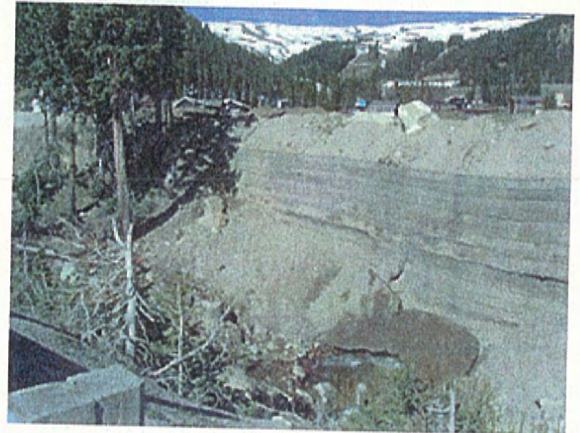




Sedimentation: Clear Creek immediately downstream from Loveland ski area parking; road sand and gravel from US 6.



Sedimentation: Clear Creek immediately downstream from Loveland ski area parking; sand and gravel from parking lot.

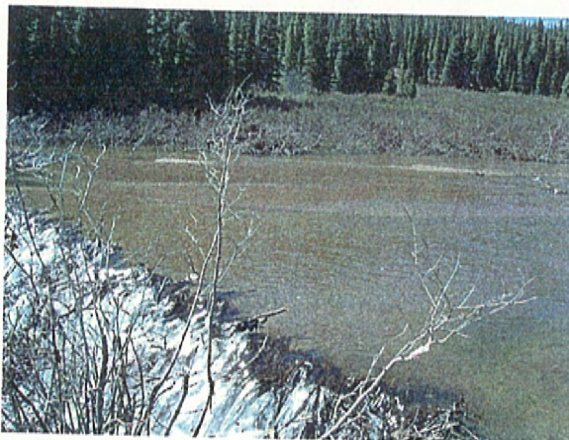
1



2 Potential Hydrocarbon Seepage from the Loveland ski area parking lot.



3 Channelization: Channelized Clear Creek immediately downstream from Loveland Valley parking area.



4 Sedimentation: Beaver Pond near Dry Gulch.

FIGURE 3-2
I-70 PEIS SWEEP
Stream Segment 1
Clear Creek County

3.1 Water Resource-related Categories – Existing Conditions

The headwaters of Clear Creek originate in this SS, above the Eisenhower Tunnel. Clear Creek flows around the south side of the east ventilation building and continues downstream on the south side of I-70 between I-70 and the Loveland Ski area and parking lots. The parking lots located on the north side of I-70 at the east portal of the Eisenhower Tunnel allow for parking of tunnel vehicles, public parking, and temporary parking for oversize vehicles and for vehicles transporting hazardous materials when Loveland Pass is closed.

3.1.1 Water Quality

This SS contains large parking lots associated with the Loveland Ski Area (unpaved) and the Eisenhower Tunnel (paved). The Loveland Ski Area parking lots are located directly on Clear Creek, and sand from the unpaved parking surface erodes directly into Clear Creek from the parking lot surface and is also shoved into the creek during snow removal. The Eisenhower Tunnel parking lots are located north of I-70 and opposite Clear Creek. Seepage water from the Eisenhower Tunnel is discharged to Clear Creek from the east portals of the tunnel.

Nutrient loading to Clear Creek has been a concern throughout the past several years. Potential sources of nutrients, primarily nitrogen and phosphorus, in this SS include the Loveland Ski Area wastewater treatment plant (WWTP), the CDOT (Eisenhower Tunnel) WWTP, and sediment.

The Loveland Ski Area WWTP is located at Loveland Basin. UCCWA monitors the quality of the Loveland WWTP discharge.

The CDOT Eisenhower Tunnel WWTP operators have continually been adding live bacterial agent (LBA) to enhance nutrient removal (UCCWA et al., 2001). The Eisenhower WWTP occasionally exceeds effluent limitations (volume of discharge) during the spring as a result of seepage (snowmelt) into the system. This WWTP is currently being redesigned to minimize seepage and improve the treatment of phosphorus and ammonia.

The geology in the entire Clear Creek drainage is characterized as mineral-laden (metals) of varying richness. Disturbance of these areas through mining for mineral-rich ores or excavation activities associated with highway construction and urban development expose minerals to both oxidation and transport to receiving streams.

3.1.2 Hydrology/Hydraulics/Stream Morphology/Floodplains

Clear Creek within this SS is a first and second order stream. The stream floodplain has been channelized to accommodate the construction of I-70 and the development of the

Loveland Ski Area. The Loveland Basin and Valley Ski Areas have established water diversions within this SS.

3.1.3 Wetland and Riparian Ecosystems

Palustrine scrub/shrub wetlands occur intermittently throughout SS 1, primarily in association with Clear Creek. This wetland type occurs continuously from the Loveland Ski Area downstream to above Dry Gulch.

3.1.4 Aquatic-dependent Communities

Although there are no records concerning the fish communities in the headwaters of Clear Creek, CDOW fish survey results indicate the potential for rainbow trout, Snake River cutthroat trout, rainbow/cutthroat hybrids, and brook trout could inhabit this SS. However, development (Loveland Ski area and highway) has simplified the stream habitat and affected these fish populations.

The U.S. Forest Service (USFS; 2000, unpublished report) assessed substrate conditions during the fall of 1999 at six locations within SS 1. Two of the locations (i.e., below the alpine zone in upper Loveland Ski Basin and above Loveland Basin's main parking lot) were designated controls. The affected locations extended from above the Loveland Valley parking lots downstream to below the creek's confluence with Dry Gulch. The USFS used a pebble count method to determine frequency of occurrence of various substrate particle sizes, which it used to ascertain the extent of fine materials in the substrate. Typically, a high frequency of occurrence of particles 6.4 mm or smaller is considered to negatively impact fish habitat (USFS, 2000, unpublished report).

The assessment indicates that fine sediment increases considerably at the four downstream locations compared to the two control locations. The control locations indicated that only 4 percent to 5 percent of the substrate consisted of particles finer than 8 millimeters (mm), while at the affected locations, 20 percent to 26 percent of the substrate consisted of particles finer than 8 mm. Assuming the control locations are indicative of conditions expected elsewhere in the system, the Clear Creek locations from the Loveland Ski Area downstream to Dry Gulch display increased sedimentation of approximately 15 to 25 %.

3.2 **Issues**

3.2.1 Historical Mining (Mineral) Influences

No active or historic mines are known to exist within this SS. The excavation of mineralized geology in SS 1 and natural erosion processes could contribute metals to