Chapter 4
Watershed Characterization

4.0 Location, Ownership and Physical Watershed Characteristics

The Slate Creek Watershed lies approximately 20 air miles south of Grangeville, Idaho and east of the Salmon River (See Map 1). Slate Creek is a 5th code HUC (as calculated using USGS Hydrologic Unit Code system). It joins the Salmon River approximately 10 miles south of White Bird, Idaho at river mile 66. All of the watershed is in Idaho County. Slate Creek flows primarily west from its headwaters of Upper Slate Lake in the Gospel Hump Wilderness.

The Slate Creek watershed encompasses 83,034 acres of which 77,200 acres (93 percent) are located on National Forest lands. Ownership of non-National Forest lands consists of State of Idaho (108 acres), Bureau of Land Management (1,125 acres), and private (4,600 acres).

This document recommends that the Forest Service, BLM and private landowners take every opportunity to collaborate on resource issues that affect the watershed (see Chapter 7, section 7.4). Although the EAWS makes no management recommendations for private and State of Idaho lands, it does use information available about condition on these lands to help suggest priorities for National Forest land management.

Typical of other watersheds in the Salmon River drainage, this one has steep, rugged topography, ranging from approximately 7,900 feet to 1,560 feet above sea level. The lower relief Florence basin is unique in the lower Salmon River drainage. The mainstem from the mouth to the confluence of Main Slate and Little Slate Creeks flows through a moderately to highly confined canyon. Canyon areas extend up both Main Slate and Little Slate Creeks for several miles, after which gradients lessen and eventually flatten to low gradient meadow areas with low valley confinement.

Mean annual precipitation in Slate Creek ranges from 18 to 50 inches, with an average of about 34 inches. Peak flows usually occur from mid-May to early June. Peak flows in the mainstem and higher elevation tributaries are snowmelt-dominated, but sometimes augmented by rain-on-snow. Lower Slate Creek is estimated to have an annual mean daily flow of 149 cubic feet per second (cfs). The high monthly mean daily flow is estimated at 554 cfs and the low monthly mean daily flow is estimated at 39 cfs. The lower elevation tributaries are quite commonly affected by early spring rainstorms or summer thunderstorms, which result in flash floods and debris torrents.

Climate is the basic environment that affects soil development and vegetation dynamics. Northern Idaho is dominated by Pacific maritime air masses and prevailing westerly winds. Over 85 percent of the annual precipitation occurs during the fall, winter, and spring months. Cyclonic storms, consisting of a series of frontal systems moving east, produce long duration, low-intensity precipitation during this period of the year.

Long term climate is part of the biophysical environment. Short term climatic events like floods or drought are a disturbance. Even daily climatic fluctuations like the passage of dry cold fronts can drastically alter fire behavior, increasing the severity of the disturbance.

4.1 Land Allocations

Map 1b shows some selected special management areas identified in the Nez Perce National Forest Plan. It does not show other specific Management Areas (timber,

winter range, etc,) because these have not been validated for many sites.

The Forest Plan (completed in 1987 and scheduled for revision within the next few years) provides direction for specific management activities, including grazing, timber production, recreation, wilderness, fire, wildlife and fisheries management, among others. Some allocations provide firm direction for allowable management activities (for example Gospel Hump Wilderness), while others provide general goals and more flexibility as to how those goals will be strived for (for example timber management areas).

Information from this EAWS will be used to update the Forest Plan where change is warranted.

The current Management Area allocations do not always reflect a site's specific mix of conditions and values. Nor do they integrate terrestrial, aquatic and social issues within a given unique setting.

The revised Forest Plan will better define management emphasis areas that integrate the aquatic, terrestrial and social concerns and needs within the landscape context. Implementation of the revised Forest Plan will test our ability to fit this new mix of activities to a specific land area.

There are approximately 5,700 acres of the Gospel Hump Wilderness area (designated by Congress in 1978) included in the west end of the Slate Creek watershed.

The Forest Plan has identified Slate Creek as being eligible for inclusion in the Wild and Scenic River system. A suitability study will be conducted as part of Forest Plan revision.

4.2 Administrative History

The Forest Reserves, which later became the National Forests, were created by the proclamation of President Grover Cleveland in 1897. The Reserve system included the Bitterroot Forest Reserve in Idaho and Montana. That reserve included much of the area now in the Nez Perce National Forest. The area in the Slate Creek drainage was part of the third Bitterroot Forest Reserve, dated May 22, 1905.

In 1907, Congress changed the name of the forest reserves to National Forests. On July 1, 1908, President Theodore Roosevelt signed executive order No. 854, which created the Nez Perce National Forest. At this time, the Buffalo Hump area had been excluded from National Forest status. In 1921, President Harding proclaimed the Buffalo Hump part of the Nez Perce National Forest.

The records regarding the establishment of the ranger districts are incomplete, with records first showing up in 1915. The Slate Creek District (or "Hump District") is referenced between 1911 and 1970. A distinct Hump District with a headquarters at Moore's Station is mentioned in 1928 and 1929, then, all references to it disappear. The Salmon River Ranger District was established in 1915 and exists under this name today.

In 1977, Congress passed the Endangered American Wilderness Act, which created the 200,464 acre Gospel Hump Wilderness.

4.3 Treaty Rights

The Nez Perce people have used the Slate Creek area for centuries. Prior to the Treaty of 1855, they used the area for hunting, fishing, and gathering food.

Tribal treaty rights apply to areas beyond the current reservation boundary. The basis for off-reservation Tribal rights and interests on ceded lands (which include the Slate Creek watershed) are shown below in excerpts from the Treaties of 1855 and 1863.

The Treaty with the Nez Perce of 1855, Article 3 states: "The exclusive right of taking fish in all streams where running through or bordering said reservation is further secured to said Indians; as also the right of taking fish at all usual and accustomed places in common with citizens of the Territory; and of erecting temporary buildings for curing, together with the privilege of hunting, gathering roots and

berries, and pasturing their horses and cattle upon open and unclaimed land."

The Treaty with the Nez Perce of 1863, Article 8 states: "The United States also agree to reserve all springs or fountains not adjacent to, or directly connected with, the streams or rivers within the lands hereby relinquished, and to keep back from settlement or entry so much of the surrounding land as may be necessary to prevent the said springs or fountains being enclosed; and, further, to preserve a perpetual right of way to and from the same, as watering places, for the use in common of both whites and Indians."

4.4 Subwatersheds

Similar to the process used in the Interior Columbia Basin project, Slate Creek was divided into 9 geographic areas or subwatersheds which provide structure for describing where processes and conditions dominate. Breaking the watershed into smaller areas, easily recognizable by most users, helps to provide a sense of place for the findings and recommendations.

The subwatersheds are shown in Map 10. Their names and sizes (rounded to the nearest 100 acres) are listed below:

- 1) Lower Slate Canyon (4,900 acres)
- 2) Main Slate Canyon (18,300 acres)
- 3) Little Van Buren Creek (3,600 acres)
- 4) Deadhorse Creek (3,800 acres)
- 5) North Fork Slate Creek (8,400 acres)
- 6) Upper Main Slate Creek (10,600 acres)
- 7) Boulder Creek (8,900 acres)
- 8) Little Slate Creek (20,200 acres)
- 9) Van Buren Creek (5,300 acres)

4.5 Watershed Features

Features that especially characterize Slate Creek are shown below. The features are listed under three categories: aquatic, terrestrial and human uses.

4.5.1 Aquatic

- Historic capability of supporting viable subpopulations of spring chinook salmon, summer steelhead, bull trout, and westslope cutthroat trout.

- Critical habitat for bull trout, steelhead, and spring/ summer chinook salmon listed under the Endangered Species Act.

- Slate Creek is the most important tributary stream within the Lower salmon River subbasin for providing habitat for listed fish species.

- A low gradient network of streams with extensive and widely distributed riparian meadows at mid-elevations.

- An assemblage of geologic formations including granitic, basalt, and limestone

- A deeply cut lower canyon occupied by a fourth order stream with a riparian area dominated by pine, fir, cottonwood, and alder.

- Three mountain lakes located in glacial cirques with associated riparian habitats.

4.5.2 Terrestrial

- High elevation ridges historically supported whitebark pine. These ridges helped connect Gospel-Hump and Seven Devils high elevation islands.

- The Florence basin area dominated by rolling hills supported lodgepole pine and mixed conifer forests subject to infrequent lethal fire. Large patches of burned area periodically provided extensive snag habitat. The wet meadows are quite unique within the lower Salmon River subbasin (see Map 2).

- The middle and low elevation canyons supported bunchgrass communities, and ponderosa pine, Douglas-fir and grand fir forests subject to very frequent and frequent low and mixed severity fire. These were connected to similar habitats within the main Salmon subbasin. Relatively

intact bunchgrass communities occur near Dairy Mountain.

- The juxtaposition of xeric, mesic, and subalpine habitats, riparian and upland shrub communities, and wet meadows provided for diverse assemblages of plants and animals within one watershed.

- The diversity of geologic substrates including limestone, basalt, and granitics, and diverse landforms including steep canyons and glaciated slopes increase the potential for high biotic diversity.

- Areas of low relief hills, broad ridge systems, and alluvial valleys in the watershed provide corridors for wildlife movement between the South Fork Clearwater and Salmon River drainages.

- The low elevation canyons provide important winter range for deer and elk.

4.5.3 Human Uses and Values

- Gospel Hump Wilderness in the eastern portion of the watershed.

- A relatively high concentration of heritage sites and current use by the Nez Perce Tribe.

- Historic mining activities important to the history of Idaho County in the Florence area.

- Popular hunting, fishing, camping, motorized trail use and sight-seeing recreational opportunities.

- Intensive mining history and popular day use and motor tour sites that can be linked in routes that traverse varied terrain, plant communities and wildlife viewing opportunities.

4.6 Disturbance Processes at Work in the Watershed

- Presettlement disturbances like fire shaped the pattern of vegetation because fires tended to vary in size, frequency, severity, and distribution both randomly and in response to terrain and conditions before the fire. This pervasive disturbance produced both some predictable patterns and great heterogeneity. Harvest and fire suppression have reduced this heterogeneity.

- Fire frequency has decreased to less than 1 percent of historical occurrence. Risk of severe fire has increased in some areas because of greater fuel quantity and/ or continuity.

- Timber harvest has replaced fire as a dominant vegetation disturbance process. Susceptibility to certain pathogens (root rots and Douglas-fir mistletoe) has increased with increases in grand fir and density of Douglas-fir.

- Predominantly pulse disturbances of fire and flood have been supplanted by wide-scale press disturbances of timber harvest and road construction, with associated sediment regimes that have impacted aquatic integrity.

- Historic sediment delivery and water yield were highly dependent on natural fire regimes and climatic variations. Current sediment delivery and water yield are more closely aligned with disturbances associated with road construction, timber harvest, mining, and grazing

- Mass, surface, and channel erosion are important disturbance processes within the watershed. Mass erosion is important in the steep breaklands, with surface and channel erosion being relatively more important in the rolling uplands. Deposition of eroded material occurs on benches, terraces, and in relatively flat stream reaches.

- Mass erosion is a natural process in steep landscapes. Debris torrents and debris avalanches historically followed fire and flood events, and may have

delivered large wood, rock, and soil to stream channels. Some failures due to natural origin still occur, generally in response to storms, rapid snowmelt, or regional flood conditions. Fire suppression, road construction, and timber harvest have altered the frequency, magnitude, and materials of mass erosion. Roads have become the most frequent initiation point for slope failures, based on recent landslide inventory. Road failures produce more fine material and less large wood and rock. Some roads, like the 354 road, interrupt the flow of debris torrents, and alter how materials are delivered to downstream channels.

- Livestock grazing of canyon grasslands in the lower portion of the drainage has resulted in increased non-native plant species. These sites are also rated as having a high probability of noxious weed infestations from site disturbances. Many sites in poor or fair ecological condition already have infestation of noxious weeds.