Tech Tips

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CENTRAL TIRE INFLATION (CTI) REDUCES SEDIMENT UP TO 84%

A METHOD TO HELP MEET NEW WATER QUALITY STANDARDS & GUIDELINES

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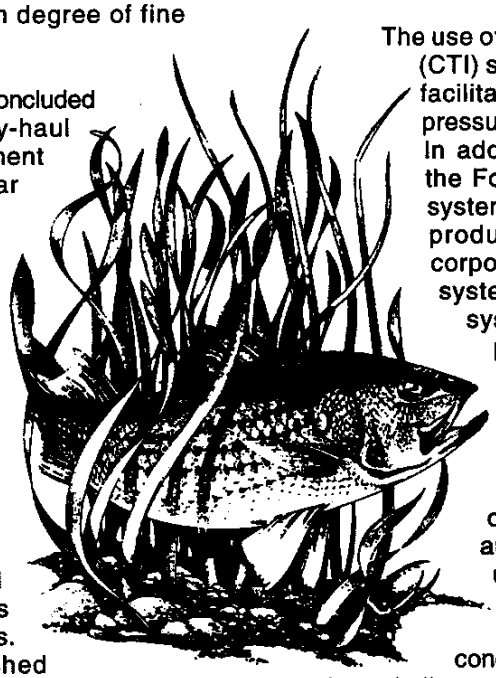
Research studies conducted over the last five years indicate that dramatic reductions in sediment from road surfaces can be expected by using lower tire pressures on heavy-haul vehicles. The roads with the most dramatic reductions in road surface sediment are those with no surfacing material or, surfaced with aggregates that produce a high degree of fine material during hauling operations.

Research conducted in Lowell, Oregon concluded that reducing tire pressures on heavy-haul vehicles reduced road surface sediment an average of 80% over a three year test period on a forest road surfaced with an aggregate producing a large amount of fine material during hauling. One test year noted reductions in sediment levels of 84%. Tire pressures were lowered from highway pressures of 90 psi to 30 psi in the drive tires while empty, and to 50 psi in the drive and trailer tires when fully loaded. Speeds were less than 35 mph.

This research has major implications to National Forests, and other forested areas, that administer watersheds requiring higher water quality standards. For example, the recently published standards and guidelines amending National Forest Plans in the Columbia River Basin impose stringent measures to reduce sediment levels. These new standards and guidelines are required to protect and improve vital spawning habitat for dwindling supplies of native Coho and Chinook Salmon.

The Boise National Forest recently sold a 12 mmbf timber sale with requirements for reduced pressure on log truck and heavy truck traffic. The primary reason for this requirement is to reduce sediment into streamcourses and protect the resident Bull Trout population.



The use of on-board Central Tire Inflation (CTI) systems on heavy-haul vehicles facilitates the raising and lowering of pressures while the vehicle is in motion. In addition to increasing interest by the Forest Service in the use of CTI systems for hauling of National Forest products; several private timber corporations are currently using the system, or proposing the use of the system, to help control sediment production.

The expected reductions in road surface sediment will vary depending upon site conditions such as precipitation, composition of the road surface, traffic levels, and other factors. However, the underlying principles responsible for the reduced sediment, shallower ruts and less concentrated flow, would be expected to produce similar results in other locations. An effort is currently underway by the Intermountain Research Station and the San Dimas Technology and Development Center to develop guidelines quantifying the expected reductions in road surface sediment for various situations and areas around the country.

(CTI is a commercially available electromechanical device that allows the driver to raise and lower tire pressures while the vehicle is in motion.)

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