USDA

United States Department of Agriculture

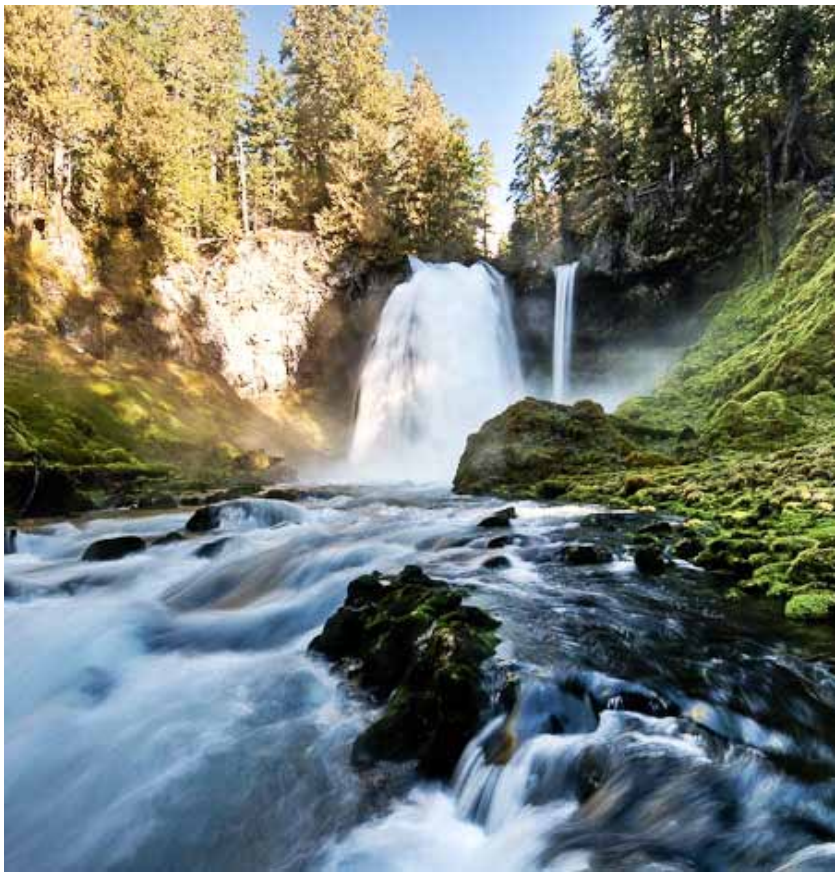
Forest Service

Pacific Northwest Region

Monitoring and Evaluation Report

Willamette National Forest

Fiscal Year 2009



Sahalie Fall,

Willamette National Forest

Welcome to the 2008 Willamette National Forest annual Monitoring and Evaluation report. This is our 20th year implementing the 1990 Willamette National Forest Plan, and this report is intended to give you an update on the services and products we provide. Our professionals monitor a wide variety of forest resources and have summarized their findings for your review.

I would like to introduce myself. I have been the Willamette National Forest Supervisor since last Fall and am so honored to be here. My focus will be to find new ways to accomplish our land management objectives, working even more closely with partners and universities so that we can most efficiently and effectively produce products and services. I believe that restoring and maintaining the health of our ecosystems depends on our ability to work together to share ideas, costs and solutions.

I invite you to read this year's report and contact myself or my staff with any questions, ideas, or concerns you may have. I appreciate your continued interest in the Willamette National Forest.

Sincerely,

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MEG MITCHELL

Forest Supervisor

Willamette National Forest

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MONITORING AND EVALUATION REPORT

This report focuses on the monitoring and evaluation process described in Chapter V of the Forest Plan. The document provides an overview on how the Plan's management direction is being implemented and an evaluation of the current conditions. The questions and the answers have changed as conditions have changed and new information has become available.

If you would like an additional copy of this report contact Judy McHugh (541 225-6305) or write to: Willamette National Forest; 3106 Pierce Parkway Suite D; Springfield, OR 97477.

Contents

Introduction and Background

The Land and Resource Management Plan (Forest Plan) for the Willamette National Forest was approved by the Regional Forester on July 31, 1990. We began implementing the Forest Plan on September 10, 1990.

The Forest Plan is the basis for integrated management of all the Forest's resources. It designates areas of resource management emphasis based on the capabilities of these areas and the differing levels of goods and services that are projected to come from them. The Forest Plan also specifies monitoring and evaluation requirements to provide information necessary to determine whether promises are being kept, and to assure assumptions made during analysis are valid.

On April 13, 1994, the Secretaries of the Departments of Agriculture and Interior signed a Record of Decision for the Management of Habitat for Late-Successional and Old-Growth Forest Related Species, referred to as the Northwest Forest Plan or NWFP, which amended the Forest Plan by establishing new land allocations (management areas) and standards and guidelines (S&Gs). The implementation of these new management areas and S&Gs began May 20, 1994.

Monitoring Strategy

To meet the challenge of monitoring, the Willamette National Forest developed a strategy designed to address questions asked in the monitoring section of the Forest Plan (Chapter V) and to assure compliance with the Standards and Guidelines established in the Northwest Forest Plan. The basic elements of that strategy were:

1. *Identify the monitoring that is currently being done on the Willamette National Forest.*

2. *Supervisor's Office Staff develop plans and programs to address the questions asked in the monitoring section of the Forest Plan (Chapter V).*

3. *Forest Supervisor and Staff review at least one project on each District. The focus of that review being to determine, "Did we do what we said we would do?"*

4. *Publish a report displaying the results of monitoring and an evaluation reviews.*

The measure used in the Forest Plan monitoring questions is the "Threshold of Variability" or TOV. The TOV is a threshold that when exceeded triggers further investigation to determine a proper course of action. For many questions the TOV has been exceeded due to the subsequent Northwest Forest Plan that materially altered many outputs predicted in the Forest Plan. A Forest Plan revision scheduled to begin around 2014 will alter predicted outputs to a level probable under the Northwest Forest Plan. Where the TOV no longer provides useful information, a narrative and data will still be provided.

Monitor and Evaluation

Monitoring and evaluation provide the control system over management activities on the Willamette National Forest. Monitoring and evaluation each have distinctly different purposes.

Monitoring is gathering information and observing management activities. Forest Plan monitoring is organized into three levels:

Implementation Monitoring is used to determine if the objectives, standards, guidelines, and management practices specified in the Forest Plan are being implemented. "Did we do what we said we were going to do?"

Effectiveness Monitoring is used to determine if the design and execution of the prescribed management practices are effective in meeting the goals, objectives, and desired future condition stated in the Forest Plan. "Are the management practices producing the desired results?"

Validation Monitoring is used to determine whether data, assumptions, and coefficients used to predict outcomes and effects in the development of the Forest Plan are correct. "Are the planning assumptions valid, or are there better ways to meet Forest Plan goals and objectives?"

Evaluation is the analysis and interpretation of the information provided by monitoring. Evaluation is the feedback mechanism identifying whether there is a need to change how the Forest Plan is being implemented to comply with existing direction, or whether there is a need to change Forest Plan direction itself through amendments or revisions.

This report emphasizes the question, "Did we do what we said we were going to do?" as well as reporting the progress that is being made on questions of effectiveness and validation. This approach is consistent both with the first assumption behind our Forest Plan monitoring strategy and the last guarantee in the Forest Plan Guarantee that promises we will show you how we are implementing the Plan. Typically, several years of effectiveness and validation monitoring results are needed to permit meaningful evaluation

of trends against baseline data. These trends are revealed and discussed throughout the report when they become evident

Summary of Monitoring Findings

A review of the monitoring activities, findings and results for the fiscal year 2009 is presented in the following section. This section is organized in five major headings covering the range of resources monitored on the forest.

Physical Resources

The Forest Standards and Guidelines provide direction to enable the Forest to meet the goals of maintaining and improving water quality, soil productivity, and air quality. These Standards and Guidelines also provide direction to prevent, detect, and with few exceptions suppress fires. Below is a summary of FY08 monitoring questions designed to assist the Forest Supervisor in determining the effectiveness of the Forest Plan Standards and Guidelines to meet the goals of protecting, maintaining, and improving the physical environment of the Forest.

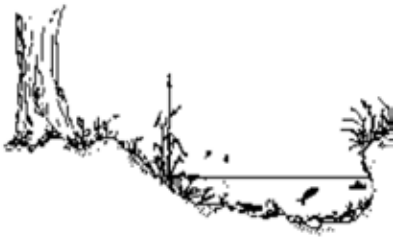
If the reader is interested in more information than what is provided in the following summary they may request the documents listed under "Supplemental Information".

CONTENTS

PHYSICAL RESOURCES SUMMARY FINDINGS

Physical Resource	Monitoring Question	Monitoring Activities	Monitoring Results	Supplemental Information
Water Quality	25 - Water temperature	Water sampling	Results OK	Water quality FY09 monitoring report
	26 - Water turbidity	Field evaluations	Results OK	
	27 - Peak flows	No formal monitoring in 2008	No new results	
	30 - Lake quality	Field monitoring	Results OK	
Soil Productivity	32 - Soils, mass movement	On-site visits	Results OK	Soil FY09 monitoring report
	33 - Soil productivity, mass movement	Routine monitoring	Results OK	Water quality FY09 monitoring report
	34 - Soil productivity	Site visits and implementation monitoring	Results OK	
Air Quality	35 - Air quality	Reported smoke intrusions, lichen surveys	Results OK	Fire Management and Lichen FY09 monitoring reports
Fire	36 - Fire protection	District reports	Results OK	Fire Management FY09 monitoring report
	37 - Fuels treatment	Forest report	Results OK	

Water Quality



Monitoring Questions 25 & 26: Water Quality: Temperature and Turbidity

Are Standard and Guidelines effective in meeting State Water Quality Standards for turbidity and temperature?

The Forest measured summer water temperature at 100 sites during 2009. Fifty-seven of these monitoring sites were on streams listed as water quality impaired for temperature under section 303(d) of the Clean Water Act (2004/2006 integrated list, see table below). The other 43 included monitoring related to stream habitat surveys, and specific forest management or restoration projects associated with species listed under the Endangered Species Act.

Of the 100 sites measured for temperature in the summer/fall of 2009, 61 sites showed a 7-day average maximum temperature exceeding salmon and trout rearing and migration standards (16-18o C), the core cold water habitat standard (16oC), or the bull trout spawning and rearing standard (12oC) established by Oregon Department of Environmental Quality (ODEQ). These maximum water temperature conditions occurred primarily in July and August, which is typical of past summer water temperature monitoring on the Willamette National Forest. Generally, those sites that exceeded standards occurred in wider main stem channels with less riparian shade, while the cooler water sites tended to be associated with headwater streams and small tributaries with better vegetative cover and contribution from cold water springs at the base of High Cascades geology.

Number of summer water temperature sites successfully monitored on the Willamette National Forest, summer 2009.

Sub-basin	Total # of Sites Successfully Monitored	# of 303(d) Listed Streams Monitored	# of Sites Exceeding Standards	# of Sites Meeting Standards
North Santiam Sub-basin	23	13	6	17
South Santiam Sub-basin	12	8	10	2
McKenzie River Sub-basin	38	9	15	23
Middle Fork Willamette Sub-basin	27	27	22	5
Totals	100	57	61	39

In October, 2006, based on both ODEQ and Forest Service water temperature data collected on national forest lands in past years, ODEQ issued the Willamette Total Maximum Daily Load (TMDL) for point and non-point sources of pollutants in the Willamette Basin. This TMDL focused primarily on water temperature, and analyzed shade as a surrogate for water temperature. As Designated Management Agencies required by law to meet requirements of the Willamette TMDL, the Willamette and Umpqua National Forests submitted a Water Quality Restoration Plan (WQRP) in April 2008, serving as an implementation plan for the TMDL for the North Santiam, South Santiam, McKenzie River, Middle Fork Willamette, and Coast Fork Willamette Sub-basins (USDA Forest Service, 2008). This WQRP outlines how ongoing active and passive restoration will address critical riparian shading needed to protect and enhance surface water temperatures on the Forest. Given the completion of both the Willamette TMDL and the corresponding WQRP, all streams listed on the 303d list on Willamette National Forest should be removed from the updated list in 2010. Through implementation of Forest Plan Standards and Guidelines and adherence to the Northwest Forest Plan, management of stream-side areas is contributing to a trend of improved riparian conditions that will lead to maintained or enhanced water quality over the long term.

Monitoring Question 26 is also concerned with water quality as measured by turbidity levels. Forest personnel rely heavily on real-time data provided by USGS gauging stations across the Forest. Also, aquatics personnel do project specific monitoring of turbidity where sediment is an issue. One example includes monitoring that took place in 2009 as part of the Jim's Creek Oak Savannah Habitat Restoration project in the Upper Middle Fork Willamette River. As part of this habitat restoration, conifers dominating the site will be cut to enhance existing oak vegetation. Consultation with National Marine Fisheries Service required the Forest to monitor turbidity in adjacent streams, both pre- and post-treatment. In both 2008 and 2009, sites above and below treatment areas were monitored with pumping samplers during discrete time periods to establish baseline turbidity readings during both summer low flows and seasonal storms. Concurrently, Oregon State University is conducting research on sediment movement from hill slopes before and after harvest and prescribed fire treatments at this site. This data will be used to inform future management decisions at similar restoration sites. Logging on the Jim's Creek restoration site occurred in 2009, but none of the post-logging prescribed fire treatments have occurred. Turbidity measurements in the first storms following fire treatments to this site will likely occur in 2011.

Personnel on the Santiam River Zone at the north end of the Forest maintain close communication with municipalities in the North Santiam Sub-basin. A group known as the North Santiam Water Users meets quarterly and has organized an emergency response protocol for natural events that have potential to affect water quality. For example, USGS websites are tracked during winter storms, and when turbidity in specific rivers and reservoirs rises to levels that may affect drinking water, Forest personnel do field reconnaissance to find the source of this turbidity and report back to the group's members. This group includes officials from the City of Salem who treat waters flowing from National Forest lands as a source of drinking water for residents of Salem, Oregon.

Monitoring Questions 27: Water Quality: Peak Flows

Are management practices causing changes in stream flows?

No new monitoring was conducted in 2009 for stream flow by the Willamette National Forest. As mentioned above, historic and real-time data from USGS gauging stations are used for flow data across the Forest. Modeling of the potential changes to peak flows as part of timber harvest on Forest was done for four timber sales using the Aggregate Recovery Percent methodology prescribed in the Willamette National Forest Land and Resource Management Plan (1990). In each case, this modeling showed that peak flows would not be deleteriously affected by young stand thinning.

Monitoring Questions 30: Water Quality: Lakes

Are Standards and Guidelines for Water Quality and Riparian Areas effective in maintaining or enhancing water quality and riparian conditions of lakes?

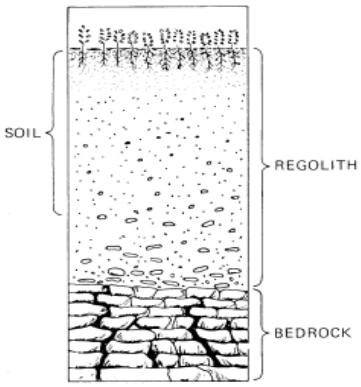
Lake monitoring on the Forest in 2009 included monitoring of key chemical and biological properties of Waldo Lake. In addition, high use recreation areas on several reservoirs on the Forest were also monitored to determine if high concentrations of potentially toxic blue-green algae were present.

The Willamette National Forest contracted with Cascade Research Group to perform three monitoring trips to Waldo Lake in 2009 as part of the long-term monitoring program for the lake. Chemical and biological samples and field data were collected on three dates: August 8, September 14, and October 11. In addition, under an agreement with Portland State University (PSU), water temperature data was collected from stationary instruments that recorded temperatures at various depths at two locations on Waldo Lake. On September 10, 2009 a Slocum Autonomous Underwater Gliding Vehicle equipped with a conductivity, temperature, and depth sensors was deployed by PSU in the north end of the lake. This information is being used to develop and calibrate a water quality and hydrodynamic model for the lake. Forest personnel continued to monitor lake outflow and weather data to provide data for model development and calibration.

Monitoring visits were made primarily to developed recreation sites on water bodies that are known to have had blooms of potentially toxic blue-green algae in the past. Public health advisories are issued when concentrations of potentially toxic blue-green algae are at concentrations above the health based threshold established by the Oregon Department of Human Services (ODHS). Throughout the summer season site visits were made to approximately 25 locations on Detroit, Cougar, Blue River, Hills Creek, and Lookout Point Reservoirs. Trailheads, swimming areas, and boat ramps were posted with educational information about the health hazards of toxic blue-green algae blooms and how to identify them. As a result of this monitoring and in cooperation with ODHS, public health advisories were issued for Hills Creek Reservoir for two time periods in 2009. The first health advisory on Hills Creek Reservoir was in effect for 26 days from May 21 to June 16. The second advisory was in effects for 32 days beginning July 30 and ending August 31.

Forest Service personnel will continue to work cooperatively with other state and federal agencies to protect human health with regard to toxic algal blooms occurring on National Forest lands.

Soil Productivity



Monitoring Questions 33 & 34: Soil Productivity and Mass Movement

Are Standard and Guidelines effective in maintaining soil condition and conditions for nutrient cycling? Are the Forest Plan predictions of mass movement valid?

Forest Plan Standards and Guidelines used to protect soil productivity are focused on limiting the extent of compaction and displacement related to the use of ground-based equipment on forest soils, and survey of soil effects from prescribed fire.

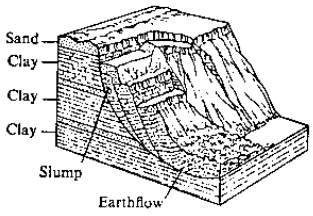
The Forest Plan requires that no more than 20% of an area harvested by ground-based machines should be impacted by roads, landings and skid trails on a given harvest unit. Post-sale reconnaissance and transect monitoring accomplished by the Forest Geologist on two units of the Stinger Timber Sale in 2009 revealed that Best Management Practices (BMPs) were being used properly to protect soil productivity in an over-the-snow logging operation. BMPs included use of ground-based machines only on slopes under 30%, proper road use and a minimum snow layer of 18" to allow this type of winter logging. Reconnaissance revealed only minor disturbance on less than 1% of these units, well below the Forest Plan standard of 20%. These results, as well as recent findings on the Andy Timber Sale in 2008, have shown that when properly administered, the effects of

over-the-snow ground-based harvest in winter can be very effective at protecting forest soils on the Willamette National Forest.

The Forest Geologist also conducted post-prescribed fire monitoring of soils after under burns in the Andy and Cascade Cat Timber Sales as well as two meadow restoration projects, Browder Ridge and Lodgepole Flats to check for soil damage. Forest Plan Standards and Guidelines state that severely burned areas, evidenced by duff removal and soil discoloration, should not exceed 10% of an activity area. On the Andy Timber Sale unit, duff retention objectives were 20 to 40%. Transects conducted in both high and light intensity burn areas revealed average duff retention of 56 and 58%, respectively, well above the stated objectives prior to under burning. Cascade Cat unit 23 was visited 10 years after under burning. Duff retention objectives here were 60-80%. Observations showed ground cover predominating throughout the unit including duff, litter, forbs and short brush with evidence of extensive use by big game.

Surveys of the two meadow areas mentioned above occurred shortly after prescribed fire activities. In both Lodgepole Flats and Browder Ridge Meadow, encroaching conifers were felled and piled in efforts to restore pre-fire exclusion conditions in these high elevation dry meadow habitats. Prescribed fire was used to burn piles and, where possible, fire was reintroduced to existing meadow areas. Post-fire reconnaissance revealed that meadow grass and forb areas did not burn significantly on either site. Only pile burning areas showed effects where larger fuels burned in contact with soil, but these were a very small proportion of the meadow areas. As such, duff retention standards and protection of soil at these two sites was met, staying well within Forest Plan Standards and Guidelines. The meadow management objective of reducing conifer encroachment in these two meadows was also fully achieved.

Additional soil monitoring is routinely completed during the Forest Supervisor's monitoring reviews. See section "Implementation Monitoring".



Monitoring Questions 32: Water Mass Movement

Are Standard and Guidelines effective in managing mass movements to meet Forest goals?

The Willamette National Forest includes land types that are naturally prone to mass movement. Where land management activities have occurred in these areas, ongoing monitoring is being done either visually or through electronic and/or mechanical instrumentation. There are at least 9 active sites on the Forest that are being monitored, and the majority of these sites are on the north end of the Forest in the Santiam River basin.

In 2008, Willamette National Forest personnel assisted in the assessment of the Frasier Slide, located on the northeast slope of Coyote Mountain (Salt Creek Watershed) on the Middle Fork Ranger District. This 60-acre slide first occurred on Saturday, January 19, 2008, and caused failure of up 1000 feet of Union Pacific Railroad line. Two Willamette National Forest Geologists conducted an extensive field survey of the surrounding 800 acres to analyze geomorphic history that led up to the slide and future potential for slope failure. The final report, completed in fall 2008, showed no compelling evidence for any site specific causal action on the part of the Forest Service or the Union Pacific Railroad.

No additional slope instability has been observed, and no slide material has entered the track grade.

Actively or potentially highly unstable slopes were not found in the area and it was estimated that slope stability had been maintained for the previous 500 years. Stabilization of the slide and subsequent reopening of the rail line was managed by Union Pacific Railroad in consultation with the Forest Service and others, and freight transportation resumed in May 2008. Passenger traffic resumed later that summer. In 2009, Geotechnical Engineer, Mark Leverton was on site on several occasions throughout the year. He indicated that the slope stabilization measures (rock buttress, horizontal drains, and under drains) are working well, and the extensive waste areas are stable and re-vegetating. Essentially no additional slope instability has been observed, and no slide material has entered the track grade.

In 2009, the Forest Geologist also visited five locations where Forest access routes intersect with semi-active or active slides of natural origin. Two of these sites have undergone large-scale reconstructions at some point in the past and are under ongoing surveillance. Both the Boone Creek Slide on McKenzie River District (Road 19) and the Camp 5 Hill Slide on the Middle Fork District (Road 1926) showed no recent movement in 2009, verifying that past drainage improvements and a retaining wall structure are maintaining roads at these sites. The Forest Geologist gave input on three other stability issues on Latiwi, Holman Creek and Moose Mountain roads (Forest Roads 2044, 2045 and 2027, respectively), where smaller scale, active slides caused limitations to management by Forest Service and private land managers. Visits to all three sites in 2009 indicated that stability had been achieved through various treatments resulting in the ability to haul logs from private and federal timber sales in the area.

A complex of six active land flows that directly affect an eight-mile section of U.S. Highway 20 between Cascadia and Santiam Pass are currently being studied by a coalition of partners. This group, made up of Federal Highway Administration, Oregon Department Transportation, Linn County and the U.S. Forest Service, secured $1,000,000 to study feasible, cost effective options for protecting the integrity of this important highway. Data collection included continuous groundwater monitoring, drilling to determine failure plane depths and collection of precipitation data at a weather station on site. Data collected and analyzed in 2008 led to specific recommendations for road

reconstruction and long-term maintenance at the six active land flow sites on Highway 20 (FHWA Geotechnical Report No. 05-08 Cornforth Consultants, Inc. Report 1869-2). While considerable progress has been made in the study, funding has been exhausted until the final earmark appropriation is processed, and there has been a delay in acquiring LiDAR survey data from DOGAMI. Because of these two issues, the final completion date for the project will be delayed about one year until the fall of 2010.

Willamette National Forest personnel will continue to monitor on-going stability concerns and will work cooperatively with other land management agencies and companies to address specific needs.

USDA Forest Service, Umpqua and Willamette National Forests, 2008, Willamette Basin Water Quality Restoration Plan for the North Santiam, South Santiam, McKenzie, Middle Fork and Coast Fork Sub-basins. 142 pp.

U.S. Department of Transportation Federal Highway Administration, Western Federal Lands Highway Division, Vancouver, Washington. Geotechnical Report No. 05-08 OR EMK 2005(1), Interim Report Landslide Data and Analysis, South Santiam Highway, U.S. Route 20, Slope Stabilization Phase 1, Willamette National Forest, Linn County, Oregon, U.S. August, 2008.

Air Quality

Monitoring Question 35: Air Quality

Are management activities that affect air quality in compliance with state and federal air quality regulations?

Legal Basis and Purpose of the Willamette National Forest Air Program

Under provisions of the federal Clean Air Act, the Wilderness Act, the Organic Act, and the Regional Haze Rule, the Forest Service has responsibilities and authorities to mitigate potential air quality impacts on all national forest system lands.

Forest Service policy assigns Regional Foresters the responsibility to respond to States or the Federal EPA on issues or actions involving the Clean Air Act. Forest Supervisors are delegated the responsibility to take action to identify impacts and to protect National Forest System lands from adverse impacts which may result from air pollution (including atmospheric deposition).

Specific objectives for Forest level air resource management include:

1. *Monitoring air pollutants when Forest Service goals and objectives are at risk and adequate data are not available.*

2. *Defining selected sensitive indicators of air quality, Air Quality Related Values (AQRV). Monitor AQRVs and establish the acceptable level of protection needed to prevent adverse ecological, human (visitor experiences such as visibility or odors), or cultural (e.g. archeological) impacts.*

3. *Minimizing air pollutant impact from land management activities.*

4. *Managing smoke from management ignited prescribed fires.*

Air Pollutants of concern

The principal air pollutants identified by the Clean Air Act, called the criteria pollutants, are: nitrogen oxides, sulfur dioxide, ozone, carbon monoxide, fine particulate matter (PM2.5 and PM10), and lead. Amendments to the CAA during the 1990s added additional toxic metals, notably mercury, and various semi-volatile organic pollutants (e.g., certain pesticides, PCBs, polycyclic aromatic hydrocarbons). Federal law dictates allowable concentrations of these pollutants in the air. Very little degradation of air quality is permitted in Class I Areas, larger increments are permitted in Class II areas. Class I Areas managed by the Willamette National Forest are Three Sisters, Diamond Peak, Mt Jefferson, and Mt Washington Wilderness Areas. All other parts of the Forest are Class II. The pollutants of greatest concern on the Willamette National Forest (both Class I and II Areas) are nitrogen oxides, ammonia, sulfur dioxide, toxic metals, and ozone.

Emissions of nitrogen oxides from fossil fuel combustion and ammonia from agriculture are the primary source of eutrophying air pollutants. These pollutants are deposited from the atmosphere to forest ecosystems as nitrate and ammonium ions.

Atmospheric transformations of nitrogen oxides and sulfur dioxide also produce nitric and sulfuric acids, the primary components of acid rain. Acid rain is more properly defined as 'acid deposition' because not only rain can become acidified, but also snow, fog, sleet, and hail. Nitrogen oxides also interact with sunlight and heat to produce ozone. Together, these eutrophying, acidifying and oxidizing pollutants are detrimental to the health of plants, humans, and animals. Smoke from wildfire and prescribed fire is also an important concern, releasing carbon monoxide and particulate matter hazardous to human health and wildlife. Forest managers work with the Oregon Department of Environmental Quality to ensure that prescribed fires are carried out when wind directions are least likely to drift smoke over nearby communities.

Monitoring of Air Pollutants and Air Quality Related Values

Precipitation Chemistry: The Willamette National Forest hosts the longest continuously running National Atmospheric Deposition Program (NADP) monitor in Oregon. This monitor is located at the HJ Andrews Experimental Forest (see Figure below). NADP is a

national program to monitor trends in acidity, nitrates, sulfates, ammonium ions and other inorganic pollutants in wet deposition (i.e. precipitation).

The NADP monitor at the H.J. Andrews Experimental Forest

Visibility: The Willamette National Forest hosts and Interagency Monitoring of Protected Visual Environments (IMPROVE) monitor to track visibility and the chemistry of particulates in the air that interfere with visibility in Class I Wilderness. IMPROVE is a sophisticated national network of monitors operated by the US Forest Service, National Park Service, National Fish & Wildlife Service and other partners. The Class I Wilderness areas on the Willamette National Forest are Three Sisters, Mt. Jefferson, Mt. Washington, and Diamond Peak. The IMPROVE monitor is at the western boundary of Three Sisters Wilderness.

AQRV Biomonitoring: Biomonitoring remains the primary method by which the Willamette National Forest monitors air quality. AQRVs monitored by the Willamette National Forest are vascular plants sensitive to ozone, and non-vascular plants (epiphytic lichens and mosses) sensitive to nitrogen- and sulfur- containing pollutants. Like the proverbial canaries used to alert miners of the presence of unhealthy air, monitoring responses of the plant species most sensitive to specific air pollutants allows early detection of adverse effects, providing lead time if action is needed. Accumulation of nitrogen, sulfur and metals in non-vascular plants is also tracked.

Ozone-sensitive plants are monitored by the Forest Inventory and Analysis (FIA)-Forest Health Monitoring program on a 15 yr rotation and 23 km grid. This program is administered by the USFS Pacific Northwest Research Station. The first ozone AQRV monitoring round was completed in 1997-2002.

Ozone injury symptoms on red alder following controlled exposure to 39 parts per million ozone over 28 days.

Sulfur- and Nitrogen-sensitive non-vascular plants are monitored in coordination with the regional Forest Service Air Program on the 3.4 mile FIA grid, every 10 years. Loss of biodiversity and shifts in community composition from pollution-sensitive to pollution tolerant species provide evidence of adverse ecological effects due to air pollution.

Elemental analysis of non-vascular plants collected on the 3.4 mile FIA grid is used to assess spatial and temporal trends in the accumulation of sulfur, nitrogen, and metals in vegetation across the Forest landscape. Round 2 of lichen AQRV monitoring was completed in 2004-2005. This includes 11 Diamond Peak, 26 Mt Jefferson, 9 Mt Washington, 55 Three Sisters, 1 Menagerie, and 1 middle Santiam site visits.

Epiphytic lichens, mosses and liverworts are a conspicuous component of Willamette National Forest vegetation, and highly sensitive to eutrophying and acidifying air pollutants.

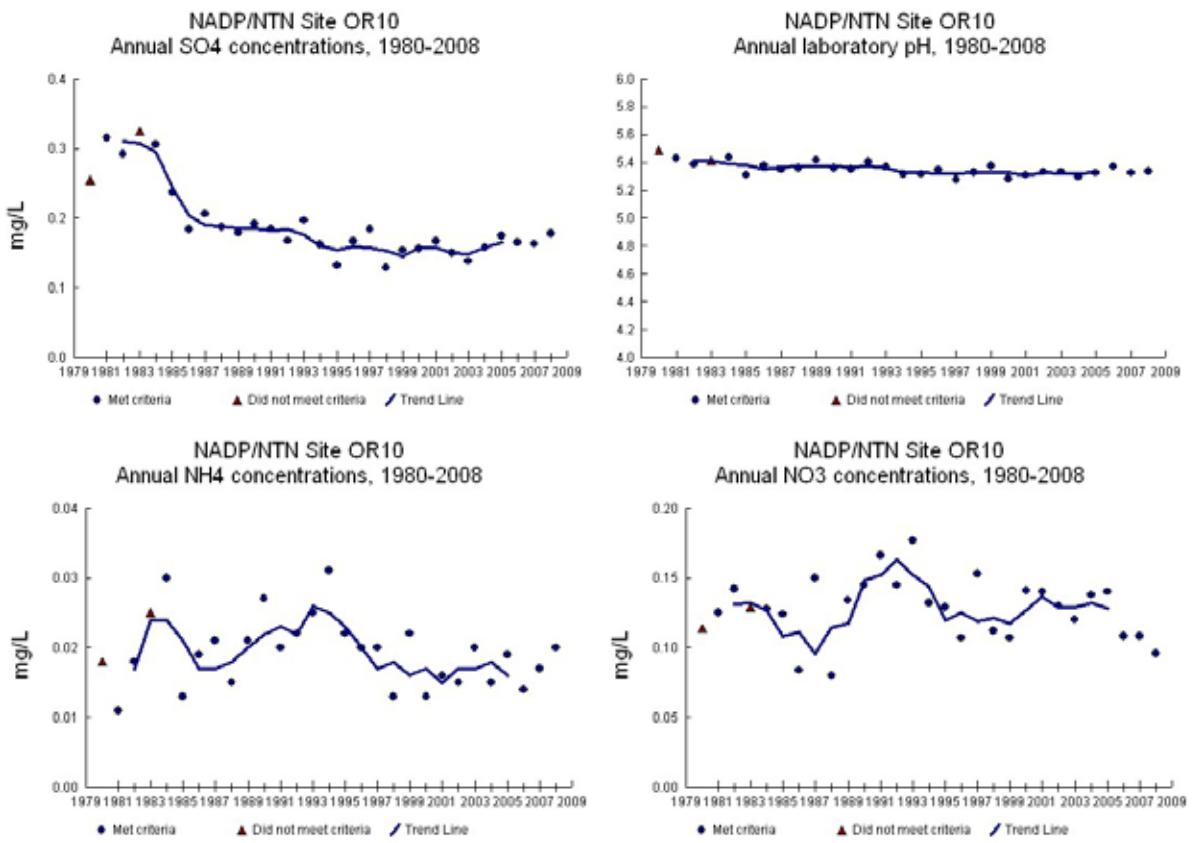
Results of Monitoring Air Pollutants and Air Quality Related Values

Precipitation Chemistry: During 19 years of precipitation chemistry monitoring at the HJ Andrews Experimental Forest (Fig. 4), pH, nitrates, sulfates and ammonia remained within ranges expected for unpolluted rain. No significant change was observed in levels of nitrates and ammonia in precipitation. Sulfates decreased at the HJ Andrews monitor, consistent with regional decreases attributed to point source controls required by the Clean Air Act. One surprise was a small but significant decrease in mean annual precipitation pH, from 5.4 to 5.3, indicating additional acidity. Although this change seems small, pH is a log scale and a pH 5 solution has 10x more acidity than a pH 6 solution. Because sulfates have decreased over this period and ammonium and nitrates are unchanged, the source of the slowly increasing acidity is not readily apparent. Fortunately pH is still within the range expected for unpolluted rain (5.2-5.6) and adverse ecological effects are not expected.

Visibility Monitoring (Fig. 5): Since monitoring began in 1988, visibility at the Three Sisters Wilderness IMPROVE site has neither worsened nor improved. Visibility is very good compared to other IMPROVE sites in the western US, and particulates of carbon from forest fires, and of ammonium sulfate and ammonium nitrate from anthropogenic sources are low.

AQRV Monitoring:

Ozone effects on sensitive species: No evidence of ozone damage to ozone-sensitive vascular plant species was detected at any of the sites on the Willamette National Forest monitored by FIA-FHM program from 1997-2002. Indicator species in Oregon were Ponderosa pine, thimbleberry, quaking aspen, Scouler's willow, mountain snowberry, huckleberry, Pacific ninebark, blue elderberry, and chokecherry.

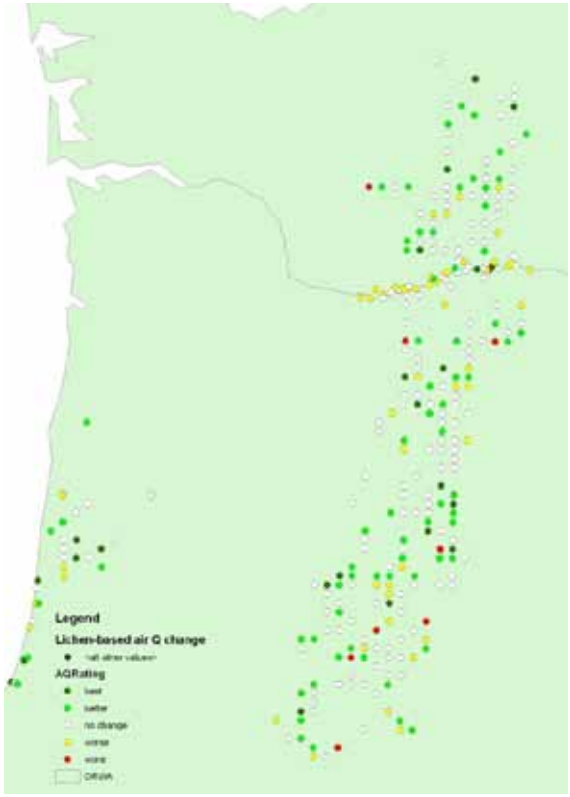


Long-term monitoring of precipitation chemistry at the HJ Andrews Experimental Forest provide evidence that pH and the nutrient nitrogen-containing pollutants NH4+ (ammonium) and NO3- (nitrate) have remained about the same since 1979. In contrast, SO42- (sulfates) have decreased markedly. Trends in nitrates and sulfates are consistent with IMPROVE results (Figure 6). The critical level for ammonium ions to protect the most sensitive vegetation (i.e. epiphytic lichens and mosses) is 0.04 mg/L; levels on the Willamette National Forest are well below this limit and even the most sensitive species grown in abundance here.

Nitrogen and Sulfur effects on Sensitive Species): Monitoring of the ecological effects of acidifying and eutrophying (fertilizing) air pollutants on sensitive non-vascular plants occurred from 1994-1997 and 2004-2005. Survey data from10-year revisits to 85 lichen biomonitoring sites on the Willamette National Forest indicated that lichen community composition either improved or showed no change at 75 sites. Slightly worse scores (favoring species of more eutrophic conditions) were observed at 10 sites but in no obvious pattern. Because most sites improved or did not change, no general concern is warranted.

Spatial and Temporal Trends Nitrogen, Sulfur, and Metals Accumulated by Vegetation):

Nitrogen: Slight increases in atmospherically deposited nitrogen were observed in lichen thalli at most sites (consistent with regional trends) but the new levels were still within expected 'clean-site' ranges for lichen vegetation at all sites except those on the Forest boundary closest to Eugene/Springfield.



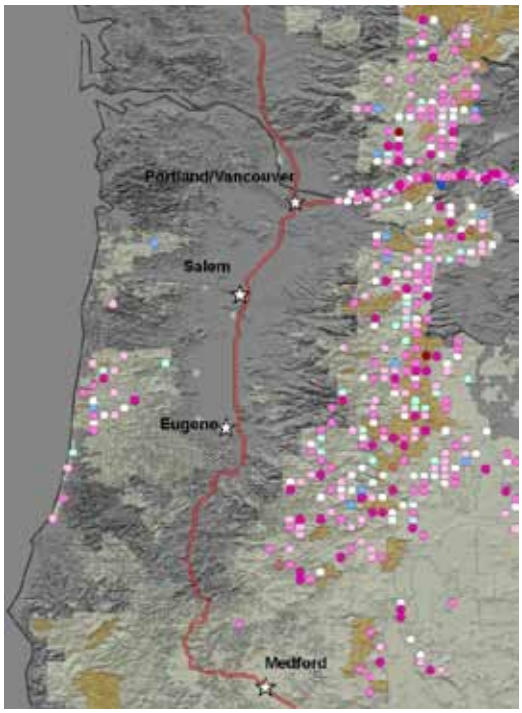
Lichen community-based air quality scores at most sites on the Willamette National Forest either improved (green dots) or the same (white dots) in 2004-2005 compared to 1994-1997. Yellow and red dots show sites where lichen community composition indicates air quality declines.

Sulfur: Sulfur deposition also increased at about half the sites and about 25% of sites are now close to or above 'clean site ranges'. Sulfur is associated with marine aerosols and these increases, which contrast with decreases observed in much of the region, could be explained by higher storm intensity. Highest sulfur concentrations were observed at mid to high elevations in the Cascades and at Forest boundary closest to Eugene/Springfield. These findings contrast with regional declines recorded NADP monitors (all at low elevations) and warrant further analysis.

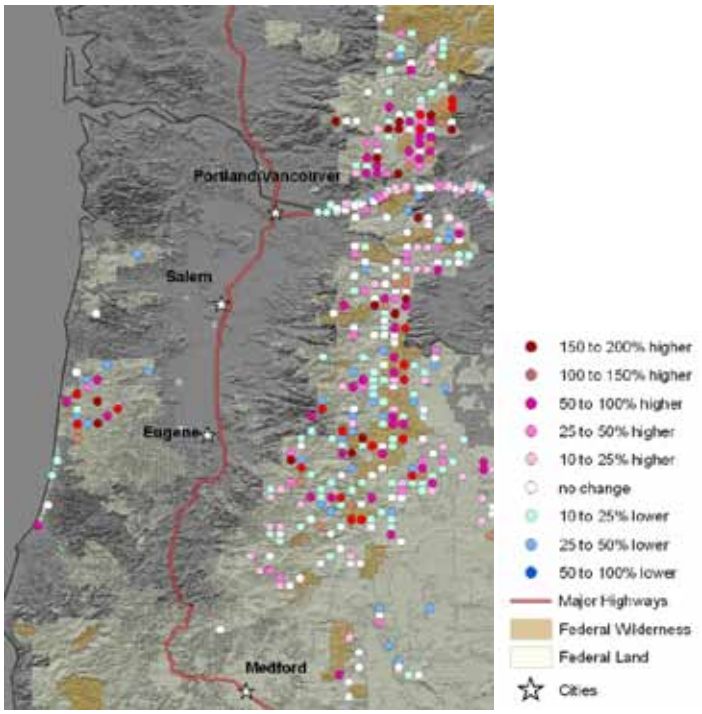
Toxic Metals: Decreases were observed in chromium, nickel, titanium and vanadium levels in lichen vegetation, possibly a long-term environmental benefit of improved vehicle emission controls. Lead concentrations increased slightly at most sites but were still within clean site ranges at all sites. Cadmium and zinc also increased at most sites. Cadmium is associated with marine aerosols and may be related to climate change driven increases in storm intensity. No explanation is available yet for increased lead or zinc. Climate warming in the Cascades may explain migration of metals to higher elevations.

Implications for Management

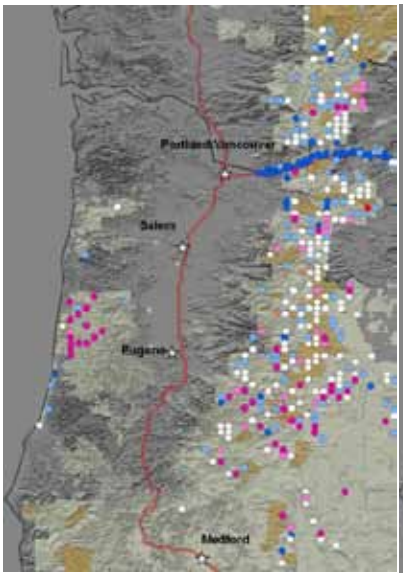
Since 1979, air quality on the Willamette National Forest has generally stayed the same, improved, or is still within clean site ranges for monitored pollutants. The condition, species diversity and abundance of the most air-pollution sensitive vegetation, so far indicates an overall steady state or slight improvement in air quality. Pollutants to watch include nitrogen, sulfur, lead, cadmium, and zinc, all of which are still low, but appear to be increasing in epiphytic vegetation. Although no trends data are available yet, mercury contamination of forested ecosystems is increasing nationally and also warrants monitoring. Of all pollutants measured, only sulfur may be approaching critical levels. Increases in this and metal-containing contaminants may be due to increased Pacific storm intensity which could be bringing larger amounts of marine aerosols deeper into the Forest; increases in trans-Pacific transport are also possible. Continued monitoring and further analysis of existing data is recommended. Managers may also wish to consider adding air quality objectives in the next revision of the Forest Plan.



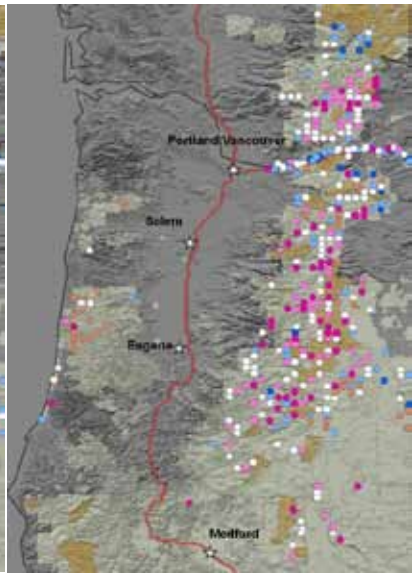
Nitrogen



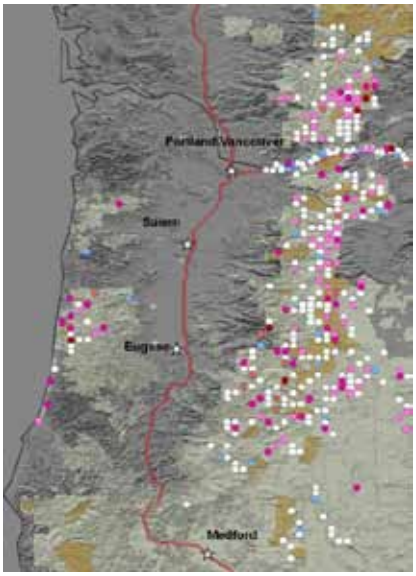
Sulphur



Cadmium

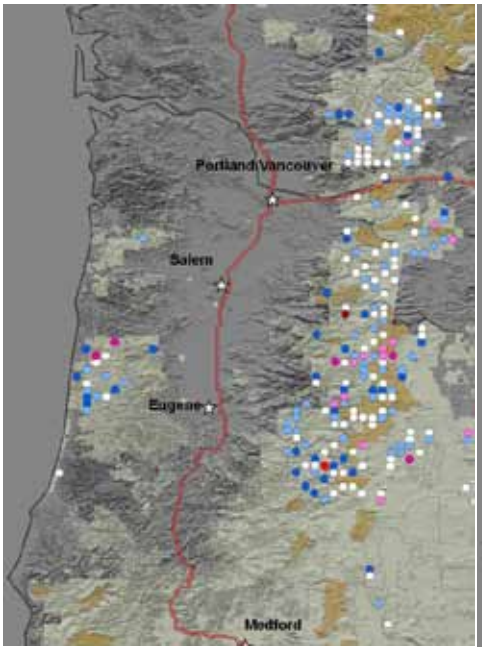


Zinc

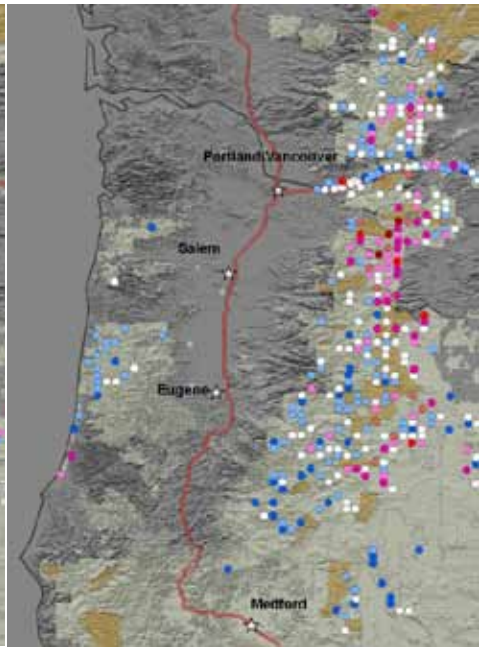


Lead

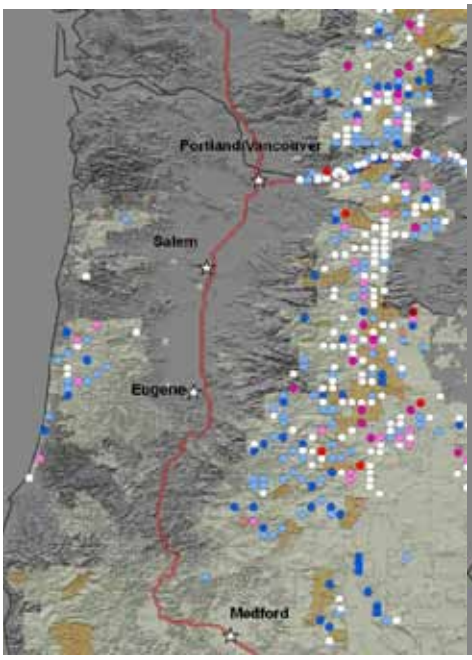
Increasing atmospheric deposition of nitrogen, sulfur, chromium, lead, and zinc was observed at many sites on the Willamette National Forests between 1998 and 2008, indicated by levels of these elements in epiphytic vegetation. Levels of these elements were still within expected background ranges but the trend bears monitoring.



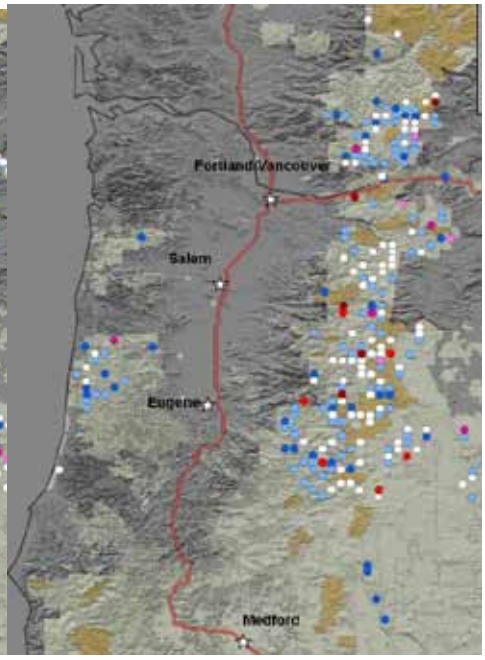
Nickel



Vanadium



Titanium



Chromium

Decreasing atmospheric deposition of chromium, nickel, vanadium and titanium was observed at most sites the Mt Hood National Forest between 1998 and 2005, indicated by levels of these elements in epiphytic vegetation. Stricter vehicle emissions standards may explain improvements; climate warming in the Cascades may explain migration of metals to higher elevations.

New Monitoring Question: Climate Change

What evidence do we have of climate change and what ecological effects have been documented so far?

Why Monitor Climate Change?

Anthropogenic emissions of heat-trapping gases like carbon dioxide, methane, and nitrous oxides are changing the earth's climate. Regional analyses for the Pacific Northwest predict warming temperatures, smaller snow packs, earlier snowmelt, summer time drought, higher stream temperatures, higher energy storms, and increased coastal flooding. There is less agreement about long term trends in precipitation; some models predict increases, others decreases. Understanding the changes that are occurring helps Forest managers plan adaptive actions to ameliorate adverse effects to the condition of natural resources and biological diversity.

Climate Change Monitoring Methods on the Willamette National Forest (Temperature, Climate-Sensitive Vegetation)

Two kinds of data have been collected on the Willamette National Forest to map climate change and document the ecological effects of climate change. These are temperature and precipitation measurements and surveys of non-vascular plants (epiphytic lichens). Temperature and precipitation data are collected at weather stations throughout the region and drive a sophisticated model developed by climatologists at Oregon State University, called PRISM. The model calculates temperatures and precipitation on an 800 m scale throughout the region. Lichen community data are collected in ten year rotations by the Willamette National Forest Air Program on a 3.4 mile grid following the Forest Inventory and Analysis lichen indicator protocol.

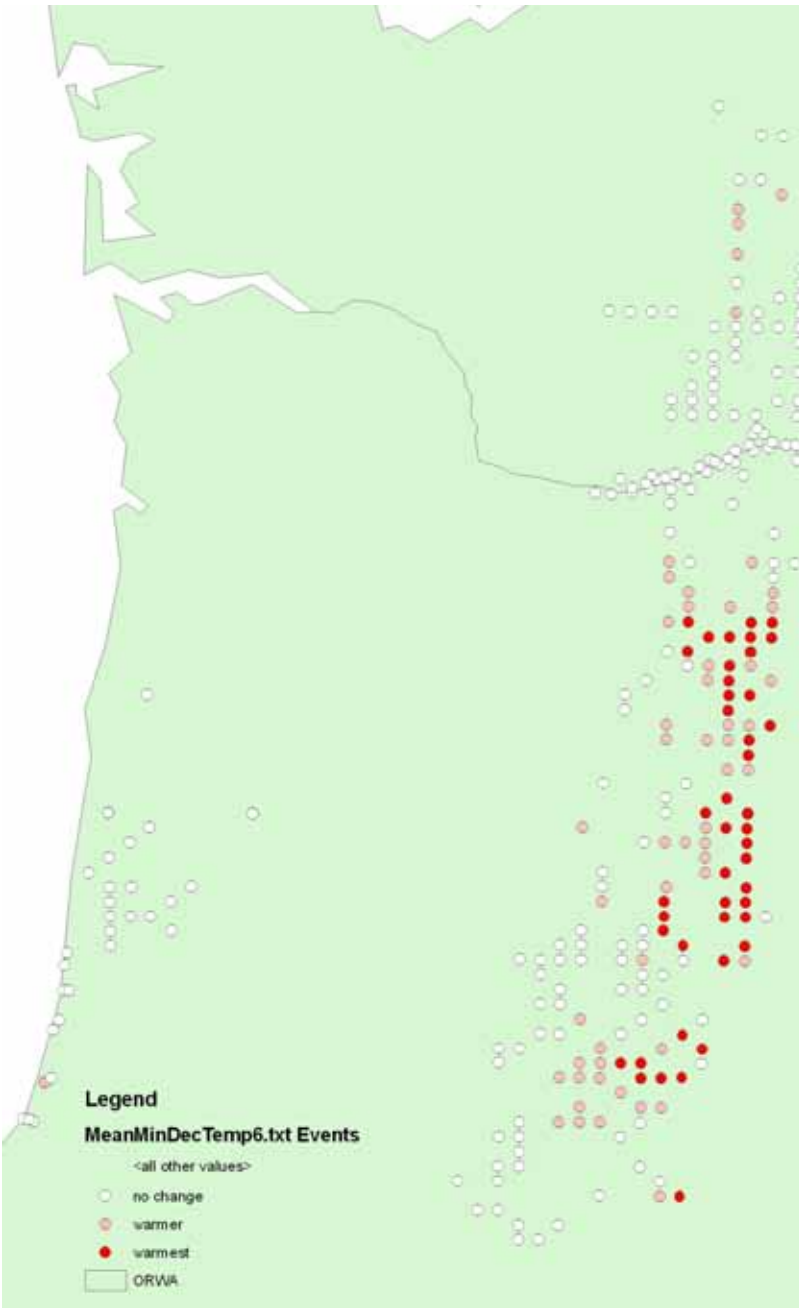
Monitoring Results

Temperature and Precipitation Trends

Linear regressions of year (1970 -2000) vs. the mean minimum December temperature predicted by PRSIM at each lichen biomonitoring site on the Willamette National Forest and other national forests in the Pacific Northwest region were tested for significance at $p < 0.5$. Individual sites were rated as no change, warmer, and much warmer. No change was observed in the Oregon Coast Range and low elevation valleys, moderate increases in temperature were observed in the mid elevation Oregon Cascades and the Washington Cascades, greatest warmer occurred at the high elevation in the Oregon Cascades. No sites became significantly cooler. A similar analysis found no overall regional trends in precipitation.

Changes in Distribution and Abundance of Climate-Sensitive Vegetation

Between the initial biomonitoring round in 1994-1997 and the second round in 2004-2007, lichen community composition shifted in response to cooler temperatures in much of the Siuslaw National Forest (central Oregon Coast) and warmer temperatures in the Gifford Pinchot, Mt. Hood, Willamette, and Umpqua national Forests (western Oregon and Washington Cascades). No overall change in climate was observed in the Columbia River Gorge National Scenic Area. Vegetation effects on the Willamette NF were largely consistent with temperature trends.



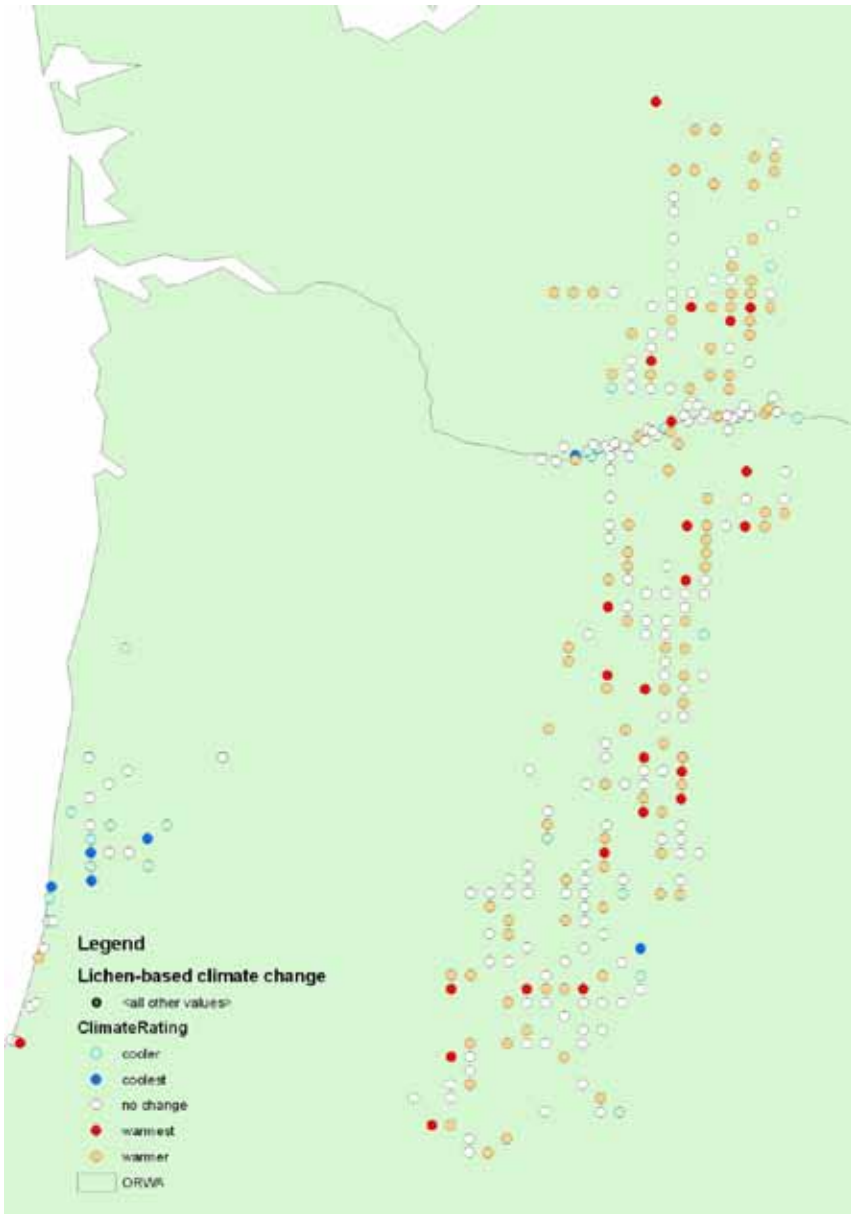
Change in mean minimum December temperatures at climate change biomonitoring sites modeled by PRISM between 1970 and 2000. No change was observed in the coast range and low elevations, moderate increases in temperature were observed in the mid elevation Cascades, greatest warmer occurred at the high elevation in the Oregon Cascades.

Implications for Management

The Willamette National Forest Air Program, working cooperatively with the regional Air Program, is demonstrating some of the first effects of climate change on biological diversity and species distribution patterns in the Pacific Northwest region. This work is demonstrating

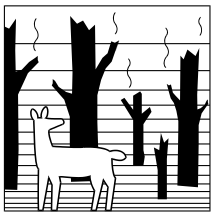
that climate change is not even across the landscape. Little change has yet been observed in valleys and low elevations, and the Oregon central Coast Range has evidently experienced some cooling since 1997; most dramatic warming is occurring in the mid to high elevation Oregon and Washington Cascades. From a biodiversity perspective, species at greatest risk on the Willamette National Forest would be rare alpine and subalpine species with cold temperature requirements. Other anticipated effects of warming include drought stress due to smaller snow packs, increased summer time stream temperatures, and increases in wildfire intensity and frequency.

Further analysis of non-vascular and vascular plant inventory data is needed to identify species at risk. Analysis of long term trends in stream temperatures, aquatic biota, and other climate-related variables affecting aquatic habitats would also be useful.



This map shows that between the initial monitoring round in 1994-1997 and the second round in 2004-2007, lichen community composition shifted in response to cooler temperatures in much of the Siuslaw National Forest (central Oregon Coast) and warmer temperatures in the Gifford Pinchot, Mt. Hood, Willamette, and Umpqua national Forests (western Oregon and Washington Cascades). No overall change in climate was observed in the Columbia River Gorge NSA. Data from the USFS PNW Region Air Program.

Fire



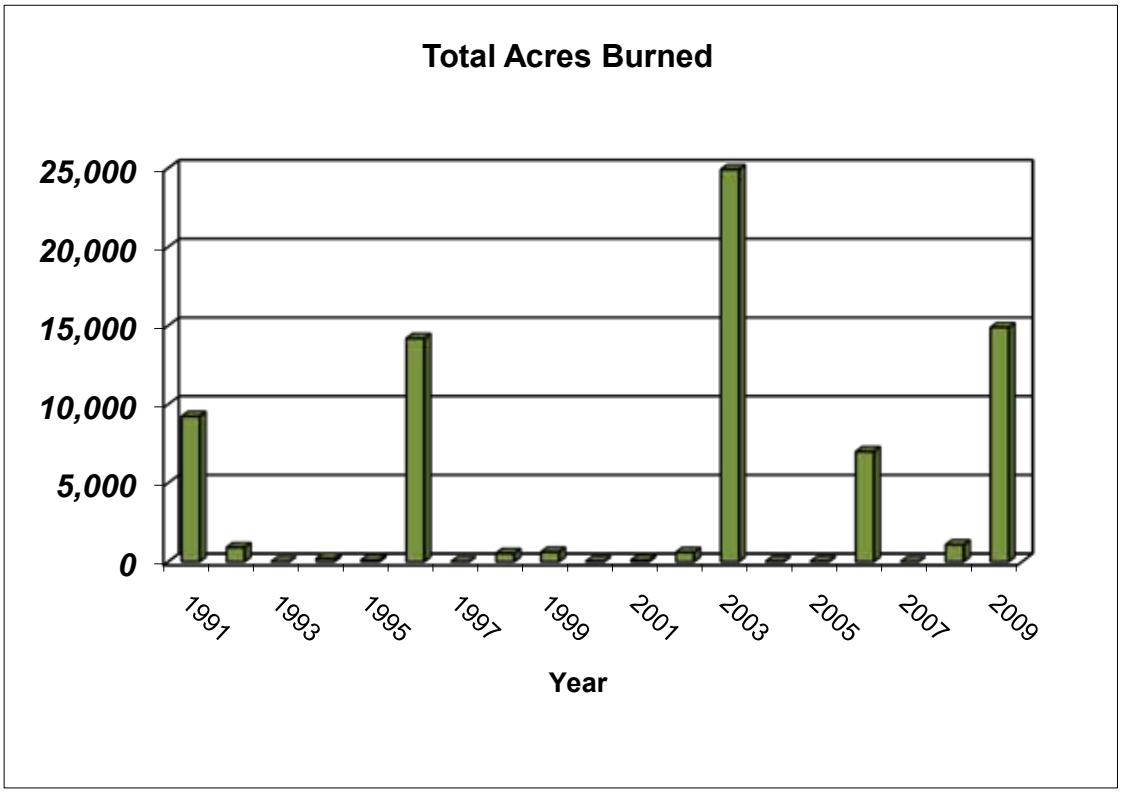
Monitoring Question 36: Fire protection

Are the acres burned by wildfire within the levels considered in the plan?

Sixty fires burned 14,871 acres in non-wilderness areas in FY09. Fourteen reported fires burned 4 acres in the wilderness in FY09. 2009 fire occurrences were 35% below normal with only 74 starts. There were two large fires (over 300 acres). The largest fire was the Tumblebug fire, which was started by lightning in late September and burned 14,560 acres. The 2009 fire season ended in early October when the Willamette National Forest received significant rainfall.

A plan is also in place to allow the management of natural ignitions to achieve resource objectives within the Cascades Crest Wildernesses. The La Conte fire in the Three Sisters Wilderness was managed under this plan burning 1.5 acres.

As illustrated by the graph below, this fiscal year continues to depict the high degree of variability among fire patterns across the Forest.



A retrospective view of fires in the last 19 years since the Forest Plan has been implemented reveals that over 74,400 acres have burned in both wilderness and non-wilderness. This exceeds the threshold expected by more than twice. Fires, when they do occur also exceed in size considerably.

A plan is also in place to allow the management of natural ignitions to achieve resource objectives within the Cascades Crest Wildernesses. The La Conte fire in the Three Sisters Wilderness was managed under this plan burning 1.5 acres.

Monitoring Question 37: Fuels treatment

Were fuel loading/distribution standards met on affected activity areas?

The Forest completed 1,830 acres of fuel treatment in FY2009 or 100% of the assigned target for fuel treatment. The threshold of variability was not exceeded in fiscal year 2009 and the three years cumulative average (2,394 acres) of fuel treatments has not been exceeded. The acres treated were a direct result of timber harvest activities on the forest.

An additional 702 acres of secondary treatments also occurred in FY2009, including 492 acres of treatment in the Wildland Urban Interface.

With an increasing harvest level, the future outlook is for an upward trend in fuels treatments on the Forest.

Biological Resources

The Forest Standards and Guidelines provide direction to enable the Forest to meet the goals of protecting and improving species populations and their habitat. Threatened, endangered, and sensitive species as well as indicator species are monitored for species viability. Below is a summary of FY09 monitoring questions designed to assist the Forest Supervisor in determining the effectiveness of the Forest Plan Standards and Guidelines in meeting the Forest's goals.

If the reader is interested in more information than what is provided in the following summary they may request the documents listed under "Supplemental Information".

CONTENTS

BIOLOGICAL RESOURCES SUMMARY FINDINGS

Biological Resource	Monitoring Question	Monitoring Activities	Monitoring Results	Supplemental Information
Fish Population	13 - Fish Populations	River monitoring, field observations	Results OK	Fish FY09 Monitoring Report
Habitat Diversity	14 - Aquatic Habitat	Field evaluations	Results OK	Fish FY09 Monitoring Report
	28, 31 - Riparian & Wetlands	Field evaluations	Results OK	Wetlands Monitoring Report FY09
	40 - Biological Diversity	Field surveys and Spotted Owl demographic study	Results OK	Biological Diversity FY09 Monitoring Report
Wildlife	15 - Bald Eagle	District surveys	Results OK	Wildlife FY09 monitoring report
	18 - Perigrine Falcon	District surveys	Results OK	
	19 - Primary Cavity Excavators	District surveys	Results OK	
	20 - Marten & Pileated Woodpecker	Snag creation and monitoring	Results OK	
	21 - Deer & Elk	Hunter statistics and annual census counts by ODFW	Population stable to declining	
Plants	16 - TE&S Plants, Noxious Weeds, Native Species	Forest and district records and field activities	Results OK	Botany FY09 monitoring report

Fish Populations

Monitoring Questions 13: Fish Populations

Are the predictions of maintaining or improving Management Indicator Species and Threatened Species of fish valid?

The forest tracks population and habitat changes for spring Chinook, winter steelhead, Oregon chub, and bull trout. The three major river systems on the forest are the Middle Fork Willamette River, the McKenzie River, and the Santiam River.

MIDDLE FORK WILLAMETTE RIVER

Spring Chinook: In 2009 pre-spawned adult salmon were once again released in the Paddy's Valley area in the Middle Fork Willamette River. Adult salmon were placed in the system after it was determined the man-made redds from 2008 were not successful in producing young of the year. In 2008, ODFW planted fertile eggs in human-made redds in the Middle Fork River due to the fact that no live adult hatchery salmon were available for release. During the summer of 2009 we observed very few juvenile salmon in the Middle Fork Willamette River. In late fall 2009, we released 436 adult male, 147 adult female, and 341 jack Chinook salmon. We observed 11 redds during the only survey completed for the area. This survey was completed late in the year and we suspect many redds were obstructed or already covered by organic matter and fallen leaves. In addition, we were only able to survey half of the known available spawning habitat in the area. Therefore, we surmise there were many more spring Chinook redds in the Paddy's Valley area then we recorded in 2009.

Bull trout habitat: In 2009 we observed at least 22 adult bull trout returning to spawning areas of the Middle Fork Willamette River. At least 15 bull trout redds were documented in tributary streams and an additional seven redds were observed in the Middle Fork Willamette River. Some of these redds in the Middle Fork Willamette were not confirmed as "positive" bull trout redds but we are relatively confident many were. This is another increase over last year's estimate and the population continues to increase and is expected to maintain that trend for the next several years as new age classes continue to mature. The Forest Service works in conjunction with ODFW on nearly all bull trout and salmon related research projects.

In 2009 we monitored all previous projects and determined bull trout are still present in all release areas and all age classes are present in the Middle Fork Willamette River and Hills Creek Reservoir. Bull trout are using the habitat we have constructed and enhanced. Monitoring techniques included night snorkel surveys, various trapping projects and angling. Larger bull trout are still implanted with a recorded tag (PIT tag) so biologists can determine seasonal migration patterns and location of spawning.

In 2009, four miles of bull trout habitat on the Middle Fork Willamette River was improved in a jointly funded restoration project with the Watershed Council, OWEB, and US Fish and Wildlife Service. In the last few years the Forest has completed several instream restoration projects to increase spawning habitat in areas used by bull trout. In 2009, nearly 400 logs and root wads were used to construct 50 large log structures at numerous sites frequented by bull trout. We pull over entire trees to create solid foundations for our stream structures. We are preparing to place another 600 logs in the Middle Fork Willamette River and surrounding areas to create or enhance four more miles of habitat as part of the recently completed 5 Year Action Plan developed for the Middle Fork Willamette Watershed. Once this is completed we feel the bulk of stream restoration and enhancement in the watershed will be completed. Also in 2009, we completed the Indigo Springs Bull Trout Spawning Channel Project. This project removed an impassable barrier for bull trout to restore connectivity to some of the most important habitat on the forest and provide an additional 400 feet of engineered channel for spawning. This project was completed with major funding from the USFWS, OWEB, and others and is a remarkable example of the quality of projects we have completed for bull trout recovery in the watershed.

Bull trout populations: The population appears to be increasing or at least maintaining itself and is expected to maintain that trend as new age classes continue to mature and natural reproduction continues. Juveniles are still present in all release areas and we now observe natural spawning at several sites each year. The bull trout Working Group and US Fish and Wildlife Service agreed to rear another 900 bull trout fry in the McKenzie Hatchery again this year. These fish will be transported to the Middle Fork Willamette and released in the fall of 2010.

Today, bull trout are common in the Middle Fork Willamette. Years of hard work and funding appear to have paid big dividends in this program as we can once again see wild bull trout in their native environment

MCKENZIE RIVER

Spring Chinook: In 2009, spring Chinook adult returns at fish counting facilities at Leaburg Dam were similar to those in 2008. Calendar year 2009 saw 1,638 spring Chinook pass the dam (1,612 in 2008).

Partners continue to address limiting factors within the sub-basin.

Restoration of habitats by partners in the sub-basin focus on factors found limiting to spring Chinook production, and those projects range from historic temperature regime restoration and passage at Cougar Dam (Cougar Temperature Control Project, and fish passage facilities to be complete November 2010 by USACE) to restoration of aquatic habitats (South Fork McKenzie River by USFS). Of the effects that are believed substantial in the sub-basin, the long term presence of the

McKenzie River Hatchery program is thought to be significant. Changes in spring Chinook stock management by ODFW toward natural production, especially above dams, will be monitored by USACE and ODFW for effectiveness in future years. Changes in life history due to the altered thermal regime or changes in the juvenile migratory corridor and downstream rearing habitat are thought to be significant in the lower sub-basin (non-Forest Service land) but could not be estimated due to lack of information.

The USFS completed a multi-year project in the South Fork McKenzie River upstream of Cougar Dam. In 2009, finer woody material was placed upstream of log jams placed in the channel in 2007 and 2008. The USFS will conduct post-project effectiveness monitoring through examination of habitat conditions, which will be of value in answering the question of Chinook and bull trout habitat availability and production conditions. ODFW and USACE continue to monitor spring Chinook salmon production above and below Cougar Dam and that data will be useful in answering restoration effectiveness.

Willamette Basin dams (i.e. projects) operations must now address a 2008 Biological Opinion. Of high priority are issues of habitat connectivity above dams and of highest priority within the McKenzie sub-basin is reconnecting the South Fork McKenzie River. The USACE is currently working on a "trap and haul" facility at Cougar Dam that would transport spring Chinook salmon (and other native fish) to upstream habitats. In 2009, ODFW released 1,378 adult spring Chinook salmon (647 males, 624 females, and 107 jacks) from the McKenzie River Hatchery upstream of Cougar Dam in the South Fork McKenzie River. The goal of these releases is to restore marine derived nutrients to the South Fork McKenzie watershed upstream of the dam, and so that the progeny of spring Chinook provide a prey base for bull trout isolated upstream of the dam.

The trap and haul facility should be complete in the fall of 2010 and may be ready to haul fish. In 2009, members of the McKenzie River Ranger District, ODFW, NMFS, and the USACE reviewed current release sites for adult spring Chinook salmon, and potential new release sites upstream of Cougar Reservoir. In 2010 we expect to select sites and prepare any needed environmental documentation.

Bull trout habitat: Calendar year 2009 saw the completion of a multi-year project in the South Fork McKenzie River. In 2007, 40 large trees were tipped into the channel to serve as "anchor trees." These large trees have their rootwad intact and this provides ballast and serves as an anchor for future log placements. In 2008, 450 pieces of woody material (logs with and without rootwads) were placed upstream of the anchor trees. Winter flows have created log jams out of these placements, and in 2009 finer woody material (small trees and branches) were placed upstream of the log jams. These log jams and channel conditions will be monitored to determine effectiveness of project objectives.

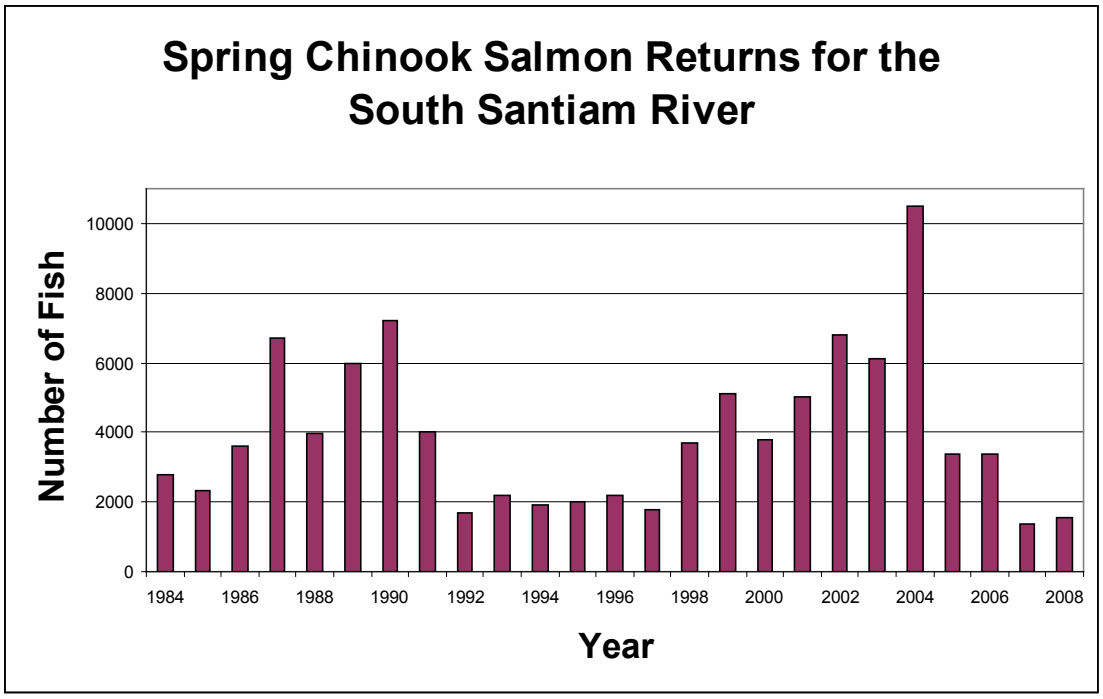
A multi-year project was completed in 2009 in the South Fork McKenzie River that will improve conditions for bull trout.

Previous habitat projects in the McKenzie River upstream of Trail Bridge Dam were monitored in 2009. In 2009, channel cross sections, and woody material inventory and tagging took place in the project reach. A report is due in March of 2010, but preliminary information shows that past woody material placements using techniques described for the South Fork McKenzie have been successful at maintaining themselves in the channel. More trees have fallen into the reach and were tagged, and channel conditions have been maintained.

Bull trout populations: All three bull trout sub-populations in the McKenzie River saw an increase in redds compared to 2008. The South Fork McKenzie sub-population and the Trail Bridge sub-populations saw their highest redd counts on record in 2009. These numbers are encouraging, especially in light of the future connectivity of all sub-populations in the McKenzie River. Trap and haul facilities at Cougar Dam should be complete in 2010 and that will benefit the South Fork sub-population. A fish ladder is planned at Trail Bridge Dam by the Eugene Water & Electric Board (EWEB) and will be completed within 6 years of receiving a new hydropower license. EWEB expects to receive their license in 2010.

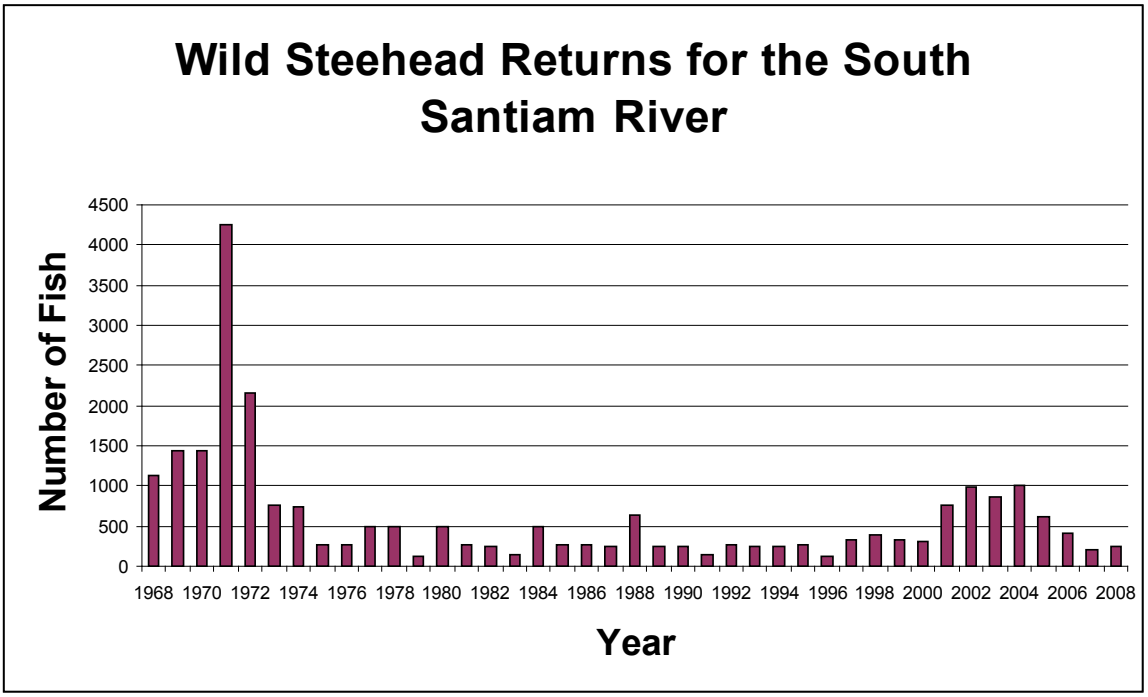
SANTIAM RIVER

Spring Chinook: There has been no monitoring in the North Santiam River, Little North Santiam River, the South Santiam River or the Calapooia River that would indicate whether smolt numbers are increasing, decreasing, or are stable. In the North Santiam River, hatchery supplementation and natural spawning of Chinook continued around Big Cliff and Detroit Dams. Redd counts show that trap and haul operations are producing



naturally spawned Chinook, and the release of 140,000 smolts in Detroit Lake continued in 2009. A study to monitor smolt survival through and over Detroit Dam was completed by the Army Corps of Engineers in 2009. Habitat studies completed by the Army Corps of Engineers show that there is quality spawning habitat in the Breitenbush and Upper North Santiam watersheds. The only way to get a handle on smolt production is to place traps on the three systems. Although unsuccessful attempts to place traps were made in 2006, the ACE is compelled by the Willamette Biological Opinion to try again in 2010-2011 with a new design for monitoring of smolt migration and downstream passage through Detroit Dam. ODFW is coordinating plans to identify a way to monitor smolts on the South Santiam River. The chart shown above identifies returning adult spring Chinook in the South Santiam River since 1984.

Upper Willamette Winter Steelhead (UWS): There may be an indication that winter steelhead smolt numbers in the South Santiam River may be fluctuating based on the variability of numbers of adults returning to the South Santiam River the last several years. Annual snorkel surveys for juvenile steelhead have been initiated on Moose Creek and over time the data collected from those surveys will increase our understanding of the population. The chart below shows returning adults of UWS in the South Santiam. UWS have been extirpated in the North Santiam River above Big Cliff Dam. Steelhead that reach the Minto trap, operated by ODFW, are passed around the collection facility and naturally in the North Santiam River below Big Cliff Dam. In the Willamette Basin Biological Opinion winter steelhead may be moved around these dams in the North Santiam River. Downstream smolt migration would be monitored by the COE.



Bull trout habitat: Potential Bull Trout habitat in the North Santiam and South Santiam River Systems are being maintained. Habitat suitability for bull trout reintroduction is currently being explored in the upper North Santiam basin. Temperature data and habitat surveys completed in 2009 have narrowed the focus of suitable habitat in the North Santiam watershed. Temperature monitoring is planned for the Breitenbush watershed in 2010.

OREGON CHUB

Oregon chub habitat areas on the National Forest are being maintained. The evidence of this finding is a stable trend in chub populations on the Forest.

Stable or increasing trends in abundance for several streams on the Forest.

In 2007, Oregon Department of Fish and Wildlife (ODFW) was the primary agency monitoring Oregon chub, and the Willamette National Forest worked cooperatively to monitor populations on the Forest. In 2008, the Middle Fork District took over the responsibility of monitoring many populations on the District. There are several populations on the Willamette National Forest that currently meet Endangered Species Act down-listing criteria of greater than 500 fish with a stable or increasing trend of abundance for at least 5 years. These trends did not change in 2009.

Monitoring Questions 14: Riparian Aquatic Habitat and Streambank Stability

Are Standards and Guidelines for Water Quality and Riparian Areas effective in maintaining or enhancing stream conditions and aquatic habitat?

Stream survey data collected over the last 10 years indicates that in-stream habitat is being maintained/enhanced by Forest Plan S&G's. Stream habitat attributes such as instream large wood, large pools, and bank stability are generally improving. There are stream reaches in need of in-stream and/or riparian restoration. The Respect the River program has been implemented in the North and South Santiam watersheds to protect and restore riparian habitat. These areas are prioritized and restoration occurs as funding allows. The Respect the River program will expand across the Forest in 2010. See Monitoring Question 13 for more discussion on accomplishments and work planned for the future.

Monitoring Questions 28 & 31: Riparian Terrestrial Habitat and Wetlands

Are riparian Standards and Guidelines effective in meeting Forest Goals for terrestrial riparian resources including beneficial values of small wetlands?

Riparian areas are being protected.

No formal monitoring was conducted for riparian terrestrial habitat in FY09; however, riparian area protection and restoration was completed on the north end of the forest with implementation of the Respect the River program. In addition, Forest Supervisor monitoring trips focus on new project including those that may affect riparian areas. Monitoring completed in FY09, showed overall physical protection of channels appeared to be successful. Providing flexibility in reserve boundaries to meet site-specific conditions such as aspect, topography, and vegetation would further enhance protection.

Protection given through the NWFP for riparian and wetlands areas maintains the quality and diversity of these areas beyond the Forests' original expectations. Add to that Respect the River, which is managing recreation impacts, protecting riparian habitat and actively restoring riparian areas, and riparian areas on the forest are being moved towards restoration.

Monitoring Questions 40: Biological Diversity

Is biological diversity being maintained or enhanced on the Forest?

The 2005 planning regulations for the US Forest Service addresses assessment of range of variation in ecosystem component characteristics and disturbance regimes, comparison to current conditions, and developing status of ecosystem diversity (FSH1909.12, Ch.40, section 43). Procedures for these assessments are being developed as more national forests complete plan revisions under the new regulations. These assessments are anticipated at the subregional level, and will require analyses that go beyond a single national forest boundary.

Formal assessment to answer MQ 40 will take place during plan revision. Given the modest scale of timber harvest under the current plan and budget levels, it appears unlikely that a catastrophic loss in plant association group/seral stage biodiversity is occurring. Monitoring Question 40 is discussed in more detail in the other biological resource sections.

Wildlife

Monitoring Questions 15: Bald Eagle

Are the bald eagle recovery objectives being met on the Forest?

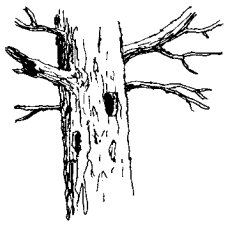
Yes. In 2007 the bald eagle was removed from federal listing as threatened under the Endangered Species Act. Bald eagles are now being managed as a Sensitive species on Forest Service lands. The 15 known nest sites on the Forest are being managed in accordance to Forest Plan Standards and Guides with seasonal restrictions applied to activities near active nests. Eleven nesting sites were monitored for use in 2009. Four nests on the Forest were documented producing a total of 5 nestlings to older than 4 weeks of age.

Monitoring Questions 18: Peregrine Falcon

Are the objectives for peregrine falcon recovery being met on the Forest?

Yes. Recovery objectives have been met for peregrine falcons on the Forest. In August of 1999 the peregrine falcon was removed from the federal Threatened and Endangered species list (delisted). Peregrine falcons are now managed as a Sensitive species on Forest Service lands.

A requirement of the Endangered Species Act is to monitor a delisted species for at least 5 years. The Forest has 28 known nesting sites. Seven of these nest sites are included in the 2003 National Monitoring Program. Twenty seven sites were monitored in 2009, including the 7 national monitoring sites. Of the 27 sites, 23 young were produced from 21 occupied sites for an average of 1.1 young per occupied site. The 7 national monitoring sites produced only 1 young in 2009, with 2 sites unoccupied.]



Monitoring Question 19: Primary Cavity Excavators

Is adequate amount, quality, and distribution of snag habitat being maintained to ensure viable populations of cavity nesting species?

Harvest units are monitored every year to determine whether the number, size, species, and distribution of wildlife trees are retained after harvest as prescribed in the accompanying Environmental Assessments. Of the 67 harvested units monitored in 2009, 100% were in compliance with wildlife green tree and snag retention prescriptions. All the units monitored met Forest Plan Standards and

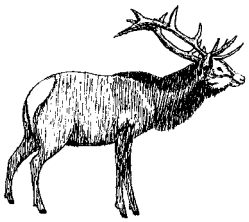
Guidelines for downed woody material, but 8 units (12%) did not fully meet the EA prescription for downed logs. Due to funding availability, only half of the prescribed number of green trees had been fallen to provide for downed wood habitat in those units. Because timber harvest practices have shifted from clearcutting old forests to thinning of younger stands, large numbers of green trees are left in addition to specific wildlife trees which helps provide habitat for cavity nesters and future sources of downed logs.

Snags are created annually using a variety of methods, such as tree topping, girdling, top blasting, and/or inoculation to create cavity nesting habitat generally in connection with timber sales. In 2009, 1702 natural and management-created snags were surveyed for cavity use on three districts. Monitoring to date shows substantial use of created snags by primary cavity excavators, especially for foraging, and suggests that this practice helps maintain and promote use by primary cavity excavators in areas of timber harvest.

Monitoring Questions 20: Marten & Pileated

Is there an adequate amount, quality, and distribution of mature or old-growth forests to maintain viable populations of species dependent on this successional stage of forest habitat?

Upon adoption of the NWFP, the pileated woodpecker and marten networks were reevaluated and nodes of habitat were maintained or dropped in order to provide connectivity between large LSRs. The LSRs were expected to provide adequate habitat for both pileated woodpeckers and martens. Snag and downed log creation occurs throughout the forest in connection with timber sale mitigation using primarily KV funds. These measures enhance habitat for both pileated woodpeckers and marten. As a result of major changes in how pileated woodpeckers and marten are managed under the NWFP, changes are recommended to this monitoring section during Forest Plan revision.



Monitoring Questions 21: Deer and Elk

Are habitat effectiveness values for cover quality, forage quality, open road density, and size and spacing of food cover being increased or maintained as established for each emphasis level?

Regionally the consensus among elk biologists in Oregon and Washington is that Forest Service and Bureau of Land Management elk management plans developed during the past couple decades, such as the Willamette Forest Plan, are based on science that is outdated (Wisdom et al. 2007). Substantial research since 1990 has suggested that elk are limited by the nutritional adequacy of the habitat, including forage area, forage biomass

and quality, and the effects of human disturbance on forage availability. Available forage quality and quantity is also thought to limit black-tailed deer populations on the Forest (Oregon Department of Fish and Wildlife [ODFW] 2008). The development of an updated elk habitat model reflecting current science is being developed by a group of elk researchers. ODFW developed a statewide management plan for black-tailed deer in 2008. Both these efforts are noting the need for better quality forage areas on National Forest lands. With the cessation of large-scale clearcutting in the Northwest Forest Plan, forage quality and populations have declined on the Forest for both deer and elk. Based on hunter statistics and annual census counts by ODFW, black-tailed deer numbers have declined in the past 15 years. Elk populations are more stable (ODFW 2003) as they can utilize lower quality forage such as grass. In some areas elk and deer have shifted from public lands to private lands which have more young clearcuts. Three Oregon State Game Management units overlap the Willamette National Forest. Populations are somewhat below management objectives in all three units (Brian Wolfer personal communication). Limited forage on National Forest lands and a need to reduce elk numbers on private lands to lower damage to reforestation are factors responsible for the lower than desired elk numbers.

The need to improve elk and deer foraging habitat is considered in all vegetation manipulation projects. Specific mitigation measures or design criteria for elk and deer habitat are often developed during timber sale planning. Thinning spacings may be increased or varied or stands may be underburned to increase forage production. Specific wildlife projects, such as forage planting, prescribed burning and meadow restoration, are designed to improve forage quality and abundance for deer and elk. About 9370 acres of accomplishments were reported in 2009 that benefitted elk and deer habitat. These projects include 908 acres of precommercial thinning, 2045 acres of commercial thinning, 254 acres of browse cutback, 605 acres of weed treatment, 679 acres of meadow restoration and prescribed burning, 702 acres of forage seeding, 1280 acres enhanced by pond development, 2616 acres enhanced with road closures, 138 acres of fertilization, and 146 acres of other forage enhancement projects. Many projects to improve elk and deer habitat are done with outside partners, including the Rocky Mountain Elk Foundation, the Mule Deer Foundation, and the Oregon Hunters Association.

Opportunities to close roads to improve habitat effectiveness for elk are considered when appropriate with other management objectives and when funding allows. Eight miles of new road closures were implemented this year and several hundred miles of existing gated roads were inspected and gates and locks were maintained to provide increased habitat security. Forty nine improvement projects were evaluated across the forest in 2009, and more than 80% were rated effective at maintaining or increasing deer and elk use. Projects judged to be ineffective were primarily some installed gate and road closures that failed to stop motorized access by determined members of the public.

Oregon Department of Fish and Wildlife. 2003. Oregon's elk management plan. Portland, Oregon.

Oregon Department of Fish and Wildlife. 2008. Oregon black-tailed deer management plan. Salem, Oregon.

Wolfer, Brian. 2009. Personal communication to Joe Doerr, Forest Wildlife Biologist , 12/21. Area Wildlife Manager. Oregon Department of Fish and Wildlife, Springfield.

Wisdom, M., J. Lehmkuhl, M. Vavra, M. Rowland, P. Singleton, B. Gaines, J. Cook, R. Cook, B. Johnson, P. Cox, and S. McCorquodale. A proposal to develop and apply new elk habitat models in Westside and Blue Mountain Provinces of Oregon and Washington. 2007. Unpublished report submitted to Sporting Conservation Council, 11/27/2007. U. S. Forest Service, Pacific Northwest Research Station. La Grande, Oregon.

Monitoring Questions 40: Biological Diversity

Is biological diversity being maintained or enhanced on the Forest?

In January 2008, Region 6 updated its list of Sensitive Species and developed a new list of Strategic Species. These species, together with federally listed and proposed species comprise the current list of Forest Service "Special Status Species". There are now 7 invertebrate, 10 bird, 3 amphibian, 1 reptile, and 5 mammal Sensitive Species suspected or documented on the Willamette National Forest. One bird and 8 invertebrate species that are classified as Strategic are also suspected to occur on the Forest. There are also 31 fungi, 28 bryophytes, 16 lichens and 44 vascular plants on the sensitive list, and 36 fungi, 25 bryophytes, 7 lichens, and 5 vascular plants on the Strategic list. The Forest provides habitat for one federally threatened bird, 1 federally endangered fish, and 3 federally threatened fish. Effects to federally threatened and endangered and Forest Service sensitive species were evaluated for each proposed project. In FY 2009, 114 project-level Biological Evaluations or Assessments were conducted to address effects and identify mitigation measures for these species. There were 2 informal consultations on project effects with the U. S. Fish and Wildlife Service or the National Marine Fisheries Service. Five formal consultations were conducted with the U. S. Fish and Wildlife Service or the National Marine Fisheries Service on project effects to northern spotted owl or federally listed fish, including three emergency consultations for wildfire suppression and mitigating landslide damage.

Sixty-two acres of western pond turtle habitat were enhanced and monitoring of nest sites was conducted cooperatively with other agencies and private partners. Several buildings that support the only known year-round colony of the sensitive Townsends big-eared bat on the Forest were designated as wildlife structures and boarded up to prevent public entrance while allowing bats to continue to use the buildings. Sensitive plant habitat was enhanced for *Rhizomnium nudum* (1 acre) by rerouting a trail around the population, *Lathyrus holochlorus* (1 acre) by signing its habitat along a road shoulder so road maintenance

activities won't take out any more of the population, and *Frasera umpquaensis* (5 acres) by removing competing vegetation in its meadow habitat. Specific inventory and monitoring surveys were conducted on the Forest for Johnson's hairstreak (a butterfly which requires dwarf mistletoe for a host plant), Oregon slender salamander, salamander slug, bald eagles, peregrine falcons, and the lichens *Pseudocyphellaria mallota*, *P. rainierensis* and *Nephroma occultum* under the Regional Special Status Species Program. The northern spotted owl demographic study was continued on the HJ Andrews Demographic Study area. Six MAPS stations were run with numerous partners to capture and record neotropical breeding birds. Forest Service biologists participated with the U. S. Geological Survey to monitor spotted frogs in Mink Lake Basin and Gold Lake. Additional surveys for Special Status Species were conducted at the project-level. Potential habitat for sensitive species habitat is often buffered from activities in lieu of surveys. The Forest continued to host the Center of Excellence for Bats, and the Bat Grid Program conducted systematic monitoring for bats on the Forest.

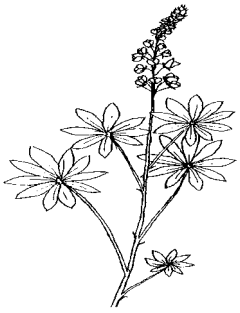
About 14,450 acres of terrestrial habitat were enhanced to benefit native wildlife and plant species using a combination of designated, integrated, and partnership funding and in-kind support. These projects included road closures, native seeding and browse planting, commercial and precommercial thinning to increase diversity, off-road weed treatments, snag and downed log creation, and nest and brush pile construction. Prescribed burning and/or cutting small conifer encroachment were used to maintain unique meadow areas on all four districts. Prescribed burning at Camas Prairie and Browder Ridge on the Sweet Home Ranger District helped maintain biodiversity in meadows with cultural significance and was done in cooperation with local tribes.

New Monitoring Question: Survey and Manage

Have surveys been conducted for Category 2 survey and mange species for all habitat-disturbing activities?

The requirements for Survey and Manage were removed by the July 2007 Record of Decision and Environmental Impact Statement to remove the Survey and Manage Mitigation Measure Standards and Guidelines from Forest Service Land and Resource Management Plans Within the Range of the Northern Spotted Owl. The conservation of rare and little known species are protected by other elements of the Northwest Forest Plan and, if listed as federally threatened, endangered, or proposed or as Forest Service sensitive or strategic, they receive additional species management considerations under the Forest Service Special Status Species Program. Protection of these species is addressed under Monitoring Question 40.

Plants



Monitoring Question 16: Threatened, endangered, and sensitive plants

Have populations of all threatened, endangered, and sensitive (TE&S) plants been inventoried, and are these plant populations being maintained at viable levels?

Were surveys conducted for all ground-disturbing projects?

Surveys were conducted on over 6292 acres for projects ranging from timber sales to new toilet construction. Thirty-eight Biological Evaluations were written to document effects on sensitive species. Twenty-nine new sensitive lichens and one new sensitive vascular plant were located during surveys.

SENSITIVE PLANT MONITORING AND RESULTS

District Botanists monitor the health of sensitive plants on their Ranger Districts as part of the Threatened, Endangered and Sensitive plant program. In 2009, nine different species were monitored. Monitoring can range from checking that plant populations are still in the area to actual counting of individuals within a population. The table listed below discloses the results of sensitive plant monitoring on the forest in 2009.

Species Name	Results
Gentiana newberryi	stable; growing
Romanzoffia thompsonii	1 population stable
Frasera umpquaensis	2 populations stable, one declining; 2009 habitat enhancement project removed competing vegetation in 2 acre area; also working with Contractor/Eugene BLM on seed viability and seedling survivorship study
Lewisia columbiana	1 population at helipad; stable
Arabis hastatula	Population on Iron Mountain declined due to removal of lookout and construction of interpretive site. Plan on growout and reintroduction in future.
Cimicifuga elata	3 populations declining, likely due to big game browsing; one population stable
Botrychium minganense	Species declining
Ophioglossum pusillum	Species stable to increasing
Aster gormanii	2 populations stable

Monitoring Questions 40: Biological Diversity

Is biological diversity being maintained or enhanced on the Forest?

Several meadows are being actively managed in partnership with many outside groups, and are presented below.

Browder Ridge/Camas Prairie Habitat Enhancement Project: Camas Prairie was burned for the 6th time. Camas seed was collected prior to the burn and the area was seeded after the burn. Ongoing weed control has been conducted at the site by a variety of contractors. A dispersed recreation site along the South Santiam River was rehabilitated by planting with native species and building a pole fence to restrict access to the site by the Youth Watershed Council.

Planting native species along the South Santiam River, near Camas Prairie, Sweet Home RD.

Browder Ridge got a lot of attention in 2009. Twelve paired permanent plots were installed in meadows and their associated tree islands prior to any treatment. Native seed was collected from 27 meadow species by volunteers and the Botany Crew. The noxious weed St. Johnswort was removed from the trailhead by Walama Restoration and the Botany Crew removed isolated patches in the meadows. A thinning contract was utilized to cut down all conifers under 10 inches in diameter in six meadows. One of the meadows was burned in the fall. This was the meadow with the most conifer encroachment. The area was seeded with native meadow species following the prescribed burn.

Alice Smith helps burn tree islands at Browder Ridge, Sweet Home RD.

Mule Meadow: Small diameter trees were cut using Stimulus-funded AmeriCorps crew

Flim Flam Bog: Over 200 willows were planted for beaver habitat.

Lodgepole Meadows Restoration: Small trees were removed and prescribed fire was used in this restoration project.

We are also monitoring the success of our terrestrial restoration efforts, as documented below.

Grasshopper Mountain: The effects of revegetation on intensely burned tree islands and stringers were monitored in 3 transects to determine how quickly native meadow species invade formerly forested areas and the effects of fire on St. Johnswort populations at the site (year 2).

Browder Ridge: Pre-treatment plots were established to monitor the effectiveness of prescribed burning in eradicating invading trees and the effectiveness of seeding following burning.

New Monitoring Question: Noxious Weeds

Are noxious weeds being treated on the Forest? Are surveys being conducted for weed populations and are partnerships being developed?

Over five thousand six hundred acres on the Willamette National Forest were treated for noxious weeds in 2008. Most of the acres (3500) were manual treatments using the Youth Conservation Corps and other Forest Service staff in old timber sale units and roadsides. Oregon Department of Agriculture Staff were contracted to treat 1500 acres using chemical and manual control. Some timber, roads and wildlife funds were used to accomplish manual removal. On Middle Fork District, 835 acres were manually controlled using fire rehabilitation funds in the Kitson Fire area.

Marion SWCD continued the partnership with the Detroit RD (USFS) and Salem BLM , this year surveying the main stem and some large tributaries of the North Santiam River for noxious weeds. Surveys were conducted by Northwest Youth Corps. An OWEB grant awarded to the Middle Fork Willamette False Brome working group (Middle Fork District is a partner) funded completion of a 5-year Action Plan, surveys on 3523 acres of private land in the lower watershed, and receipt of a Title 2 grant for survey and control in FY2010. A stimulus-funded Americorps crew worked at Buckhead Wildlife area on manual removal and a Title 2-funded Linn County Juvenile Work crew removed Scotch broom, blackberries and periwinkle at a variety of sites around Sweet Home District. Cascade Timber Consulting treated weeds on 7 miles of private land that leads into the National Forest.

New Monitoring Question: Native Species Revegetation

Is the Forest using native seed for restoration projects across the Forest?

The Forest awarded contracts for 2,000 pounds of blue wild rye and 1,350 pounds of California brome, 6,000 pounds of blue wild rye

straw and 1,100 pounds of California fescue to be used on revegetation projects forest-wide. We also partnered with Salem BLM's Horning Seed Orchard to produce 11 pounds of Cardwell's penstemon and 13 pounds of lupine. These legumes will be mixed with native grasses for roadside plantings and other restoration projects. We collected 12 pounds of blue wild rye in the Santiam River Zone that will be planted in fall 2010. We partnered with North American Butterfly Association to collect 14 native plant species on Browder Ridge.

Resources and Services to People

This section of the monitoring report describes the resources and services the Forest provides its constituents. Recreation, timber, and roads provide direct benefits to many users of the forest. Benefits from other areas such as the cultural resources and research natural areas provide a more indirect benefit designed to assist the Forest Supervisor in determining the effectiveness of the Forest Plan Standards and Guidelines in providing expected resources and services to our constituents.

CONTENTS

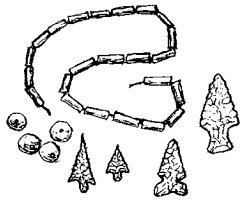
If the reader is interested in more information than what is provided in the following summary they may request the documents listed under Supplemental Information.

RESOURCES AND SERVICES TO PEOPLE SUMMARY FINDINGS

Resource	Monitoring Question	Monitoring Activities	Monitoring Results	Supplemental Information
Cultural Resources	2 - Cultural Resources	Site visits	Results OK	Heritage FY09 monitoring report
Specially designated unique areas	3 - Wilderness	District reporting, on-site visits by district personnel	Results OK	Recreation FY08 monitoring report
	4 - Wild and Scenic Rivers		Results OK	
	5 - Roadless Areas		Results OK	
	9 - Special Interest Areas		Results OK	
	39 - RNAs	Site visits and scoping	Results OK	RNA FY09 monitoring report
Recreation	6 - ROS	District reporting, on-site visits by district personnel	Results OK	Recreation and Scenic FY09 monitoring report NVUM Survey FY08.
	7 - Recreation Visitor Use		No new results until 2008	
	8 - Scenic Resources		Results OK	

Resource	Monitoring Question	Monitoring Activities	Monitoring Results	Supplemental Information
	10 - Trails	District reporting, site visits	Limited results	Trail FY09 monitoring report
	11 - Developed Recreation	District reporting, on-site visits by district personnel	Results OK	Recreation FY09 monitoring report
	12 - Off-road vehicle use		Results OK	
Timber	22 - Timber Suitability	Review of land allocation changes	No new results	Timber Suitability FY09 report
	23 - Timber Program	Review of timber records	Results OK	Timber records
	24 - Silvicultural Practices	Review of silvicultural records	Further evaluation	Silvicultural records
Transportation	38 - Transportation System	Reports, databases, traffic counts	Results OK	Transportation FY09 report

Cultural Resources



Monitoring Questions 2: Cultural Resources

Are significant cultural resources being managed and protected consistent with the Forest Plan direction and law?

The Forest cultural resource inventory reflects a resource base of over 2,250 known cultural resources including archaeological and historic sites, trails, and structures, as well as a multitude and variety of isolated finds and features. Through a variety of program efforts, the Forest is managing and protecting these sites consistent with the Forest Plan direction and applicable federal law. Archaeologists are involved at all levels of project planning to ensure that cultural resources and historic values are considered. Protection by avoidance or project redesign is typically recommended for sites discovered or monitored in conjunction with project planning. When those options are not feasible, adverse effects would be mitigated through scientific recovery and preservation of the data embodied in the historic property.

During FY2009, Heritage staff reported monitoring visits to 45 sites, which represents about 2% of the total inventory of known sites. These monitoring visits occurred most

often in conjunction with proposed project surveys or as follow-up to recent projects. Several sites were monitored in conjunction with heritage hikes and projects, as well with representatives of local tribes. Five sites could not be relocated due to changed environmental conditions or vegetative encroachment, yet no significant new impacts were reported at the majority of the sites visited.

Most often impacts noted at individual sites were either minor or were existing damages that had occurred several years ago, for example historic logging or road construction. In a few cases current conditions indicate on-going impacts related to Off-Highway Vehicle (OHV) use. This situation was specifically noted at three sites. Fortunately measures are being implemented Forest-wide in an effort to reduce environmental damages.

No incidents of site damage, vandalism or looting were identified which might constitute a violation under the Archaeological Resource Protection Act (ARPA).

Though little formal monitoring of historic buildings was reported this year, historic buildings that are actively used by the Forest are typically being maintained according to historic preservation standard. However those that are not actively used are not consistently well maintained and may be subject to vandalism. Several fine examples exist across the Forest of historic preservation through appropriate maintenance and rehabilitation efforts at many important historic sites, such as Independence Prairie Guard Station and Fish Lake Remount Station. Several historic lookouts are maintained and repaired in partnership with a lookout volunteer group.

An extensive survey of the Forest's Recreation Residences/Summer Home tracts was completed under contract in FY2009 indicated that about half of these privately owned home on Forest Service land have not been maintained in keeping with historic preservation standards; their integrity compromised their historic value and eligibility to the National Register of Historic Places. A national initiative has been implemented to ensure that these homes - occupied seasonally, under special use permits - are managed consistently with Forest Plan standards.

Continuing programs of public outreach and education strive to improve understanding and appreciation for these resources. Preservation signing is encouraged at historic buildings and other vulnerable site areas where public use is concentrated, such as campgrounds, trailheads, and OHV-use areas. We are working in conjunction with broader forest efforts to curtail access to sensitive resource areas, e.g. Respect the River.

Consultation with the State Historic Preservation Office (SHPO) continues under a Programmatic Agreement for compliance with the National Historic Preservation Act. Improvement continues with consultation with local tribes. Review of a sample of environmental documents indicates consistent consultation with SHPO and improved documentation of consultation with Tribes.

The heritage program staff provided numerous interpretive opportunities, classroom visits and Outdoor school presentations. The Sweet Home RD continues to host the annual Conservation Civilian Corps Alumni picnic each summer, as well as numerous Heritage hikes and an annual Heritage Expedition, all of which are very popular with the visiting public.

Specially Designated Unique Areas

Monitoring Questions 3: Wilderness

Is wilderness being managed to provide for a wide range of permitted uses while maintaining wilderness character and natural processes?

The Forest monitors the class settings and use levels of its wildernesses. The Wilderness Resource Spectrum class settings are consistent with the S&Gs for Wilderness management.

Use limits in Wilderness are exceeded during peak periods. Public education and information process continuing.

The Cascade Crest Coordination Committee (CCCC) provides guidance on wilderness management issues for the Mount Jefferson, Mount Washington, Three Sisters and Diamond Peak Wilderness areas. The Wilderness Working Group (WWG) is made up of wilderness managers from the Willamette and Deschutes National Forests, and implements the strategies of the CCCC. Since 2005, improvements in wilderness stewardship have resulted from the creation and implementation of a wilderness education plan, the design and pilot testing of a recreation site monitoring program, the completion of the first phase of fire use planning, invasive plant monitoring, and improved communication and coordination between the two Forests.

A permit system is still in place to monitor visitor use in all wildernesses on the Willamette National Forest. Based on data submitted, visitor encounters are estimated to be within the established Forest Plan Standards with some exceptions. Forest patrols, designated sites and other actions at Pamelia Lake and Obsidian Cliffs Limited Use Areas have resulted in improved social and resource conditions. Use numbers for the Obsidian Limited Area remain stable with some seasonal fluctuations due to field conditions. Standards for the number of visitor encounters are also estimated to be exceeded during weekends and the peak season at: Marion Lake, Jefferson Park, the Eight Lakes Basin, Duffy Lake, Erma Bell Lakes, Benson Lakes, Tenas Lakes. Recent burns in the Mt. Jefferson Wilderness are also displacing users into unburned portions of the Wilderness, potentially causing increased encounters and impacts to campsites. Marion Bridge and Whitewater Creek Bridge, two non-conforming bridge structures in the Mt. Jefferson Wilderness, were removed and replaced in 2009, bringing the trails into compliance with the Forest Plan.

Monitoring Questions 4: Wild and Scenic Rivers

Are the outstandingly remarkable river values of all eligible, study, and designated Wild and Scenic Rivers being maintained or enhanced as required?

All designated study and potential Wild and Scenic Rivers are being protected consistent with the Wild and Scenic Rivers Act. Formal and informal monitoring of conditions on the North Fork of the Middle Fork and the McKenzie Wild and Scenic Rivers is being conducted in accordance with their WSR management plans. River use is increasing, but the outstanding remarkable river values (ORV's) standards are being met. The McKenzie River Ranger District continued to implement a voluntary private boater registration program and in 2009 gathered additional data about river use through an on-site interview questionnaire. Work continues with the Oregon State Marine Board on the aquatic invasive species prevention program. Elkhorn Creek, which was designated as Wild and Scenic River under the Opal Creek legislation (1998), still requires a management plan. There were no changes to the designation status of eligible and study rivers in 2009.

Monitoring Questions 5: Roadless Areas

Are Roadless Areas being managed as provided for in the Forest Plan?

Monitoring of roadless areas focuses on whether the acreages and numbers of inventoried roadless areas and other unroaded areas are consistent with Forest Plan direction. No changes to the roadless area boundaries occurred in 2009. The last change occurred in 1998 when 275 acres of the Waldo-Moolack inventoried roadless area within the Desperado timber sale planning area was found to be incorrectly classified as roadlesss. Forest Plan Amendment 34 was completed to correct the roadless area boundary.

In FY00 roadless area boundaries as depicted in Appendix C were moved into GIS (a spatial database).

Monitoring Questions 9: Special Interest Areas

Are the natural, cultural, and historic attributes and conditions of designated special areas being managed to assure their protections and proper human use?

Generally, unique areas on the Forest such as SIAs, OGGs and OCRA are being managed to protect their special attributes. Minor site-specific problems continue to occur in localized areas within special interest areas such as Fall Creek, Hardesty Mountain, and Bradley Lake, but overall area attributes are being protected.

Rehabilitation of the Santiam Wagon Road begins.

In 2008 a decision was made to rehabilitate existing motorized recreation-vehicle impacts to the Santiam Wagon Road SIA as part of the Santiam Pass Motorized Recreation Project. Grant and restoration funds from the Oregon Parks and Recreation Department will be utilized to continue rehabilitation efforts in 2010. Implementation guides for the Wolf Rock and McKenzie River SIAs were completed in 2009.

In 1998 the Opal Creek Wilderness and Scenic Recreation Area (SRA) was created along with the Opal Creek Advisory Council. A comprehensive management plan was completed in 2002. Three Pools Day Use Area improvements were made to help reduce recreation impacts from high use, improve visitor safety, recreation experience and scenic quality, reduce congestion and to meet management goals for the Opal Creek SRA.

Monitoring of Hidden Lake SIA and Terwilliger Hot Springs shows management actions over the past several years aimed at correcting overuse, inappropriate visitor behaviors, and unacceptable resource damage are having positive effects. Social and biological conditions are moving in a direction consistent with the reason the areas was designated an SIA.

Monitoring Questions 39: Research Natural Areas

Are Research Natural Areas being protected and inventoried for use as ecological reference points?

A Research Natural Area Volunteer Stewardship program has been in effect for three very successful years. The Middle Fork Ranger District has two volunteer stewards. Their work is coordinated jointly between the Forest's RNA Coordinator and the Middle Fork RNA Coordinator.

Three RNAs were visited last year, Rigdon Point RNA, Torrey Charlton RNA, and Gold Lake RNA. Also boundary markers were reestablished for Gold Lake in anticipation for a formal boundary description. Formal boundary descriptions are completed for all RNAs at the time of establishment; however this was not the practice when Gold Lake and Olallie Ridge was established in the 1960's.

Torrey/Charlton RNA: The Charlton portion of Torrey/Charlton RNA was visited in October 2009. This is a clip written by the volunteer who visited the area:

The area covered was eastern portion of Charlton Unit of RNA. Beginning at Harralson Horse Camp @ ~ 09:30 hrs I proceeded NE on 4363 Trail; at about 1/8th mi into the burn. I inspected edges of first two plots located just east of trail. The plot nearest the trail [w/yellow " Experiment Plot " sign] had snags with tag # in 6739, 6740 series, whereas tag # in the next plot east were in 1448, 1454 series. No human disturbance was evident within or near the plots. After checking the plots, I returned to the 4363 trail and hiked NE to Pacific Crest Trail. Although some regeneration was evident since the 1996 fire, the part of the burn visible to me remained quite open except for the numerous snags still

standing among the windfalls. Reproduction of conifers (mountain hemlock, lodgepole pine, with occasional Douglas fir and white pine) was of course most salient near edges of the old fire. Otherwise regeneration was very scattered, with the largest being an occasional 5 - 6 ft lodgepole pine. For the first time, I observed ponderosa pine saplings; three single ponderosa ~3 - 4 ft tall were discovered at scattered locations. Quick searching nearby did not reveal a seed source.

After reaching the crest trail, I walked south to the north base of Charlton Butte, and then followed and old trail [part of 24-1] to the north to nearby Lily Lake. From the lake, I continued on the trail SE to its junction with Lemish Lake Trail near the eastern base of the butte (the latter section of trail is essentially the NE boundary of the Charlton Unit of RNA). Upon reaching the Lemish Lake Trail, I went west on the trail towards Charlton Lake until reaching the 4290 Road, and then west again 1/8th mi on the road to trailhead with Pacific Crest Trail. From there I hiked north on crest trail to junction with 4363 trail and returned west to Harralson Horse Camp arriving back @ ~ 17:45 hrs.

Near Charlton Butte I noticed that on north and northwest facing slopes burned in 1996 fire, stands of snags remained dense for the most part, with most snags still standing with crowns mostly intact. Conversely, the remnant stands in adjacent areas at lower elevation were more open --- characterized with much windfall and of the few snags remaining, most had substantial portions of the crowns missing. Comparing the different statures of burned stands at the two locations, it appeared that at higher elevation on the butte the somewhat smaller size of the snags coupled with possibly greater topographical shelter from wind accounted largely for the difference observed.

On Oct 7, most unshaded places on the route were snow free, but in shaded areas 1 - 2 inches of snow remained from a recent storm. Indications of recent rain and frost were also present, all of which made for not particularly good conditions to look for noxious weeds, of which I saw none. No litter was found. The trails followed showed significant recent use, except for the Lily Lake route. The current recreational visitors consisted of about six camps of recreational vehicles at Harralson. Other than a couple of fishermen I talked with and few others in camp, I saw no other persons all day. Vehicle traffic on adjacent forest roads was very light. From my cursory recon, adverse human impact on the RNAs was minimal.

Gold Lake Bog RNA: Boundary improvements to Gold Lake Bog RNA continued in 2009 marking and documenting three additional points preventing the lost of those corners due to fallen and decaying trees originally blazing the boundary. Lake RNA was established in the 1960's marking the boundary with blazes on trees.

As of this writing the Middle Fork Ranger District is looking into expanding the Gold Lake Bog RNA to include the spotted frog and the protection of the springs that serve the bog. This will develop during FY2010.

Rigdon Point RNA: During a visit in September the district botantist and a volunteer investigated a small stand of knobcone pine on Echo Creek drainage which the volunteer had found during a hike in 2000. The site, which consisted of 2 - 3 acres of decadent knobcone situated on a rocky west facing ridge, was located ~ 5 airline miles northeast of Rigdon Point approximately near the north/south section line dividing of Sections 22 & 23, T. 24 S. R. 4 E. To reach the site on foot, we began at a point about 0.7 mile up the 329 spur from the 2143 road at ~ 3,500 ' elevation and hiked east along an old trail for approximately 0.6 mile to the stand at an elevation of ~ 4,200 '.

The stand was perhaps 400 yards in length paralleling the ridge crest; the maximum width was about 150 yards. Many knobcones were dead and down when I initially hiked across the site in 2000, and more have died in the 9 year interim. Few live trees remain on the upper one-third or so of the site, with most living knobcones being below the cairn where the trail intercepts the stand. The adjoining forest (unlogged) of mostly Douglas fir with an occasional sugar pine had evidence of historic fire, which undoubtedly had also burned the knobcone pine site.

In the same trip they also accessed the RNA from the north via Staley Creek and 2137 roads. From milepost 6 on the 2137, which is the approximate west boundary of the RNA*, they followed the 2137 road southeast for about 4 miles, stopping briefly and scanning with binoculars at many places for knobcone pine on slopes below the 2137 road. From the road we found no knobcone until near where the road crossed the side ridge trending southwest (1.2 miles from milepost 6) where the 1997 test burn was located ~ 250 yards above the road. [The cairn marking the flagged foot access to the burn site had apparently been obliterated during road grading; so the access point was re-marked with flagging.] We observed that the stand of knobcone on this side ridge extended down slope below road 2137 and outside of the RNA boundary for about 200 yards or more. Only an occasional knobcone pines were seen along the 1.4 mile section of road between the test burn and the southernmost point of the RNA (the South Point). Continuing north and east on road 2137, we saw no knobcone, at least on slopes below road 2137, between the South Point and the major curve in road 2137 where the RNA boundary trends north away from the road. However, approximately 1.5 miles east of the South Point a few knobcone pines were seen on a southwest trending side ridge that road 2137 cuts across. At this location, (4.1 miles from mile post 6 and ~ 0.5 miles southeast and outside of the RNA boundary) a couple of large knobcone pines were noted growing below the road and several were seen at scattered locations on the portion of the side ridge above the road. The impression was that a foot recon upslope at this site might reveal additional knobcone pines that were not visible from the road.

Road 2137 was in good condition with only some scattered rock fall. Recent traffic use was light. No weeds of significance were found. Deer tracks were present at most places we stopped, and a doe and fawn were flushed from the road near the South Point. Two Turkey Vultures were observed soaring above and old cutting unit near mile post 6. The

"highlight wildlife sighting" of the day occurred about 4 miles north of the RNA on road 2137 where an adult bobcat crossed the road ahead of us with great speed and with tremendous ease and grace.

Recreation

Monitoring Questions 6: Recreation Opportunity Spectrum

Are physical/environmental, social, and managerial conditions for dispersed ROS settings being maintained?

Standard and Guidelines in Forest Plan manage activities for the removal of resource products and actions taken to accommodate or control human use to reduce their negative effect on dispersed ROS settings. Monitoring shows these activities are being conducted in accordance with management S&Gs for recreation opportunity settings (ROS). Specific impacts or efforts related to retaining different recreation opportunity settings were noted at Elk Lake area, Waldo Lake Basin, Opal Creek SRA and recreation areas adjacent to lakes and streams on the McKenzie River RD.

In an effort to re-vegetate eroded areas around Lost Lake, near Santiam Pass on the McKenzie River Ranger District, the decision was made to return the dispersed camping area along the shoreline back into a developed campground. In 2008/2009, boulders were strategically placed to reduce the size of public use areas and better define camping areas.

The Detroit Lake Recreation Strategy is focused on reducing the impacts of use along the river corridor.

In 2009, similar actions were implemented at both Elk Lake Campground on the Detroit District and Lost Lake Campground on the McKenzie District. Picnic tables, fire rings, site markers, information boards, barrier posts, signage and fee tube vaults were installed. Elk Lake Campground frequently exhibited use levels and party sizes or user activities that were inconsistent with the designated ROS setting. In 2009, use limits were set for campsites and fees will be charged at Elk Lake beginning in 2010. Fees are now being charged at Lost Lake to help cover costs of maintaining the campground. Post and pole fencing will be built in 2010 to protect the meadow and shoreline at Elk Lake. A similar approach is underway for Scott Lake, near McKenzie Pass, with work expected to be completed in 2010. At the Santiam Pass Recreation Area, dispersed campsites have been designated, and a no-camping zone implemented, to reduce impacts to vegetation and soils, and to eliminate use conflicts between developed and dispersed campers around Big Lake.

On the Detroit District in the Opal Creek SRA, along the North Santiam River, actions were taken to reduce dispersed camping impacts including; restoration, placing boulders to reduce size of areas and vehicle access, building post and pole fencing to protect

vegetation and stream banks and "Respect the River" educational signing and public contacts. The Sweet Home Ranger District partnered with the youth watershed council to place buck and pole fencing at a dispersed site to reduce impacts to the riparian area and concentrate use on already compacted areas.

An Oregon Administrative Rule (OAR) was established in 2009 to prohibit gas-powered boat motors and floatplanes on Waldo Lake, except for emergencies and some administrative uses. This motor restriction will apply to the 2010 summer season.

Snowmobile intrusion is on the rise in some semi-primitive non-motorized management areas on the Forest, as well as within the Three Sisters, Mount Jefferson, Waldo Lake and Mount Washington Wildernesses.

Monitoring Questions 7: Recreation Visitor Use

Are estimated use levels for dispersed ROS settings and developed settings being realized?

Forest Plan recreation visitor use estimates are now largely based on the National Visitor Use Monitoring program results. This monitoring occurs every 5 years.

Results for the Willamette National Forest survey, completed in 2008, are available. A comparison of the number of visits on forests across the country with the first NVUM survey indicates overall visitation was down. However, on the Willamette National Forest, in developed sites and at ski areas where visitor use numbers are compiled from permittees, visitor use in 2009 was either stable or increased, particularly in areas influenced by urban population centers such as the Detroit Lake Area.

Monitoring Questions 8: Scenic Resources

Is the quality of the visual resource being provided as directed in the Forest Plan?

In general, the effects of individual landscape alterations are consistent in design and implementation with the scenic quality standards for each management area and the quality of the scenic resource is being provided as directed in the Forest Plan. The cumulative effects of all management activities that might physically alter the landscape are consistent with the visual quality objectives in the Forest Plan. The TOV has not been exceeded.

Monitoring Questions 10: Trails

Are trails and trail corridors being maintained and managed for a variety of uses and experiences consistent with public demand?

Project management activities are not consistent with S&Gs for trail management classes due to inadequate funding. Trail maintenance on much of the Forest has been primarily limited to removal of logs, trailside brushing and erosion structure maintenance. Heavy maintenance is not being done at a level to maintain trails consistent with Forest Plan standards on all trails. Trails that do receive maintenance are normally restricted to one visit a year, usually in the summer. The Recreation Pass receipts and Secure Rural School funding have allowed the Districts to accomplish some heavy maintenance projects. The forest has an active volunteer program and a cadre of volunteers are recruited and trained to help with minor trail maintenance. Strong partnerships exist between several districts and user groups across the forest.

Trail maintenance limited by funding; trail construction also down.

A range of trail opportunities is offered from hiker only nature trails, to motorized only, to multiple users sharing trails. Mountain bikers are restricted from riding on trails in Wilderness.

In 2009, with help from Legacy funding and volunteers from Oregon Equestrian Trail the bridge over South Pyramid Creek that was damaged during the winter of 2007 was removed. The bridge was replaced by a natural ford which will require less long term maintenance. Legacy funding also contributed to reconstruction of two miles of severely eroded trail on Linton Meadows and Hand Lake trails. With the help of Title II funding and in working in partnership with the Pacific Crest Trail Association, the Backcountry Horsemen of Oregon, the Northwest Youth Corps, and several volunteers, 400 technical trees were logged out from a severely impacted Foley Ridge Trail. While an adequate system of trails continues to be provided to the visiting public, trail conditions have fallen slightly reflecting maintenance backlogs.

A Community Trails Plan was completed by a trail committee comprised of representatives from the Westfir-Oakridge area. The International Mountain Bike Association (IMBA), in cooperation with forest, local tourism groups and the community trail committee, completed an MOU to designate Westfir-Oakridge as a mountain bike Ride Center in 2008. The local trails committee, Greater Oakridge Area Trails Stewards, achieved non-profit status and in partnership with IMBA was successful in securing a $400,000 grant from Congress in 2009 for facilities improvements in the Westfir-Oakridge area.

Monitoring Questions 11: Developed Recreation

Are developed recreation sites providing the variety of use opportunity designed to meet user's needs, interests, and equipment; and being maintained to a level expected and accepted by those using developed facilities?

Monitoring of developed recreation sites focuses on the standards, use and range of opportunities provided. Concessionaires operating under special use permits manage

larger campgrounds and developed recreation sites on the Forest. The sites are managed and maintained to standards higher than would be possible if the Forest were to operate the sites itself. Other sites are managed under the Recreation Enhancement Act (REA) Program, which allows the Forest to retain site revenues to supplement allocated funding and thereby manage the sites to standards expected and acceptable to visitors. Indian Ridge lookout was upgraded in 2009, new paint on the exterior, stain on the interior, new flooring, widow replacement and bathroom stain make the popular lookout more enjoyable for visitors.

The use of sites is generally in a manner consistent with the site design and purpose. There are occasional problems with group size and or equipment exceeding the designed capacity of sites. These problems are long-term and can be partially addressed as the Forest implements the Recreation Site Facility Master Plan. In 2008, the forest implemented significant Recreation Site Improvement (RSI) projects, based on the recreation site facility analysis (RSFA), to reduce critical deferred maintenance at four high priority recreation sites, including a septic and toilet system replacement at Paradise improvements at Paradise, Gold Lake, Cove Creek, and Coldwater Cove Campgrounds. CIP funding arrived in 2010 for planning and design of a new water system for the North Waldo/Islet campground complex. A test well will be drilled in 2010, and placement of the new system is funded for 2011.

The Recreation Site Facility Analysis proposes a range of sites and activities and additional development on Detroit

RSI funds were used to upgrade the Paradise Water System, make improvements to the walkways and to replace toilets at Breitenbush, Whispering Falls, and Big Meadows Campgrounds. Secure Rural School funding has allowed the Districts to accomplish replacement of vault toilets at many developed recreation sites.

Generally the range of sites provided throughout the Forest is consistent with customer's preference and use trends; however, on occasion, demand exceeds site capacity (i.e. Detroit Lake, McKenzie River, Fall Creek). The Recreation Site Facility Master Plan (RSFA), proposed in 2006 that the Forest continues to provide a range of sites and activities, with additional development on the Detroit Ranger District. Shady Dell Campground was operated as a staging area by the Northwest Youth Corp under special use permit on the Middle Fork Ranger District in 2009.

Monitoring Questions 12: Off-Road Vehicle Use

Are ORV opportunities providing a quality experience to the customers, ensuring their safety, and the safety of the general public? Are conflicts being minimized between users, with wildlife (and their habitat), and is resource damage being minimized – in areas that are suitable for each appropriate ORV use?

The Forest has completed and signed the Environmental Assessment for the implementation of the 2005 Travel Management Rule. Following the publication of the Motor Vehicle Use Map in summer of 2010, roads and trails identified on that map will be designated as open to motor vehicle travel. All other roads, trails, and forest lands will be closed to motor vehicle travel.

Trails and roads will be designated for OHV use.

A decision for the Santiam Pass Recreation Area was made in 2008 which designates and reconstructs roads and trails for motorized mixed use and OHV use, including staging areas, visitor information and "learner loops". The first phase of the project was implemented in 2009 with the construction of a staging area as well as the construction of approximately two miles of trail, reconstruction of six miles of trail and thirty miles of existing trail were maintained and patrolled as part of Phase I of the projects.

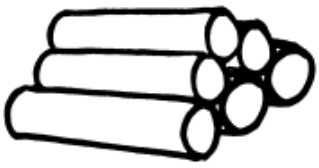
On the Forest, pockets of use show signs of resource damage, particularly around existing dispersed recreation sites and near adjacent private lands. Snowmobile intrusions into the Three Sisters, Mount Jefferson, Mount Washington, and Waldo Lake Wilderness areas continue to be an issue despite enhanced wilderness boundary signing and patrolling. Isolated incidences of mudding occur throughout the forest. As part of the Respect the River Program, mudding education including signing and brochures have been developed. Santiam Pass Recreation Area will get designated roads and trails for OHV use.

Timber

Monitoring Question 22: Timber Suitability

Has the suitable land base changed?

Suitable land is land managed for timber production on a regulated basis. Though more than 1.6 million acres are suitable for growing timber, such things as roads, water, poor conditions preventing adequate reforestation, and congressional reserved lands such as wilderness, prevent lands from being suitable for timber production on a regulated basis. Changes to the suitability of lands for timber production have not occurred since FY98.



Monitoring Question 23: Timber Program

Is the timber sale program quantity/quality comparable to the planned levels?

Target accomplishment shifted from "volume offered" to "volume awarded" in FY'06. In FY'09 the Willamette NF assigned target was 67.6 mmbf. Total volume offered in FY'09 was 76.5 mmbf. Total volume awarded in FY'09 was 70.9 mmbf. Total volume offered and total volume awarded amounts are all included in meeting our PSQ (111 mmbf) levels. FY'09 offer amounted to 68.9% of the PSQ with FY'09 award being 63.8%.

The total 70.9 mmbf volume awarded included 69.3 mmbf offered through advertisement in the newspaper, and 1.6 mmbf in products that could be converted and measured in board feet such as firewood, posts, poles, and so on. These "convertible" type products are often sold under permit without advertisement. Approximately 4% of the awarded volume came from salvage sales. One sale offered (~5.6 mmbf) received No Bid. Market down turns, increase in projected operational costs, and the decline of the national economic situation all contributed to the "no bid" situation. One sale that initially received No Bid this fiscal year was subsequently sold and awarded as was a No Bid sale from FY08. The volume for the sale from FY08 was not included in the volume offered total for FY09. The volume for the FY09 sale initially No Bid was included only once in the total volume offered quantity.

The majority of the timber harvesting program in the past few years, including FY 2009 has been in the general forest (MA-14) and matrix land allocations. However, since commercial thinning has become the predominant harvest method, timber sales have been used as a tool to achieve resource objectives in other land allocations such as riparian reserves and late successional reserves. In recent commercial thinning sales, up to 35% of the total acres thinned in a project area have been in parts of the riparian reserve.

FW-196 States "Uphill falling shall be used in harvesting old growth and large sawtimber on slopes of 30% or greater, except where not operationally feasible or where in conflict with resource protection."

Recent timber sales on the Willamette NF involve smaller, commercial thinning size trees. All of these sales have utilized FS-197 "Directional falling should be used where necessary to protect other resource values to the extent necessary to ensure a variety of resource protection. Directional falling (felling to lead) is a regular design element included in all contracts.

Monitoring Question 24: Silvicultural Practices

Are silvicultural practices outlined in Standard and Guidelines being implemented as planned?

Growth responses from intensive management are consistent with expectations in the Forest Plan. Genetically improved stock is being used as planned and will maintain or exceed the growth of natural seedlings.

Regeneration of harvest stands within 5 calendar years from harvest is mandated by the National Forest Management Act, and is tracked every year to assure compliance. There were 21 acres reported as being harvested using stand regeneration harvest method and planted in FY 2004. All of these 21 acres (100%) were reported as being certified as reforested. The data source for this information is the FACTS database and the VEGIS

database. Stocking is being established and maintained at the recommended levels and within the required time. In 2009, 761 acres were planted.

Planned created openings are much smaller than the maximum limits, and is resulting in under representation of young seral forests across the landscape.

Timber Stand Improvement (TSI) accomplishments of thinning, release, pruning, and fertilization totaled 4,629 acres. Accomplishments are about one quarter of the amount predicted in the Forest plan. There is a significant backlog of plantations in need of thinning on the Forest, but there are few new regeneration acres, so the backlog is dwindling.

Monitoring of insect and disease activity on the forest is completed each year. There are endemic levels of fir engraver and Douglas-fir bark beetle at levels that are considered to be normal.

Transportation for 2009

Monitoring Question 38: Transportation System

Is the transportation system meeting the planned resource objectives?

Policy changes in the last fifteen years have had a profound effect on how roads have been managed compared to when the thresholds of concern were formulated in the 1990 Forest Plan. In the past the primary purpose for road construction, reconstruction and maintenance on the Forest was to enable timber harvest. With declining timber harvest came declining budgets for road maintenance. Reduced timber harvest levels have resulted in the need for significantly less miles of new road construction and reconstruction than anticipated in the 1990 Forest Plan. No new road constructed occurred on the Forest in 2009 and 178 miles of road reconstruction (see table below). New road construction is far below estimation in the Forest Plan of 40 miles. This year road reconstruction is very close to the Forest Plan estimate of 174 miles. However, on the average, over the last several years, road reconstruction falls far below the threshold of variability.

Timber related road use and road maintenance budgets have fallen significantly during the last fifteen years. As a result this has reduced the need for new road construction. Also, the Forest has not had the means or ability to maintain its road system to the standards and maintenance levels of the past. This situation is being duplicated in Forests across the Nation, prompting the Forest Service to initiate a national Road Management Policy. This policy shifts our focus away from developing new roads to managing the existing road system with an emphasis on managing for the minimum road network necessary to accomplish current Forest Management objectives.

Due to the fundamental changes to the timber harvest targets and drastically reduced road maintenance funding, the miles of road maintained for passengers cars is over 36% below the threshold of variability. Though far below the threshold, the lower miles of "passenger car" roads is more in line, and consistent with current and projected road management and budgetary trends. Roads formerly maintained for passenger cars are now maintained for motorized travel that is suitable for high clearance vehicles. This reflects an increase which is now 13 % above the threshold of variability for roads suitable for high clearance vehicles.

The table below gives a snapshot of our current road system on the Forest.

STATUS OF THE FOREST'S TRANSPORTATION SYSTEM

<table>
<tr><th colspan="2">Road Construction and Reconstruction</th><th colspan="2">Miles of Road Removed</th></tr>
<tr><td>Miles of Road Constructed</td><td>0</td><td rowspan="2">Miles of Road Decommissioned</td><td rowspan="2">0</td></tr>
<tr><td>Miles of Road Reconstructed</td><td>128.2</td></tr>
<tr><th colspan="2">Road Suitability (Miles)</th><th colspan="2">Traffic Volumes</th></tr>
<tr><td>Roads Suitable for Passenger Cars</td><td>558</td><td colspan="2" rowspan="4">Traffic volumes were not monitored in FY08</td></tr>
<tr><td>Roads Suitable for High Clearance Vehicles</td><td>4,921</td></tr>
<tr><td>Closed Roads</td><td>1,060</td></tr>
<tr><td>Total Miles</td><td>6,539</td></tr>
</table>

Though much of the road system is not at the levels predicted in the Forest Plan and the TOV in some cases has been exceeded, the differences can be explained by changes instituted with the Northwest Forest Plan and changing policies. Adjustments should be made during the next Forest Planning effort to reflect current road management policy.

Social, Economic, and Budget

This section of the monitoring report describes the social and economic environment, which is affected by management on the Forest.

If the reader is interested in more information than what is provided in the following summary they may request the documents listed under Supplemental Information

CONTENTS

ECONOMIC & SOCIAL RESOURCES SUMMARY FINDINGS

Monitoring Question	Monitoring Activities	Monitoring Results	Supplemental Information
41 - Economic & Social	Review of economic reports, agency policies, and public contacts	Results OK	Economic and Social FY08 monitoring reports

Economic and Social Assumptions

Monitoring Question 41: Economic and Social Assumptions

Are economic and social assumptions, values, and projections valid?

The Forest monitors a wide variety of sources addressing general local economic and social trends. Key economic facts from the FY09 monitoring are presented in summary on the following page.

An additional objective of MQ 41 is to evaluate whether there has been significant changes in public attitudes, beliefs, or values or changes in National or Regional Direction. At times this can be gleaned from initiatives, plans, and laws passed over the course of 2009.

The Forest Service, the Willamette included, have historically been focused on water and timber but that focus has now broadened to include forest health, diversity, aesthetics, fire risks. These goals, though at times appear to be opposed, provide the Forest with

opportunities to bring our constituents together through education and reflect changing societal values.

FISCAL YEAR 2009 FINAL EXPENDITURES

Description	FY09[1]
American Recovery and Reinvestment Act	$1,106,799
Facilities Capital Improvements & Maintenance	$1,252,617
Flood Activities	$206,286
Forest Products	$5,625,214
Forest Products??	$398,846
General Administration	$4,125,536
Inventory and Monitoring Activities	$298,378
Knutson/Vandenburg Funds	$2,539,620
Land Management Planning Activities	$59,064
Land Ownership Management	$234,773
Minerals and Geology Mgt	$249,056
Payments to Counties	$1,536,264
Recreation/Heritage/Wilderness Activities	$2,306,217
Roads and Trails Improvements & Maintenance Activities	$6,850,883
State and Private Forestry	$6,470
Vegetation and Watershed Mgt	$944,505
Wildland Fire Management / Fuels Treatment	$4,682,190
Wildlife and Fisheries Habitat Mgt	$1,082,620
TOTAL	**$32,299,249**

[1] Knutson/Vandenburg Funds are funds used for post harvesting improvement activities. Primary beneficiaries of these funds are Recreation, Watershed , Wildlife, and Fisheries Management

Summary of FY 2009 Forest Receipts and Payment to States.

Forest Receipts (FY 2009)	Payments to States (FY2009)[1]	
$3,567,115	**$328,650,291**	
Forest Plan estimated receipts are not longer calculated. It is quite clear the Forest's receipts are only a fraction of the Forest Plan estimate.	**County Breakdown**	
	Clackamas	$8,958
	Douglas	$1,010,337
	Jefferson	$24,066
	Lane	$20,222,493
	Linn	$9,228,238
	Marion	$2,392,596

[1]Based on Title I, Title II, Title III funds identified in Secure Rural Schools and Community Self-Determination Act of 2000.

Implementation Monitoring

MQ 1 could be paraphrased, "Did we do what we said we were going to do?" This is the definition of implementation monitoring and the focus of many of the monitoring activities that occur on the Forest. Various levels of interdisciplinary monitoring reviews were carried out in 2008 to focus specifically on compliance with the Forest Plan.

CONTENTS

IMPLEMENTATION MONITORING SUMMARY FINDINGS

Monitoring Question	Monitoring Activities	Monitoring Results	Supplemental Information
Standards and Guidelines			
1 - Implementation Monitoring	Environmental documentation and field reviews.	Results OK	Monitoring trip documentation

Standards & Guidelines

Monitoring Question 1: Standards & Guidelines

Are Forest Plan standards & guidelines being incorporated into project level planning and decisions?

A Forest Supervisor monitoring team visited all of the districts and monitored six projects in 2009. The results and findings of each monitoring trip were documented and used to generate communication between districts and forest personnel as well as contribute to the overall evaluation of the Forest Plan. Very often these trips also result in recommendations to the Supervisor's Office (SO) for changes or clarifications to the Forest Plan standards and guidelines. The projects to be monitored may be from any resource program area. Criteria for projects are those under the current Forest Plan as amended by the NWFP standards and guidelines and those with a substantial amount of on-the-ground work accomplished.

Forest Plan Standards and Guidelines, Northwest Forest Plan direction, and overall consistency of projects to the general goals and objectives of the Forest Plan were reviewed. The documentation (NEPA analysis, decision documents, prescriptions) and the on the ground results were checked for compliance with the Forest Plan. The

monitoring team consisted of the Forest Supervisor or Deputy Forest Supervisor, SO Staff Officers, the Forest Interdisciplinary Team Leader, SO technical staff, District Rangers, and District staff.

PROJECTS MONITORED IN 2009

Ranger District	Activity Monitored
Detroit	Detroit Lake State Park Master Plan and Three Pools Day Use Site Rehabilitation Projects
Sweet Home	Camas Prairie Restoration and Moose Creek Steelhead Habitat Improvement Projects
McKenzie River	Andy 6 Timber Sale
Middle Fork	Jim's Creek Savanna Restoration Project

Forest Supervisor Reviews

Detroit Ranger District

Detroit Lake State Park Master Plan EA: The review focused on determining whether thinning objectives at the Detroit Lake State Park campground, as described in the Decision Notice (DN), were met, as well as general goals and objectives of the Forest Plan. The campground is covered under the Detroit Lake State Park Master Plan DN. The monitoring group visited an area to protect where trees were removed next to the main campground office. Precision felling was orchestrated to avoid damage to building, railings and most vegetation. There were also multiple thinning objectives of reducing potential hazard trees and timber density at one time instead of piece-meal and to provide sites for future solar panels.

The contractor removed trees 60 years old, which were processed as sawlogs and the slash as biomass. In addition, the YCC group scarified the soil and planted vegetation, and Smoke Jumpers de-limbed the lower branches of trees. Not all work is completed but is part of a five year implementation plan and in part with KV funding.

The thinning prescription and operations were well coordinated and the project objectives were met and consistent with the Forest Plan.

Three Pools Day Use Site Rehabilitation: The review looked at the Three Pools Day Use Site Rehabilitation to determine whether 1) the Mitigation & Design features were met, and 2) if the recreation improvements are consistent with the actions described in the DN.

Recreation improvements were consistent with the actions described in the DN. Trees were removed and about 100 paved parking spaces were created. Trees were used for fish enhancement and on site traffic barriers. A wider entrance, emergency parking, handicap and barrier free access were also created. In addition, a new information kiosk, restroom,

railings, trail tread improvement and garbage service were completed. The focus of the trail enhancement was to access the main swimming pools. The project utilized the existing footprint such as changing old camp sites into new picnic areas along with picnic tables. A modest recreation fee was initiated and appears to have about 80% compliance

After review it was apparent that the Mitigation & Design features were met and are consistent with the Forest Plan. Recreation at the 3 pools now has brought back more families to recreate with added infrastructure along with a safer recreation experience for all. Channeling access to the pools by improved trails and railing has reduced unwanted and unsafe trails and reduced soil erosion. Bio-swales have been created to collect run off and slash windrows to trap sediment movement.

Sweet Home Ranger District

Camas Prairie Restoration: The review focused on determining whether the objectives of promoting camas growth and restoring the degraded wetland were met, and if the restoration activities are consistent with the actions described in the Decision Memo (DM). The project has been ongoing since the late 1990's, and the District has recently added planting of hazel for Native American basket making. The project is documented in the Camas Prairie Restoration DM.

The project area has been burned every other year to reduce weeds, ash tree encroachment, and grass thatch. The District also gated a spur road that was becoming an unwanted local garbage dump.

The objective to promote camas growth has been met, and the actions are consistent with those described in the DM and the Forest Plan. There is a 50% reduction in weeds as a result of prescribed burning, a reduction in ash tree growth, and a reduction of thatch, which harbors meadow voles that eat camas. In 2004 took vegetation plots and calculated 3 times growth of Camas.

The District also has made very positive partnerships with the Confederated Tribes of the Siletz Indians, the Confederated Tribes of the Grand Ronde Indians, State, Linn County, BLM, Giustina Resources, and adjacent land owners. Most importantly the project has helped promote the restoration of traditional resources for local tribes.

Moose Creek Steelhead Habitat Improvement:

The review looked at the Moose Creek Steelhead Habitat Improvement project to determine whether 1) the Mitigation & Design features were met, and 2) if steelhead habitat improvements are consistent with the actions described in the DM.

The South Santiam Watershed Council contracted the wood placement, which included: a Columbia helicopter placing large wood into the stream, directional falling of trees into the stream, and another contractor tipping trees with root wads attached into the stream. The

helicopter placed 41 trees within a 2 ½ mile section of Moose Creek. The sizes of trees ranged between 28" to 36". Additionally, the District coordinated 3 large rock placements into the stream from a dump truck from the road.

Habitat improvement activities were consistent with the actions described in the DM and the Forest Plan. The rock and tree placement in Moose Creek have increased steelhead habitat and channel complexity. At the time of the monitoring 65 of 66 logs placed had been retained, and the retention of spawning gravels had started. The accomplishment of specific design features was also validated, including the protection of sensitive lichen and the avoidance of equipment impacts to stream turbidity.

McKenzie River Ranger District

Andy 6 Timber Sale: The review looked at the And y 6 Timber Sale to determine whether 1) the Mitigation & Design features were met, and 2) if the treatments are consistent with the actions described in the Robinson-Scott Landscape Management Project Record of Decision (ROD) and the Final Integrated Resource Prescription for the Andy Timber Sale.

Mitigation and design features in the Andy 6 Timber Sale were prescribed to address specific resource issues, including Elk Emphasis Area Management, Bull Trout, and Water Quality/Riparian and Aquatic Habitat.

Specific measures reviewed include:

- *Retaining a 15% no harvest (Elk Emphasis Management Area Management)*
- *Leaving a visual screen. of 50' along FS Road 2657 (Elk Emphasis Management Area Management)*
- *A 180' no cut riparian buffer from the unit boundary to Anderson Creek tributary (Bull Trout)*
- *Use of over the snow ground based logging (Water Quality/Riparian and Aquatic Habitat)*

After review it was apparent that the Mitigation & Design features were met and consistent with the Forest Plan. Residual trees and a 2.5 acre wildlife tree zone are present in the unit meeting the 15% no harvest measure. A 50' no cut buffer was left along FS Road 2657 creating a visual screen to provide some protection for elk and deer from roadside hunters.

The no cut riparian buffer was prescribed to address concerns over impacts to Bull trout because Anderson Creek is the heart of Bull Trout habitat on the Willamette NF. The no cut buffer was met, measuring 187' from the unit boundary to Anderson Creek tributary.

Over the snow logging was used on part of the unit, taking advantage of a heavy snow pack. The mitigation requires a continuous snow pack of at least 18", which was met. Results of the over the snow logging is readily apparent with large intact down wood and other down pieces present in the equipment travel route. Conventional ground based logging typically would have disturbed these areas to bare soil.

Middle Fork Ranger District

Jim's Creek Savanna Restoration Project: The review looked at the Jim's Creek Savanna Restoration Project to determine whether 1) the Mitigation & Design features were met, and 2) if the treatments are consistent with the actions described in the Jim's Creek Savanna Restoration Project Decision Notice.

Mitigation and design features in the Jim's Creek Savanna Restoration Project were prescribed to address specific resource issues, including Water Quality /Fish Habitat and the Maintenance of Biodiversity.

Specific measures reviewed include:

- *Helicopter Logging (Water Quality /Fish Habitat)*
- *Partial or Full Suspension Logging (Maintenance of Biodiversity)*
- *Full site potential tree height riparian buffers on permanent streams to protect water temperature, and a no treatment buffer averaging 50 feet either side of ephemeral channels (Water Quality /Fish Habitat)*

After review it was apparent that the Mitigation & Design features were met and consistent with the Forest Plan. There was little ground disturbance evident during the field review, due to the use of helicopter and partial/full suspension logging systems. The no cut riparian buffer was prescribed to address concerns over impacts to water quality and fish habitat. A measurement was taken from the edge of the unit off FS Road 2129 to the south to an ephemeral stream, and a 50' no cut buffer was verified.

Management Trends

This section of the monitoring report was traditionally reserved for Recommended Action items applied to the Forest Plan. Recommended Actions items are developed as a result of our monitoring efforts over the year. This section proved to be invaluable source for progress during the first several years of plan implementation. Recommended Action items resulted in the correction, where needed, of estimates in the Forest Plan, changes to management practices as needed to comply with the Forest Plan, clarifications to the Forest Plan, and many other adjustments including amendments to the Forest Plan.

CONTENTS

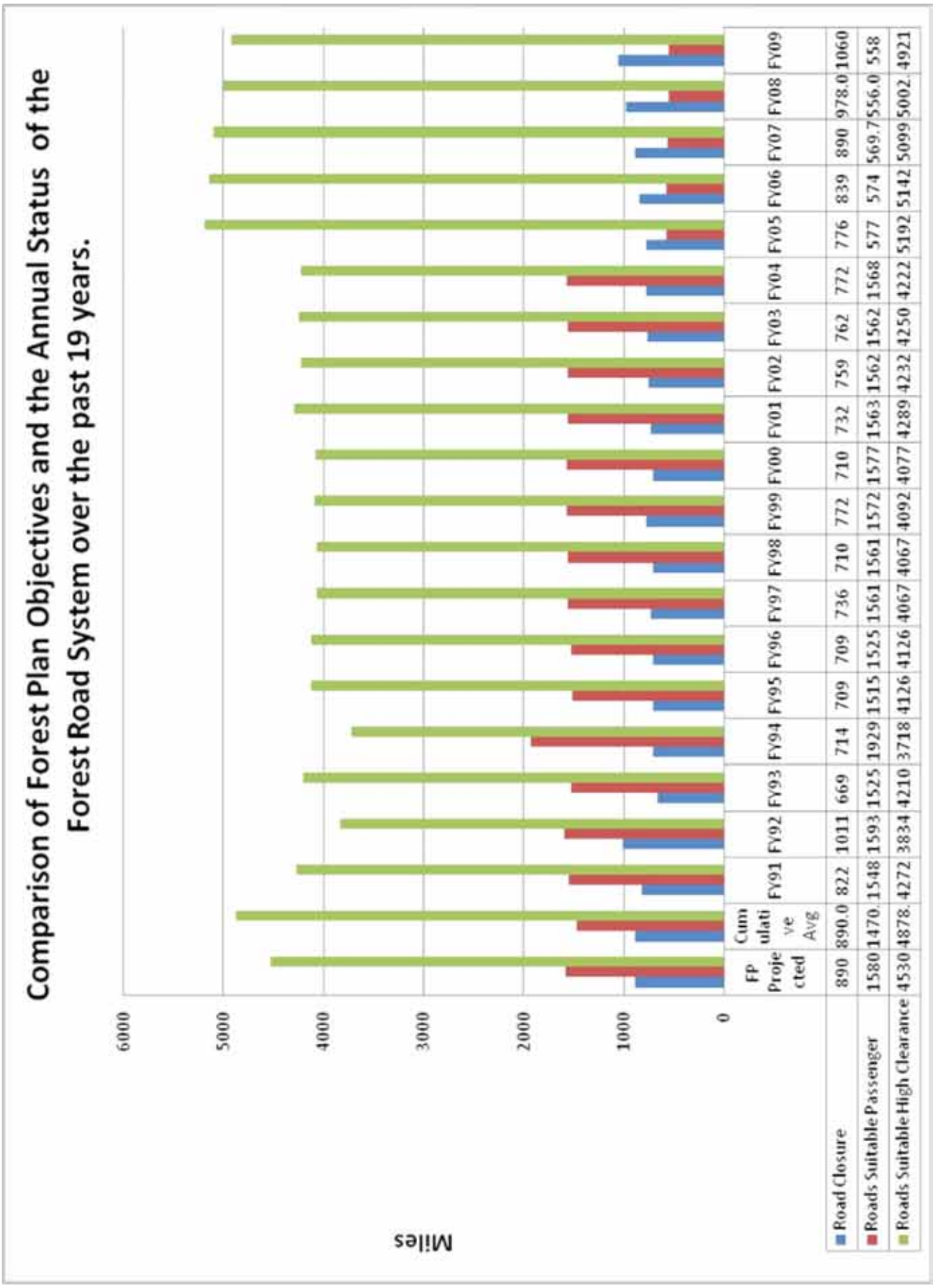
The Forest has been implementing the Forest Plan since 1990. The Forest personnel routinely apply all standards and guidelines (S&Gs). In review of this Monitoring Report, we did not note areas that needed attention that could be accomplished with a Recommended Action item. This is not to say improvements to the Forest Plan are no longer needed. Many changes are needed, but primarily due to the Plan's age, this would result in recommendations that cannot be completed within a year or two (the expected timeline for results from Recommended Action items).

The Forest IDT agreed that a better use of limited resources is to focus on Forest Plan revision, scheduled to begin in FY2014. Consequently, a retrospective evaluation of all past Monitoring Reports was conducted to identify trends in resource areas that will need attention in the Forest Plan revision. Since the initiation of the Forest Plan Revision is still few years away, this section will focus on a single resource each Monitoring Report until the Forest Plan revision is initiated.

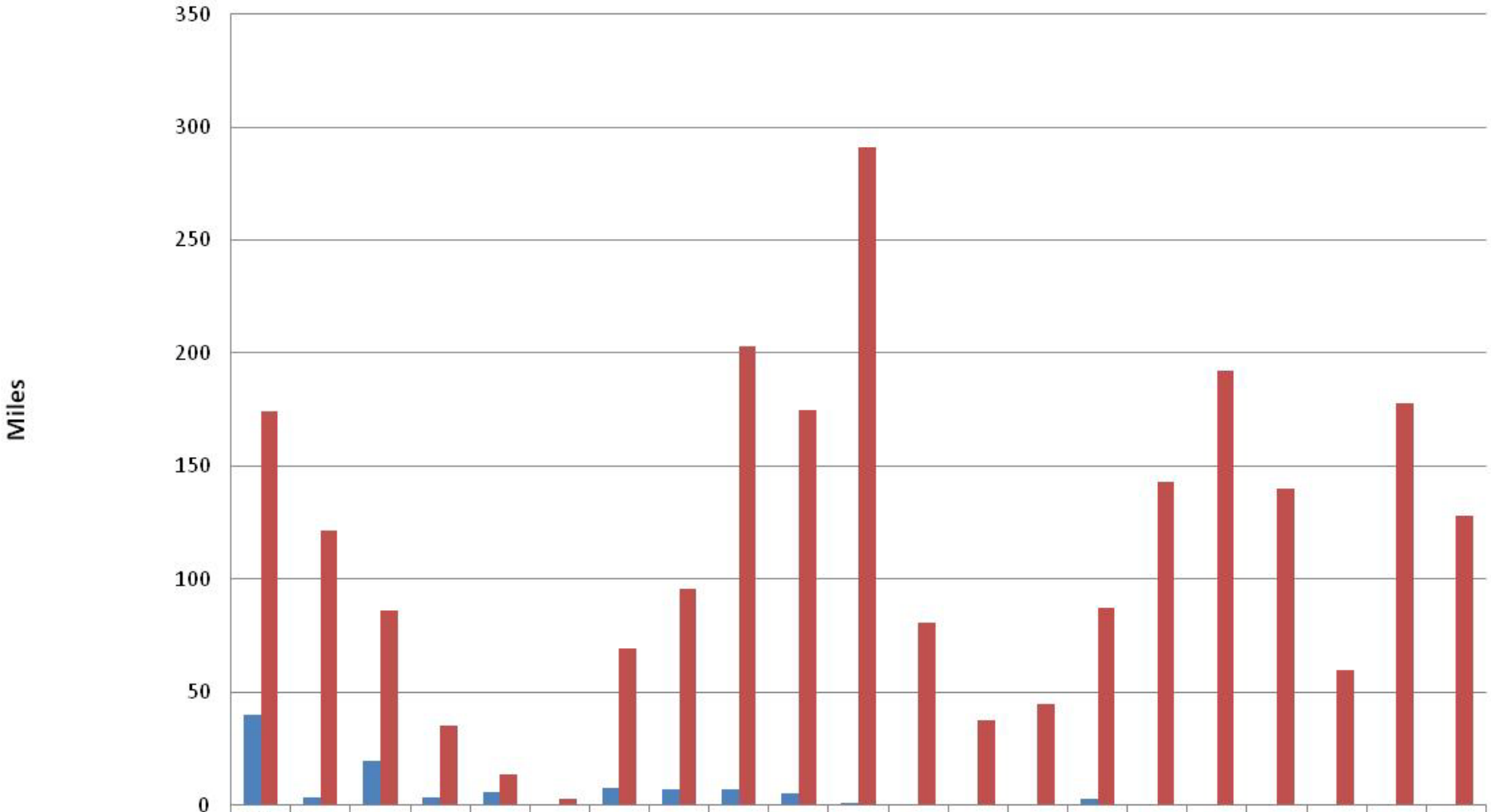
Transportation System

As mentioned in the Transportation section of the report, policy changes in the last fifteen years have had a profound effect on how roads have been managed compared to when the thresholds of concern were formulated in the 1990 Forest Plan. Timber related road use and road maintenance budgets have fallen significantly during the last nineteen years. Consequently the need for new road construction and the funding to maintain existing roads to the standards and maintenance levels of the past is not possible.

Due to the fundamental changes to the timber harvest targets and drastically reduced road maintenance funding, the miles of road maintained for passengers cars is well below Forest Plan projections. Though far below the threshold, the lower miles of "passenger car" roads and the higher miles of closed roads is more in line and consistent with current


Comparison of Forest Plan Objectives and the Annual Status of the Forest Road System over the past 19 years.
Miles
6000
5000
4000
3000
2000
1000
0
Road Closure
Roads Suitable Passenger
Roads Suitable High Clearance
FP Projected
Cumulative Avg
FY91 FY92 FY93 FY94 FY95 FY96 FY97 FY98 FY99 FY00 FY01 FY02 FY03 FY04 FY05 FY06 FY07 FY08 FY09
890 890.0 822 1011 669 714 709 709 736 710 732 759 762 772 776 839 890 978.0 1060
1580 1470. 1548 1593 1525 1929 1515 1525 1561 1561 1563 1562 1562 1568 577 574 569.7 556.0 558
4530 4878. 4272 3834 4210 3718 4126 4126 4067 4067 4289 4232 4250 4222 5192 5142 5099 5002. 4921

Comparison of Forest Plan Objectives and Annual Road Construction and Reconstruction over the past 19 years.



	FP Projected	Cumulative Avg	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09
Road Construction	40	3.6	19.6	3.1	5.9	0.2	7.7	6.9	7	4.9	0.8	0.6	0	0.6	2.9	0	0	0.6	0	0.0	0
Road Reconstruction	174	121.3	86.1	34.9	13.3	2.7	69.6	95.7	203	175	290.9	80.6	37.8	44.6	87.2	143	192	140.3	60	178.0	128.2

and projected road management and budgetary trends. Roads formerly maintained for passenger cars are now maintained for motorized travel that is suitable for high clearance vehicles. (see Figure s above).

Accomplishments

The following table compares the actual accomplishment of selected Forest Plan objectives during the fiscal year 2009 (FY09), October 2008 through September 2009) with the predictions in the Forest Plan (Chapter IV, pages IV-10 to IV-12). Also shown are the cumulative outputs and accomplishments since the Plan was implemented. The cumulative results are expressed as average annual. This provides the closest comparison to the Forest Plan averages, which are based on a 10-year planning period.

Outputs may vary annually for many reasons including year-to-year scheduling decisions, market conditions, budget appropriations, and even weather conditions. Thus, comparison of a single year may not provide enough information for an adequate evaluation. As we continue to monitor over several years, trends or averages of accomplishments will provide a better basis for evaluation.

The Northwest Forest Plan was the basis for significant modifications to land allocations and to Standards and Guidelines. With these changes coupled with declining budgets, notable differences between Forest Plan projections and subsequent accomplishments are evident. The following table (Summary of Program Accomplishments) reflects adjustments to the Forest Plan projections for timber related activities; however, no other projections were altered.

Summary of Program Accomplishments

Output or Activity	Units	Projected Forest Plan Level	FY 2009 Accomplishment		Cumulative Avg. Accomplishment[1]	
			Units	*%*	*Units*	*%*
RECREATION AND WILDERNESS						
National Forest Visits [2]	Visits	--	1,360,400.0	[2] Projected recreation estimates made in the Forest Plan no longer apply. Methods and units for measuring recreation use have changed substantially. The units reported represent 2008. Next reporting year 2010.		
Site Visits [2]	Visits	--	1,656,600.0			
Wilderness Recreation Use [2]	Visits	--	134,700.0			
Trail Construction/Reconstruction	Miles	78.0	7.0	3%	19.5	25%
Developed Recreation Construction	PAOT	327.0	0.0	--	--	--
Developed Recreation Reconstruction	PAOT	844.0	0.0	--	--	--
TIMBER MANAGEMENT						
Timber Sale Program	MMBF	136.0	70.9	59%	58.6	49%
Timber Harvest Treatments						
Regeneration Harvest	Acres	3,144.0	0.0	0%	357.3	11%
Commercial Thins	Acres	2,808.0	3,630	129%	1,634.4	58%
Other	Acres	--	21.0	--	314.3	--
Timber Stand Improvement	Acres	18,100.0	4,629.0	26%	9,166.4	51%
Reforestation	Acres	3,144.0	761.0	24%	1,416.5	45%
Fuel (Slash) Treatment	Acres	3,144.0	1,830.0	58%	1920.6	61%
ROAD MANAGEMENT						
Road Construction	Miles	40.0	.0	0%	3.6	9%
Road Reconstruction	Miles	174.0	128.2	74%	121.3	70%
Roads Closed	Miles	890.0	1,060.0	119%	890.0	100%
Roads Suitable for Passenger Car	Miles	1,580.0	558.0	35%	1,470.3	93%
Roads Suitable for High Clearance Vehicles	Miles	4,530.0	4,921.0	109%	4,878.7	108%
FISH / WATER / WILDLIFE / LIVESTOCK						
Watershed Improvement	Acres	533.0	2,236.0	420%	534.0	100%
Anadromous/Inland Fish Habitat Improvements	Miles	12.0	46.0	390%	18.1	153%
Wildlife Habitat Improvements	Structures	451.0	---	Projected wildlife estimates are no longer measured in structures but in acres. For tracking purposes we will report in acres.		
	Acres	---	14,450.0			
Livestock Grazing (AUMs)	AUMs	200.0	0	0%	65.6	33%

[1] Cumulative Average Accomplishment is reflective of the average since the Forest Plan was implemented. Timber management numbers are an exception. The accomplishments are measured since the Northwest Forest Plan was adopted. These accomplishments' can only be considered a general trend. The methods and units used to assess and report accomplishments' has changed over time.

2 In response to the need for accurate recreation use data, the National Visitor Use Monitoring project was developed at the National level and is being implemented by all National Forests. This process provides a consistent methodology for scientifically credible, repeatable, reliable, and defensible set of recreation use data.

Forest Plan Amendments

Your Forest Plan is a dynamic document that can be amended in response to:

- *Errors and/or discrepancies found during implementation.*
- *New information.*
- *Changes in physical conditions.*
- *New laws, regulations, or policy that affect National Forest management.*

We frequently learn about the need for amendments through monitoring.

Since first published in the summer of 1990, there have been 43 non-significant amendments to the Willamette National Forest Plan. In addition, during 1994 the Northwest Forest Plan was completed and amended all Forest Plans in the range of the Northern Spotted Owl including this Forest. Because all Forest Plans were amended at the Regional level, the amendment did not receive a number.

The following summarizes the amendments to the Forest Plan:

Forest Plan Amendments

Amendment	Implementation Date	Type of Change
1	10/30/1990	Vacates Regional Guide for spotted owls. (Decision by Assistant Secretary of Agriculture John Evans; Federal Register Notice published 10/03/1990.)
2	12/10/1990	Allows snowmobile use in certain parts of Santiam Pass area.
3	8/5/1991	Corrects errors and omissions in Forest Plan (errata).
4	8/5/1991	Requires roadside brush management methods be consistent with scenic resource needs and allows machine mowing.
5	8/5/1991	Corrects mapping error in boundary of Diamond Peak Wilderness.
6	8/5/1991	Changes and clarifies direction about retention of downed wood to better meet functional and operational objectives.
7	3/22/1992	Established Management Plan for the McKenzie Wild and Scenic River; places the river in a new Management Area(MA), MA-6d; and establishes a new Special Interest Area Carmen Reservoir.

Forest Plan Amendments

Amendment	Implementation Date	Type of Change
8	3/22/1992	Establishes Management Plan for the North Fork of the Middle Fork of the Willamette River Wild and Scenic River; places the river in a new Management Area, MA-6e; and changes the scenic allocation of about 29,000 acres of viewshed near the river from Modification Middleground to Partial Retention Middleground.
9	2/20/1992	Changes official Forest Plan Map from manually drafted management areas on mylar USGS quadrangles to a digital version on Forest's Geographic Information System.
10	3/14/1992	Changes about 67 acres in Spring Butte area (Rigdon) from General Forest (MA-14a) to Special Habitat Area (MA-9d).
11	3/14/1992	Changes about 65 acres in Beaver Marsh area (Rigdon) from Special Interest Area (MA-5a) to Special Habitat Area (MA-9d).
12	4/4/1992	Adds Habitat Conservation Areas (HCAs) for northern spotted owl and adopts the standards and guidelines recommended by the interagency Scientific Committee. (Decision by Assistant Secretary of Agriculture James R. Moseley.)
13	7/29/1992	Makes initial allocation of about 640 acres of land acquired by land exchange not far from the South Pyramid area on the Sweet Home Ranger District to General Forest (MA-14a).
14	7/29/1992	Changes about 51 acres in the Long Ranch area, Sweet Home Ranger District, from Dispersed Recreation - lakeside Setting (MA-10f) to Special Habitat Area (MA-9d).
15	7/6/1992	Adds standard and guideline MA-1-20a to clarify that the visual quality objective for wilderness is Preservation, and deletes FW-059.
16	7/29/1992	Establishes new Management Area, Integrated Research Site (MA-3b) to support research on long-term site productivity on about 1,500 acres on Blue River Ranger District, and moves a pileated woodpecker site within the area. Also, relabels the H.J. Andrews Experimental Forest as MA-3a.
17	2/17/1993	Extends deferment of timber harvest and road construction in the Opal Creek area for up to an additional two years to allow time for resolution of various issues surrounding management of the area, including decision about how the Forest Service will meet Recovery Plan objectives for the northern spotted owl.
18	2/17/1993	Clarifies direction in Forest-wide standard and guideline FW-018 to provide more site-specific and objectives-based analysis for placement and remedial actions associated with dispersed campsites.
19	6/2/1993	Relocates about 1,100 feet of Bornite Brook and 900 feet of Vanishing Creek, and by so doing interchanges the actual location of affected lands between MA-14a and MA-15. Upon reclamation of the bornite project's tailings impoundment, creates about 5 acres of wetlands converting that acreage from MA-14a to MA-15.

Forest Plan Amendments

Amendment	Implementation Date	Type of Change
20	5/17/1993	Adds S&G to require an integrated management approach for weed management. After identification, noxious weed sites should be analyzed for the most effective control methods, based on site-specific conditions.
21	6/23/1993	Makes initial allocation of 123 acres acquired through land exchange on the Blue River RD, 59 acres allocated to MA-5A (Gold Hill SIA); 64 acres allocated to MA-11d near Blue River Reservoir.
22	11/24/1993	Allows temporary reduction in availability of elk cover in Mill Creek and Anderson Creek High Emphasis areas (McKenzie RD) to allow stand management practices which will accelerate the development of high quality cover.
23	1/5/1994	Establishes the Forest's Special Forest Products Management Plan, including implementing direction through several new Forest-wide S&Gs.
	5/20/1994	Establishes land allocations and S&Gs as described in the Record of Decision for Amendments to the Forest Service and Bureau of Land Management management plans.
24	9/29/1994	Changes 1/2-acre in the Westfir area from Scenic-Partial Retention (MA-11c) to Special Use-Permits (MA-13a).
25	5/26/1995	Modifies the S&Gs for riparian reserves, wildlife tree provisions, and fueling loadings in MA-3b and AMA Long-Term Ecosystem Productivity project. This was a nonsignificant amendment to the Forest Plan.
26	5/17/1995	Modifies the S&Gs for visual objectives, big-game management, and the retention of large woody material. This was a nonsignificant amendment to the Forest Plan.
27	6/22/1995	Designates approximately 110 acres as MA-9d, Special Wildlife Habitat, in the Heart Planning Area on the Oakridge RD.
28	11/29/1995	Designates the electronic site as a Special-Use-Permits area (MA-13a). Prior to this decision the site was located within Scenic-Modification Middleground (MA-11a). For specifics see Santiam Cellular Environmental Assessment and Decision Notice.
29	1/12/1996	Expand the current Special-Use-Permit area (MA-12b) from 732 acres to 802 acres. Master Plan provides for improvements to the alpine ski facility, as well as adding other year-round recreational opportunities. For specifics see the Hoodoo Master Plan FSEIS and ROD.
30	4/17/1996	Within the Browder Cat timber sale boundary, decreases riparian reserve widths to 50 feet for both sides on four intermittent streams within and adjacent to harvest units and establishes riparian reserves of 175 feet for both sides on two perennial non-fish bearing streams adjacent to a proposed unit.
31	5/15/1996	Established the Rigdon Point RNA.

Forest Plan Amendments

Amendment	Implementation Date	Type of Change
32	9/4/1996	Decreases the interim Riparian Reserve widths 21 acres for Class IV streams and 5 acres for Class III within the Augusta Timber Sale Planning area located in South Fork McKenzie Tier 1 Key Watershed.
33	1/23/1997	Assigns a management area to recently acquired land in the following way: 13 acres to McKenzie River Wild and Scenic River corridor (MA 6d), 11 acres to Scenic Partial Retention/ Middleground (MA 11c) and .25 acres to Special Interest Area (MA 5a).
34	1/23/1998	Changes approximately 1,900 acres of land from Scenic Modification/Middleground (MA 11a) to General Forest (MA 14a) and removes 275 acres of inventoried roadless area on the Middle Fork Ranger District.
35	5/17/1997	Temporarily reduced winter range cover for elk in a high elk emphasis area below the 0.5 Habitat Effectiveness rating required by S&G FW-149 in the Robinson-Scott project area.
36	7/8/1997	Establishes new S&Gs for four sensitive plant species; Gorman's aster, *Aster gormanii;* Common adders tongue, *Ophioglossum pusillum;* selected populations of tall bugbane, *Cimicifuga elata;* and selected populations of Umpqua swertia, *Fraseran umpquaensis.*
37	5/19/1997	Assigns initial allocations for about 2,180 acres of acquired lands located on Detroit and Sweet Home Ranger Districts.
38	1/21/1998	Changes management emphasis to provide for a proposed action to build a replica fire lookout station museum on the Lowell Ranger District.
39	6/1/1998	Establishes two new communication sites on the Sweet Home Ranger District. The development involves less than 1/4 acre.
40	7/13/1998	Establishes the 2,877 acre Torrey-Charlton Research Natural Area (RNA). The RNA spans over both the Willamette and Deschutes National Forests.
41	8/24/1998	Establishes two new communication sites on the Detroit Ranger District. The development involves less than 1/4 acre.
42	8/30/1999	Allows the Forest to continue a program of noxious weed treatment based on the type of infection.
43	2/15/2000	Changes approximately 1,060 acres of MA 14a (General Forest) to MA 9b (Pileated Woodpecker habitat). Also a slight modification of MA 10e (Dispersed recreation) with no net change in acreage.
44	12/21/2001	Established the Walldo Lake Management Plan which addressed management issues in and around the lake. This decision has since been rescinded.
451	7/1/2002	Establishes Opal Creek Scenic Recreation Area as Management Area 2C and includes goals, objectives, and Standard & Guidelines. [1]This Amendment 45 was inadvertently missed causing two amendments to be labeled Amendment 45.

Forest Plan Amendments

Amendment	Implementation Date	Type of Change
45	6/16/2004	Thins 5.2mmbf on approximately 491 acres within management areas LSR and AMA. Three units are within Three Creek Old-Growth Grove requiring a non-significant Forest Plan amendment.
46	8/22/2006	Exempted the project from strict compliance with five specific Forest Plan standards and guidelines relating to the amount of even-aged harvest and size of harvest units within trail corridors and scenic allocations.
47	4/16/2007	Waldo Lake Managing Recreation Use – Phased in a prohibition internal combustion boat motors on Waldo Lake and the use of internal combustion engines (chain saws, generators, etc.) in the dispersed, nonmotorized management area around the lake.
48	6/25/2007	Updated the Forest Plan direction concerning the prevention and control of invasive plants to be consistent with the Region 6 USFS ROD for Preventing and Managing Invasive Plants.
49	8/31/2007	Huckleberry Flats OHV Trail Expansion - Changed the designation of the Huckleberry BGEA (Big Game Emphasis Area) from Medium Emphasis to Low Emphasis and changed the designation of the adjoining South Christy BGEA from Medium Emphasis to High Emphasis.
49	10/22/2008	There are two parts to this amendment. First an implementation guide was not created for the Santiam Wagon Road. Second Standard and Guideline MA-10b-04 as changed to limited travel of all wheeled motorized vehicles to only designated trails and/or roads.
50	4/18/2008	Forest Plan Amendment #50 for Bridge Thin was required because we proposed work in the McKenzie River SIA, but had no Implementation Guide completed, which is required under the Forest Plan.
51	9/17/2009	Changed the location of MA9c- marten habitat from its current location. The new location is of higher quality habitat fuel reductuion treatments could also take place.
52	10/14/2009	This amendment prohibitted motorized travel off of a designated system of travel routes in all Management Areas.

Forest Plan Updates

Forest Plan Amendments (discussed above) change decisions made by the Forest Plan, consequently, they also require environmental analysis under the National Environmental Policy Act (NEPA). From time to time other changes to the Forest Plan are needed which are not intended to affect earlier decisions or Plan objectives. Examples of such changes include corrections; clarification of intent; changes to monitoring questions; and refinements of management area boundaries to match management direction with site-specific resource characteristics at the margin. We call these types of changes "Updates." Since they do not change any Plan decision, they do not require NEPA analysis. F

There have been eight updates to the Forest Plan:

Forest Plan Updates

Update	Implementation Date	Type of Change
1	7/6/1993	Makes two minor management area boundary adjustments on the Oakridge Ranger District (RD). Two acres were changed from MA-6e to MA-9d to correct a boundary line running through a pond. Two hundred sixteen acres were changes from MA-11c to MA-14a so management for visual sensitivity would better match actual topographic characteristics.
2	10/18/1993	Clarifies the Forest-wide S&Gs for prescribed fire in nonwilderness. Accomplishes this by deleting FW-248 through FW-252 and substituting in their place rewritten FW-248 through FW-250. The changed S&Gs better reflect management intent to conduct objectives-based fuels analysis considering a range of resource protection and enhancement needs appropriate to site-specific conditions.
3	10/18/1993	Updates and reprints the Forest's Monitoring Tables from Chapter V of the Forest Plan. Eliminates duplication, improves clarity, and refines data, and analysis requirements to better address monitoring concerns.

Forest Plan Updates

Update	Implementation Date	Type of Change
4	10/17/1994	Special Forest Products (SFP) Table IV-32a shows a type of collection allowed by management area. To clarify that the exclusion of commercial SFP collection applies only to the large, mapped Late-Successional Reserves (LSR) and not to all of the owl activity centers that are now 100-acres LSRs.
5	12/15/1995	Updates pertaining to the role of natural fires in Wilderness. Insures direction for prescribed natural fire is consistent with Wilderness policy through adjustments to the Forest Management Goals, Desired Future Condition, Forest-wide S&Gs, Management Area prescriptions, and Monitoring Questions.
6	1/23/1997	Updates to the Forest Plan Map of Record with changes to Swift Creek (MA 10f); corrections to 100 acre Late Successional Reserves (MA 16b), an AMA designation correction (MA 11f to MA 17), and a Hoodoo Master Plan boundary correction (MA 12b).
7	8/31/1998	Updates the Forest Plan Map of Record with refinements to the LSR222 boundary, establishment of MA 13B for the Middle Fork Ranger Station, the incorporation of Pileated Woodpecker and Marten areas, changes to 7 owl cores on the McKenzie RD and one on the Lowell Ranger District, the location of the already established Huckleberry Lookout (MA 13b) onto the Map of Record, the assignment of management allocations to newly acquired private land, refinements to the boundary of the McKenzie work center.
8	4/3/2000	Updates the Forest Plan Map of Record with RNA boundary refinements, the creation of Ma 1 for Opal Creek Wilderness and MA 2C for Opal Creek Scenic Area; an update that finalizes the boundary of the North Fork of the Middle Fork Wild and Scenic River, small refinements of the Forestwide wilderness boundaries, an LMP layer adjustment to reflect private land changes, adjustments to the boundary of Hills Creek LSR to allow scenic enhancement activities, and the creation of a MA 6b for the Elkhorn Wild and Scenic River.

Forest Plan Updates

Update	Implementation Date	Type of Change
9	4/9/2001	Documents the change of Inventoried Roadless Area maps from paper copies to an electronic Geographic Information system layer in the Forest Planning records.
10	10/17/2002	Updates the Forest Plan Map of Record with a Guistina Land Exchange of 173 acres for 237 acres; correct Shadow Bay campground from 12a to a 12b; vertical integration of administrative boundaries; update with the Finberry Timber Sale, correct the Three Creek RNA boundary; change land allocation from 11c to 13a at Carmen Air Quality Monitoring Site; reflect the Drury Land Purchase of approximately 28 acres; add names of special features into the layer, change an allocation from 14a to 12a on Timber Butte Lookout; and finally add the boundaries of the seed orchards.
11	6/21/2006	Updates to the Forest Plan Map of Record. The updates included labeling errors to Opal Creek Wilderness and to Hills Creek Reservoir. Two other updates included refining the boundaries to 100 acre LSRs in the Blowout Thin EA and correcting a previous error in a Bald Eagle Management Area across from Hills Creek Reservoir. None of the updates resulting in significant change nor was a result of a change in direction. A final change to added several Bald Eagle Management Areas to the Map of Record was requested. No additional areas were added because no NEPA documentation supporting the areas was available.
12	5/19/2008	Updates the name of our elk emphasis' area from "Old Squaw" to "Latiwi". No boundary changes
13	9/5/2008	Adds the McKenzie Bridge Airstrip as a Management Area 13b.
14	9/17/2009	The updates stem from corrections to boundaries and from labelling errors. Updates included one 100 acre LSR, the Federal Highway Administration Easement, Hills Creek Reservoir, private land acquisition, Flat Creek warehouse, AMA Research Plots, Olallie Creek RNA, and a Pine Marten change documented in Amendent 51. A map of the changes are available.

List of Contributors

The principal contributors to the 2009 Monitoring and Evaluation Report are listed below. Please contact one of us if you have questions or want further information about the reported results.

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Acknowledgments

Monitoring activity on the Forest involves many people, far too numerous to list here. A few of these contributors or their organizations are acknowledged in the Findings section as their related work is presented. In addition, many volunteers contributed their time and expertise, as did Ranger District employees across the Forest.