APPENDIX A

Adaptive Management and Continuous Improvement

Adaptive management is a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs. Its most effective form–"active" adaptive management–employs management programs that are designed to experimentally compare selected policies or practices, by evaluating alternative hypotheses about the system being managed. At its simplest, adaptive management can be described as a repeated cycle of "plan, do, report, and evaluate." This basic cycle is in place at all levels of the Oregon Plan, including at the grassroots level through for example, watershed councils and their action plans, at the ESU level through the Oregon Plan monitoring plan, and at the state budget/policy levels through a number of processes.

Specifically under the Oregon Plan, a set of systems are in place to provide for adaptive management within the scope of watersheds, the ESU and statewide. However, as discussed more fully below, the Oregon Plan does not operate its adaptive management systems in isolation, but rather as part of the state's overall strategic planning and budgeting processes supported by the Oregon Benchmarks and the Sustainability Act. Its adaptive management process is also connected to federal adaptive management efforts and to active research being undertaken related to hatcheries and habitat. Ensuring that the Oregon Plan functions in this broader adaptive management context is an important strength in promoting budgetary and other investments by Oregon's Legislature.

Adaptive Management at Work

The Oregon Plan Coastal Coho Assessment Project is clearly adaptive management at work. The purpose of the Oregon Plan Assessment is to document and evaluate the implementation of the Oregon Plan in meeting its purposes within the Oregon Coast ESU and to make recommendations for changes as may be needed.

This assessment has identified a number of possible improvements to the adaptive management process and our work has led to a number of new commitments and recommendations related to adaptive management, including;

1. Oregon through OWEB will produce a report of comprehensive monitoring efforts in the coastal Coho ESU at 5 year intervals. The first report would be produced in 2010 and contain data collected though 2007. The report will update information on Coho, habitat, water quality, and stream flow, recently completed research results and effectiveness monitoring.
2. Oregon will establish an Adaptive Management Work Group (AMWG) by the end of 2005. The AMWG will be responsible for identifying key issues and analyses that should be addressed by monitoring and reported in the periodic monitoring report.
3. Oregon through the Governor's Office will seek to enhance existing state agency staffing levels dedicated to monitoring and that will specifically support data analysis and reporting.
4. Oregon through the Oregon Plan Monitoring Team will complete a review of monitoring in relation to findings of this Assessment and propose refinement or alteration of monitoring designs by the 2006 field season. This review will work to enhance and demonstrate the Oregon Plan's capacity to detect and respond to changes in Coho viability or habitat.
5. OWEB will maintain and upgrade the data library website to provide access to data used in the Assessment
6. Oregon through the Governor's Office will continue work with Stakeholder/NOAA work group to complete a draft conservation plan by December 2005. The Conservation Plan will attempt to identify potential harvest/habitat/hatchery thresholds for considering management or status changes.

The above recommendations will strengthen an adaptive management program that is already strong. The information below provides a further overview of Oregon's Oregon Plan adaptive management program, including how the program is interrelated with other state and federal agency efforts, and the connections to Oregon's policy and budget processes.

1. 0 Overview of Oregon Plan Adaptive Management Processes

ORS 541.351 to 541.415 establishes the Oregon Plan, Oregon Watershed Enhancement Board, the IMST and agency responsibilities under the Oregon Plan for Salmon and Watersheds. Within this framework are a set of adaptive management requirements for monitoring, research, reporting, collaborating and improving agency actions. An Oregon Plan Monitoring Team works to connect statewide interagency and agency actions into a cohesive and comprehensive monitoring strategy.

ORS 541.351 defines "adaptive management" under the Oregon Plan as applying management or practices over time and across the landscape to achieve site specific resource goals using an integrated and science based approach that results in changes over time in response to feedback or monitoring. ORS 541.353(e) requires that agencies under the Oregon Plan monitor and ensure

implementation of the integrated watershed action plans using adaptive management to make appropriate changes in action plans and goals as needed.

ORS 541.365 Requires the Oregon Watershed Enhancement Board to coordinate information, data and data retrieval needs of the natural resource agencies of the state with the State Service Center for Geographic Information Systems and to develop and implement a statewide monitoring program for activities conducted under the Oregon Plan.

ORS 541.371 requires the Oregon Watershed Enhancement Board to establish a framework for a locally based integrated watershed planning and management process designed to assist watershed councils and soil and water conservation districts and to support the efforts of watershed councils and soil and water conservation districts to work within the requirements of state and federal laws without duplication of planning effort.

The framework must include guidance and protocols for watershed assessments to encourage consistent assessment methods across all watersheds and agencies, including assessment of cumulative effects and guidance on how to prepare watershed action plans. OWEB is required to support development and implementation of a system that enables standardized collection, management and reporting of natural resources information in Oregon, including water data, geographic information system data and information on native fish and wildlife and habitat.

ORS 541.378 creates in the General Fund of the State Treasury the Restoration and Protection Research Fund. Moneys credited to the fund are continuously appropriated to the Oregon Watershed Enhancement Board for the purpose of funding research and other activities related to the restoration and protection of native salmonid populations, watersheds, fish and wildlife habitats and water quality, including but not limited to research, monitoring, evaluation and assessment related to the Oregon Plan.

ORS 541.395 requires the Department of Environmental Quality, Department of Fish and Wildlife, Water Resources Department, State Forestry Department, State Department of Agriculture, and agricultural extension service of Oregon State University to provide the OWEB with a copy of any report produced by the agency that is related to enhancement or restoration of riparian areas or associated uplands.

ORS 541.409 creates an Independent Multidisciplinary Science Team consisting of seven scientists with recognized expertise in fisheries, artificial propagation, stream ecology, forestry,

range, watershed and agricultural management. The Independent Multidisciplinary Science Team reviews implementation of the Oregon Plan and other programs for achieving healthy streams as described in ORS 541.405. They are to prepare and submit to the Governor, the Legislative Assembly and the public an annual report on the implementation of the Oregon Plan, including any recommendations for changes or adjustments to the initiative. They serve as an independent scientific peer review panel to the state agencies responsible for developing and implementing the Oregon Plan and other salmon or stream enhancement programs throughout this state. Finally, they report regularly to the joint legislative committee created pursuant to ORS 171.551 concerning the duties described under this subsection and other requests by that joint legislative committee.

OWEB is specifically required to biennially report to Legislative Assembly on the implementation of the management program under ORS 541.384 and grants awarded under ORS 541.399. ORS 541.420 require the Oregon Watershed Enhancement Board shall, by January 15 of each odd-numbered year, to submit a report to the Governor and to the appropriate committee or committees of the Legislative Assembly that assesses the implementation and effectiveness of the Oregon Plan in the state. The report is required to address each drainage basin in the state and includes.

1. A status report on watershed and key habitat conditions in the drainage basin based on available information;
2. An assessment of data and information needs deemed critical to monitoring and evaluating watershed and habitat enhancement programs and efforts;
3. An overview of state agency programs addressing watershed conditions;
4. An overview of voluntary restoration activities addressing watershed conditions;
5. A summary of investments made by the board from funds received under section 4b, Article XV of the Oregon Constitution, and all other sources; and
6. The recommendations of the board for enhancing the effectiveness of Oregon Plan implementation in each drainage basin.

In addition to the biennial report, Oregon Watershed Enhancement Board is required to report regularly during the interim on the implementation of the Oregon Plan to the joint legislative committee created under ORS 171.551. Each natural resources agency is to provide information requested by OWEB in the format and at the times determined by them.

The State has adopted a monitoring framework that is based upon several key hypotheses that will be tested through various adaptive management processes. The first set of these hypotheses are that our programs are effective in maintaining the resources they are designed to protect. These hypotheses are being tested programmatically by the agencies charged to implement the program

and through some key landscape modeling efforts as described in the tables below.

The second set of hypotheses is that the key initiatives under the Oregon Plan related to harvest, hatcheries and habitat are effective at restoring populations and habitat. ESU scale monitoring is underway to track coho population, and aquatic and riparian habitat trends. Monitoring of fish populations occurs at all life stages and should be highly sensitive to trends. Data collected for habitat parameters is currently less sensitive to trends, but when tied to fish population trends should provide critical information necessary to appropriately react.

A third set of hypotheses relate to the implementation and effectiveness of the Oregon Plan, which is periodically assessed to identify programmatic improvements. As noted elsewhere in this assessment report, a number of changes are being proposed related to the Plan under the current assessment of the north Coast ESU. The biennial reports discussed earlier are also a key element in this effort.

1.1 Oregon Benchmarks

Oregon somewhat uniquely ties all the adaptive management efforts together through the Oregon Benchmarks. The Oregon Benchmarks represent among the most sophisticated approaches taken by state government to track progress in achieving economic, social and environmental goals.

The Benchmarks measure progress towards Oregon's overall strategic vision, *Oregon Shines*. Its goals are three-fold: 1) quality jobs for all Oregonians, 2) safe, caring and engaged communities, and 3) healthy, sustainable surroundings. Benchmarks are organized into seven categories: economy, education, civic engagement, social support, public safety, community development and environment. These benchmarks help to provide the long view perspective in solving economic, social and environmental problems. In addition, Oregon Benchmarks are used for a broad array of policymaking and budget-related activities. Oregon state agencies are required to link key performance measures to them for budget reporting and development purposes.

In the late nineties, The Oregon Progress Board facilitated a process to update and revise the state's environmental benchmarks. The process involved several committees of scientists, stakeholders, and agency personnel. A group of scientists, chaired by Oregon State University President Paul Risser, ultimately proposed 18 new or modified indicators to the Board. These indicators were described in the Oregon State of the Environment Report 2000.

The Progress Board evaluated the indicators submitted by the scientists and, after extensive discussion with agency personnel, adopted and/or modified most of them. For some benchmarks,

the Board also set targets or performance goals. The Progress Board released its report called Achieving the Oregon Shines Vision: the 2001 Benchmark Performance Report, in March 2001. The Board adopted additional changes to the environmental benchmarks during the May 2002 meeting.

The following are general topic descriptors of the key environmental Oregon Benchmarks that are currently being used by Oregon:
BM 75 Air quality; BM 76 CO2 emissions; BM 77 Wetlands; BM 78 Water quality; BM 79 Water rights; BM 80 Agricultural land; BM 81 Forest land; BM 82 Timber harvest; BM 83 Solid waste; BM 84 Hazardous waste; BM 85 Freshwater species; BM 86 Marine species; BM 87 Terrestrial species; BM 88 Species in conservation areas; BM 89 Invasive species; and BM 90 State park land. Detail on the specific elements of these indicators can be found at http://egov.oregon.gov/DAS/OPB/obm.shtml

1.2 Sustainability Act

Sustainability Act of 2001and the Governor's Executive Order 2003-03 direct state government to define sustainability, produce goals within state government to achieve sustainability, identify challenges to achieving sustainability and measure our performance based on sustainability. The intent is to use this act for to further the adaptive management and continuous improvement process in state government. To institutionally support this effort, the Act created the Institute for Natural Resources (INR) at Oregon State University. The purpose of the Institute is to provide reliable, objective relevant and science-based interdisciplinary natural resource expertise, information, research and assistance to facilitate adaptive management and long-term stewardship of Oregon's resources. With adequate support and resources, the Institute will be able to help state agencies fully implement and adaptively manage the benchmark process. To date the INR has supported a number of agency efforts related to adaptive management under the Oregon Plan. These have included a review of "salmon anchor habitat" and a forest fire program review.

2.0 Overview of Federal Efforts

Eight Federal agencies have developed an implementation and effectiveness monitoring program encompassing Federal lands managed by the Forest Service, Bureau of Land Management, and Park Service under the Northwest Forest Plan (NWFP) (this includes all federal lands in the ESU). This effort focuses on important regional scale questions about older forests, listed species (northern spotted owls, marbled murrelets), watershed health, federal agency relationships with Tribes, and changing socio-economic conditions in communities closely tied to federal lands. The

Regional Monitoring program receives its own funding and is a separately managed interagency program.

The federal monitoring program is charged with producing annual summaries and reports. Periodic interpretive reports present the analysis and results of cumulative monitoring data and other information important to evaluating the effectiveness of the Northwest Forest Plan. The interpretive reports are critical to the Northwest Forest Plan adaptive management process, used to make adjustments to the NWFP as necessary for achieving plan objectives. The first comprehensive interpretive report was recently presented at a large public meeting in Portland. The first report is important in establishing baseline information and in describing any status and trends that can be detected in monitored resources since the plan was signed in 1994. This includes information on northern spotted owls, marbled murrelets, older forests, watershed condition, rural communities and tribes, and compliance with the standards and guides of the Northwest Forest Plan. Recommendations will be made based on analysis of key components of the NWFP. Subsequent interpretive reports will be published every five years.

3.0 Overview of Grassroots Efforts

Watershed Councils are a key element in the adaptive management process. At the grassroots level they conduct watershed assessments, gather other information and prepare watershed action plans. They sponsor and/or conduct restoration projects and report accomplishments to OWEB. Data and information reported by Watershed Councils are used to document the planned implementation of the Oregon Plan restoration efforts and the success of the local watershed action plan. Based upon their local experience, OWEB and state agencies assist Councils review their plans and make appropriate periodic modifications.

Private Oregon Plan partners such as forest, farm and fish producers that have become "certified," usually have adopted and implemented environmental management systems and an adaptive management processes as a condition of their certification. For example, the Sustainable Forestry Initiative (SFI) program includes a system of performance measures and the requirement to promote continual improvement by monitoring, measuring and reporting performance in achieving their commitments under SFI. Most industrial forestland within the ESU is certified under one of the existing systems.

4.0 Key Monitoring and Research Actions under the Oregon Plan Adaptive Management Program

As discussed earlier, several sets of hypotheses are being tested under the Oregon Plan process. The tables below describe **key** policy/programs/practices and the Oregon Plan or agency

programmatic and monitoring or research adaptive management systems that are in place for them. The tables also provide information of the certainty and effectiveness of these systems. These tables do not include any compliance or enforcement monitoring programs. Compliance/enforcement monitoring are used as adaptive management elements for regulatory programs, especially to determine root causes of compliance problems and to determine whether rule changes, training or other actions are needed to improve compliance. Compliance/enforcement monitoring is described elsewhere in Oregon's Coastal Coho Assessment report.

Policy/Program/ Practice	Scope	Certainty	Frequency	Decision-making body(ies)	Coordination required	Effectiveness
Hatchery Management Policy	Statewide. The purpose of the Hatchery Management Policy is to describe the hatchery tool and its range of applications. The Hatchery Management Policy also provides general fish culture and facility guidelines and measures to maintain genetic resources of native fish populations spawned or reared in captivity. This policy applies to all Department hatchery operations and programs including Salmon and Trout Enhancement Program (STEP) fish propagation projects (OAR 635-009-0090 through 635-009-0240) and Cooperative Salmon Hatchery Programs (OAR 635-009-0400 through 635-009-0455).	Required by rule. This policy describes best management practices that are intended to help ensure the conservation of both naturally produced native fish and hatchery produced fish in Oregon through the responsible use of hatcheries. The Hatchery Management Policy complements and supports the Native Fish Conservation Policy OAR 635-007-0502 through 635-007-0506 and will be implemented through conservation plans developed for individual species management units, hatchery program management plans, or other formal agreements with management partners. The Hatchery Management Policy provides a foundation for the management and reform of hatcheries in Oregon, whereas the Native Fish Conservation Policy establishes the process for defining the specific use of the hatchery tool in specific watersheds.	Annual reports to establish conformity of individual hatcheries with policy. BMPs reviewed as needed based upon new research.	Fish and Wildlife Commission		
Harvest Management Policy	Statewide and Regional	Federal and state statutory requirements	Annual reports	Pacific States Marine Fisheries Commission; Fish and Wildlife	Member states of PSMFC	PSMFC facilitates interjurisdictional fishery agreements and coordinates information.

				Commission		PSMFC coordinated the signing of a Memorandum of Understanding between the states of Washington, Oregon and California regarding season
Native Fish Policy	Statewide	The Native Fish Conservation Policy was adopted in Nov. 2002 with interim criteria added in Sept. 2003. The purpose of the Policy is to ensure the conservation and recovery of native fish. The Policy is implemented through the development of conservation plans adopted by the OFW Commission. The Policy identifies three goals: Prevent the serious depletion of native fish. Maintain & restore naturally produced fish in order to provide substantial ecological, economic and cultural benefits to the citizens of Oregon. Foster & sustain opportunities for fisheries consistent with the conservation of naturally produced fish & responsible use of hatcheries.	Annual and long-term reporting requirements to document data, departures from plan & evaluations necessary for adaptive management – in a format available to the public.	Fish and Wildlife Commission	USFWS; NMFS	Conservation plans shall illustrate a range of options for recovery strategies, fisheries and the responsible use of hatchery produced fish. Conservation plans will address the following elements: Management Identification of the SMU & the constituent populations. Description of the desired biological status. Description of the current status. Assessment of the primary factors causing the gap between current & desired status and identify those that can be managed. Description of short - and long-term management strategies to address the limiting factors. Description of monitoring, evaluation & research necessary to gauge the success of strategies & resolve uncertainties. A process for modifying strategies based on

						monitoring, evaluation and research results. Measurable criteria indicating significant deterioration in status, triggering plan modification. Annual & long-term reporting requirements to document data, departures from plan & evaluations necessary for adaptive management– in a format available to the public. Description of potential impacts to other native fish species
Northwest Forest Plan for Oregon State Forests	State-owned forestlands in Tillamook, Clatsop, Washington, Columbia, Benton, Yamhill, and Lance Counties	Required by rule	Maximum ten years	Oregon Board of Forestry	With ODFW	Monitoring Plan is in place. Budgeted resources include
State Forests Watershed Analysis Projects	The Oregon Department of Forestry (ODF) conducts watershed analysis projects in basins containing State Forest land. These projects evaluate the interactions between ODF management and a watershed's physical and biological processes. And lead to forest management plan implementation decisions.	Required by rule. ODF watershed analyses are designed to be performed in several steps. The analyst compiles available information to describe current watershed condition. Based on this description, factors limiting important watershed functions are identified and assessed. The analysts and ODF resource specialists determine whether riparian and aquatic strategies are addressing the appropriate process and function concerns within the	Ongoing	Department of Forestry/Board of Forestry	With ODFW	As watershed analysis projects are completed, the project reports, with selected supporting materials, will be posted at the ODF's website site.

		watershed. Information provided by watershed analysis will be used to refine district implementation plans and, as necessary, contribute to a comprehensive review of forest management plan goals and strategies.				
Northwest Forest Plan for Federal forests	All Federal lands managed by USDA Forest Service and BLM under the NFP	Federal forests are monitoring the effectiveness of the North West Forest Plan through a program titled: "Aquatic and Riparian Effectiveness Monitoring Program". The program is being implemented West of the Cascades in Washington, Oregon, and Northwest California.				The goal is to evaluate the effectiveness of forest plan aquatic conservation strategy to maintain key aquatic and riparian processes that create and maintain habitat conditions. The sample design is based on randomly sample and survey of 250 watersheds over 5 years (10% of watersheds). The data will be analyzed using a decision support model based on shifting frequency distributions (Fuzzy Logic)
Oregon Forest Practices Act	All private and state-owned forestlands	OAR 629-635-0110 Applicability and Monitoring (3)(a) Monitoring and evaluation of the water protection rules are necessary … (b) In cooperation with state and federal agencies, landowners and other interested parties, the department shall conduct monitoring on a continuing basis….. The monitoring shall determine the	Annual reports required by OAR 629-635-0110 Applicability and Monitoring ….(d) The department shall report to the Board of Forestry annually about current monitoring efforts and, in a timely manner, present findings and recommendations for	Oregon Board of Forestry	OAR 629-605-0110 Annual Review The State Forester shall, at least once each year, meet with other state agencies concerned with the forest environment to review the Forest	Monitoring Plan is in place. Budgeted resources include $368,000 per year based for the 03-05. FPMP. Roughly $47,500 per year of harvest tax dollars are used to fund cooperative monitoring and research projects. The goals of the FPMP are to: Evaluate the effectiveness,

		effectiveness of the rules to meet the goals of the Forest Practices Act and the purposes stated in the rules, as well as their workability and operability.	changes to practices. The Board of Forestry shall consider the findings and recommendations and take appropriate action.		Practice Rules relative to sufficiency. The State Forester shall then report to the Board of Forestry a summary of such meeting or meetings together with recommendations for amendments to rules, new rules, or repeal of rules.	implementation and assumptions of the forest practices act Coordinate with other monitoring and research efforts Investigate the cumulative effects of forest practices on forest resources. Support efforts to establish benchmarks/criterion used to define the range of desired conditions/regional goals. Monitor the implementation and effectiveness of the Oregon Plan. Monitor temporal and spatial trends in forest and stream conditions.
Clean Water Act - State Water Quality Standards	Periodic assessment of water quality (i.e., 303(d) list) and review of water quality improvements plans (i.e., TMDLS)	To ensure water quality improvements occur, DEQ has adopted rules enabling the agency to enforce TMDL implementation requirements. These rules also incorporate principles of adaptive management. The rules require federal land managers and municipalities to develop, implement, monitor and revise TMDL implementation plans as necessary to reduce pollutant loading. The rules also describe how pollution controls on state and private forest land will be addressed under the Oregon Forest Practices Act and controls related to agricultural	DEQ plans to revisit the TMDLs every 5-10 years when new information suggests changes may be needed	Environmental Quality Commission	With Board of Forestry and Department of Agriculture as noted. EPA	

		activities will be addressed per the requirements of Senate Bill 1010 and associated rules.				
DEQ Water Quality Management (WQM) Program	Statewide In support of restoring and protecting Oregon's water, air and land, the WQM Program: Collects representative, valid environmental data through physical, chemical, and biological sampling and assessment. Manages environmental data to ensure availability of accurate and complete data from agency programs and the general public. Analyzes and interprets water quality related data to produce reports which identify water quality conditions, identify threats to water quality, evaluate trends, and model proposed actions.	See above. Resources are in place to conduct annual monitoring. Protocols are in place. Part of this effort is specifically encompassed in the Oregon Plan Monitoring Program described below.	Annual monitoring and reports	Environmental Quality Commission	With other Oregon Plan agencies, EPA	Protocols developed with assistance from EPA. Sites adequate do describe statewide trends.
Oregon Plan Monitoring Program and Plan	Statewide with emphasis in coastal Coho watersheds The Oregon Plan Monitoring Projects are designed to work together to give basic information on salmon populations and conditions across large geographic areas. The major elements are: **Adult Salmon Spawning Surveys** Counts of spawning adult salmon are a key indicator of abundance. **Juvenile Salmon Population Census** Snorkel pool habitats to count juvenile salmon. **Stream Habitat Assessment** Information on channel size, flow, substrate composition, large wood, habitat complexity, and riparian characteristics.	Required by statute	Biennial Reports	OWEB and joint interim legislative committee	All state natural resource agencies	Monitoring plan and protocols are in place and annual data collection is occurring. Oregon Plan assessment will be used to evaluate efficacy and effectiveness of the monitoring efforts. Oregon plans to increase the statistical power of the different projects to improve predictive strength.

	Salmonid Life Cycle Monitoring Project: Smolt Trapping A program to monitor survival and downstream migration of salmonid fishes (*Oncorhynchus spp*.) with three objectives; 1) estimate abundance of adult salmonids and downstream migrating juvenile salmonids, 2) estimate the marine and freshwater survival rates for Coho salmon (*Oncorhynchus kisutch)* and 3) evaluate the effects of habitat modification on the abundance of juvenile salmonids in Cummins and Tenmile Creeks. **Stream Health – Biotic Index Measurement** Measurements of aquatic insects, aquatic plants, water quality, fish communities, and habitat are combined to create an integrated assessment of stream condition.					
Forestry Program for Oregon Assessment	All private and public forestlands	Assessment of Forest Conditions based upon a developing set of criteria and indicators adopted by Board of Forestry	Every 7-10 years	Oregon Board of Forestry		Periodic report using Criteria and Indicators based on the Conservation and Sustainable Management of Temperate and Boreal Forests developed through the Montreal Process. The Montreal Process is an internationally sponsored initiative that identified seven criteria as essential components of sustainable forest management. Sixty-seven indicators are used to describe these seven criteria.
Timber Growth and Harvest	All private and public forestlands	Required for statewide benchmarks "Timber Harvest - Public Lands Actual public timber harvest	Annual	Oregon Board of Forestry	USDA Forest Service	Uses FIA data

		as a % of potential harvest levels under current plans & policies" and "Timber Harvest - Private Lands Actual private timber harvest as a % of potential harvest levels under current plans & policies"				
The Fish Passage Program.	Statewide implementing state fish passage laws, providing resources and information for those affected by the laws or seeking to improve passage, working with the Fish Passage Task Force advisory group, and working with local ODFW staff and others to improve fish passage throughout the state	Required by statute and rule		DSL, ODF, and ODFW		Requires an inventory of barriers to be maintained so progress in restoration can be tracked. Mechanisms are in place to adopt and disseminate technical information about the success of various approaches for ensuring fish passage. Oregon maintains a manual describing the technical elements of fish passage.

This section describes some of the key Adaptive management research underway that is integrated into state or federal programs as part of the Oregon Plan.

Research Program	Current Geographic Focus	Research Goal	Cooperators	Research Focus	Website
Watershed Research Cooperative	Hinkle Creek Paired Watershed Study in the Cascade Range. Two additional installations are planned, one in the north Coast Range.	To evaluate on a watershed scale how well current forest practices protect water quality, aquatic habitat, and fish—particularly salmonids.	OSU College of Forestry, FRESC, OSU College of Agriculture the Fisheries and Wildlife Department, ODFW, BLM, Roseburg Forest Products, OFIC, OFRI, Douglas County and ODF	Studies will focus on the cumulative affects of harvesting in upstream, nonfish-bearing headwaters and the linkages to any to fish-bearing streams. This issue has been addressed conceptually for years and this project will be one of the first efforts to address it quantitatively	
Hatchery Research Center (HRC)		The goal of the Hatchery Research Center (HRC) is to answer questions related to fish recovery and hatchery programs, including the differences between wild and hatchery fish, and how to better manage those	Oregon Department of Fish and Wildlife and the Oregon State University Department of Fisheries and Wildlife.		http://www.dfw.state.or.us/HRC

		differences.			
Cooperative Forest Ecosystem Research (CFER)	Western Oregon	To study the effects of natural disturbance, forest management, and their interactions on ecosystem function and development. Ecology of individual species within a general framework of understanding community and ecosystem-level relationships. To study the biotic and abiotic patterns, processes, and linkages at multiple levels of time and space	USGS Forest and Rangeland Ecosystem Science Center (FRESC), Oregon State University (OSU), the Bureau of Land Management (BLM), and the Oregon Department of Forestry (ODF)	Currently, there are four research themes that focus CFER research activities. These themes address: (1) Stand structure and biotic responses to changes in structure of young forests of western Oregon; (2) Large woody debris in the terrestrial and aquatic riparian zone: production, recruitment and function; (3) Influence of Landscape pattern and composition on species in forested ecosystems of western Oregon; and (4) Influences of riparian vegetative community composition on animal community response	http://www.fsl.orst.edu/cfer/overview/integtn.html
Coastal Landscape Analysis and Modeling Study (CLAMS)	The study area is the Oregon Coast Range Physiographic Province, which contains all of the Coast Range hydrological province and part of the Willamette hydrological province.	To develop and evaluate concepts and tools to understand pattern and dynamics of provincial ecosystems such as the Coast Range and to analyze the aggregate ecological and socio-economic consequences of different forest policies and strategies across multiple ownerships of the province.	OSU College of Forestry, the US Forest Service Pacific Northwest Research Station, and the Oregon Department of Forestry.	Build high resolution spatial models (grain size of 0.1 to 10 ha) of current biophysical conditions (e.g. veget ation, ownership patterns, topography, streams) across all ownerships using Landsat TM satellite imagery, forest inventory plots, and other GIS layers. Conduct surveys and interviews of forest landowners to determine their expected management intentions (e.g. rotation ages, thinning regimes, riparian management intensity) under current policies and develop spatial land use change models based on retrospective studies. Simulate expected successional changes in forest structure and composition under differe nt management regimes using ORGANON and ZELIG stand dynamics models. Build a landscape change simulation system based on forest management intentions and forest stand models to project future landscape structure for 100-200 years. Develop habitat suitability models for selected terrestrial and aquatic vertebrate species, coarse filter measures of community and landscape conditions, historical range of natural variation of forest successional	http://www.fsl.orst.edu/clams/overview.html

				stages, and landslide and debris flow potential, and geomorphic dynamics. Develop socio-economic response models for measures of employment and income by economic sector, timber value and production using IMPLAN; develop recreational opportunity spectrum models, and contingent value of biological diversity to the public. Build landuse change models that are based on historical FIA data and driven by estimates of population change. Estimate ecological and socio-economic consequences of current forest policies using the landscape simulator and the various response models. Include outside influences such as effects of population growth on land use change. Evaluate, test, and revise overall simulator system and sub-models. Provide policy makers, landowners, and the public with results of spatial projections of consequences and interact with them to help inform debate and facilitate collaborative learning.	

5.0 Certainty and Effectiveness

This assessment itself is a partial demonstration of adaptive management being implemented under the Oregon Plan. However, an individual assessment or evaluation, does not lead to a conclusion that there is a certainty of ongoing adaptive management through a series of continuous improvement cycles and that the cycles will be effective. Breaking adaptive management into components of "plan," "do," "report" and "evaluate" is useful in considering both certainty and effectiveness of our efforts.

With regard to "plan," planning occurs at a number of levels and through a number of processes. Some of these have been described earlier, with the most obvious "plan" being the Oregon Plan

for Salmon and Watersheds itself. The Oregon Plan includes a substantial number of written documents that include commitments and planned actions, and a body of supporting frameworks, institutions and processes. Other plans of importance include the monitoring plan and watershed action plans. Specific to these plans, Oregon does not yet have a comprehensive means of tracking changes to the plans that occur not as a result of adaptive management, but rather as a result of external factors such as budget problems. Despite this weakness, specific plans are required, resources are in place to support development of required plans, and each plan by policy is to include adaptive management principles for ongoing improvement.

"Do" is the implementation part of the Oregon Plan. In the context of adaptive management, it is important that systems are in place to document barriers that are preventing the implementation of planned actions. The formal process that is in place to complete this documentation is through the Oregon Plan Core Team, which has as one of their charges to address barriers to plan implementation. However, this approach probably has not yet been developed to the point that all barriers would be documented. Nonetheless key barriers, particularly those related to restoration practices, generally are documented. For example, the Core Team has documented and worked to address barriers to instream restoration work through the use of the Regional General Permit.

To the extent that adaptive management keys on the adaptive management component of "report," it is apparent that reporting processes are in place for many key parts of the Oregon Plan, especially operational elements such as reporting of restoration projects. Conditions are placed on grant recipients requiring reporting. As described in the table above, reporting relative to key policies and programs are also in place. For most of the key policies and programs under the Oregon Plan, law or rule requires periodic reporting to the policy Board or Commission responsible for the program.

"Evaluation" under the Oregon Plan occurs through a number of agency policy and programmatic processes discussed in the tables above. At the Oregon Plan scale, evaluation is also formalized through the role of the IMST. The Independent Multidisciplinary Science Team (IMST) is a scientific review panel charged with advising the State of Oregon on matters of science related to the Oregon Plan for Salmon and Watersheds. These matters include fish recovery, water quality improvements, and enhancing watershed health. IMST evaluation of the scientific basis for programs provides the public, the Governor, and the Oregon Legislature with a frame of reference when struggling with policy decisions affecting Oregon Plan implementation.

The primary means of communicating results of the IMST's work to Oregon's Governor, Legislature, state agencies, and the public is through written technical reports and reviews. In

technical reports, the IMST assesses the best available science as it pertains to salmonids and watershed recovery and the management of natural resources. IMST reports are addressed to Oregon's Governor, Senate President, and Speaker of the House. Reviews are addressed to the requesting agency or authority.

IMST recommendations are directed to State agencies or entities that have the ability to implement or to affect changes in management or regulation that are needed for implementation. State agencies are expected to respond to IMST recommendations within six months after a report is issued.

Once agency responses are received, the IMST reviews the scientific adequacy of each response and if further action or consideration by the agency is warranted. The IMST's review of responses is forwarded to the Governor and the State Legislature.

To date the IMST has prepared reports evaluating the following topics: Agriculture, Forestry, Water Temperature, Instream Gravel Mining, Klamath Basin, Predation on Salmonids, and Riparian Area Management.

In an example of how these evaluations have been used, in its Forestry Report, the IMST made a total of 19 recommendations in its forestry project report of September 14, 1999. These recommendations along with the Department of Forestry actions/responses to address the recommendations are described in the table below.

In addition to the IMST, the INR has increasing played a role in facilitating program management reviews of different components of the Oregon Plan. Through their help, science and other information are systematic used to consider program effectiveness and options for improvement.

Certainty and effectiveness are also impacted by budget and resource constraints. During the 2001-2003 biennium, reductions in General Funds precipitated in large part by the economic downturn reduced some monitoring and adaptive management investments These reductions have limited the number and/or frequency of stream sites being monitored by DEQ (both ambient and Oregon Plan monitoring sites). Under the reduced budget levels, water quality monitoring in the Coastal Coho ESU includes only large river ambient sites. Surveys of small wadeable streams have been reduced from 55 to 6 sites per year. It will be difficult for DEQ to continue to assess water quality status and trends in the ESU with this reduced monitoring network. Further limited reductions are possible to monitoring resources under the 2005-07 budget cycle. Oregon will seek to address resource limits as improvements in the economy and budget take place.

IMST Recommendation	ODF Action Completed	ODF Action Pending
1. Explicitly incorporate the policy objectives of the Oregon Plan and Executive Order 99-01 into OFPA.	The 2003 Forestry Plan for Oregon makes explicit that "*The Board will support and contribute to continuing statewide efforts under the OPSW to protect and enhance Oregon's native fish populations and water quality, while sustaining a healthy economy.*"	July 2004 draft FPA riparian rules also make explicit the policy objectives of the Oregon Plan in several rules (OAR 629-635-0100 and 629-605-0103) to encourage continued voluntary participation in the OPSW. Note: Draft riparian rules are being deliberated by the Board of Forestry. The official public comment period has not been initiated by the Board, but should proceed in 2005. Rules which have been ***adopted*** have been finalized; rules which are described as ***approved draft rules*** continue to be deliberated.
2. ODF should develop a policy framework to encompass landscape (large watershed) level planning and operations on forests within the range of wild salmonids in Oregon.	The 2003 FPFO provides a policy framework that will foster landscape level planning and operations on forests statewide. Much new information useful for implementing effective economic and social forest policies has been jointly developed by the Department of Forestry, Oregon State University College of Forestry, the USDA Forest Service Pacific Northwest Research Station, and others. However, more information is needed about conditions and trends of Oregon's forests to better craft coordinated approaches and to understand the implications of changes in forest policy and management at the landscape level and across ownerships. Once this information is available, the Board and ODF will be better able to implement a more coordinated management approach that is needed to promote the desired balance of forest value production.	ODF believes we should work with OSU College of Forestry and others to create and implement a process to build the scientific foundation necessary to support policy and technical changes that improve consistency of forest practices and forest management with the concepts of dynamic forest ecosystems and "primary purpose". Tools are also needed to: (a) better analyze short- and long-term risks; and (b) better analyze, at different scales, how well the different forest ownerships integrate to provide necessary resource protection. The Coastal Coho ESU assessment, currently underway, is an example of how natural resource agencies are beginning to conduct landscape scale evaluations of the OPSW. Lessons learned from the study will help us to improve our ability to conduct these types of assessments at various scales, and to move toward seamless communication between implementing agencies and local conservation groups.
3. Treat non-fish-bearing streams the same as small, medium, and large fish-bearing streams when determining buffer-width protection.	The Board of Forestry approved a draft rule in March 2004 that Type F prescriptions for large and medium Type N streams will be addressed through a voluntary pathway. The Board concluded that there was insufficient monitoring or scientific	The July 2004 draft rules propose that: ➢ ODF will continue to prioritize monitoring small Type N streams as budget and resources are available. ➢ The Oregon Headwaters Research Consortium, formed in 2001, continues to address headwater

	evidence that documents that degradation of resources is likely if forest practices continue to be conducted under existing regulations.	stream research questions. ➢ Hinkle Creek is the site of a new, state-of-the-art paired watershed study to investigate the effects of contemporary forest practices on water quality, fisheries and aquatic habitat. It is the first ever paired watershed study located completely on private forestland. ➢ Increased protection for small Type N streams is continuing to be deliberated by the Board of Forestry.
4. Provide increased riparian protection for the 100-year floodplains and islands	The Board of Forestry approved a draft rule in September 2003 that additional protection for channel migration zones would be addressed through voluntary measures. The Board concluded that there was insufficient monitoring or scientific evidence that documents that degradation of resources is likely if forest practices continue to be conducted under existing regulations.	ODF will address development of an Oregon Plan measure through an advisory committee process in 2005. Monitoring necessary to determine whether existing riparian rules are effective in protecting channel migration zones will be included in the department's monitoring strategy. Landowners choosing this voluntary option provide the opportunity for us to test our assumptions.
5. Increase the conifer basal-area requirement and the number-of-trees requirement for RMAs, with increases in these requirements for medium and small streams regardless of fish presence.	The Board of Forestry approved a draft rule in July 2004 draft rule language for an increase in basal area retention on medium and small Type F streams in western Oregon subject to the outcome of the analysis required by ORS 527.714. The Board rejected in March 2004 any basal area retention increase to medium and small Type F streams in eastern Oregon until there is sufficient monitoring or scientific evidence that documents that degradation of resources is likely if forest practices continue to be conducted under existing regulations.	**Related Rule Proposals** Draft riparian rules propose an increase in basal area for small and medium fish bearing streams in western Oregon. A physical habitat approach for classifying streams will be used for fish presence, including where field surveys show no fish use above artificial fish passage barriers. **Monitoring & Research Necessary** Insufficient information exists to expand the basal area increase to all other streams regardless of fish presence. Monitoring of small non-fish bearing streams is proposed to be a monitoring priority. **Interim Voluntary Pathway** Until better information can inform our rule making process, a number of voluntary Oregon Plan measures

		may be developed including measures to: ➢ Use Type F prescriptions for large and medium Type N streams. ➢ 60% Basal Area Cap. ➢ No harvest within ½ RMA ➢ Retain largest trees within RMA
6. Complete the study of the effectiveness of the OFPA Rules in providing large wood for the short and long term.	The study was completed and a report entitled "Harvest Effects on Riparian Function and Structure Under Current Oregon Forest Practice Rules" (Dent 2001) was released in July 2001. Based on data from this study, the Board of Forestry approved in July 2004 draft rule language for an increase in basal area retention on medium and small Type F streams in western Oregon subject to the outcome of the analysis required by ORS 527.714. The Board rejected in March 2004 any basal area retention increase to medium and small Type F streams in eastern Oregon until there is sufficient monitoring or scientific evidence that documents that degradation of resources is	A rule is proposed to improve incentives for the active placement of large wood during harvest operations. The change will allow operators to harvest more trees from the riparian management areas in exchange for placing large wood in streams or doing other acceptable fish habitat improvement work. The increased incentive ratio is offset by an increase in the active management target for small and medium Type F streams in western Oregon.
7. Provide enhanced levels of certainty of protection for "core areas".	likely if forest practices continue to be conducted under existing regulations.	The FPA provides for the use of site specific plans and alternate practices, and encourages management such that the desired outcomes are provided. Proposed riparian rules, the 2003 FPFO, and the Private and Community Forest Program strategic plan encourage active management within the RMA to provide for enhanced riparian function. Providing flexibility for alternate practices fits nicely with the concept of ***"core areas"*** as originally intended in the OPSW. That is, when landowners are informed about the habitat and life stage needs of species dependent upon "biological hotspots" either located on the landowner's property or downstream, management decisions can be made to maximize a return on their

		investments to enhance or restore habitat. We recognize that the landscape from the headwaters to the estuary is comprised of multiple ownerships, and all have a part to play in conducting management to conserve and restore watershed functions that are suitable to salmonids life cycle needs An example of how the FPA is evolving to recognize the importance of knowledge to inform landowners' management decisions is the proposed rule to strategically leave trees in debris prone locations where large wood can be delivered to downstream fish bearing reaches. Assisted by the ODFW field biologist and ODF stewardship forester, the landowner can determine whether this management strategy is the best to provide for a particular species or life stage.
8. Develop and implement standards or guidelines that reduce the length of roadside drainage ditches that discharge into channels.	The Board of Forestry adopted rules, effective January 1, 2003. Guidance has been developed. **629-625-0330 Drainage**: The purpose of this rule is to provide a drainage system on new and reconstructed roads that minimizes alteration of stream channels and the risk of sediment delivery to waters of the state. The rule provides a list of priorities to assist operators in achieving the intended purpose.	
9. Implement the standards and guidelines for the length of roadside drainage ditch between cross-drainage structures, especially on steep-gradient roads.	The Board of Forestry adopted rules, effective January 1, 2003. Guidance has been developed. **Drainage** (1) The purpose of this rule is to provide a drainage system on new and reconstructed roads that minimizes alteration of stream channels and the risk of sediment delivery to waters of the state. Drainage structures should be located based on the priority listed below. When there is a conflict between the requirements of sections (2)	

	through (6) of this rule, the lowest numbered section takes precedence, and the later-numbered and conflicting section shall not be implemented. (2) Operators shall not concentrate road drainage water into headwalls, slide areas, high landslide hazard locations, or steep erodible fillslopes. (3) Operators shall not divert water from stream channels into roadside ditches. (4) Operators shall install dips, water bars, or cross drainage culverts above and away from stream crossings so that road drainage water may be filtered before entering waters of the state. (5) Operators shall provide drainage when roads cross or expose springs, seeps, or wet areas. (6) Operators shall provide a drainage system using grade reversals, surface sloping, ditches, culverts and/or waterbars as necessary to minimize development of gully erosion of the road prism or slopes below the road.	
10. Require the flow capacity of cross-drainage structures and stream crossing structures and culverts to meet current design standards.	The Board of Forestry adopted rules effective January 1, 2003. Guidance has been developed. Technology transfer, often through Associated Oregon Logger workshops, ODF monitoring, and other media have communicated what we have learned. **629-625-0320** **Stream Crossing Structures** (2) Operators shall design and construct stream crossings (culverts, bridges, and fords) to: (a) Pass a peak flow that at least corresponds to the 50-year return interval. When determining the size of culvert	Roads built before the FPA are addressed through a voluntary Oregon Plan pathway. Discussion about the topic is provided in the next section.

	needed to pass a peak flow corresponding to the 50-year return interval, operators shall select a size that is adequate to preclude ponding of water higher than the top of the culvert; and (b) Allow migration of adult and juvenile fish upstream and downstream during conditions when fish movement in that stream normally occurs.	
11. Provide for the stabilization of roads not constructed to current standards (including "old roads and railroad grades") in critical locations.	**Critical Locations Policy - For Roads Subject To The FPA** 629-625-0100 and 0200, before roads are constructed or reconstructed, the Department will work with operators and landowners to locate these roads away from critical locations to the extent possible. Critical locations include high landslide hazard locations, slopes over 60 percent with decomposed granite-type soils, within RMAs or within 50 feet of stream channels or lakes, or within wetlands.	**Incentives before Mandates** The BOF cannot mandate that roads built before the FPA be brought up to current standards. Furthermore, the 2003 Forestry Plan for Oregon supports cooperation and incentives as the preferred tools for promoting desired public benefits on private lands. Oregon Forest Industries Council members are recognized for their voluntary actions to address work needed on roads built prior to the FPA. OWEB biennial reports document their contribution. We believe that a voluntary pathway to bring 'legacy' roads up to current standards has been a sound policy choice. **More work needed** The Coastal Coho Assessment Habitat Team is evaluating success of an Oregon Plan voluntary pathway to make legacy road improvements. We know that industrial forest landowners have completed many projects. We have monit ored these projects for conformance with current standards and have shared information on what works best. Still, we cannot say how much work remains to be completed. Better ways of gathering and sharing information is needed to help us understand how far we have come and how far we have left to go. Numbers of reported projects have decreased recently. We would like to know whether the decrease is due to work having been completed, or whether other issues are involved. If work is nearing completion, how can we document that? If the latter, how can agencies

		better serve the process to provide meaningful incentives? Improvements are needed to better serve non-industrial landowners, who through conversation, have told us that they would like to improve legacy roads but need financial assistance and/or assistance in reporting what they have already accomplished.
12. Require durable surfacing on wet-season haul roads and require that hauling cease before surfaces become soft or "pump" sediment to the surface.	The Department completed a Wet Weather Hauling study in June 2003. Based on this data, the Board of Forestry adopted rules effective January 1, 2003. Guidance has been developed and training implemented. **629-625-0700: Wet Weather Road Use** (1) The purpose of this rule is to reduce delivery of fine sediment to streams caused by the use of forest roads during wet periods that may adversely affect downstream water quality in Type F or Type D streams. (2) Operators shall use durable surfacing or other effective measures that resist deep rutting or development of a layer of mud on top of the road surface on road segments that drain directly to streams on active roads that will be used for log hauling during wet periods. (3) Operators shall cease active road use where the surface is deeply rutted or covered by a layer of mud and where runoff from that road segment is causing a visible increase in the turbidity of Type F or Type D streams as measured above and below the effects of the road.	
13. Retain trees on "high risk slopes" and in likely debris torrent tracks to increase the likelihood that large wood will be transported to streams when landslides and	The Board of Forestry approved draft rule language in July 2004 subject to outcome of the analysis required by ORS 527.714.	**Wood from Debris Flows Proposed Rule:** Provides a menu of methods to leave trees or downed wood where the materials can be moved by debris flows into fish-use streams. The proposed rule language recognizes the importance of upland sources of wood and provides a means for wood delivery not identified in current rules. Requiring operators to retain harvest unit leave

debris torrents occur.		trees (already required in harvest Type 2 or Type 3 units) along the lower portions of small Type N streams the Department determines are likely to experience torrents that would move wood into the adjacent Type F stream. The objective is to provide at least a portion of the upland source of large wood for fish streams. The revision would not require retention of any more trees than the current regulations do, but would require operators to leave a portion of those trees in a specific location.
14. Continue to apply the current best management practices (BMP) approach to the management of forest lands with significant landslide potential, and develop a better case history basis for evaluating the effectiveness of BMPs in these areas.	The Board of Forestry adopted rules effective January 1, 2003. Guidance has been developed. Technology transfer has been conducted to train stewardship foresters to implement the rule.	
15. Modify culverts and other structures to permit the passage of juvenile and adult salmonids upstream and downstream at forest roads and RDE sites.	The Board of Forestry adopted rules effective January 1, 2003. Guidance has been developed. Technology transfer through Associated Oregon Loggers has also occurred and other media, such as the FP monitor, developed to inform operators as we manage differently.	
16. ODF, ODFW and ODEQ should develop a collaborative program of monitoring to quantify the linkages between parameters of ecosystem condition and wild salmonid recovery.	ODFW has developed and implemented a collaborative monitoring program as a member of the Oregon Plan Monitoring Team and have collected some of the parameters that describe ecosystem conditions as part of that effort. Through initiatives like the Coastal Coho Assessment we anticipate the state natural resource agencies will be in a better position to define additional information needs to address this critical question.	**Coastal Coho ESU Assessment** This study, currently underway, is an unprecedented first attempt to conduct landscape scale evaluations of the OPSW. Lessons learned from conducting the assessment will help us to improve our ability to conduct these types of assessments at various scales, and to move toward seamless communication between implementing agencies and local conservation groups. **Riparian Function and Stream Temperature Study (RipStream)** The objective of this study is to provide a coordinated

		monitoring effort with which to evaluate effectiveness of forest practices rules and strategies in protecting stream temperature, and promoting riparian structure that provides necessary functions for the protection of fish and wildlife habitat. The project will evaluate both privately and state-owned forestland. ODF is completing the 2nd year of baseline (i.e. pre-harvest) data for some sites and the first year of post-harvest data for other sites. Some sites have the two-years of pre-harvest data and are pending harvest. Analysis of the pre-harvest data is scheduled to begin in late 2004. The Oregon Headwaters Research Cooperative (OHRC) has formed in Oregon to help address these headwater research needs. The purpose of the cooperative is to investigate local and downstream effects of forest management on the biota and habitat characteristics of headwaters stream systems. The goals of the OHRC are: 1. To gain scientific understanding of the physical and biological processes of headwaters stream systems. 2. To examine the local and downstream responses of headwater streams to a range of forest management prescriptions. Hinkle Creek is the site of a new, state-of-the-art paired watershed study to investigate the effects of contemporary forest practices on water quality, fisheries and aquatic habitat. It is the first ever paired watershed study located completely on private forestland.
17. ODFW should complete "core area" designation for all wild salmonids in Oregon and identify high priority protection/restoration areas that are not covered by current "core area"	ODFW has developed a refined core areas and high priority areas for habitat restoration/protection in coastal watersheds. Analyses completed under the Coastal Coho Assessment will provide additional direction to this task.	

designations.		
18. ODFW should include consideration of practices (forestry, agriculture, urban, other land uses) above and below core areas, as these may affect the conditions and processes critical to maintenance of core area function in forestry areas.	This task is related to #17. Our recent efforts to identify priority areas have focused on 6th field watersheds as the basis for establishing these areas, rather than stream segments (as was done for Core Areas).	
19. The Oregon Forest Research Laboratory (FRL), in collaboration with ODFW, should develop forest road-stream crossing strategies that facilitate the passage of large wood at road-stream crossings.	ODFW has not completed or initiated any action on this recommendation.	ODF is supportive of developing strategies to facilitate passage of large wood at road stream crossings.