



# FY INFORMATION

*A Research  
Summary  
From the  
Washington  
Forest  
Protection  
Association*

## **New Washington State Road Maintenance and Abandonment Program Addresses Aquatic Habitat and Fish Passage Issues**



*The bridge above on Green Diamond forestland was installed as part of the company's RMAP work. It was designed and constructed by modern engineering standards to address the issue of maintaining the stream's water quality and minimizing or eliminating sediment entering the stream. Green Diamond received a recognition award from the Shared Strategy for Puget Sound coalition for its proactive approach to road maintenance efforts and stream enhancement.*



*Installing cross drains on Weyerhaeuser roads reduces sediment in forest streams and is part of the company's commitment to improving aquatic habitat in its forestland.*

Over the past several years, some 700 miles of new habitat have been made accessible to fish in Washington streams, thanks to a new road improvement program undertaken in 2001 by forest landowners. The statewide effort, known as the Road Maintenance and Abandonment Program (RMAP), is part of the Forests & Fish law, and is being regulated by Washington's Department of Natural Resources (DNR). Its objective is to upgrade road systems at stream crossings on state and private forestland to improve and maintain water quality and healthy aquatic habitat. Some 60,000 miles of streams flow through more than 9 million acres of state and private forestland in Washington.

### **The Interrelationship of Forest Roads and Aquatic Habitat**

Because many forest roads were built years and even decades ago when the relationship between healthy aquatic habitat and roads was less well understood, construction and use sometimes affected water quality. For example, early engineers were concerned mainly with getting the water off and away from the road to avoid damage. Road grades and ditches were designed to collect runoff—along with the sediment that they picked up—and deliver them off the road, sometimes directly to the nearest stream. Resulting sediment filled spaces in gravel beds where salmon lay their eggs during spawning.

Early commercial logging in the Northwest utilized steam power and railroads, and tracks usually followed the streams into mountains because the grades were gentle enough for the engines. Because truck roads generally

followed old railroad grades, many early forest roads were located close to the streams, again degrading aquatic habitat.

To compound the problem, the use of bulldozers after WW II made it possible to build roads on some very steep slopes. To “bench” the road into the hillside, large amounts of soil and rock were “side cast” on to these steep slopes. Some side-cast material eventually gave way, taking roads with it and often causing landslides that affected streams below.

Because we knew less about fish biology, early construction techniques at times resulted in culverts at stream crossings that were not designed to pass fish and often collected debris that blocked them. As researchers discovered more about fish behavior and the impact of runoff and erosion, engineers have responded by adjusting road locations as well as construction methods and materials, and forest engineers now are able to build roads with minimal environmental impact. Road construction standards today are highly regulated by state law and employ practices that reflect the latest developments in our understanding of fish biology. Many older roads still in use, as well as unused or “orphan” roads, are either presently creating problems with water quality or have the potential to do so.

## Beginnings of the Roads Program

As concerns about declines in salmon populations increased in the early 1990s, DNR, other state agencies and stakeholders developed watershed analysis procedures and conducted research that led in 1999 to the adoption of a plan, known as *The Forest and Fish Report*, which ultimately became state law as part of the Forest Practices Act. The new plan called for addressing the problems of fish passage and the impacts on aquatic habitat caused by older roads and stream crossings by use of bridges or culverts.

The Forest Practices Rule covering RMAPs calls for landowners to inventory approximately 20 percent of their land each year for five years, finishing the task by July 1, 2006. Furthermore, the process requires that the maintenance and abandonment work begin immediately and be completed in 15 years (by July 1, 2016). Since the program began, private forest landowners have been submitting annual inventory results and work plans to DNR, and have begun the on-the-ground improvements. By the end of 2004, inventories had been conducted on more than 48,000 miles of forest roads. DNR has approved more than 7,400 RMAPs and restorative work is well underway. To date, more than 1,200 stream-crossing structures, primarily older culverts, have

*“We tackle the worst sites first and try to get the most stream miles opened up quickly.”*

—Marty Brooks  
Weyerhaeuser

been replaced, opening up 647 miles of streams to fish.

Gary Graves, forest practice assistant division manager for operations with the DNR, says that the inventory work is going well. “Overall, things are very encouraging,” he said. Because restoration work is quite expensive, RMAP presents particular problems to small landowners. To address the problem, the Washington State Legislature passed the Family Forest Fish Passage program, which provides financial and technical assistance to small landowners with fish barriers on their land. To date nearly 60 miles of fish

## Statewide Road Improvements Under RMAP

From DNR data as of December 31, 2004

	Total Number of Approved RMAPs	Miles of Forest Road Affected	Miles of Road Abandoned	Miles of Orphan Roads	Miles of Fish Passage Opened	Structures Removed or Replaced
<b>Northeast</b>	3,374	8,097	203	88	89	211
<b>Northwest</b>	1,600	4,935	637	569	41	128
<b>Olympic</b>	418	4,694	74	186	109	151
<b>Pacific</b>	1,655	21,072	298	550	243	449
<b>S. Puget Sound</b>	22	6,609	100	174	75	154
<b>Southeast</b>	354	2,644	275	377	90	124
<b>TOTAL</b>	<b>7,401</b>	<b>48,051</b>	<b>1,587</b>	<b>1,944</b>	<b>705*</b>	<b>1,253*</b>

*Major progress has already been made in forest road improvements and stream passage since the Road Maintenance and Abandonment Program began in 2001. The plan calls for work to begin immediately and be completed by 2016.*

\* Includes 58 miles of streams opened and 36 structures removed/replaced through the Family Forest Fish Passage Program. Because of reporting methodology, not every column adds up exactly to the totals indicated.

habitat has been opened up, and nearly 40 blocking structures removed.

### Early Road Work is Encouraging

Most of the effort to date has been carried out by the industrial landowners. Marty Brooks, forester with Weyerhaeuser's Aberdeen Forest Area, said that their inventory work is more than 80 percent complete and based on that information, they have begun work on approved RMAPs. “We tackle the worst sites first,” he said, “and try to get the most stream miles opened up quickly.”

For a large company like Weyerhaeuser, planning maintenance and restoration is a formidable challenge. Brooks said he must plan one to three years ahead and coordinate road work with harvest operations and other management activities.

Keith Simmons, manager of harvest planning and engineering with Green Diamond, is responsible for the RMAP work on the company's 315,000 acres of Washington forestland. Aggressive maintenance efforts have earned the company a recognition award from Shared Strategy for Puget Sound, a coalition of organizations working with local communities to restore salmon.

“We really were ahead of the game,” Simmons said, “because we started thinking about this issue in the early 90s and began discussions with state and federal officials. What came out of these talks indicated that water quality was the critical issue, and that forest roads had the largest impact.”

### The Ultimate RMAP Objective

The hope, of course, is that salmon will move upstream and utilize the new habitat made available to them and though biologists say it is too early to know, there is cause for optimism. Dr. Thomas Quinn, professor of aquatic and fisheries sciences at the University of Washington, pointed to a recent study on the Cedar River where a low dam that had blocked fish passage since 1901 was modified in 2003. “We're encouraged that in that short time we've already seen evidence of recolonization by Chinook and Coho salmon,” he said.

Said Dave Whipple of Washington's Department of Fish and Wildlife, “There are all sorts of unknowns but also high expectations about the success of the program. One thing is clear, however: a tremendous amount has already been accomplished and there is even more good work to come. That can only lead to more fish habitat and improving fish populations in the streams and rivers in Washington's forests.”



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