

(28) Replacing warped, bent, or damaged engine enclosures and ineffective insulation.

(29) Noise control measures will be effective only as long as control devices are properly maintained.

[9]11. **WATER**

**[INSTREAM FLOW RESERVATION: THE LITTLE SUSITNA HAS THE HIGHEST PRIORITY FOR INSTREAM FLOW RESERVATION DUE TO ANADROMOUS FISHERIES AND EXPECTED COMMERCIAL AND RECREATIONAL DEMANDS.]**

**a. Public Water Supply.** The following measures should be evaluated and utilized in resort planning and development to offset possible negative impacts to water:

(1) On- or off-site public water storage for use during abnormally low flows at times of high demand.

(2) Water conservation programs.

(3) Ground-water wells.

(4) Bring in water from off-site sources such as public wells, public water utilities, etc.

**b. Water Supply for Snowmaking.** Snowmaking water withdrawals may have adverse impacts on the Little Susitna River and the Fishhook Creek streamflow during the winter low flow months. Alternate means of providing water for snowmaking during low-flow periods should be explored:

(1) Use Government Creek, Fishhook Creek, or the Government Creek bowl (unnamed creek) for snowmaking in addition to the Little Susitna River.

(2) Install storage ponds at strategic locations that can be accessed by the snowmaking system. These ponds would contain water diverted to them during periods of pre season high flows. The developer should evaluate the potential of using a natural pond and depression in Section 15 for snowmaking to reduce or eliminate the need to pump water up the mountain for snowmaking.

(3) Use ground water to augment snowmaking.

(4) Use water from off site public water sources.

**c. Hydrogeologically Sensitive Areas.** Resort development should avoid hydrogeologically sensitive areas, i.e. those which, due to high water tables and/or near-surface bedrock, are especially susceptible to ground water contamination. (Potential sources of contamination are summarized in Table 15 in the Hatcher Pass Alpine Ski Area and Four-Season Resort Project Evaluation, p. 104.)

**d. Protection of Recharge Areas.** Engineering practices consistent with protection of recharge areas should be employed, including but not limited to:

(1) Line disposal, evaporation, sewage ponds, or lagoons with impermeable liners.

(2) Monitor ground water in the vicinity of the golf course, horse barns, salt or salted sand storage sites, and areas of fuel use or storage.

(3) Surface water and storm water runoff shall be protected from contamination where possible to avoid negative impacts on ground water quality. Where surface water contamination is unavoidable, treatment is required before allowing surface water discharge to the subsurface. Surface drainage that may contain sediments or other contaminants should be routed to a settling pond or oil and grease separator or other treatment system to remove contaminants before discharge to streams. Drainage systems from facilities should be designed so that chlorinated water is not discharged into the stream.

(4) Snow piles should be placed away from creeks or surface drainage to creeks or water bodies.

**e. Prevention of Groundwater Contamination.** A sewage lagoon or community-scale subsurface disposal field is potentially the most problematic source of groundwater contamination. This could be mitigated by construction of a sewage treatment plant with discharge to surface water. (Such discharge, however, must be adequately treated so that it does not contaminate the Little Susitna River.) Mitigation of other problems would entail common engineering, construction, and waste or product management precautions, monitoring to determine effectiveness of mitigation measures, avoidance of hydrogeologically sensitive areas and nearby well fields during placement of potential sources of contamination.

**f. Management of Surface Run Off.** It is highly probable that the addition of artificial snow to ski slopes and vegetation removal for skiing and resort facilities will result in increased surface water runoff. Flooding, erosion, and increased sedimentation are the most significant impacts of increased runoff; an approved erosion control plan that is in effect before construction begins could help mitigate these impacts. See Revegetation and Erosion Control Guideline 6(h) in this section.

**g. Monitoring of Streamflow.** A streamflow monitoring program should be undertaken by the developer in coordination with DNR to develop mitigation measures and for use in the water rights permit process. At a minimum, the developer should supplement DNR's streamflow data with data of their own for Fishhook Creek, Government Creek, and the creek which drains Government Peak (east side) bowl.

**h. Baseline Water Quality Data.** There is no baseline water quality database to assess the effects the proposed ski area project may have on ground water quality.

The developer should supplement DNR's water quality data with data collection in all streams within Subunits A and B as well as upstream and downstream of development on the Little Susitna River. Data should be collected on: turbidity, heavy metals, nitrogen and phosphorus compounds, fecal coliform bacteria counts, biocides, chlorinated compounds, detergents, or synthetic organic hydrocarbons in surface waters in and near the proposed ski area. Pre- and post-project monitoring of water quality constituents at three sites on the Little Susitna River is needed: (a) upstream of project related activities; (b) at the USGS gaging station, MP 8.5 Willow-Fishhook Road; and (c) downstream of the Government Creek mixing zone which would allow potential surface water quality impacts to be evaluated.

i. **Ponds.** Man-made ponds within the development should be designed as an aesthetic attraction and lined with impermeable liners when necessary to prevent slope destabilization.

#### [10]12. **MATERIAL AND BUILDING ROCK SITES**

a. **Building Rock** No material or building rock sites will be authorized adjacent to the Hatcher Pass Road in this subunit.

b. **Material Sites** (See Map 2, page 49 in original plan)

Site #9. This potential site is not recommended for development due to visual conflicts in an intensive use recreation area.

Site #10. This site could be adequately screened from the adjacent road by both a natural vegetative screen and an embankment and should be considered first as the primary materials site along the Little Susitna River. This site is probably the best one on the Little Susitna River drainage considering the visual screening potential, the size of the material deposit, and its accessibility from the road. It could be rehabilitated for a parking area after project completion.

Site #11. The actual location of site No. 11 will depend upon where the parking and other facilities of the proposed Government Peak Ski Area are located. This material site would become a parking area or site for other facilities after material extraction is completed. Providing visual screening from the road has a high priority in this area. The method for visual screening of this site will depend on its actual location and the proximity of other facilities. Opportunities exist to utilize contours and vegetation and access the pit by a short, curved spur road out of direct visual line of sight with the Hatcher Pass Road.

**Existing Site, MP 16.** This present material site on the Fishhook Road in Township 19N, Range 1E, Section 3 is located in glacial till deposits which usually have low potential as construction material sources. This site will not be used as a material site but will be recontoured and converted to a parking area. See location on Map 11 (in original plan).