History and Geomorphology of Alder Side Channel and Straughn Slough, 1939 through 2002

Alder Side Channel and Straughn Slough are side channels on the south side of the Quinault River valley (Figure 1). Alder Side Channel extends between about RK 5.7 and RK 9.5. Straughn Slough extends between about RK 4.7 and RK 5.1. Inner Creek Slough is a terrace channel located on the south side of the valley between Alder Side Channel and Straughn Slough, between about RK 5.3 and RK 7.2 (Figure 1). Because of its location through a terrace, Inner Creek Slough has been relatively stable since 1939 and will not be included in this discussion.

Figures 2 through 11 show the history of formation of potential habitat in the area of Alder Side Channel and Straughn Slough between 1939 and 2002. (The 1897, 1906, and 1929 channels all extended outside of the HCMZ in this section of the Quinault River and their locations are suspect and so were not used in this discussion.) Bank erosion that has occurred since 1939 is shown in Figure 12.

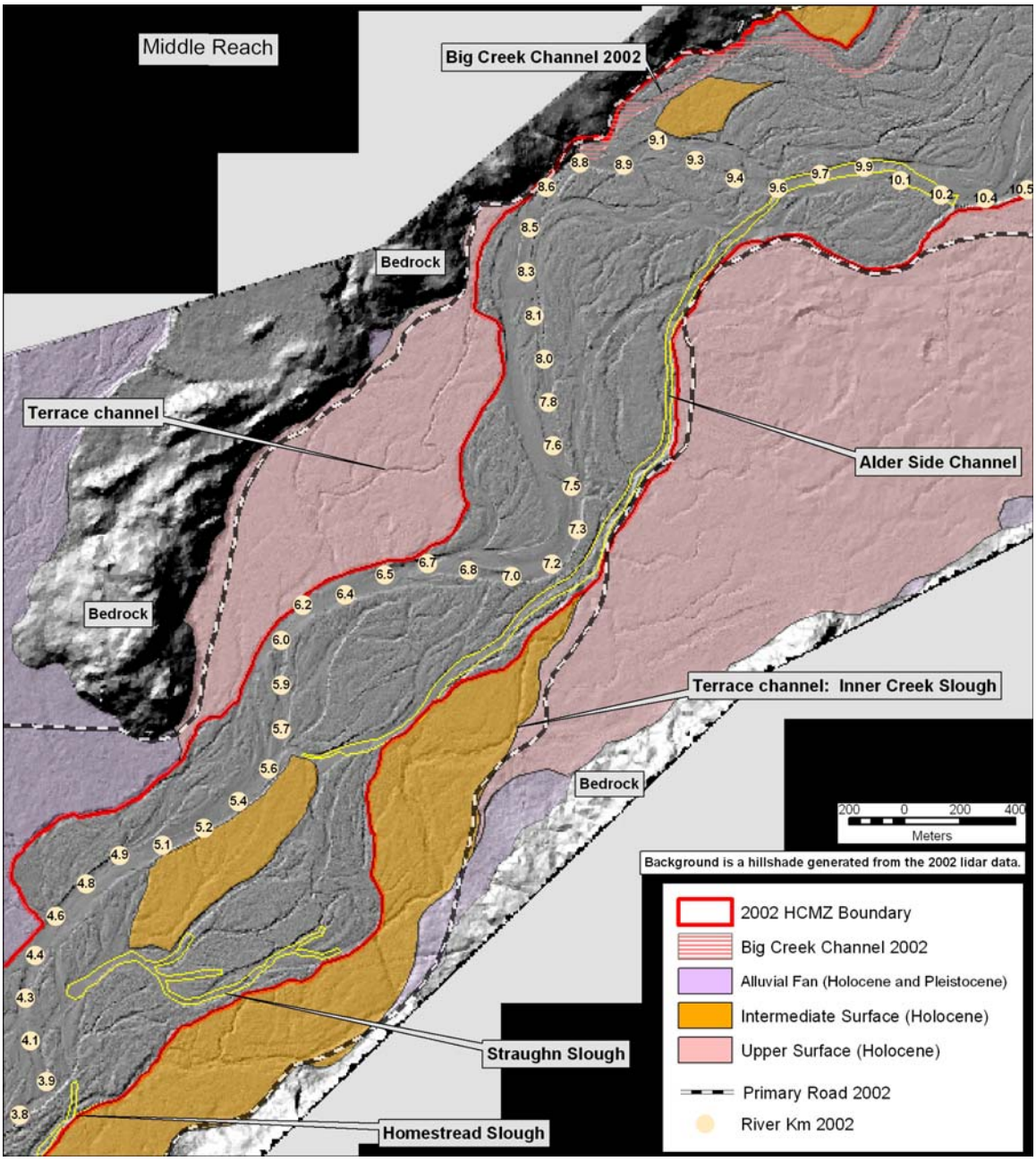

Figure 1. Alder Side Channel and Straughn Slough are located along the south boundary of the historical channel migration zone (HCMZ) between RK 4.7 and RK 9.5 on the south side of the Quinault River valley. Portions of Alder Creek flow along an older Holocene surface. A terrace channel, Inner Creek Slough, flows through the Holocene terrace between Alder Side Channel and Straughn Slough. Big Creek , a major tributary from the north, enters the Quinault River just upstream of Alder Side Channel. Background is a hillshade created from 2002 LiDAR data. River kilometers are from the low-flow channel at the time of a river survey in 2002.

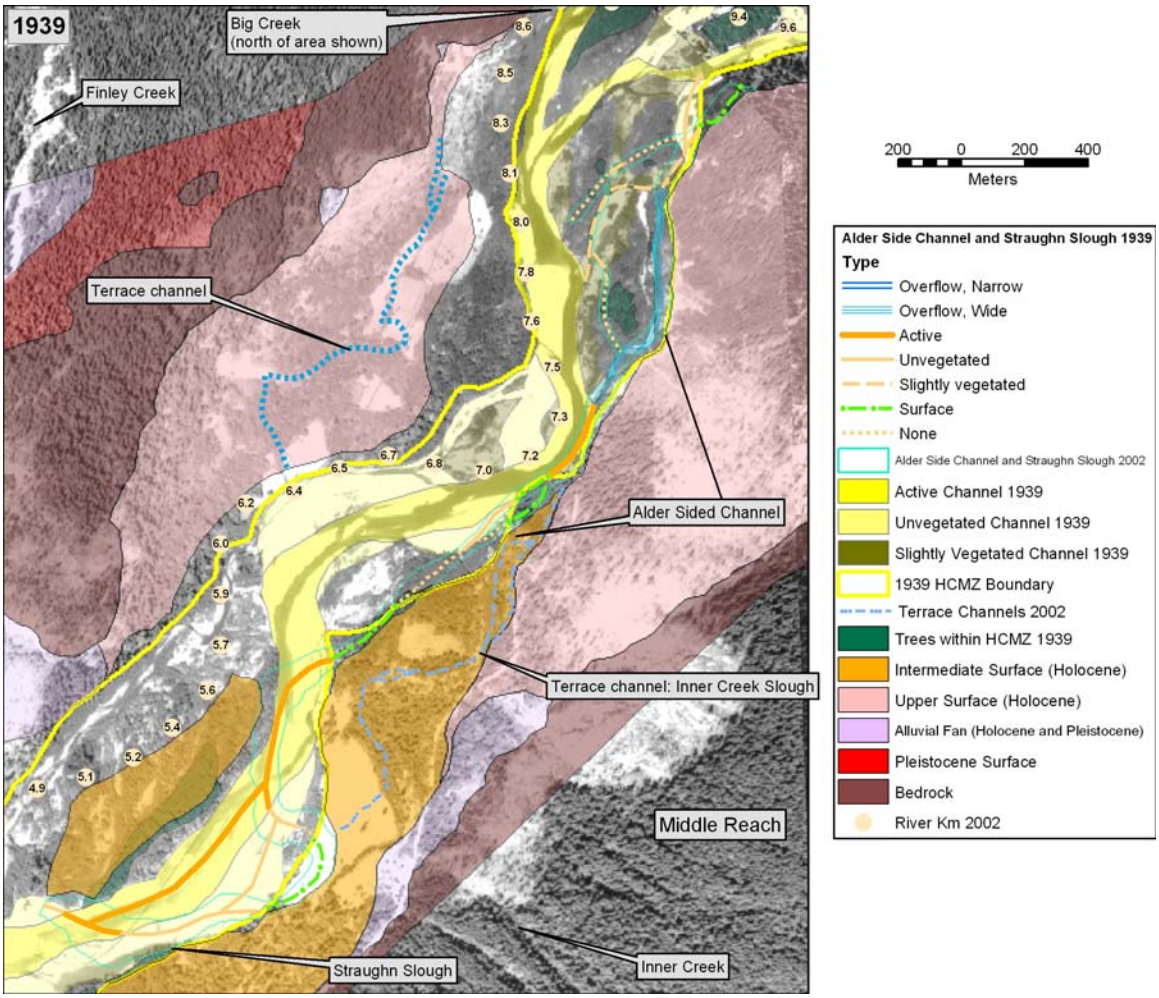

Figure 2. Only section of Alder Side Channel that existed as side channel and potential habitat was a 300-m-long section near the upstream end between RK 7.3 and RK 8.1. The section downstream of Alder Side Channel and Straughn Slough were part of the active or unvegetated channel of the Quinault River or had not yet been cut. (The Alder Side Channel and Straughn Slough were not entirely present until 1994.)

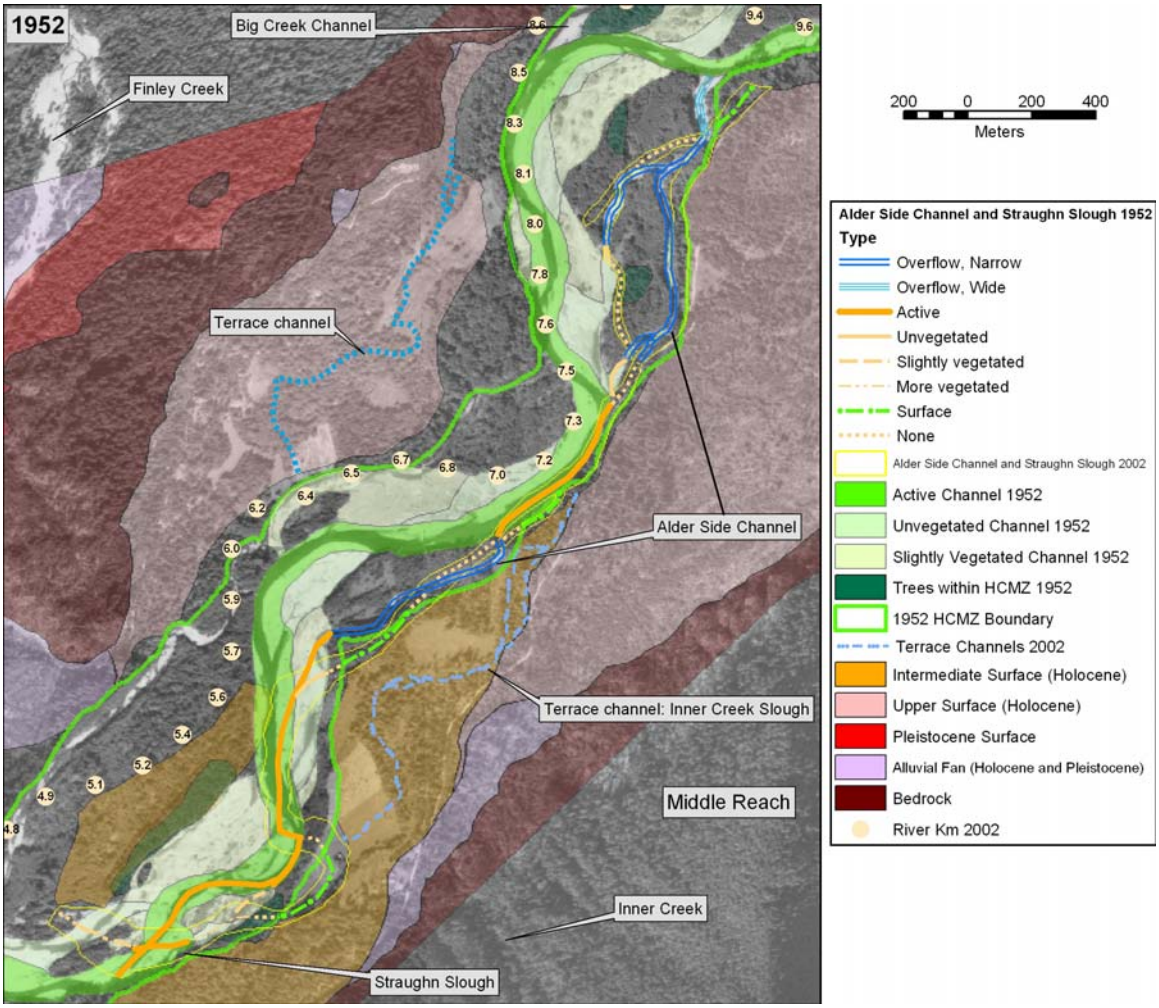

Figure 3. In 1952, the upstream section of Alder Side Channel that was potential habitat increased in length to about 850 m. A downstream section of potential habitat about 650 m long was present in 1952 between about RK 5.9 and RK 6.8. Straughn Slough was still part of the active channel or had not yet been excavated.

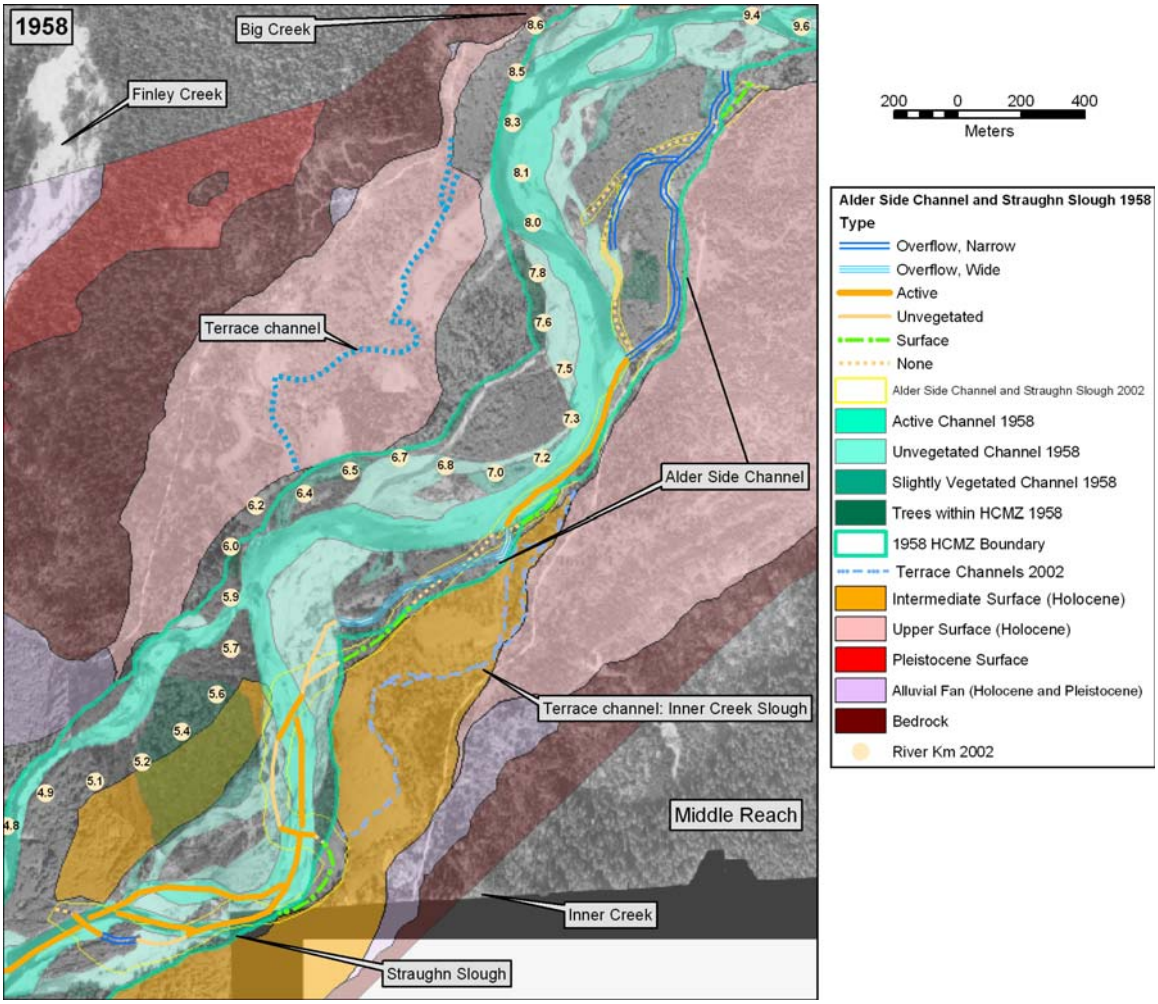

Figure 4. By 1958, the length of the upstream section of Alder Side Channel that was potential habitat had increased to about 900 m. The downstream section of potential habitat was about as it was in 1952. Straughn Slough was still part of the active channel, unvegetated channel, or had not yet been excavated.

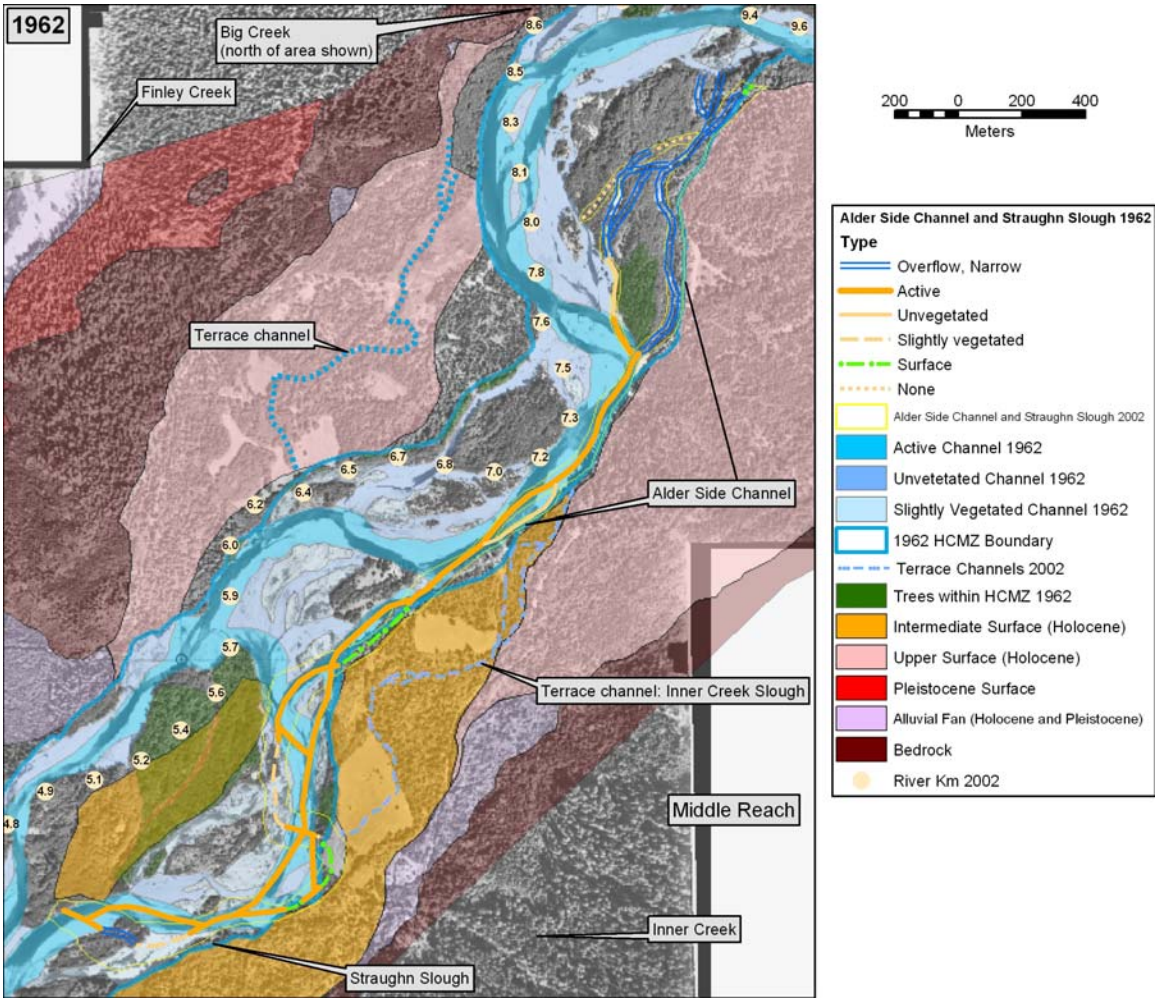

Figure 5. By 1962, the upstream section of Alder Side Channel that was potential habitat increased in length to about 1000 m. A meander in the active channel of the Quinault River had lengthened in a downstream direction since 1958, so that the active channel occupied the downstream section of potential habitat that existed in 1952 and 1958. The part that was active channel in 1962 continued to cut laterally to the south, creating sections that will become part of Alder Side Channel and Straughn Slough in later years. Part of Straughn Slough had not yet been excavated.

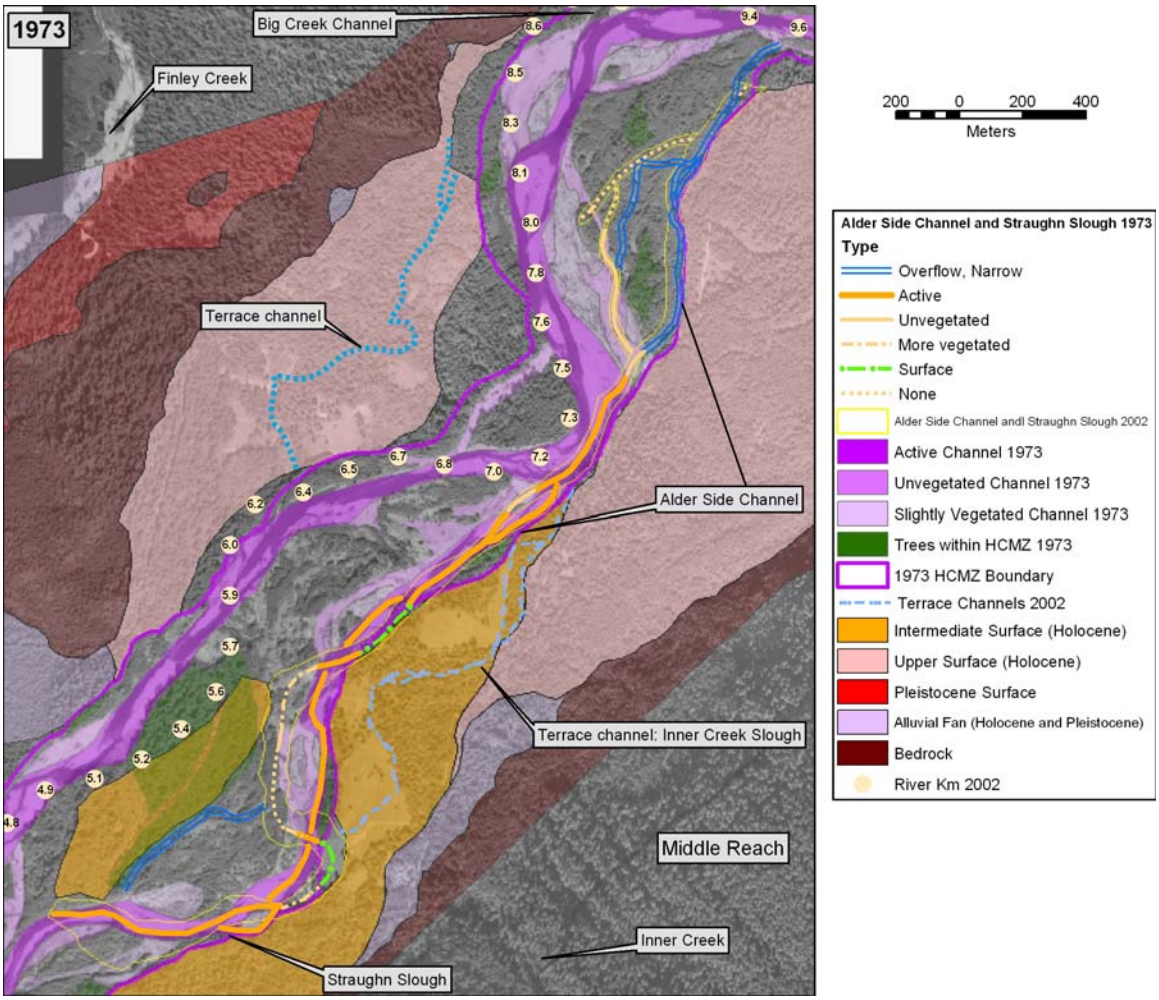

Figure 6. In 1973, the upstream section of Alder Side Channel that was potential habitat was still about 1000 m long, as it was in 1962. One path of the active channel of the Quinault River still flowed along the south (left) HCMZ boundary near the position of the future south portion of Alder Side Channel and Straughn Slough. Part of Straughn Slough had not yet been excavated.

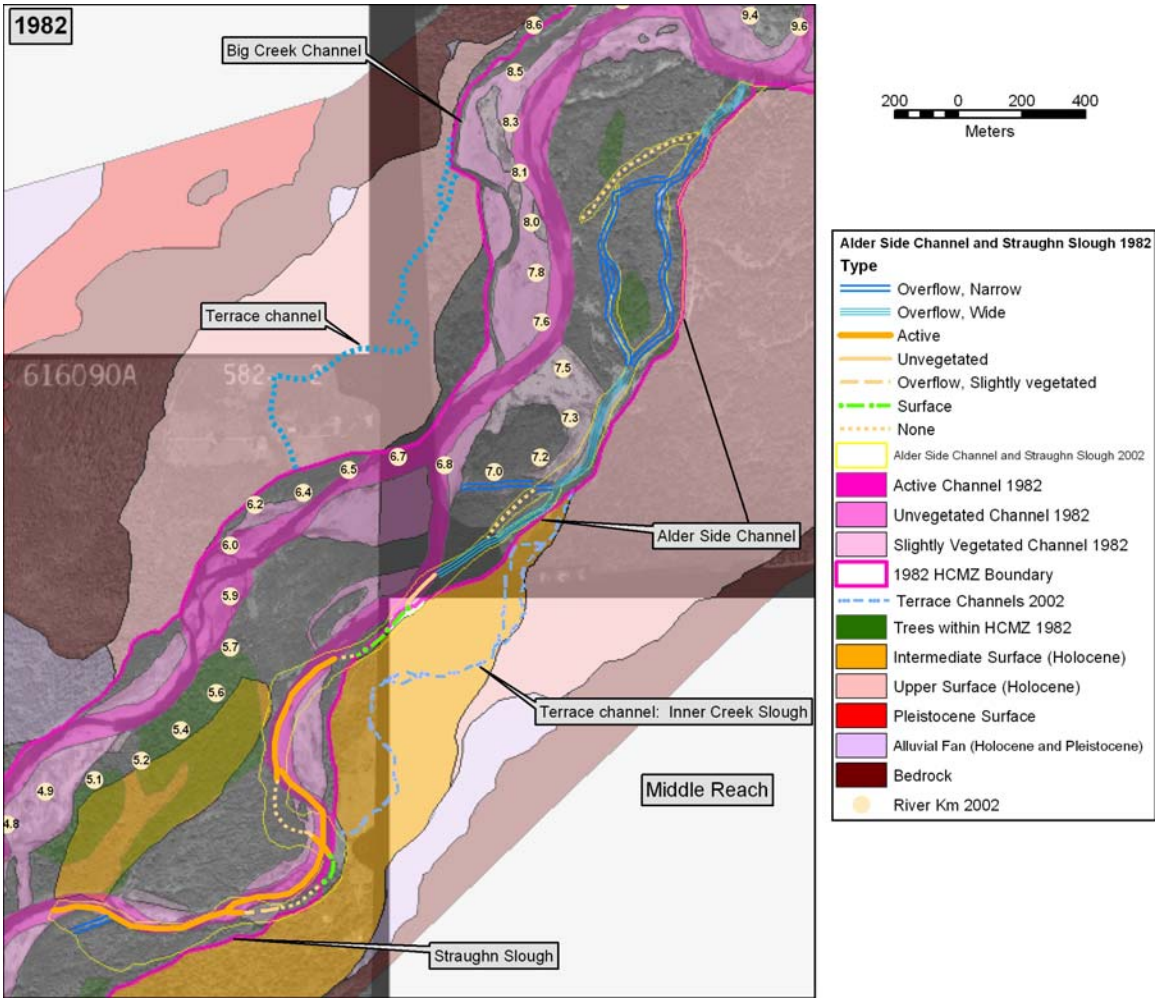

Figure 7. By 1982, the upstream section of potential habitat in Alder Side Channel has extended to a length of about 2000 m. The south (left) path of the active channel of the Quinault River flowed along the downstream about 2000 m of Alder Side Channel and Straughn Slough. In 1982, it appears that more flow was in the north path of the active channel of the river. The channel that becomes Straughn Slough had been nearly entirely excavated by 1982.

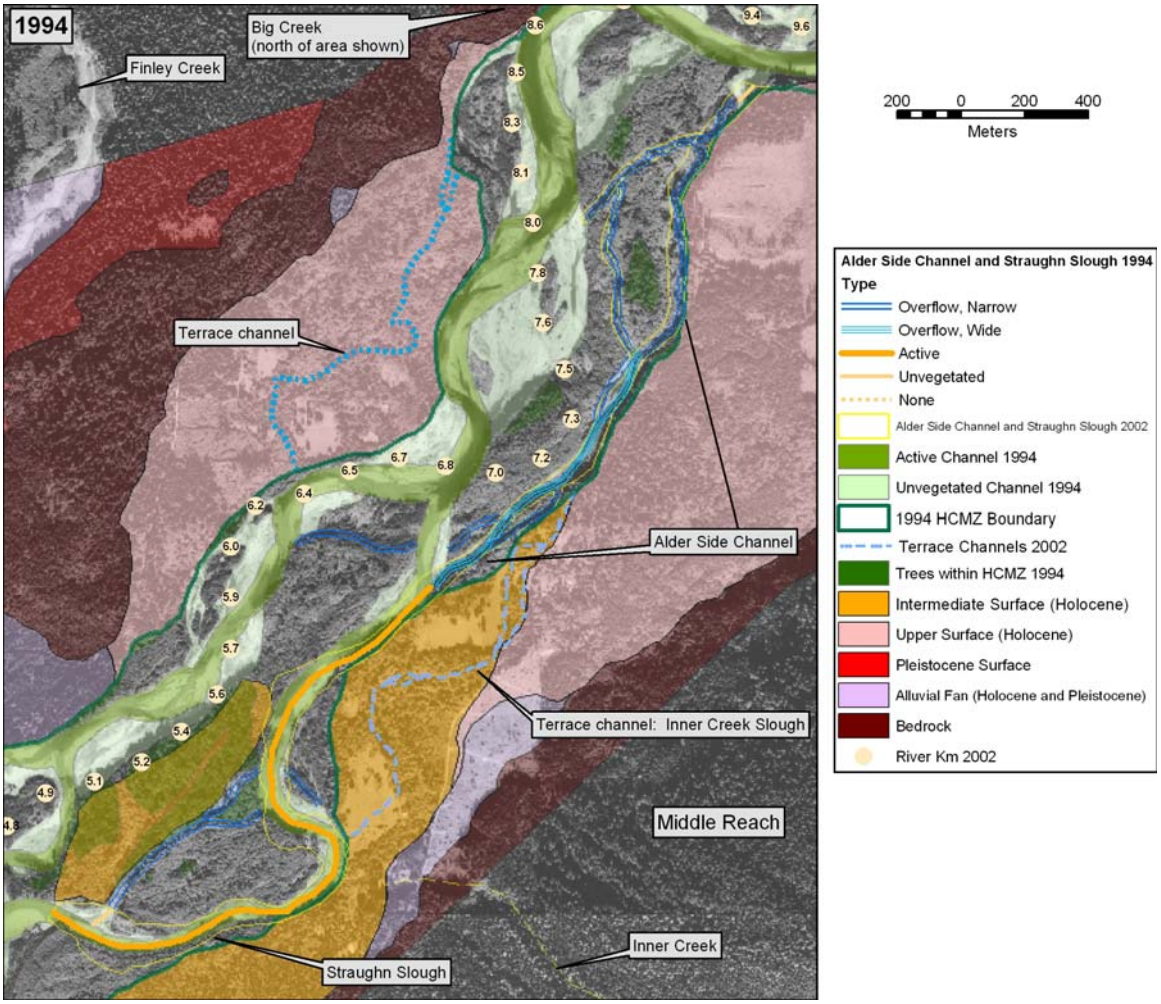

Figure 8. In 1994, the length of the upstream section of Alder Side Channel that was potential habitat was still about 2000 m long. The south (left) path of the active channel of the Quinault River flows in the downstream section of Alder Side Channel and Straughn Slough. Alder Side Channel and Straughn Slough have the configuration that they do in 2002.

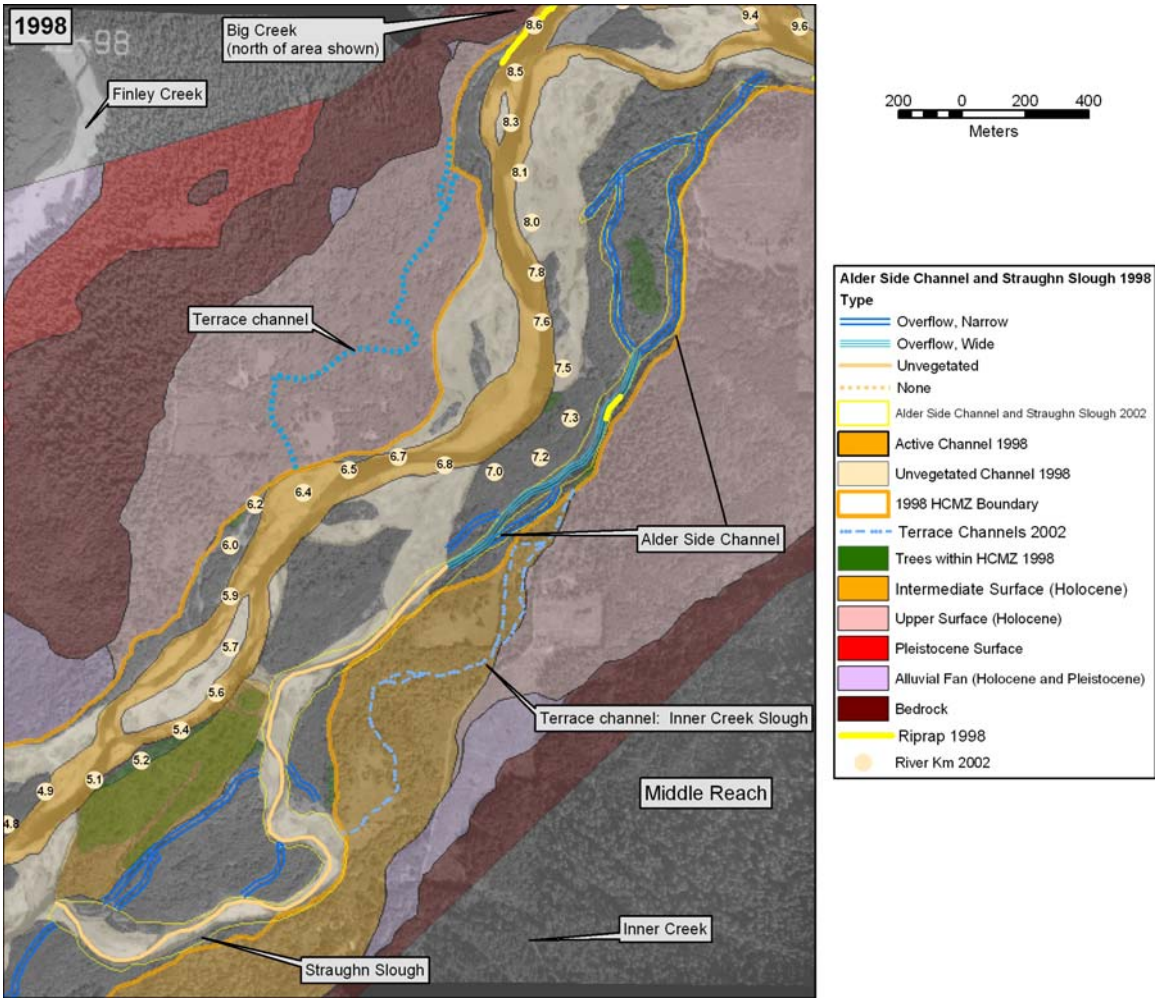

Figure 9. In 1998, the upstream section of Alder Side Channel that was potential habitat was about the same as it was in 1994. However, the downstream section of Alder Side Channel (between about RK 5.7 and RK 6.7) and Straughn Slough had been abandoned by the active channel of the Quinault River, and were now an unvegetated overflow channel only. Note the formation of additional narrow channels through riparian vegetation in several localities adjacent to Alder Side Channel.

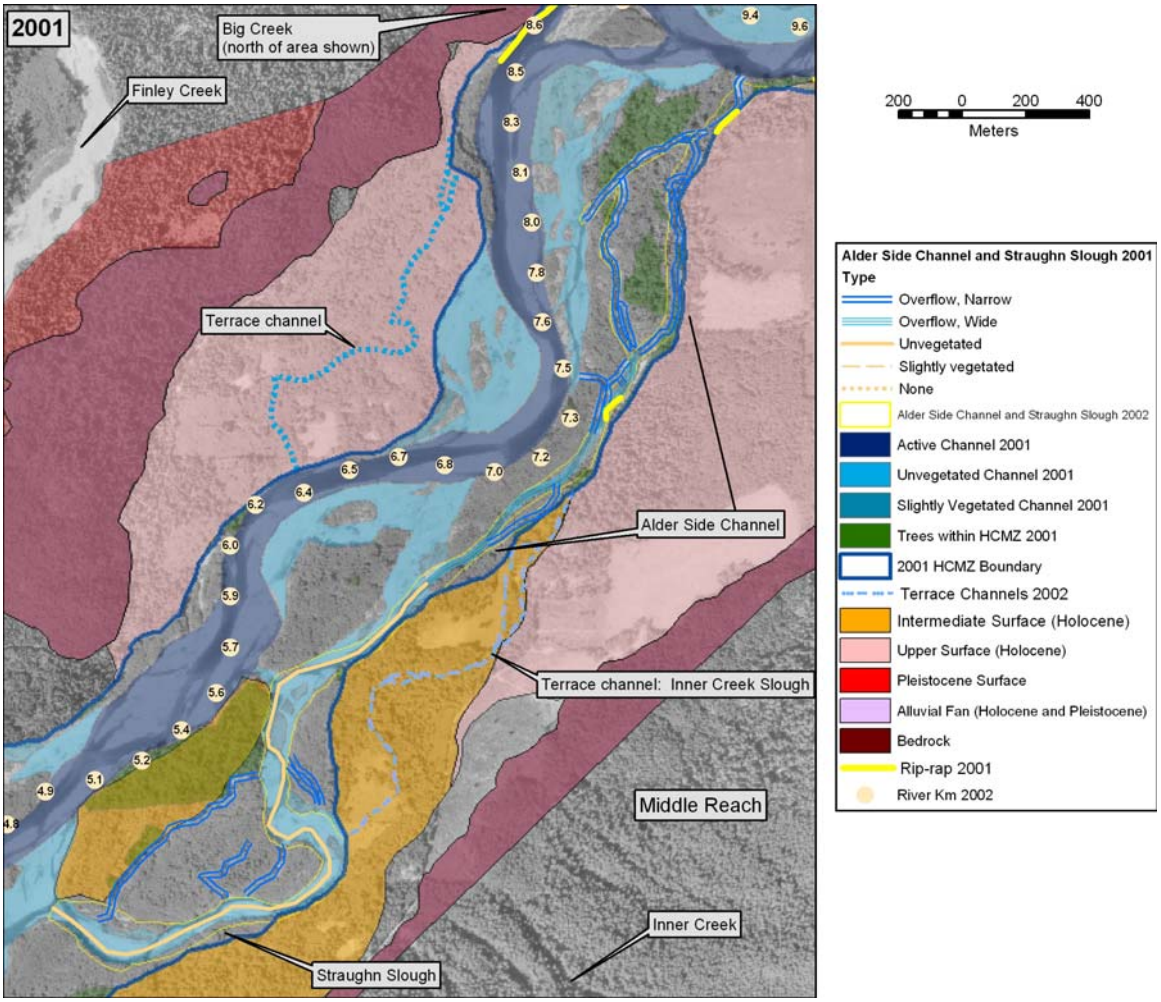

Figure 10. In 2001, the configurations of Alder Side Channel and Straughn Slough were much as they were in 1998. The upstream section of Alder Side Channel that was potential habitat was still about 2000 m long. The downstream portion of Alder Side Channel and Straughn Slough (about 2000 m long) were still part of the unvegetated channel of the Quinault River.

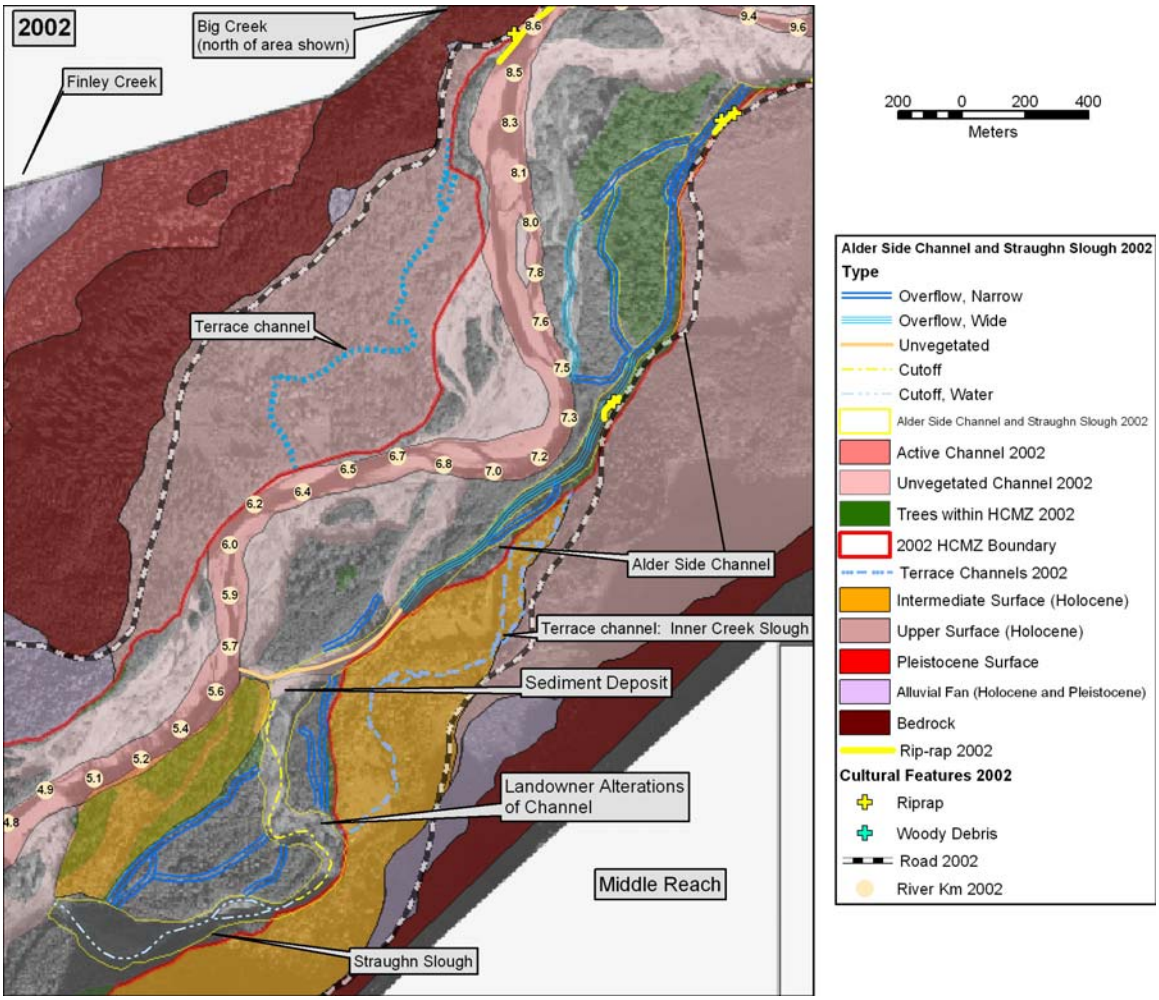

Figure 11. By 2002, the upstream section of Alder Side Channel that was potential habitat was similar to its configuration and length in 2001. A high flow caused the Quinault River to reoccupy the unvegetated channel between RK 5.7 and RK 6.8, the downstream end of Alder Side Channel. A sediment deposit was present near the mouth of Alder Side Channel near RK 5.6, where the unvegetated channel turns to join the active channel of the Quinault River. An overflow channel downstream of this point did not appear to receive surface flow from the river. Straughn Slough, which is the downstream about 900 m of this dry overflow channel, still had water visible in it in 2002. This flow may be from Inner Creek, a tributary, or groundwater.

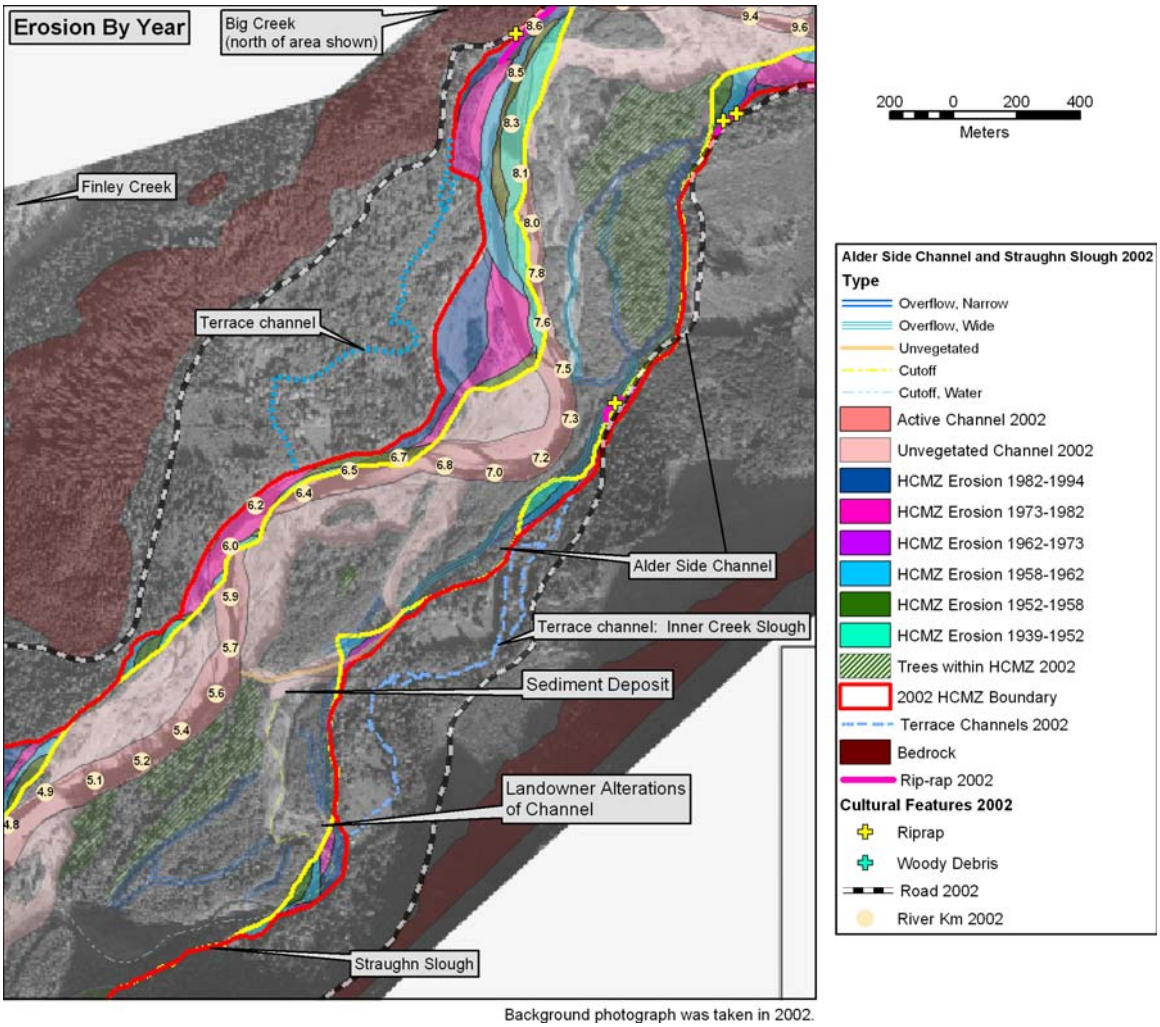

Figure 12. Bank erosion between 1939 and 2002 occurred mostly on the northwest side of the Quinault Valley opposite Alder Side Channel. The erosion occurred between 1939 and 1994. The erosion between RK 7.5 and RK 8.6 allowed the upstream end of Alder Side Channel to become stable habitat between 1939 and 2002. Erosion also has occurred upstream of Alder Side Channel on the south side of the valley.