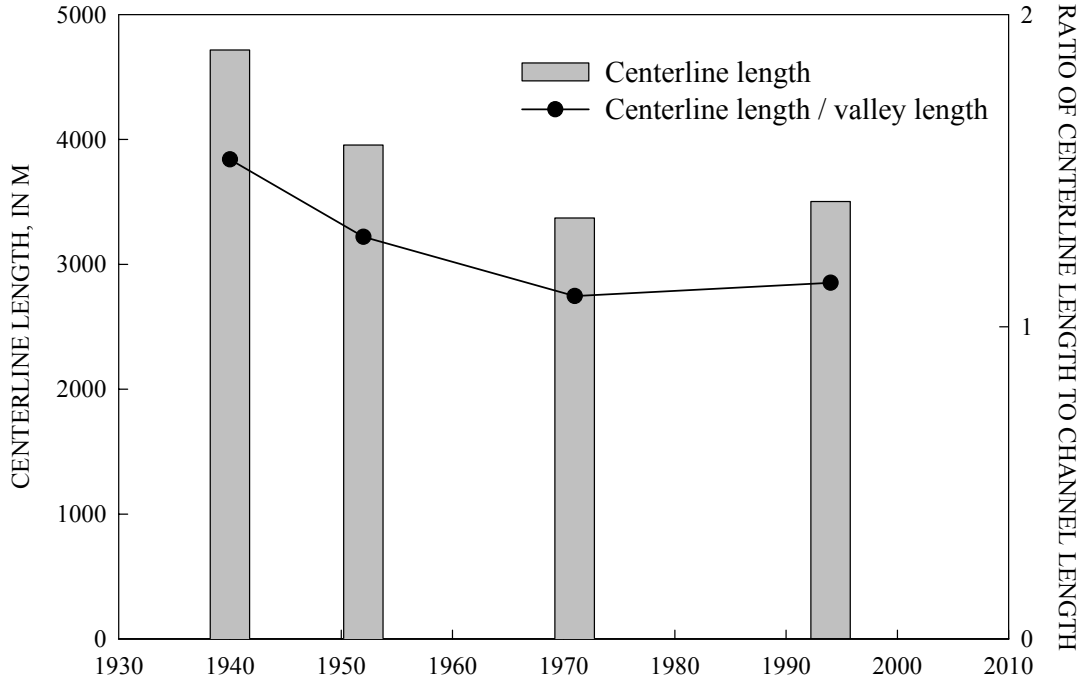

Figure 4-10. Upper Truckee River channel length results, 1941 – 1994.

The active area of this section of the Upper Truckee River has decreased since the years 1940 to 1952, to present (Table 4-5; Figure 4-11). This can be attributed in part to the construction of cutoffs by local landowners and channel incision related to these and other cutoffs constructed near the airport. Although this reach of the Upper Truckee River had a more stable planform between 1971 and 1994 then it did previously, it is currently still quite active. If we assume that this reach is representative of adjacent alluvial reaches, particularly those downstream from the golf course, these data also support the contention that fine-grained suspended-sediment loads emanating from streambanks of the Upper Truckee are high, but decreasing with time. A regression of annual, fine-grained concentrations with time for the index station on the Upper Truckee River (10336610) was found significant at the 0.03 level over the past 22 years.

Table 4-5. Upper Truckee River active-area analysis.

Period	Interval (years)	Worked area (m^2)	Worked area/valley per time interval (m^2/km/y)	Worked area per length (start) per time interval (m^2/km/y)
1940-52	12	60857	1.65	1.08
1952-71	19	54796	0.94	0.73
1971-94	23	51266	0.73	0.66

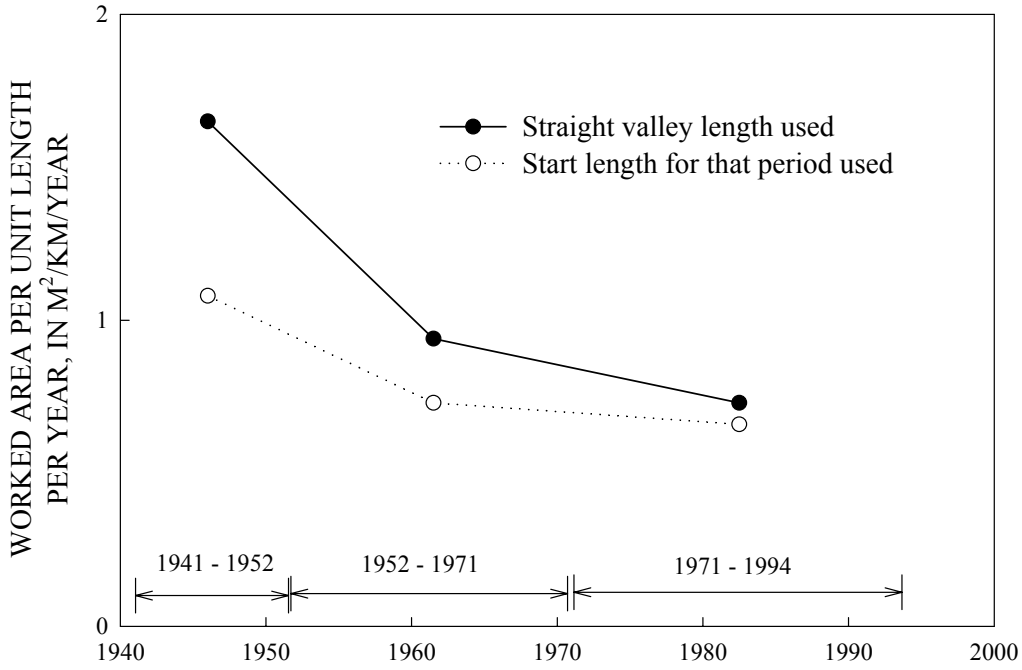

Figure 4-11. Upper Truckee River channel-activity results, 1941 – 1994.

4.5.4 Sub-Reach Channel Activity Results

Comparison between reaches adjacent to and upstream of the golf course show decreasing channel activity with time. Figure 4-13 contains graphs summarizing results of analysis of the golf course reach and remaining upstream reach and Table 4-6 tabulates this information.

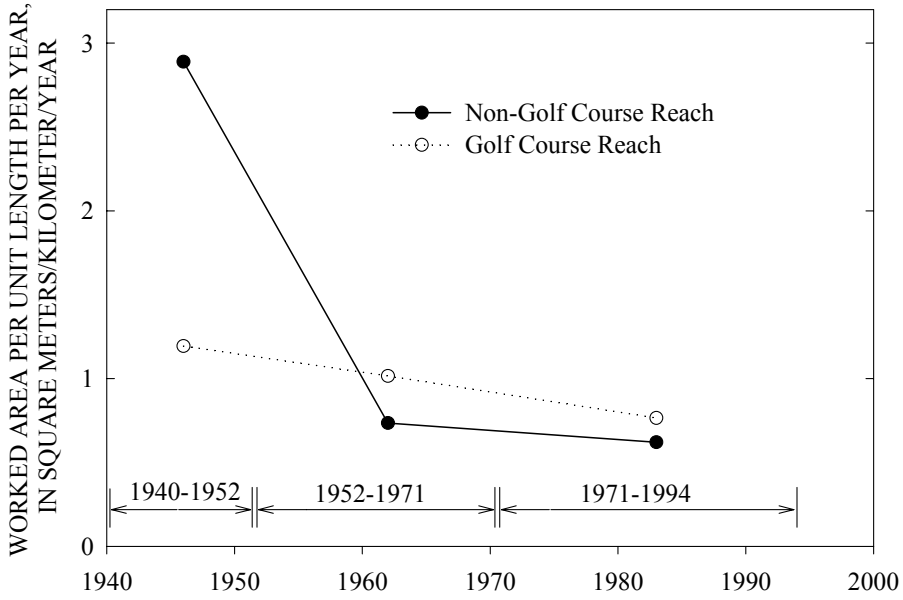

Figure 4-12. Channel activity for golf course and upstream sub-reaches, using valley length.

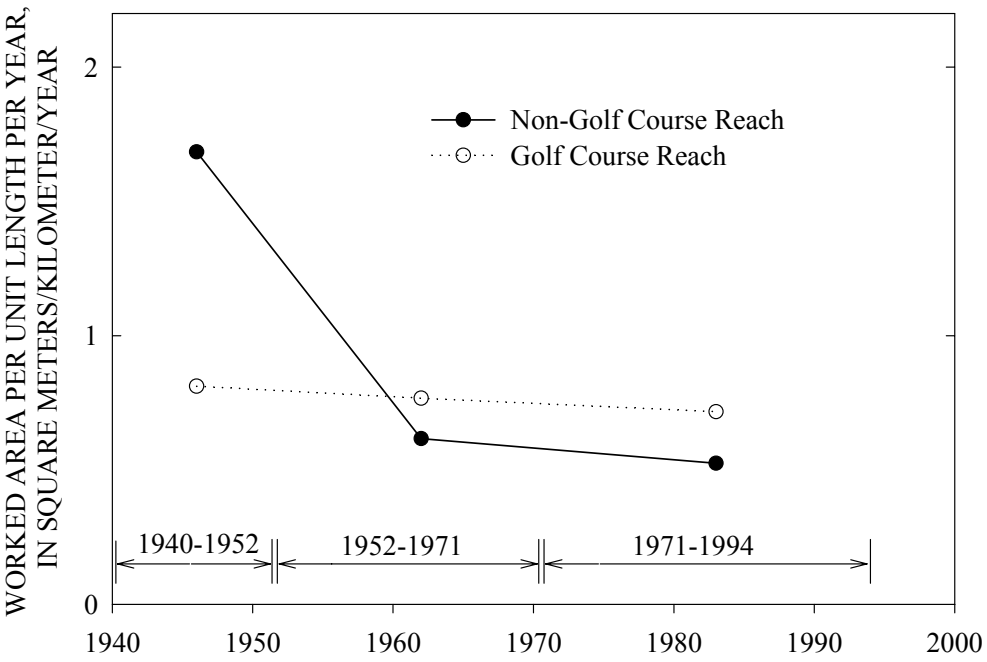

Figure 4-13. Channel activity for golf course and upstream sub-reaches, using centerline start length.

Table 4-6. Channel Activity in upstream and golf course sections of the Upper Truckee River.

Period	Reach	Worked area (m^2)	Worked Area/Valley Length per Time Interval (m^2/km/y)	Worked Area per (Start) Length per Time Interval (m^2/y/km)
1940-52	Upstream of Golf Course	28700	2.89	1.68
1952-71	Upstream of Golf Course	11600	0.735	0.617
1971-94	Upstream of Golf Course	11800	0.620	0.525
1940-52	Golf Course	32100	1.19	0.812
1952-71	Golf Course	43220	1.02	0.767
1971-94	Golf Course	39400	0.765	0.717

The first period of the reach upstream of the golf course possessed the largest active area value. The active area of the golf course reach is also comparatively high during this period. Between 1952 and 1971, and 1971 and 1994, the reach upstream of the golf course showed slightly lower activity values than the reach in the golf course. This may be attributable to the construction of a sheet-pile grade control structure in the upstream reach which serves to arrest further channel incision. Still, activity rates for both reaches show a decline over the 53-year

time period, further supporting the view that sediment loads from the Upper Truckee River are decreasing.

4.6 Ground Reconnaissance: Results of RGAs and Stream Walks

4.6.1 Upper Truckee River

The assessed portion of the Upper Truckee River spans 21 km from the Highway 50 bridge above Truckee Marsh to the USGS stream gage located 0.1 km below the Alpine Campground (10336580) (Figure 4-14). The length of assessed channel has been divided into six major reaches: the lower meadow, airport channelization, upper meadow, golf course, meandering gravel pool-riffle, and alternating moraine/meadow.

The lower meadow is a 2.5 km meandering reach. Streambanks are typically 1.5 m-high and composed of silt and fine sand. The stream meanders near the east valley wall thereby creating occasional escarpments. The escarpments contain a mix of materials including cohesive clays, cemented sands, and loose sand and gravel. Vegetation consists of grasses and alder on the flat meadow banks and sagebrush and pine on the escarpment banks. The overall bank erosion potential for the reach is rated high with sloughing banks considered to be the dominant fine sediment source.

In 1968 the Upper Truckee River was realigned to make way for modifications to the airport runway (Resources Agency, 1969). The present channel form is a 1.2 km reach with 20 cm diameter rip-rap lining the banks. Alders, grass, and small pines cover the banks. The erosion potential of the banks is negligible. The reach falls between hotspots 17 and 18 (Table 4-7).

Table 4-7. Summary of reconnaissance-level evaluation of areas of streambank instability and delivery of fine-grained sediments along the Upper Truckee River.

Erosion hotspot	Hotspot Location (UTM)		Source of Fine Sediment	Relative erosion magnitude
	Easting	Northing		
1	760870	4312260	1.5 m high sloughed silt bank	moderate
2	760920	4312250	1.5 m high sloughed silt bank	moderate
Hwy 50 bridge				
3	760970	4312230	1.5 m high sloughed silt bank	high
4	761070	4312226	1.5 m high sloughed silt bank	high
5	761110	4312230	1.5 m high sloughed silt bank	high
6	761155	4312223	1.5 m high sloughed silt bank	high
7	761256	4312156	1.5 m high sloughed silt bank	high
8	761371	4311919	1.5 m high sloughed silt bank	high
9	761503	4311704	1.5 m high sloughed silt bank	high
10	761468	4311521	1.5 m high sloughed silt bank	high

11	761441	4311376	5 m high escarpment below dam	moderate
Dam				
12	761304	4311214	6 m high escarpment	moderate
13	761219	4311170	6 m high escarpment	high
14	761133	4311094	4 m high escarpment	high
15	761020	4310981	1.2 m high undercut bank of silt/sand	moderate
16	760960	4310835	1.2 m high undercut bank of silt/sand	moderate
17	761029	4310789	1.2 m high undercut bank of silt/sand	moderate
			channelized and rip-rapped	negligible
18	760940	4309060	6 m high escarpment	moderate
19	760924	4308810	1.5 m high sloughed silt bank	moderate
20	760871	4308448	1.5 m high sloughed silt bank	moderate
21	760732	4308262	1.5 m high sloughed silt bank	moderate
22	760641	4308068	2.0 m high sloughed silt bank	moderate
Hwy 50/89 bridge				
23	759662	4306745	3 m high slumped bank	moderate
24	759376	4306658	2 m high slumped bank	moderate
25	758927	4306417	2 m high eroding bank	moderate
26	758910	4306450	1.5 m high eroding bank	moderate
27	758672	4306417	2 m high eroding bank	moderate
28	758694	4306026	2.3 m high scalloped R bank	moderate
End of golf course				
29	758523	4305851	2.5 m high eroding R bank	moderate
30	758062	4303989	3 m high eroding bank affected by LWD	major
31	758579	4303011	eroding L bank	low
32	758685	4302967	LWD jam causing bank scour	moderate
33	758642	4302801	1.5 m high eroding silt/fine sand bank	moderate
34	758800	4302180	1.5 m high slumped L bank	moderate
35	758805	4302080	1.5 m high slumped L bank	moderate
36	758776	4301770	1.5 m high sloughed silt overlying sand bank	moderate
37	758775	4301618	1.5 m high sloughed silt overlying sand bank	moderate
38	758864	4300887	3 m high slumped bank	moderate
39	758936	4300508	2 m high eroding bank	moderate
Portal Road bridge				