line for Implementation

The major provisions of this plan have already been implemented. Protection of riparian areas along all streams has been ongoing since the NWFP became effective in 1994. Inherent in the NWFP implementation is the passive restoration of riparian areas that ensued as a result of the Riparian Reserves. Implementation of active restoration activities beyond the inherent passive riparian restoration occurs in the context of watershed analysis and through site-specific projects. Restoration projects require analysis under the NEPA. The timing for implementation of those activities is dependent on funding availability.

The problems leading to water quality limitations and 303(d) listing have accumulated over many decades. Natural recovery and restorative management actions to address these problems will occur over an extended period of time. Implementation will continue until the restoration goals, objectives, and management measures as described in this WQRP are achieved. While active restoration may provide immediate, localized improvement, recovery at the watershed scale is long term in nature. The ACS contained in the NWFP (as amended, USDA and USDI 2004) describes restoration timeframes. ACS seeks to "prevent further degradation and restore habitat over broad landscapes as opposed to individual projects or small watersheds. Because it is based on natural disturbance processes, it may take decades, possibly more than a century to achieve objectives."

Stream reaches analyzed on BLM-administered lands within the plan area currently meet their target shade values (Table 8). It will take a longer time for aquatic habitat recovery than for shade recovery. Instream conditions will recover only after mature conifers begin to enter the waterways through one of several delivery mechanisms, e.g. blowdown, wildfire, debris flows down tributary streams and into fish-bearing reaches, and flooding. Tree growth from the current condition of young conifers to mature age conifers will take approximately 200 to 250 years. This will represent full biological recovery of these stream channels, while temperature recovery and stabilization of streambanks will occur earlier.

Element 6. Reasonable Assurance of Implementation

The BLM Ashland Field Manager is responsible for ensuring this WQRP is implemented, reviewed, and amended as needed. This official is responsible for all WQRPs for lands under their jurisdiction. The field manager will ensure coordination and consistency in plan development, implementation, monitoring, review, and revision. The manager will also ensure priorities are monitored and revised as needed and review and consider funding needs for this and other WQRPs in annual budget planning.

The BLM is committed to working cooperatively with all interested parties in the plan area. This includes watershed councils, other government agencies, and private entities. The problems affecting water

quality are widespread; coordination and innovative partnerships are key ingredients to successful restoration efforts.

The BLM, Medford District intends to implement this plan within current and future funding constraints. Implementation and adoption of the MOA with the DEQ also provide assurances that water quality protection and restoration on lands administered by the BLM will progress in an effective manner.

Element 7. Monitoring and Evaluation

Monitoring and evaluation have two basic components: 1) monitoring the implementation of this WQRP and 2) monitoring the physical, chemical, and biological parameters for water quality. Monitoring information will provide a check on progress being made toward achieving the TMDL allocations and meeting water quality standards, and will be used as part of the Adaptive Management process.

The objectives of this monitoring effort are to demonstrate long-term recovery, better understand natural variability, track implementation of projects and BMPs, and evaluate effectiveness of TMDL implementation. This monitoring and feedback mechanism is a major component of the "reasonable assurance of implementation" for this WQRP.

The NWFP and the BLM Medford District RMP are ongoing federal land management plans. The NWFP, effective in 1994, requires that if results of monitoring indicate management is not achieving ACS objectives, among them water quality, plan amendments may be required. These plan amendments could, in part, redirect management toward attainment of state water quality standards.

The RMP was implemented in 1995 and the BLM is in the initial stage of revising the RMP, with an anticipated completion date of Spring 2008. The current plan contains requirements for implementation, effectiveness, and validation monitoring of BMPs for water resources. The Medford District annual program summary provides feedback and tracks how management actions are being implemented.

RMP monitoring will be conducted as identified in the approved BLM Medford District plan. Monitoring will be used to ensure that decisions and priorities conveyed by BLM management plans are being implemented, to document progress toward attainment of state water quality standards, to identify whether resource management objectives are being attained, and to document whether mitigating measures and other management direction are effective.

DEQ will evaluate progress of actions to attain water quality standards. If DEQ determines that implementation is not proceeding or if implementation measures are in place, but water quality standards or load allocations are not or will not be attained, then DEQ will work with the BLM to assess the situation and to take appropriate action. Such action may include additional implementation measures, modifications to the TMDL, and/or placing the water body on the 303(d) list when the list is next submitted to EPA.

WQRP Implementation and Effectiveness Monitoring

As restoration activities that benefit aquatic resources are completed they will be provided annually to the Interagency Restoration DAtabase (IRDA). This database was developed by the Regional Ecosystem Office (REO) to track all restoration accomplishments by federal agencies in the areas covered by the NWFP. It is an ArcView based application and is available via the Internet at the REO website (www.reo.gov). It also contains data from the state of Oregon. The IRDA is intended to provide for consistent and universal reporting and accountability among federal agencies and to provide a common

approach to meeting federal agency commitments made in monitoring and reporting restoration efforts in the Oregon Coastal Salmon Restoration Initiative. Activities that are tracked include in-stream structure and passage, riparian treatments, upland treatments, road decommissioning and improvements, and wetland treatments.

In addition, implementation and effectiveness monitoring will be accomplished for restoration projects according to project level specifications and requirements.

Water Quality Monitoring

Water quality monitoring data will be used to evaluate the success of WQRP implementation and effectiveness. Ongoing monitoring will detect improvements in water quality conditions as well as the progress toward attaining water quality standards.

Core indicators of water quality and stream health including stream temperature, stream shade, and stream channel condition will be monitored on BLM-administered land if funds and personnel are available.

Monitoring results associated with compliance with this WQRP will be submitted to the DEQ upon request.

Stream Temperature Monitoring

The BLM has collected Birdseye Creek temperature data since 1994 (Table 7). In order to detect changes in temperature from the long-term data set, the BLM will continue to monitor stream temperatures on Birdseye Creek as long as funding allows. Monitoring is conducted to meet a variety of objectives, thus additional long-term monitoring sites as well as project-specific, short-term sites may be used. Objectives may include: monitor long-term temperature recovery; better understand the natural temperature variability; track potential project effects; and determine the upper extent of the problem area.

Sampling methods and quality control will follow DEQ protocol. Generally, stream temperatures will be monitored from June 1 to September 30 to ensure that critical high temperature periods are covered. Measurements will be made with sensors programmed to record samples at least hourly. Qualified personnel will review raw data and delete erroneous data due to unit malfunction or other factors. Valid data will be processed to compute the 7-day rolling average of daily maximum temperature at each site. The resulting files will be stored in the BLM's database.

Stream Shade Monitoring

Guidelines in the Northwest Forest Plan specify that vegetation management activities that occur within the Riparian Reserves must have a goal of improving riparian conditions. The existing level of stream shade provided by the adjacent riparian stand will be determined prior to Riparian Reserve treatments that have the potential to influence water temperature. Measurement of angular canopy density (the measure of canopy closure as projected in a straight line from the stream surface to the sun) will be made in a manner that can be repeated within the portion of the adjacent stand within one tree height of the streambank at bankfull width. The measurement will occur within the stand, and not be influenced by the opening over the actual stream channel. Immediately after treatment, the shade measurement procedure will be repeated to verify that the treatment met the prescribed goals.

Stream Channel Condition Monitoring

Restoration activities designed to improve stream channel conditions (i.e. road surface and drainage improvements, road decommissioning, and unstable area protection) will be included in the IRDA.

Monitoring Data and Adaptive Management

This WQRP is intended to be adaptive in nature. Sampling methodology, timing, frequency, and location will be refined as appropriate based on lessons learned, new information and techniques, and data analysis. A formal review involving BLM and DEQ will take place every five years, starting in 2010, to review the collected data and activity accomplishment. This ensures a formal mechanism for reviewing accomplishments, monitoring results, and new information. The evaluations will be used to determine whether management actions are having the desired effects or if changes in management actions and/or TMDLs are needed.

Element 8. Public Involvement

The Federal Land Policy Management Act (FLPMA) and the NEPA require public participation for any activities proposed for federal lands. The NWFP and the Medford District RMP each went through an extensive public involvement process. Many of the elements contained in this WQRP are derived from these existing land use planning documents.

Public involvement was also included in the development of the *South Rogue-Gold Hill Watershed Analysis*. Additionally, the NEPA process requires public involvement prior to land management actions, providing another opportunity for public participation. During this process, the BLM sends scoping letters and schedules meetings with the public. The public comment period ensures that public participation is incorporated into the decision-making process.

The DEQ has lead responsibility for creating Total Maximum Daily Loads (TMDLs) and WQMPs to address water quality impaired streams for Oregon. This WQRP will be provided to the DEQ for incorporation into the Middle Rogue Subbasin WQMP. The WQMP development will include public involvement.

Element 9. Costs and Funding

Active restoration can be quite costly, especially for road upgrades and major culvert replacements. The cost varies with the level of restoration. The cost of riparian silvicultural treatments on forested lands is generally covered with appropriated funds and will vary depending on treatment type. The cost of WQRP monitoring is estimated to be $5,000 per year and includes data collection, database management, data analysis, and report preparation.

Funding for project implementation and monitoring is derived from a number of sources. Implementation of the proposed actions discussed in this document will be contingent on securing adequate funding. Funds for project implementation originate from grants, cost-share projects, specific budget requests, appropriated funds, revenue generating activities (such as timber sales), or other sources. Potential sources of funding to implement restoration projects on federal lands include BLM Clean Water and Watershed Restoration funds and Title 2 funds from the Secure Rural Schools and Community Self-Determination Act of 2000 (Public Law 106-393).

The Title 2 program began in FY 2000 and will continue through FY 2006. Projects funded by the Title 2 program must meet certain criteria and be approved by the appropriate resource advisory committee. At least 50 percent of all project funds must be used for projects that are primarily dedicated to: road maintenance, decommissioning, or obliteration; or restoration of streams and watersheds. The available funds are based on County payments.

It is important to note that many of the specific management practices contained in this WQRP are the implementation of BMPs during ongoing management activities such as timber harvest, silvicultural treatments, fuels management, etc. These practices are not dependent on specific restoration funding.

Work on federal lands will be accomplished to improve water quality as quickly as possible by addressing the highest existing and at-risk management-related contributors to water quality problems. Every attempt will be made to secure funding for restoration activity accomplishment but it must be recognized that the federal agencies are subject to political and economic realities. Currently, timber harvest is minimal due to lawsuits and the requirements of the clearances needed to proceed. If this situation continues, a major source of funding is lost. Historically, budget line items for restoration are a fraction of the total requirement. Therefore, it must be recognized that restoration actions are subject to the availability of funding.

Another important factor for implementation time lines and funding is that managers must consider the Rogue River-Gold Hill Watershed South along with all other watersheds under their jurisdiction when determining budget allocations.

Element 10. Citation to Legal Authorities

The Endangered Species Act (ESA) and the Clean Water Act (CWA) are two federal laws which guide public land management. These laws are meant to provide for the recovery and preservation of endangered and threatened species and the quality of the nation's waters. The BLM is required to assist in implementing these two laws. The NWFP and RMP are mechanisms for the BLM to implement the ESA and CWA. They provide the overall planning framework for the development and implementation of this WQRP.

Clean Water Act Section 303(d)

Section 303(d) of the 1972 federal CWA as amended requires states to develop a list of rivers, streams, and lakes that cannot meet water quality standards without application of additional pollution controls beyond the existing requirements on industrial sources and sewage treatment plants. Waters that need this additional help are referred to as "water quality limited" (WQL). Water quality limited waterbodies must be identified by the Environmental Protection Agency (EPA) or by a delegated state agency. In Oregon, this responsibility rests with the DEQ. The DEQ updates the list of water quality limited waters every two years. The list is referred to as the 303(d) list. Section 303 of the CWA further requires that TMDLs be developed for all waters on the 303(d) list. A TMDL defines the amount of pollution that can be present in the waterbody without causing water quality standards to be violated. A WQMP is developed to describe a strategy for reducing water pollution to the level of the load allocations and waste load allocations prescribed in the TMDL, which is designed to restore the water quality and result in compliance with the water quality standards. In this way, the designated beneficial uses of the water will be protected for all citizens.

Northwest Forest Plan

In response to environmental concerns and litigation related to timber harvest and other operations on federal lands, the BLM commissioned the Forest Ecosystem Management Assessment Team (FEMAT 1993) to formulate and assess the consequences of management options. The assessment emphasizes producing management alternatives that comply with existing laws and maintaining the highest contribution of economic and social well being. The "backbone" of ecosystem management is recognized as constructing a network of late-successional forests and an interim and long-term scheme that protects aquatic and associated riparian habitats adequate to provide for threatened and at-risk species. Biological

objectives of the Northwest Forest Plan include assuring adequate habitat on federal lands to aid the "recovery" of late-successional forest habitat-associated species listed as threatened under the ESA and preventing species from being listed under the ESA.

The RMP for the BLM Medford District provides for water quality and riparian management and is written to ensure attainment of ACS objectives and compliance with the CWA.

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