

Section G

SEDIMENT INPUT SUMMARY

Introduction

The estimated sediment inputs for the Willow/Freezeout Creeks WAU have been summarized and are presented. The purpose of this summary is to determine the relative amount of different sediment sources, determine priorities for erosion control, and assist in interpretation of stream channel conditions in relation to sediment deposition and transport. A sediment budget provides quantification of sediment inputs, transport, and storage in a watershed (Reid and Dunne, 1996). In this case we are not doing a true sediment budget, only an estimation of the sediment inputs. However, this estimation is useful for source analysis, numeric targets, and allocation of responsibility as needed in a Total Maximum Daily Load (TMDL) for 303(d) listed rivers, such as the Russian River where the Willow/Freezeout Creeks WAU is located. However, care must be used when interpreting these estimated values; by no means can the estimates be considered absolute. Rather, sediment input estimates are best interpreted for relative comparisons between processes and planning watersheds.

This section combines and summarizes sediment input results from the Mass Wasting and Surface and Fluvial Erosion modules of the watershed analysis for the Willow/Freezeout Creeks WAU. Sediment input for the Willow/Freezeout Creeks WAU is estimated from mass wasting, road surface and fluvial erosion, skid trail erosion and gully erosion. The sediment inputs have been estimated for the past fifty years (1950-2000).

Sediment Inputs

The major sediment inputs in the Willow/Freezeout Creeks WAU over the last 50 years have come from mass wasting, road associated surface and fluvial erosion, skid trail associated surface and fluvial erosion and gully erosion. The breakdown of estimated sediment inputs is presented by watershed for the Willow/Freezeout Creeks WAU (Table G-1).

A high amount of sediment inputs are estimated for Willow Creek watershed in the 1950s and 1960s, primarily from skid trail and gully erosion. Mass Wasting is highest in Willow Creek during the 1980s when the largest storms on record created a large amount of debris slide failures. Sediment inputs for mass wasting were only estimated for the past 30 years and road associated erosion for the last decade. However, to provide context for the last 50 years the average rate of erosion for roads and mass wasting was extrapolated for comparison to the gully and skid trail estimates. This extrapolation show gully erosion as the highest contributor (34%) with roads as the lowest (16%)(Table G-2).

Table G-1. Estimated Sediment Inputs by Watershed and Decade for the Willow/Freezeout Creeks WAU.

Watershed by Decade	Road Assoc. Fluvial and Surface Erosion (tons/sq mi/yr)	Skid Trail Assoc. Erosion (tons/sq mi/yr)	Gully Erosion (Trihey) (tons/sq mi/yr)	Mass Wasting (tons/sq mi/yr)
<i>Willow Creek</i>				
1950s	n/a	322	260	n/a
1960s	n/a	368	260	n/a
1970s	n/a	38	260	25
1980s	n/a	89	260	548
1990s	119	29	260	110
<i>Freezeout Creek</i>				
1950s	n/a	36	n/a	n/a
1960s	n/a	77	n/a	n/a
1970s	n/a	16	n/a	2
1980s	n/a	311	n/a	266
1990s	138	4	n/a	217
<i>Dutch Bill Creek</i>				
1950s	n/a	0	n/a	n/a
1960s	n/a	181	n/a	n/a
1970s	n/a	8	n/a	0
1980s	n/a	161	n/a	0
1990s	68	0	n/a	40

Table G-2. Proportion of Sediment Inputs by Process for the Willow/Freezeout Creeks WAU, 1950-2000.

Watershed	Road Assoc. Fluvial and Surface Erosion *	Skid Trail Erosion	Gully Erosion (Trihey)	Mass Wasting **
Willow Creek	16%	22%	34%	27%
Freezeout Creek	35%	23%	n/a	42%
Dutch Bill	44%	45%	n/a	10%

* - 1990s estimate used to extrapolate 1950-1990 inputs

** - 1970-2000 estimate use to extrapolate for 1950-1970 inputs

The highest amount of sediment inputs for Freezeout Creek watershed occurred in the 1980s. This is from a high amount of tractor yarding creating skid trail associated erosion and a high amount of mass wasting from large storm events that decade. The proportion of erosion is

fairly evenly spread between mass wasting, skid trail and road erosion for Freezeout Creek watershed. However, mass wasting is the largest contributor (42%) in the Freezeout Creek watershed. The land in Dutch Bill Creek primarily has the sediment inputs split between road and skid trail with some mass wasting erosion as well.

The estimated proportion of sediment inputs for the Willow/Freezeout Creeks WAU is an average of process inputs over the last 50 years (see Table G-2). The estimates are not necessarily indicative of future inputs, rather it provides an indication of where protections or restoration should be emphasized. Particularly, the skid trail estimates should be considerably lower over time because much of practices that created the high skid trail erosion amounts are no longer used.

Literature Cited

Reid, L. and T. Dunne. 1996. Rapid evaluation of sediment budgets. Catena Verlag GMBH. Reiskirchen, Germany.