A LAND USE HISTORY OF THE INTERIOR COLUMBIA RIVER BASIN 13,000 BP TO 1940

PRESENTED BY

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Preface

The following report was prepared by University scientists through cooperative agreement, project science staff, or contractors as part of the ongoing efforts of the Interior Columbia Basin Ecosystem Management Project, co-managed by the U.S. Forest Service and the Bureau of Land Management. It was prepared for the express purpose of compiling information, reviewing available literature, researching topics related to ecosystems within the Interior Columbia Basin, or exploring relationships among biophysical and economic/social resources.

This report has been reviewed by agency scientists as part of the ongoing ecosystem project. The report may be cited within the primary products produced by the project or it may have served its purposes by furthering our understanding of complex resource issues within the Basin. This report may become the basis for scientific journal articles or technical reports by the USDA Forest Service or USDI Bureau of Land Management. The attached report has not been through all the steps appropriate to final publishing as either a scientific journal article or a technical report.

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"There once were men capable of inhabiting a river without disrupting the harmony of its life." -- Aldo Leopold, 1940

In the closing years of the twentieth century -- the end of a millennium -- harmony of people with nature is missing in most corners of the earth. One of the most striking stories of the alteration of such harmony is the history of the Columbia River Basin. This report focuses on the story of how people used the lands in the areas drained by the Columbia River Basin from 12,000 BP to 1940.

The landscape touched by the Columbia River's drainage is a land mass larger than the country of France. This large, diverse geographical area spans the desert lands of southern Oregon to the heights of the Northern Rocky Mountains in western Montana. In between lies the Columbia Plain, rolling, dry, and in some places, arid terrain whose only native trees were the willows and cottonwoods that hugged the stream and creek bottoms. Forest lands trim the borders of the plain -- the Okanogan Highlands to the north, the Cascade Range to the west, the Ochoco Mountains to the south, and the Northern Rockies to the east. But the dominating presence of the Cascades prevents moisture from the Pacific Ocean from entering the Columbia Plateau, which remains quite dry for most of the year.

This study takes a look inside the watersheds of the Columbia River Basin, those on the Columbia Plateau in eastern Washington and Oregon, those in the Northern Great Basin south of the Deschutes country to the southern border of Oregon, as well as those in the Northern Rockies of Idaho and Montana. To be sure, the occupation of the land by people had an effect. By telling their story of land use, questions regarding ecological balance and alteration of the landscape by Native American and Euro-American alike will be raised. A history of people's presence on the land may reveal where people kept or broke the harmony of the Columbia River's life.

HISTORIC OVERVIEW

Humans first appeared in the region west of the Mississippi River some 12,000 years ago, having migrated from Asia through the Bering Straits land bridge. These earliest trans-Mississippi peoples were nomadic big-game hunters, dependent on herds of Pleistocene megafauna (mammoths, mastodons, and bison antiquus). Warming climatic conditions associated with glacial retreat around 8,000 BP resulted in environmental changes and the extinction of the megafaunal game. In response to these environmental changes, the early hunters diversified into regional cultures that included hunting, gathering, and fishing activities, depending on available resources. In the interior Northwest, Northern Rockies, and Northern Plains, these regional cultures have been identified as the Plateau, Great Basin, and Plains cultures, which developed between 7,000 BP and 2,000 BP. Historic tribal entities became identifiable between 1000 A.D. and 1700 A.D. throughout the trans-Mississippi West.

It was these historic tribes that were encountered by the first European and Euro-American explorers, beginning with Spanish adventures and missionaries in the Southwest and along the California Coast during the 1500s and 1600s. This initial contact resulted in acquisition of the horse by Southwestern tribes. The subsequent dispersion of horses throughout the trans-Mississippi region radically altered native hunting and territorial patterns, particularly those of the Plains and Plateau cultures. By the late 1700s, Russian fur ships had probed the Pacific Northwest coastal area, and French-Canadian and English fur traders had moved onto the Northern Great Plains and eastern fringes of the Rocky Mountains from the northeast and east. Americans breached the Continental Divide in 1805, when the government-sponsored Corps of Discovery (Lewis and Clark Expedition) followed the Missouri River to its headwaters, crossed the Northern Rockies, and reached the Pacific Ocean by way of the Columbia River system.

Other government explorations of the West followed during the early nineteenth century, including the expeditions of Zebulon Pike (1805-1807) and Stephen Long (1820) in the Central Great Plains, Southern Rockies, and the Southwest; but it was the profit-driven fur trade that brought Euro-American influences to bear most heavily on the native cultures of the trans-Mississippi West. Between 1807-1840, fur trade activity entered virtually every corner of the West, resulting in both a vast body of geographic knowledge, which would serve future Euro-American migration, and profound alterations of native lifestyles by the introduction of Euro-American customs and technology, especially guns. Christianity, previously brought to the

Southwest by Spanish explorers, was among the cultural influences the fur trade carried into the Northern Plains and Rockies. Disease was another, decimating whole populations of native tribes during the eighteenth and early nineteenth centuries.

With the establishment of permanent or semi-permanent trading centers and travel routes, the fur trade encouraged subsequent Euro-American migration into the trans-Mississippi West for agricultural and mercantile purposes. By the middle of the nineteenth century, at least three major agricultural migrations had occurred, drawing thousands of Euro-American settlers to Texas in the 1820s and 1830s; to Oregon and California during the 1820s, 1830s, and 1840s; and to the Great Basin in the 1840s and 1850s. Such migrations further resulted in the expansion, improvement, and military protection of travel routes. This in turn increased pressure on tribal cultures and disrupted traditional territorial patterns. Discovery of gold in California in 1849 further accelerated the influx of non-Indian populations to the region as goldseekers from around the world poured into the mountain West in search of precious metals.

Over the next three decades, the mining frontier quickly drew agriculture, industry, modern transportation, and government to the most remote corners of the West, with their consequent effects on the environment, its resources, and native inhabitants. By the mid-1880s, nearly all native tribes had been confined, by force or treaty or both, to reservations that represented mere fractions of their previous territories; and native cultures were aggressively suppressed by government agents and missionaries. Three major transcontinental railroads crossed the trans-Mississippi West via northern central and southern routes. Placer miners and boom camps had been overshadowed by industrial mining capable of altering the landscape of an entire watershed with water-power, explosives, heavy equipment, and world-class mills and smelters. The demand for logs and lumber by both railroads and mines led to the emergence of the western wood products industry, particularly in the Northern Rockies and Pacific Northwest. Agriculture had expanded rapidly from a subsistence of localized commercial activity to a large-scale farming and ranching industry with major effects on land, vegetation, wildlife, and water resources.

Largely as a result of such radical changes in western land and resource use during the late nineteenth century, federal and state governments became increasingly involved in land and resource management over the next hundred years. In addition to regulatory activities, government agencies played an increasing role in fostering resource use through the establishment of national forests and parks, and reclamation and irrigation projects during the early decades of the twentieth century.

OVERVIEW OF HUMAN SETTLEMENT IN THE NORTHERN ROCKIES PORTION OF THE COLUMBIA RIVER BASIN

Humans first appeared in the Northern Rockies portion of the Columbia River Basin some 12,000 years ago. These earliest inhabitants were nomadic big game hunters, dependent on herds of Pleistocene megafauna (mammoths, mastodons, and bison antiquus). Warming conditions associated with glacial retreat (c. 8,000 BP) led to environmental changes and the extinction of the megafaunal game. In response ot these environmental changes, the early hunters diversified into regional cultures that included hunting, gathering, and fishing activities, depending on available resources.

The regional culture identified with the west slope of the Northern Rockies is the Plateau Culture. Taking its name from the Columbia Plateau, this culture developed between 7,000 BP and 1700 A.D. Representatives of the Plains, Great Basin, and Coastal Culture areas frequently entered the Columbia Plateau, and aspects of their cultures were frequently assimilated by Plateau groups. Historic tribal entities became identifiable in the Northern Rockies between 1000 and 1700.

It was these historic tribes that were encountered by the first European and Euro-American explorers, beginning with the Spanish adventurers and missionaries in the Southwest and along the California Coast during the 1500s and 1600s. This initial contact resulted in acquisition of the horse by Southwestern tribes. The subsequent dispersion of horses throughout the Great Plains and Rocky Mountains radically altered native hunting and territorial patterns, particularly those of the Plains and Plateau cultures. By the late 1700s, Russian fur ships had probed the Pacific Northwest coastal area, and French-Canadian and English fur traders had moved onto the Northern Great Plains and eastern fringes of the Rocky Mountains from the northeast and east. Americans breached the Continental Divide in 1805, when the government-sponsored Corps of Discovery (the Lewis and Clark Expedition) followed the Missouri River to its headwaters, crossed the Northern Rockies, and reached the Pacific Ocean by way of the Columbia River system.

Within a few years of the Corps' successful exploration, the profit-driven fur trade would bring Euro-American influences to bear heavily on the native cultures of the Northern Rockies. Between 1807-1840, fur trade activity entered virtually every corner of the region, resulting in both a vast body of geographic knowledge that would serve future Euro-American migration, and in profound alterations of native lifestyles by the introduction of Euro-American customs and technology, especially by the introduction of guns. Christianity was among the cultural

influences carried into the Northern Rockies by the fur trade, often in conflict with and in many cases supplanting the tribes' traditional beliefs and values. Disease was another influence, decimating whole populations of native peoples during the late eighteenth and early nineteenth centuries.

With the establishment of permanent or semi-permanent trading centers and travel routes, the fur trade encouraged subsequent Euro-American migration through and later into the Northern Rockies for agricultural and mercantile purposes. During the 1820s, 1830s, and 1840s, a swelling tide of emigration poured through the Northern Rockies along the Oregon and California trails. This migration further resulted in the expansion, improvement, and military protection of travel routes, which in turn increased pressure on tribal cultures and disrupted traditional territorial patterns. The discovery of gold in California in 1849 further accelerated the influx of non-Indian population to the region as goldseekers from around the world poured into the mountain West in search of precious metals.

Over the next three decades, the mining frontier quickly drew agriculture, industry, modern transportation, and government to the most remote corners of the West, with their consequent effects on the environment, its resources, and native inhabitants. By the mid-1880s, nearly all native tribes had been confined, by force or treaty or both, to reservations that represented mere fractions of their previous territories Native cultures were aggressively suppressed by government agents and missionaries. A transcontinental railroad had crossed the Northern Rockies during the 1880s, and would be followed by two others in the 1890s and early 1900s. Placer miners and boom camps had been overshadowed by industrial mining capable of altering the landscape of an entire watershed with water-power, explosives, heavy equipment, and world-class mills and smelters. The demand for logs and lumber by both railroads and mines led to the emergence of the western wood products industry. In some areas of the Mountain West, agriculture had expanded rapidly from a subsistence or localized commercial activity to a large-scale farming and ranching industry with major effects on land, vegetation, wildlife, and water resources. Largely as a result of such radical changes in western land and resource use during the late nineteenth century, federal and state governments became increasingly involved in land and resource management over the next hundred years. In addition to regulatory activities, government agencies played an expanding role in the Northern Rockies, fostering resource use through the establishment of national forests and parks, and the construction of massive reclamation and irrigation projects during the early decades of the twentieth century.

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UPPER MISSOURI RIVER WATERSHED

(HEADWATERS TO GATES OF THE MOUNTAINS)

The Missouri River is formed by the confluence of three major headwaters, the Madison, Gallatin, and Jefferson Rivers at Three Forks, Montana. The Gallatin and Madison rise within the boundaries of Yellowstone National Park and flow north to meet the Jefferson, which formed by the confluence of the Beaverhead, Big Hole, and Ruby Rivers near Twin Bridges, Montana. These rivers in turn have their sources in the Beaverhead and Centennial Mountains to the south on the Continental Divide. The headwaters portion of the Upper Missouri watershed consists primarily of four large, grassy valleys--the Gallatin, Madison, Beaverhead and Big Hole--bounded by the high mountains of the Gallatin, Madison, Gravelly, Tobacco Root, and Pioneer ranges. From Three Forks the Missouri flows north for nearly eighty miles through the broad Missouri Valley. North of Helena, Montana it enters a series of narrow defiles known as the Gates of the Mountains, through which the Missouri passes from the Rocky Mountains onto the Great Plains. The following historical summary concerns only this Rocky Mountain portion of the Upper Missouri watershed.

PREHISTORIC SETTLEMENT ACTIVITY (12,000 B.P. TO C.1500 A.D.)

Archaeological sources indicate that humans first occupied the Rocky Mountain area of the Missouri watershed around 10,500 B.P. During the prehistoric era, the area from the Missouri's headwaters downstream to its exit from the Rocky Mountains was a common hunting ground for people from both the Great Plains and the Columbia Plateau. By 4,000 B.P. both Plains and Plateau people had adopted a seasonal pattern of hunting and gathering and for many, the bison herds on the Great Plains were an important source of meat, hides, and other useful materials. Besides serving as a hunting ground where many large game species could be found, the valleys of the Missouri and its headwaters formed natural travel corridors for Plateau people heading to bison-hunting grounds east of the mountains, and for Plains tribes seeking access to the mountains. With the emergence of modern tribal cultures beginning around 1300 A.D., several Plateau tribes frequented the watershed, including the Shoshone and Bannock, Nez Perce, Salish, Pend d'Oreille and other Plateau people. Some Plains tribes also were likely frequent occupants of the area, possibly including the Kiowa (Knight 1989, 151-157; Malone 1973, 4).

PROTOHISTORIC SETTLEMENT ACTIVITY (C.1500 A.D. TO 1800 A.D.)

The Protohistoric era is characterized by the appearance of Euro-American influence on native culture, pre-dating the initial encounters between the tribes and the newcomers. Euro-American settlement set off a chain-reaction of tribal dislocations. Epidemics of European-borne diseases often decimated tribes far in advance of actual contact with Euro-Americans. By the early 1700s, horses reached the Northern Rockies and Plains, radically changing native lifeways long before explorers or traders entered those regions. Likewise, European or Euro-American trade goods also frequently preceded direct contact between the tribes and non-native trade sources. Around 1700, Shoshone bands in the Great Basin and Snake River Plain acquired horses, allowing them to expand their range northward across much of present-day Montana and into southern Alberta. When the Blackfeet acquired guns around 1750, they in turn repelled the Shoshones and established military domination of much of the intermountain portions of the Missouri and Yellowstone watersheds. This resulted in frequent clashes between the Blackfeet and the Crows, who had migrated into the Upper Yellowstone by 1700 A.D., regularly hunting and traveling in the Missouri headwaters area. The Blackfeet were also unrelenting enemies of the Plateau tribes, who had acquired horses around 1730 and thereafter made more frequent bison hunts in the Upper Missouri watershed (Malone 1973, 4). The Blackfeet remained a powerful presence in the region until devastating smallpox epidemics in the 1830s decimated their population, weakening them militarily and reducing their territorial range (Malone 1973, 4).

PREINDUSTRIAL SETTLEMENT ACTIVITY (C.1775 TO 1864)

The earliest Euro-American activity in the Rocky Mountain portion of the Missouri watershed probably occurred with the exploration of the area by the Lewis and Clark expedition in 1805 and 1806. The explorers traveled up the Missouri into the Rocky Mountains in the summer of 1805, arriving at Three Forks on July 25. At Three Forks, they cached their canoes and proceeded upriver along the Jefferson and Beaverhead, passing out of the Missouri watershed at Lemhi Pass. On their return journey in 1806, Meriwether Lewis led one contingent back to the Missouri via the Big Blackfoot River, Lewis and Clark Pass, and the Dearborn and Sun Rivers, considerably downriver from Gates of the Mountains. William Clark led the rest of the expedition back to the Three Forks. There he divided his command, sending ten men down the Missouri to rejoin members of Lewis's party at Great Falls. Clark and the remainder traveled eastward from Three Forks through the Gallatin Valley to Bozeman Pass, where they crossed into the Yellowstone watershed (Thwaites 1969, 2:230-386; 5:245-262).

Lewis and Clark had barely returned to St. Louis when parties of trappers began to make their way to the Upper Missouri, lured by the explorers' reports that the area was "richer in beaver and otter than any country on earth" (Malone, Roeder and Lang 1991, 40). In 1807, two members of the Lewis and Clark expedition, John Colter and George Droulliard joined a party of trappers led by Manuel Lisa of the Missouri Fur Company. During the winter of 1807-1808, Colter embarked on a foot journey of hundreds of miles through the Absaroka Range and Yellowstone Plateau country. In the process he probably traveled through the upper reaches of the Missouri's Madison and Gallatin headwaters. The following summer Colter explored the Three Forks region, contacting Salish bands in the area and barely escaping with his life from an encounter with the Blackfeet. In 1810, Andrew Henry and Pierre Menard led a band of thirty-two trappers west from the Yellowstone to the Three Forks area. There they built a trading post between the Jefferson and Madison rivers and commenced trapping the area. Almost immediately they faced violent opposition from the Blackfeet and Gros Ventres who hunted in the region. After losing eight trappers to the Blackfeet, including George Droulliard, Henry abandoned the Three Forks post at the close of the season. For the next decade, the Missouri fur interests confined their activities to the Lower Missouri (Chittenden 1986 [1935], 1:138-151; 2:704-715).

During the early 1820s, the Missouri Fur Company again tested the Three Forks region, this time with a sizeable force of trappers working on the Jefferson in 1823. The Blackfeet again proved implacable. After the trappers departed from the Jefferson in 1823, the Blackfeet ambushed them on the Yellowstone, inflicting heavy casualties and confiscating the furs. In the face of such losses and competition from other firms, the Missouri Fur Company gave up the attempt to establish its trade on the Upper Missouri. In the meantime, a second American fur company had been formed by St. Louis investors, including Andrew Henry. The Rocky Mountain Fur Company, as it came to be known, focused its activities in the region of the Green, Snake, Wind, and Bear Rivers. Though preferring to avoid territories frequented by the Blackfeet, RMFC trappers and traders frequently entered the Missouri headwaters area during the 1820s and 1830s, especially favoring the Madison and Beaverhead country. The British Hudson's Bay Company also entered the headwaters area during the 1820s. In 1824 and 1825 brigades led by Alexander Ross and Peter Skene Ogden worked the streams above Three Forks, including the Big Hole and the Madison-Gallatin divide. John Work and another HBC brigade thoroughly explored the Beaverhead country in 1831. These brigades were part of a Hudson's Bay effort trap out areas surrounding the Columbia Basin, thereby discouraging American movement into that watershed. Generally, however, both Hudson's Bay Company and its Canadian competitor, the North West Company, left the Upper Missouri to the American interests (Chittenden 1986 [1935], 1:151-159, 261-290).

In 1828, a third American company entered the Upper Missouri fur trade. From its newly constructed base at Fort Union, near the confluence of the Yellowstone and Missouri Rivers, John Jacob Astor's American Fur Company competed aggressively with the Rocky Mountain interests, sending competing traders to that firm's annual trade rendezvous and tracking the Rocky Mountain men to their best trapping grounds. The competition was fierce and often violent. Aware that they were being trailed, Rocky Mountain men led AFC lieutenant William Henry Vanderburgh into a fatal Blackfeet ambush in the Beaverhead country, near the Ruby

River in 1832. Ultimately the competition proved too much for the Rocky Mountain company, and the firm sold out to Astor in 1834. The American Fur Company had succeeded in opening trade with the Blackfeet in 1830, and thereafter much of its trade was conducted from posts on the Missouri below Great Falls. Although the mountain fur trade continued into the early 1840s, activity in the headwaters region declined as a result of both the depletion of the fur resource and a falling demand for pelts (Chittenden 1986 [1935], 1:300-374; 2:657-663; Malone, Roeder & Lang 1991, 53-59).

During its thirty-year reign, the fur trade depleted fur-bearing animal populations, especially beaver, in the Missouri headwaters area. It distributed guns, trade goods, and alcohol among the many tribes who used the region. These trade items disrupted tribal culture and traditional resource use by altering subsistence patterns, warfare, and economic values. The fur trade was also responsible for the devastating smallpox that decimated many Upper Missouri tribes, especially the Blackfeet, during the 1830s (Chittenden 1986 [1935], 612-620; Malone Roeder & Lang 1991, 57-59).

During the years 1840 to 1860, the tribes who traditionally hunted in the Missouri watershed above the Gates of the Mountains once more had the territory largely to themselves. While the Fort Laramie Treaty of 1851, the Hellgate Treaty of 1855, and the Stevens' Blackfeet Treaty of 1855 delineated tribal territories for the Crow, Sioux, Salish, Pend d'Oreille, Kootenai, Blackfeet, Shoshone and Bannock, the land along the upper reaches of the Missouri and its headwaters remained a common hunting ground frequented by the tribes. The treaties were part of a larger plan to avoid conflicts by removing tribes from lands along heavily traveled emigrant routes and potential transportation corridors (Malone, Roeder & Lang 1991, 116-117).

In 1853, Congress authorized the Pacific Railroad Survey to examine potential railroad routes across the West. In command of the survey's northern reconnaisance was I.I. Stevens, newly appointed governor of Washington Territory. Elements of the Stevens survey examined several possible routes through the Northern Rockies, including the Missouri headwaters area. While attached to the Stevens Survey, Lt. John Mullan became convinced of the feasibility of a wagon road linking the heads of navigation on the Missouri (Ft.Benton) and the Columbia (Walla Walla). With Stevens' support, Congress authorized the road project in 1857. Construction began in 1859 and by 1860, the road-building crews pushed the road into the Missouri River watershed from the west via Mullan Pass, then northeastward paralleling the Missouri River to Fort Benton. Although the rugged terrain of the Mullan Road prevented it from becoming a major wagon route, it nonetheless played an important role during the 1860s when hordes of prospectors poured into the territory in search of gold (Malone, Roeder & Lang 1991, 72).

In 1860, the ever-widening search for gold first led prospectors to the Gold Creek mines on the Upper Clark Fork, then into the Missouri headwaters area. There between 1862 and 1864, prospecting parties discovered incredibly rich placer deposits at Grasshopper Creek (Bannack) and Alder Gulch (Virginia City) in the Beaverhead drainage, and Last Chance Gulch (Helena) and Confederate Gulch (Diamond City) on the Missouri. These were Montana's richest placers and ranked among the West's great placer districts. Lode mining also took hold, both on the periphery of the placer districts and in rich quartz districts like Argenta in the Beaverhead, where silver ore was discovered in 1864. Thousands of people from throughout the country stampeded into southwestern Montana in pursuit of gold and mining-related profits, quickly populating these and scores of less spectacular camps throughout the watershed. The sudden influx of such large numbers of people had tremendous effects on the resources of the headwaters region of the Upper Missouri. Within a relatively short period of time, placer miners diverted and fouled streams, exterminated local game populations, and clearcut hillsides for miles around the mining camps.

The mining rush and its effects also disrupted traditional use patterns practiced by the tribes who hunted in the watershed. The Corinne-Virginia City freight road, the Mullan Road and the Bozeman Trail all bisected hunting grounds and tribal travel ways. Of the three routes, the most controversial was the Bozeman Trail, laid out in 1863 from the Oregon Trail northward along the east face of the Big Horns, west along the Yellowstone River, and over Bozeman Pass to the Gallatin Valley. The trespass of an emigrant trail through the heart of Sioux hunting grounds in the Yellowstone Basin touched off a series of violent confrontations with

the Sioux along the trail and in the Gallatin Valley, culminating in the Sioux War of 1867. The warfare ended with the closure of the Bozeman Trail under the Medicine Lodge Treaty of 1868. Also affected were the Crows, whose lands lay along the Bozeman route, and some incidents of violence in the Gallatin and Madison Valleys during the 1860s involved members of that tribe. One by-product of these hostilities was the establishment of a military post, Fort Ellis, near Bozeman in 1867. The fort was deactivated in 1886 (Malone, Roeder, and Lang 1991, 103, 126-127).

Out of the booming population of the mining camps came the demand for a steady, affordable supply of agricultural products. Livestock raising was already underway in the Missouri headwaters region by the late 1850s. Former trappers and traders acquired worn-out cattle, horses, and mules from emigrants along the Oregon Trail and drove the animals north to recuperate and fatten on the rich wild hay of the Beaverhead and Big Hole Valleys. When rehabilitated, the animals were returned to the Oregon route and traded for trail-weary stock on a one-for-two basis. Crop agriculture took hold later, when the demand fostered by the mining boom of the 1860s resulted in a scarcity of farm products and high prices (Malone 1973, 5). While nearly all of the Missouri's major Rocky Mountain Valleys were productive agricultural areas, the most fertile by far was the Gallatin Valley, where hay, grains, potatoes, vegetables and livestock flourished by the mid-1860s. Although its elevation discouraged most vegetable crops, the Madison Valley supported abundant hay, grain, and livestock. The early emphasis on agriculture in these two valleys was due to their proximity to the gold camps around Virginia City. As the mining population spread throughout the Northern Rockies during the mid-1860s, stock-ranching and hay- and grain-farming became important activities in the Big Hole, Beaverhead, Missouri, and other valleys of the watershed (*Water Resources*, Madison County 1954, 9; *Water Resources*, Broadwater County 1956, 6,28; Historic Records, Gallatin 1940, 160-164; Historic Records, Beaverhead 1939, 17).

MODERN SETTLEMENT ACTIVITY (1865 TO 1940)

Placer and lode mining activities intensified and expanded throughout the watershed during the late 1860s and 1870s. The frenetic development of placer deposits had subsided by the early 1870s, as the richest and most easily worked deposits were exhausted. Lower grade or deeply buried placers required the utilization of hydraulic mining methods or dredges to efficiently extract gold from massive amounts of overburden. Hydraulicking, the use of pressurized water to blast away entire streambanks or hillsides, was underway in several camps by the late 1860s, and was common throughout the watershed by the 1870s. During the 1880s, hydraulic operations grew even more extensive as the completion of railroads gave miners access to ever larger and more powerful equipment, and the process continued in use well into the 1950s (Wolle 1963, 43-58; Helena National Forest 1994).

The site of Montana's first major gold bonanza, Alder Gulch, was also the scene of the development of modern gold dredging methods. Beginning in 1896, a series of dredges operated in the Ruby Valley below Virginia City, as many as three in operation at once. In 1910, the largest electric dredge in the world was built there, capable of stripping 10,000 cubic yards per day from the riverbed. The dredge even carried its own mill for the production of bullion from quartz rock. Dredges worked the Ruby Valley until 1922, leaving in their wake "miles of naked gravel and boulders, heaped in sinuous mounds between the banks of the creek." Said one employee of the dredging company, "The once beautiful valley, once filled with grain, alfalfa, and stock is now a mound of gravel" (Wolle 1963, 42). Large-scale dredging also occurred in the Prickly Pear Valley near Helena, with a smaller operation near Bannack (Wolle 1963, 41-58; Spence 1989).

During the Depression-era of the 1930s, the western United States experienced a second "gold rush era" when large numbers of the unemployed turned to placering, often supplemented by hunting, trapping, and fishing. Considerable activity of this nature occurred in the Upper Missouri watershed, ranging from single-man hand-placering operations to larger commercial ventures. The latter included the introduction of power excavating equipment--primarily draglines and so-called dry-land dredges--to mining operations in the region. Among the most extensive of the dragline operations were those at Confederate Gulch and Indian

Creek during the late 1930s, where streambeds and floodplains were excavated into gaping canyons. The Depression-era boom came to an end with the onset of World War II and the imposition of wartime regulations banning most non-essential metals mining (Light & Horstman 1994, 6, 11-12; Helena National Forest 1994).

Lode mines were developed at a relatively early point in the mining history of the Upper Missouri watershed, with gold quartz mining and milling underway at Alder Gulch, Bannack and Helena in 1863-1864. In 1865, silver mining began at Argenta, where the watershed's first smelters were erected in 1866-1867. By the 1880s, lode mines and mills were active throughout the watershed. Industrial mining received a major boost during the 1880s from the completion of three railroads into the watershed: the Utah & Northern (1881); the Northern Pacific (1883); and the Great Northern's Montana Central Branch (1889). Because many mines produced ores that contained high quantities of lead, zinc, and copper, that could not be processed by milling alone, several smelters operated at Argenta, Gregory, Glendale, Wickes, and East Helena during the 1880s and 1890s. All but the East Helena smelter complex were closed by the early 1900s, largely as a result of the 1893 silver panic which shut down many silver producers permanently. The East Helena smelter has continued operations to the present. By 1940, deep mines, mills, and smelters throughout the region had released massive amounts of wastes into air, soil, and water for 75 years. Large-scale placering employed hydraulic hoses, draglines, and dredges, discharging tons of sediments into waterways, and destroying streambeds and floodplains by burying them under mountains of tailings and debris.

By 1865, agriculture was thriving throughout the major valleys of the watershed. During the 1870s and 1880s herds and cultivated acreage multiplied as the growth of sizeable lode-mining communities and the City of Helena created a ready market for beef, dairy products, draft animals, and foodstuffs. The first large bands of sheep were driven into the Beaverhead Valley in 1869, and commercial wool-growing quickly became an important agricultural activity. The expansion of irrigation systems throughout the watershed encouraged crop production, as did the arrival of railroads during the early 1880s. The railroads provided access to distant markets, brought additional settlers to agricultural areas, and facilitated farming by making heavy farm and milling equipment available. As a result of rail service, the Gallatin Valley became an important regional flour milling center. By the 1890s, large-scale cattle ranches were common in the Big Hole and Beaverhead Valleys, and two of the largest outfits, the Flying D and Taylor's Fork Cattle Company operated in the Gallatin Valley. Although most large operations gave way to smaller fenced-range ranches by the turn of the century, the Flying D continued well past the 1920s, controlling over a half million acres and up to 20,000 head of cattle (*Water Resources*, Broadwater County 1956, 28; *Water Resources*, Gallatin County 1953, 6,46; *Water Resources*, Jefferson County 1956, 6; Historic Records, Gallatin County 1940, 160-165; Historic Records, Beaverhead County 1939, 17; Malone, Roeder & Lang 1991, 151; Malone 1973, 7).

From the 1890s until 1918, a steady influx of homesteaders took up lands in the watershed. During World War I, the rate of homesteading increased under the impetus of high wartime prices for farm products. A severe drought that began in 1918 and persisted through the 1920s, drove many homesteaders and small farmers from their lands. By the early 1920s, 42,000 acres were tax-delinquent in Broadwater County alone. Many who survived the 1920s were finished by the onset of the Great Depression in the 1930s. By 1936, Broadwater county had taken tax deeds on most of the agricultural property listed as delinquent in the 1920s (*Water Resources*, Broadwater County 1956, 28; *Water Resources*, Jefferson County 1956, 7).

Despite these setbacks, agriculture in the region recovered by the 1940s through a combination of improved farming techniques, New Deal and other farm programs, and increased demand resulting from World War II. Irrigation also played a major role in the recovery of agriculture during the late 1930s and 1940s. While early irrigation efforts in the watershed had been individual or local mutual efforts, by the 1890s and early 1900s more extensive projects, including dams and reservoirs were undertaken by private water dompanies or large cooperatives. The completion of Old Canyon Ferry and Hauser dams on the Missouri River by major power interests during this period greatly expanded the irrigation of the Missouri River Valley. During the late 1930s and early 1940s, the Montana State Water Conservation Board and the Public Works Administartion collaborated on a number of dam and reservoir projects, including the Willow Creek Project, the Ruby River Storage Project, the Broadwater-Missouri Diversion Project, and Middle Creek Storage (*Water Resources*,

Lewis and Clark County 1957, 23; *Water Resources*, Madison County 1954, 48, 51; *Water Resources*, Gallatin County 1953, 47-48; *Water Resources*, Broadwater County 1956, 26-27).

With the expansion of irrigation systems during the 1890s and 1900s, and again in the 1930s, numerous small tributaries of the Missouri were dammed or diverted onto crop and pasture land. The construction of large dams and reservoirs on the Missouri itself (near Helena) greatly altered stream flow, and other factors affecting the fishery and related habitats. Other effects of modern agricultural and stock-raising practices on the lands of the Upper Missouri watershed included the introduction of non-native species, overgrazing, destruction of wildlife habitat, eradication of predators, and irrigation-related erosion, sedimentation, and dewatering of streams.

The watershed's timber industry grew in relation to mining and agriculture. The first sawmill may have been that of R.C. Knox in Lumber Gulch near Bannack in 1862. By the end of that year, other sawmills were also operating in the area. By 1864, sawmills were features of nearly all sizeable placer camps in the watershed. Because the timber stands of the Upper Missouri forests were generally not as dense nor of as high quality as those found on the Pacific slope, no large-scale timber industry developed in the watershed. Lumbering was geared toward local markets, establishing a pattern that prevailed throughout the late nineteenth and twentieth century. One exception was the short-lived, intensive logging of the heavy West Gallatin timber stands during the early 1900s. Formed in 1904, the Walter Cooper Company established several logging camps and built a large mill complex for the logging and manufacture of railroad ties for the Northern Pacific Railroad. Using splash dams, the logs were floated down the Gallatin River to the mill. However, Cooper soon exhausted its timber supply and the operations ceased in 1910. Cooper's milltown, Salesville, survived to become present-day Gallatin Gateway, Montana (Historical Records, Beaverhead County 1939, 8; Malone 1973, 6-7.)

Although the watershed's timber industry was geared to local consumption, that consumption--generated by hundreds of hardrock and placer mines, mills, smelters, and the operations of three railroads--was enormous. The areas around mining districts and the City of Helena were quickly cutover, as well as thousands of acres in Gallatin Canyon. Although it was never of the magnitude of lumber operations west of the Continental Divide, logging operations in the Missouri's Rocky Mountain watershed contributed considerably to deforestation, erosion, and damage to streams and fisheries in logged areas (*Water Resources*, Lewis and Clark County 1957, 30; *Water Resources*, Gallatin County 1953, 23).

UPPER MISSOURI RIVER WATERSHED

(HEADWATERS TO GATES OF THE MOUNTAINS)

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UPPER YELLOWSTONE RIVER WATERSHED

A major tributary of the Missouri River system, the Yellowstone River rises in Wyoming's Absaroka Mountains southeast of present-day Yellowstone National Park. It runs northwest through a broad, willowed valley to Yellowstone Lake, a 142-square-mile reservoir atop the Yellowstone Plateau. From the Lake, the river flows north and west through high meadows before it plunges over the Upper and Lower Falls and through the narrow Grand Canyon of the Yellowstone. Below the Canyon the river moves westward along the southern face of the Beartooth Mountains, picking up the waters of the Lamar and Gardiner Rivers before it descends from the Plateau through steep Yankee Jim Canyon into the broad Paradise Valley. Just below the mouth of this valley, the Shields River enters the Yellowstone from the north and the Yellowstone turns east-northeastward toward its union with the Missouri some 400 miles distant. That portion of the watershed from the headwaters to its confluence with the Shields River (near Livingston, Montana) is the Upper Yellowstone.

PREHISTORIC SETTLEMENT ACTIVITY (12,000 B.P. TO C.1500 A.D.)

According to archaeological evidence, humans first occupied the Upper Yellowstone watershed around 10,000 B.P. These earliest inhabitants were nomadic big game hunters, but as the climate warmed and dried around 8,000 B.P. Pleistocene game became extinct. While hunting continued to dominate the subsistence pattern, the gathering and use of plants became increasingly important. Around 5,000 B.P., inhabitants of the Upper Yellowstone adopted a seasonal, semi-nomadic round, wintering in the Yellowstone Valley between Yankee Jim Canyon and the Gardner River, with summer camps in the vicinity of Lake Yellowstone (Arthur 1966, 178; Haines 1977, 1:18-20; Heidenreich 1985, 4).

Because the Snake River headwaters rose on and near the Yellowstone Plateau, the Upper Yellowstone area became part of an important travel corridor linking the two watersheds, providing access to the Great Plains for Columbia Plateau bison hunters via the so-called Bannock Trail. Among the Columbia Plateau peoples who eventually frequented the Upper Yellowstone were the Shoshone, Bannock, and Northern Paiute. Of these, only the Mountain Sheepeater Shoshone, or Tukudika, established a permanent presence on the Yellowstone Plateau. By 1600 A.D. the Crows had migrated up the Yellowstone River into the area, and other Plains tribes were frequent visitors there (Haines 1977, 1:2, 20-24; Arthur 1966, 24, 56).

PROTOHISTORIC SETTLEMENT ACTIVITY (C.1500 A.D. TO 1800 A.D.)

The Protohistoric era is characterized by the appearance of Euro-American influence on native culture. Euro-American settlement set off a chain-reaction of tribal dislocations. Epidemics of European-borne diseases often decimated tribes far in advance of actual contact with the newcomers. By the early 1700s, horses reached the Northern Rockies and Plains, revolutionizing native lifeways long before Euro-Americans penetrated those regions. Likewise, European or Euro-American trade goods also frequently preceded direct contact between the tribe and non-native trade sources. After the Shoshone acquired the horse in the early 1700s, their range expanded rapidly eastward and northward out of the Northern Great Basin and Southern Columbia Plateau onto the Great Plains of Wyoming and northward beyond the Missouri River. They maintained their dominance in this region for nearly fifty years, until the Blackfeet acquired guns. By the early 1800s, the Blackfeet had driven the Shoshone back into a territory extending from the Upper Yellowstone and Missouri headwaters to the Upper Snake watershed, and became implacable foes of the Plateau tribes. Although the Shoshone, Bannock, Nez Perce, Salish and other Plateau groups continued to frequent the Upper Yellowstone en route to the bison country of the Great Plains, they usually did so in large multi-tribal groups for security against the Blackfeet. By this date, the Crows had come to regard much of the Yellowstone country as their own (Haines 1977, 1:21-22; Arthur 1966, 24, 55; Heidenreich 1985, 7).

PREINDUSTRIAL SETTLEMENT ACTIVITY (C.1775 TO 1864)

The first recorded Euro-American presence in the Upper Yellowstone area occurred with the eastward return of the Lewis and Clark Expedition. In 1806, a small party led by William Clark crossed the Gallatin Range into the Yellowstone watershed near Livingston. Leaving their horses to be driven overland by Lieutenant Pryor, Clark's group took to bullboats on the Yellowstone for their journey to the Missouri and reunion with the rest of the expedition. The following year, one of the expedition members, John Colter, returned to the Upper Yellowstone in the employ of the Missouri Fur Company. In an effort to make trade contacts with tribes during the winter of 1807-1808, Colter embarked on a 500-mile journey that took him up the Shoshone River, across the Absaroka Range into Jackson Hole, up the Snake, around Yellowstone Lake and across the Plateau, returning down the Clark's Fork of the Yellowstone to the Missouri fur post at the mouth of the Big Horn (Thwaites 1969 [1905], 5:262-264; Haines 1977, 1:37).

Few trappers ventured into the headwaters region during the next ten years, as fledgeling American fur companies focused their attention on the Upper Missouri and Lower Yellowstone area. The British and Canadian interests were primarily concerned with achieving trade dominance in the Columbia watershed and securing British claims to the Pacific Northwest. In 1818 Donald McKenzie led a party of North West Company (Canadian) trappers including Alexander Ross onto the Yellowstone Plateau. Ross returned in 1824 at the head of a Hudson's Bay Company brigade that trapped streams along the Upper Yellowstone. Aside from these and a few other British or Canadian incursions, the area east of the Continental Divide was left largely to the Americans. Driven from the Upper Missouri by the hostility of the Blackfeet and the difficulty of supplying posts there, American fur men turned their attention to the Rockies and the country drained by the Green, Bear, Snake and Wind Rivers during the mid-1820s. Beginning in 1826, American trappers regularly worked the Upper Yellowstone, in spite of frequent violent encounters with Blackfeet raiders. Abandoning the concept of fixed trading posts, the Rocky Mountain company relied on "free trappers" who traded their furs to the company at an annual trade rendezvous in the mountains, usually near the headwaters of the Snake or Green River. The rendezvous continued until the early 1840s, when depletion of fur-bearing animals and changing fashion ended the Rocky Mountain fur trade. During this time, trappers of the Rocky Mountain Fur Company and its chief rival, the American Fur Company, explored every corner of the Snake River headwaters and Upper Yellowstone watershed. In the process, tribes of both watersheds, the Shoshone and Bannock on the Snake, and the Crow in the country east of the Upper Yellowstone, underwent cultural changes as a result of their participation in the fur trade. Through the fur trade, Euro-American goods, including guns, steel weapons, and alcohol, received wide distribution among the tribes of the Northern Plains and Rockies. These goods in turn profoundly altered tribal lifeways, subsistence patterns and warfare.

Disease was also a by-product of the fur trade. Smallpox had probably entered the Upper Yellowstone as early as the late 1790s, when an epidemic swept through the Crows and, via trade contacts, into several Plateau tribes. Repeated outbreaks of disease occurred among the Plains tribes during the 1830s. Of these the most devastating was the smallpox epidemic of the late 1830s on the Upper Missouri. Nearly destroying the Mandans, the disease decimated the Assiniboines and Blackfeet, ending the latter's military dominance of the Upper Missouri and Upper Yellowstone watersheds (Malone, Roeder & Lang 1991, 47-59; Haines 1977, 1:26-27; 38-43, 52; Heidenreich 1985, 10-11, 14).

From 1840 until 1860, there was little Euro-American activity on the Upper Yellowstone. The U.S. government recognized most of the Upper and Middle Yellowstone River watershed as Crow territory under terms of the Ft. Laramie Treaty of 1851, ignoring the presence of the Mountain Sheepeaters on the Yellowstone Plateau (Heidenreich 1985, 15; Haines 1977, 1:27, 62; Malone, Roeder & Lang 1991, 116).

The fact that the lands east of the Upper Yellowstone legally belonged to the Crows did little, if anything, to stem the tide of Euro-American settlement. The discovery of gold on Idaho's Clearwater River and subsequent strikes along the Salmon, Boise, and Owyhee Rivers, and on the upper reaches of the Missouri, drew thousands of prospectors into the Northern Rockies between 1860 and 1863. It was inevitable that their ever-widening search for gold would bring some of these men into the Upper Yellowstone. Added to the

activities of goldhunters was John Bozeman's 1863 promotion of a cutoff leading directly from the Oregon Trail to the Montana goldfields through lands belonging to the Sioux and Crows. The route led northwesterly along the east front of the Big Horns to the Yellowstone River, where it headed west over Bozeman Pass onto the Upper Missouri headwaters.

The first recorded gold discoveries in the Upper Yellowstone occurred in 1863 on Crevasse Creek (near present-day Jardine) and on Emigrant Gulch. A small stampede to the area occurred the following summer, including several men recruited from one of John Bozeman's emigrant trains. Appropriately, one of the new mining camps was named Emigrant, another nearby camp was Yellowstone City. The camps flourished only briefly as the Upper Yellowstone placers were shallow. Confirmed reports of incredibly rich diggings at Alder, Confederate, and Last Chance Gulches on the Upper Missouri resulted in the Yellowstone camps being largely abandoned by the end of 1864 (Haines 1977, 1:62-73, 81; Wolle 1963, 395-403).

MODERN SETTLEMENT ACTIVITY (1865 TO 1940)

In spite of the stampede to the Upper Missouri mines, a few prospectors continued to probe the streams of the Upper Yellowstone. Additional placer deposits were found along the river near the mouths of Bear and Emigrant Gulches in the late 1860s, and placer operations continued at Emigrant and Chico until the early 1940s. However, the major mining activity on the Upper Yellowstone involved lode mining, primarily in the vicinity of Bear Gulch and Crevasse Creek, known as the Crevasse Mountain mining district. Other quartz mines operated in the vicinity of Chico. The first lode discoveries were made in 1870, with subsequent finds occurring later in the decade, but development was impractical until the completion of the Northern Pacific Railroad and its Upper Yellowstone spur in 1883. By the 1890s, 10-stamp mills operated at Jardine and Crevasse. These mills were enlarged to 20-stamps during the late 1890s, and in 1900 a 40-stamp mill was erected at Jardine. In 1903 the Kimberly-Montana Gold Mining and Milling Company built a hydro-electric plant on Bear Gulch near the Yellowstone River and installed a 150-ton cyanide plant to rework old mill tailings. In 1904, the Jardine mines began shipping marketable quantities of tungsten in addition to gold. By 1923 the Jardine mines were producing ore that averaged 38 per cent arsenic trioxide and an arsenic plant was built to process arsenic for the commercial market. Gold, arsenic and tungsten production continued well into the 1930s, when low prices and declining production forced the closure of most mines. The remaining mines shut down in 1942 under wartime regulations that halted gold mining. However, War Department demands for arsenic led to the rehabilitation of the Jardine plant and production continued until 1948 (Wolle 1963, 395-404).

Other mining operations in the Upper Yellowstone included coal mines at Aldridge and Electric (formerly Horr), and a major coking works at Electric and Cokedale. By 1895 the Cokedale works, which supplied coke to smelters at Butte, Anaconda, East Helena and Great Falls, contained 130 ovens and was served by a Northern Pacific rail spur until the works closed in 1906. Beginning in 1932, a Northern Pacific subsidiary quarried travertine near Gardiner, shipping it nationwide (*Historical Records*, Park County 1940, 365-366).

In the 1930s, the Upper Yellowstone placers were reworked during the Depression-era resurgence of placer mining that swept the West. At Chico, the placers had been hydraulicked extensively as early as the 1870s, and later the deposits were reworked on a larger scale using a steamshovel. The Chico deposits were worked in 1941-1942 and again in 1946-1948 by a 10-cubic-yard capacity Yuba dredge. Placering, especially hydraulicking and dredging, and hardrock mining and milling contributed to sedimentation, erosion, streambed disturbance, toxic metals leaching, and other adverse effects in the areas where the activities occurred. The situation at Chico was described by an eyewitness in 1956: "mounds of waste rock border the stream. Gravel dumps and dredge ponds cover acres of ground in this vicinity, both above and below the townsite" (Wolle 1963, 405-406, 398-399, 401; *Water Resources* 1951, 17).

The mining activity of the 1860s and 1870s in the Upper Yellowstone, along with its associated emigration and agriculture, was carried on in the face of fierce opposition from the Sioux and Blackfeet, as well as from

the Crows, who had been promised the eastern portion of the watershed under the Ft. Laramie Treaty of 1851. Growing encroachment on lands along the Yellowstone, including the Bozeman Trail and the Northern Pacific Railroad Surveys resulted in unrest among the tribes. In 1868 a second Ft. Laramie Treaty deprived the Crows of their Upper Yellowstone lands, and removed the Blackfeet (Piegans) to a reservation north of the Missouri River, but violence persisted until the removal of the Sioux after 1876. The Crows and several Plateau tribes continued to make annual buffalo hunts in the Upper Yellowstone area into the late 1870s. Following many of the traditional trails to the buffalo country, the Nez Perce passed through the Yellowstone Plateau in 1877 during their legendary 1,100 mile flight from pursuing troops. In 1878, many Bannocks, faced with near-starvation on their Idaho reservation, also tried to follow the old Upper Yellowstone trails to the buffalo country, but were intercepted by troops on the Plateau and returned to the reservation (Haines 1977, 1:27-30; Malone, Roeder & Lang 1991, 136-139).

As was common in many areas of the West, agriculture in the Upper Yellowstone grew up in response to the needs of mining districts. Early farmers and ranchers located in the bottomlands along the river between the Emigrant and Crevasse camps. There they raised wheat, cattle, and vegetables for the local market. By the 1870s, this market included not only miners, but also the growing numbers of hunters and sight-seers who journeyed to the remarkable geyser basins of the newly created Yellowstone National Park. The Bottler Ranch opposite Emigrant Gulch became a well-known base for such excursions. During the 1870s and 1880s, with the growing tourist traffic, and the abundance of good grazing and water in the Upper Yellowstone watershed, beef cattle, hay and grain production flourished. After completion of the Northern Pacific Railroad in 1883, sheep-raising also became an important part of Upper Yellowstone agriculture. The railroads also provided more distant markets to farmers and ranchers and this, along with the ready availability of irrigation water, encouraged the expansion of agriculture beyond the river and stream bottoms in the 1890s. Most early irrigation projects in the Upper Yellowstone were individual undertakings, although a few like the Livingston Ditch and the Park Branch Canal were cooperative efforts. During the early 1900s, a few larger irrigation projects were constructed, such as the Livingston or Park Irrigation Ditch five miles above Livingston and the Hunter's Hot Springs Canal, both of which diverted water from the Yellowstone. The Livingston Ditch and the earlier Park Branch project were both enlarged during the 1930s as Public Works Administration (PWA) projects during the Depression (Wolle 1963, 403; Whithorn 1984, 78-79; Haines 1977, 1:81, 95; Whithorn 1984, 64-65, 78-79, 87, 97, 121; *Enterprise* 1976 [1900], 15-18; *Water Resources Survey*, Park County 1951, 30-39, 48; *Historical Records*, Park County 1940, 361-362).

Besides boosting mining and agriculture in the Upper Yellowstone, the completion of the Northern Pacific Railroad's mainline in 1883 gave birth to region's major trade and population center, and fostered the development of its vital tourism industry. Laid out by railroad surveyors in 1882, the city of Livingston grew quickly. As the Northern Pacific's division point, Livingston was the location of the railroad's major maintenance facility, assuring a relatively stable population base and attracting important subsidiary industries. By the early 1900s, over 1,000 people were employed at the railroad's Livingston shops. In 1883, the railroad also laid a branchline through the Upper Yellowstone, serving both the coal and hardrock mines in the area, as well as the Yellowstone Park excursion traffic from the line's terminus at Cinnabar. In 1902 the line was extended to the northern portal of the park at Gardiner (Haines 1977, 1:265; Wolle 1963, 395, 400; *Historical Records*, Park County 1940, 366).

With the creation of Yellowstone National Park in 1872, a large portion of the Upper Yellowstone was "reserved and withdrawn from settlement, occupancy, or sale . . . and dedicated and set apart as a public park or pleasuring-ground for the benefit and enjoyment of the people . . . ."(Haines 1977, 1:167). The "national park idea" had been born out of concern over the effects of unregulated logging, grazing, hunting, specimen collecting, and commercial development on the scenery, wildlife, and geological and geothermal features of the Yellowstone Plateau. The human activities which most affected this portion of the watershed after 1872 resulted from the attempt to protect and manage the park's natural resources.

Before the establishment of the park, hunters, particularly those involved in the meat and hide trade, engaged in the indiscriminate slaughter of wildlife. The Bottler Brothers, whose ranch was a popular hostel for

Yellowstone excursionists in the 1870s, killed an estimated 2,000 elk near Mammoth Hot Springs in the spring of 1870 (Haines 1977, 1:205). The following winter other professional hunters killed over 4,000 elk in the Mammoth Basin alone, not counting the toll in other areas of the Yellowstone Plateau or the numbers of deer and mountain sheep also slaughtered for their hides (Haines 1977, 1:207). The activities of commercial hunters had been compounded by senseless waste of both game and non-game species by irresponsible recreational hunters. The wholesale destruction of wildlife in the area continued long after the establishment of the park. By 1875 game animals were scarce in the most traveled portions of the park (Haines 1977, 1:200). In 1882 park visitor General Philip H. Sheridan reported that during the previous winter as many as 2,000 elk were killed "in and around the edges of the Park" (Haines 1977, 2:59). In 1884 Congress passed the Lacey Act "To protect the birds and animals in Yellowstone National Park" (Haines 1977, 2:64). Park managers embarked on a policy of absolute protection of most park animals, a major exception being predators. In an effort to propagate elk and buffalo, park policy allowed for the elimination of coyotes, mountain lions, wolves, and bears through a variety of methods, until 1934 (Haines 1977, 2:80-83). The removal of large numbers of predators in turn created other ongoing wildlife management problems. Among other protective efforts that engendered a new set of environmental problems was fire suppression. Fire control policies enacted to deal with the destruction of park timber by arson-caused and natural fires resulted in the interruption of the natural fire cycle, vegetation changes, and unnatural fuel accumulation.

An important outgrowth of the creation and protection of Yellowstone National Park was the reservation of forest lands as permanent federal holdings. Concern over damage to forests from overcutting, overgrazing, and fire led to passage of the Forest Reserve Act of 1891. Followed by the creation of the U.S. Forest Service (1905) and the national forests (1907), the act marked the beginning of an active federal role in natural resource management. By 1908, lands in the Upper Yellowstone watershed had been included in the Absaroka and Gallatin National Forests (Alexander 1987, 36).

The early mission of the Forest Service focused on six tasks: the protection of forests against fire and trespass; management of timber harvest and protection of watersheds; improvement of timber stands; protection of water supply; utilization and improvement of forest ranges for grazing; and establishment of Forest Service facilities, including communication and transportation networks. Overgrazing, particularly by sheep, remained a problem on Forest lands throughout the early 1900s. In spite of grazing regulation, the problem actually worsened on some ranges, particularly under the influence of wartime demands during the years 1914-1919. On forests where grazing was a major activity, predator control was also a concern. During the early 1900s, the U.S. Biological Survey eradicated large numbers of coyote, bear, and mountain lion using hunters, trappers, and experimental poisons. A wide range of other wildlife management problems also confronted the Forest Service during this period. After the catastrophic 1910 fire season in the North West fire suppression became a priority for the Forest Service. By the 1920s, fire prevention efforts included the use of lookouts, improved communications and fire-fighting techniques, and cooperative fire-fighting agreements with state agencies and private citizens.

During the Depression era of the 1930s, both the Forest Service and the National Park Service in Yellowstone received a major manpower boost through New Deal programs designed to assist the unemployed. Of particular importance was the Civilian Conservation Corps (CCC). Numerous CCC camps were established in the forests and in the national park, with enrollees employed in erosion control, fire-fighting, reforestation, and the construction of roads, trails, and administrative and recreational facilities. With the participation of CCC manpower during the 1930s, both agencies expanded their systems of roads and trails. In the case of the forests, the additional roads not only served Forest Service needs, but also provided access to remote areas for the increasing numbers of recreationists who used national forests during the Depression (Alexander 1987, 19-25, 33-38, 45-47); Wildesen 1982, 74).

UPPER YELLOWSTONE RIVER WATERSHED

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CLARK FORK RIVER WATERSHED

From its headwaters at Silver Bow Creek on the Continental Divide, the Clark Fork River flows nearly 300 miles northwestward through a broad corridor of semi-arid mountain valleys to Lake Pend Oreille. Together with its major tributaries the Blackfoot, the Bitterroot, and the Flathead -- the Clark Fork drains 22,000 square miles in Western Montana and Northern Idaho. From the Missoula Valley upriver, the Upper Clark Fork flows through a series of broad, semi-arid valleys. Downstream from Missoula, the Middle Lower Clark Fork corridor narrows, passing through steeper, more heavily timbered valleys.

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

Archaeological sources indicate that humans first occupied the Clark Fork River watershed 10,000 years ago. These early inhabitants subsisted through a combination of hunting, gathering, and fishing. By 4,000 BP people in the Clark Fork watershed, like others throughout the Columbia Plateau, had adopted a seasonal pattern in which they moved from semi-permanent winter camps to various root-digging, fishing, and hunting grounds, depending on the resource available at the time (Miller 1981, 19-26; Phillips 1974, 16).

Modern tribal cultures were generally recognizable throughout the Columbia Plateau by 1300 A.D., however there is considerable debate over the origins and earliest appearance of tribal cultures identified with the Clark Fork watershed. Most anthropologists and tribal traditions seem to agree that it was well before 1700. Because its broad valleys furnished excellent travel corridors to both the Great Plains and Columbia Basin, the watershed was eventually frequented by many tribes whose primary territories lay elsewhere. Its primary inhabitants, however, were three closely associated tribes: three Salishan-speaking peoples, the Salish (also called Flathead), the Pend d'Oreille or the Kalispel; and the linguistically distinct Kootenai. Together these tribes inhabited an area from the Kootenai River south to the Missouri headwaters, stretching from present-day Spokane eastward to the Continental Divide. Some bands may have lived farther east on the Great Plains. All pursued the seasonal rounds characteristic of the Plateau Culture area, although the Salish placed a greater emphasis on bison and hunting in general, while the Pend d'Oreille had a greater orientation toward fishing.

Their seasonal rounds took them throughout the watershed and beyond, with each tribe

favoring a particular home area. For the Salish this was the Bitterroot Valley. The Upper Pend d'Oreille, who were closely associated with the Salish, lived in both the Bitterroot and Flathead valleys. The Lower Pend D-Oreille generally were found along the Lower Clark Fork and Pend d'Oreille rivers, although they shared hunting grounds to the north with the Kootenai. The primary territory of the Kootenai lay in the northern reaches of the Clark Fork watershed and the Kootenai River Valley. All four tribes regarded the area from the Missoula Valley downriver to present-day Plains as common ground (Phillips 1974, 21-26, 37, 43, 57, 236; Knight 1989, 161-162, 196; Chalfant 1974, 4; Fahey 1986, 31; Deaver and Deaver 1986, 33, 47).

Protohistoric Settlement Activity (1500 to 1800)

The Protohistoric era is characterized by the appearance of Euro-American influence on native culture. In some instances, such influence was indirect. Euro-American settlement set off a chain-reaction of tribal dislocations. Epidemics of European-borne diseases often decimated tribes far in advance of actual contact with the newcomers. By the early 1700s, horses reached the Northern Rockies and Plains, revolutionizing native ways of life long before Euro-Americans penetrated those regions. Likewise, European or Euro-American trade goods also frequently preceded direct contact between the tribe and non-native trade sources. Around 1700, Shoshone bands in the Great Basin and Snake River Plain acquired horses, allowing them to expand their range northward across much of present-day Montana, increasing their generally benign contact with the tribes of the Clark Fork basin. When the Blackfeet acquired guns around 1750, they repelled the Shoshones and became unrelenting enemies of the Plateau tribes, including those in the Clark Fork watershed.

The Salish, Pend d'Oreille, and Kootenai obtained horses around the 1730s. Like other Plateau tribes who acquired horses, they quickly adapted to a semi-nomadic lifestyle, embracing expanded territories including seasonal buffalo hunts on the Great Plains. They extended their trade contacts throughout the inland West, and in doing so, adapted many elements of Plains and Coastal cultures into their own ways of life. Horses flourished in the Bitterroot, Clark Fork, and Flathead valleys, but were perhaps not so numerous in the rugged country of the Kootenai. The sizeable Salish and Pend d'Oreille horse herds, along with the more accessible nature of their valleys, attracted regular raids by the Blackfeet (Phillips 1974, 7, 51; Fahey 1986, 37-38; McLeod and Melton 1986, 5:7).

Smallpox decimated the tribes of the Clark Fork watershed between 1760 and 1770, although the disease may have appeared among them as early as the 1730s. Subsequent epidemics occurred in the 1780s, 1790s, and again in 1838. According to one estimate, disease had reduced Plateau tribes as much as 94 percent by the 1840s (Fahey 1974, 24-25, 46; McLeod and Melton 1986, 7:5; Miller 1981, 128-129, 134).

Preindustrial Settlement Activity (1775 to 1865)

Although the Kootenai may have had some contact with British or Canadian traders during the 1790s, the first recorded Euro-American activity in the watershed occurred in 1805 with the Lewis and Clark Expedition. The explorers traveled through the Bitterroot Valley and over the Lolo Trail into the Clearwater country. On their return in June 1806, the two captains divided their forces at Traveler's Rest, with Clark returning up the Bitterroot to the Beaverhead, while Lewis led his party across the Missoula Valley and up the Blackfoot River to the Continental Divide (Thwaites 1969 [1905] 3:52-64; 5:165-194; 5:245-249; Phillips 1974, 10).

For four decades following the Lewis and Clark expedition, the United States and Great Britain vied for control of the Pacific Northwest. Much of the struggle took the form of rivalry for the region's fur resources that brought both British and American fur companies into the Clark Fork watershed. In 1809 David Thompson of the North West Fur Company established a trading post on the Clark Fork near Thompson Falls. Over the next few years he established a profitable trade with the Salish and Kootenai tribes, and explored much of the watershed upriver to the Missoula Valley.

Following several years of violent competition, the Hudson's Bay Company (HBC) absorbed the North West Company in 1821. In an effort to discourage American fur interests from entering the Columbia Basin, the company attempted to trap out the upper reaches of the Columbia. It was in connection with this policy that HBC brigades entered the Upper Clark Fork Basin during the 1820s. The watershed also attracted American trappers, as the river corridor provided travel routes into the Columbia country from the Yellowstone and Missouri rivers. Fur trade activity on the Clark Fork peaked in 1831 and 1832, when British and American trappers noted that beaver were growing scarce in the region. By the early 1840s, the combination of changing fashion and trapped-out streams ended the organized fur trade along the Clark Fork. Fur trapping continued in the watershed during the 1840s and 1850s, but it was

largely a subsistence activity carried on by a handful of trappers who had settled in the watershed (Stuart 1977a, 125-131, 170-179; Malone et al. 1991, 42-45; Morgan 1953, 123; Toole 1959, 48; Hafen 1965, 2:9, 141, 373; 8:256; Ferris 1940, 107, 166; Work 1923, 28, 98-100).

In response to repeated requests from the Salish and Nez Perces, Father Jean-Pierre DeSmet led a group of Jesuit missionaries to the Bitterroot Valley in 1841. There they established St. Mary's Mission, the first of several Jesuit missions in the Northwest. By 1845, the mission included a church, farm, flourmill, and sawmill. St. Mary's flourished until 1846, when relations between the Salish and the missionaries soured. In 1850 the mission was closed and the property was converted into a trading post by Major John Owen. In 1854, the Jesuits returned to the Bitterroot and constructed a second St. Mary's that operated until 1891, when the Salish were removed from the valley (Fahey 1974, 64-88; Malone et al. 1991, 62-63).

In 1855, territorial governor I.I. Stevens conducted a series of treaty councils with the tribes of Washington Territory, including those in the Clark Fork watershed. It was Stevens' goal to place the tribes on large reservations, thereby opening areas for transportation routes and settlement, and avoiding the type of conflicts that had occurred along the Oregon Trail. In July 1855 he met with the Salish, Pend d'Oreille, and Kootenai tribes in the Missoula Valley, urging them to accept a reservation of nearly 1.3 million acres in the Jocko, Mission, and Flathead valleys.

Because it included much of their preferred territory, the Pend d'Oreille and Kootenai approved the location. The Salish, however, were unwilling to surrender their beloved Bitterroot Valley. To gain the tribes participation in the treaty, language was inserted allowing the Salish to remain in the Bitterroot until the lands could be surveyed. At that time, the President would decide whether the tribe could remain in their valley or move to the Jocko Reservation. Much confusion and heartache later resulted from this portion of the treaty, as the Salish were removed from the Bitterroot in 1891 (Fahey 1974, 89-112; Malone et al. 1991, 116-117).

Two years earlier, Stevens had also led a reconnaissance expedition to survey potential railroad routes through the Northern Rockies. In Stevens' command was Lt. John Mullan, who became convinced that a wagon road could be built to connect Ft. Benton, the head of navigation on the Missouri, with Walla Walla, its counterpart on the Columbia. Congress approved Mullan's plan and construction began in eastern Washington in 1859. By the summer of 1860, Mullan's crews had pushed the road into western Montana via the St. Regis River, up the Clark Fork and Little Blackfoot rivers, and into the Missouri Valley, reaching Ft. Benton on August 1, 1860. Although eventually supplanted by less arduous routes, the Mullan Road provided an important link between the supply centers of Ft. Benton and Walla Walla and the mining camps

of Montana and Idaho during the 1860s and early 1870s (Malone et al. 1991, 72).

Montana's mining activity had its beginning in the Clark Fork watershed. In 1858 prospectors James Stuart, Granville Stuart, and Reece Anderson found gold in a small stream at the north end of the Deer Lodge Valley (Stuart 1977b, 136). Though not a rich deposit, the Gold Creek placers attracted a stampede of miners that later resulted in far more valuable discoveries. Nearly every stream in the Upper Clark Fork watershed was placered during the 1860s, with mining camps springing up on German Gulch, the Little Blackfoot River, Flint Creek, Bear Gulch, and the Big Blackfoot River. In 1869, Montana's last major placer strike occurred on Cedar Creek, near present-day Superior, resulting in the exploration and development of several mining districts on the Lower Clark Fork.

Although it was undoubtedly spurred by the mining activity of the 1860s, agriculture had already taken hold in some parts of the watershed. In 1842, St. Mary's Mission planted the watershed's first crops of wheat, potatoes, and oats in the Bitterroot Valley. Even after the mission closed in 1846, the farm continued in connection with the Ft. Owen trading post.

By the 1850s, stock-raising was also well under way in the watershed, as several former trappers built herds by retrieving worn out or abandoned emigrant stock along the Oregon Trail. They drove the animals north to graze on the grassy ranges of the Deer Lodge and Bitterroot valleys. The fattened stock were then driven back to the emigrant route, where they were sold or traded one-for-two trail weary animals (Stuart 1977b, 97). By 1862, a prospector traveling through the Deer Lodge Valley could report that Johnny Grant had 3,000 to 4,000 head of cattle, besides his horses and mules (White 1966, 67). With the growth of mining camps in the 1860s, more than one would-be prospector realized that handsome profits could be made by supplying the camps and turned to farming instead (Kohrs 1977, 19; Malone et al. 1991, 146-147).

Modern Era Settlement Activity
(1865 to 1940)

In 1864, prospectors found paying amounts of placer gold in Silver Bow Creek, one of the headwaters of the Clark Fork. Water was scarce and the diggings were mediocre. Few miners made much more than wages working them. None would have believed that in twenty years their little camp -- Butte -- would be the colossus of the mining world. Although the placers were shallow, lode-mining efforts eventually revealed rich silver-copper deposits. By the mid-1870s, Butte's silver mines had attracted outside capital and a far-seeing mining man,

Marcus Daly.

Daly realized that Butte's future lay in its incredible copper body and by the mid-1880s, he and other ambitious men were developing Butte's mines on a massive scale, producing record quantities of silver, zinc, and manganese as well as copper (Malone et al. 1911, 209-211). Scores of active mines crowded the hillsides. A half-dozen copper smelters lined Silver Bow Creek, and some of the world's largest silver mills worked ore day and night. In addition to Marcus Daly's Anaconda Copper Company, at least five major mining and smelting companies operated in Butte before the turn of the century (Smith 1953). Recognizing that Butte suffered from a chronic shortage of water and disposal space for mill and smelter tailings, Daly erected his huge Anaconda Reduction Works twenty-six miles west of Butte, above Anaconda, the company townsite.

Serving the Butte and Anaconda mining centers were three railroads: the Utah and Northern, completed to Butte from Corinne, Utah, in 1881; a branch of the Northern Pacific's transcontinental line, completed in 1883; and a branch of the Great Northern's transcontinental line, completed in 1889. Two other railroads also served Butte: the Butte, Anaconda, and Pacific, which was the Anaconda Company's ore-hauling shortline, completed in 1894; and the transcontinental Chicago, Milwaukee and St. Paul, completed in 1907.

By 1910, Standard Oil had acquired all of Butte's copper companies, including Anaconda, and had consolidated them under a single holding company, Amalgamated Copper. Under Amalgamated, the remaining Butte smelters were closed, and Butte's ores were processed at the mammoth complex at Anaconda and another in Great Falls. In 1915, the company was abolished and replaced by the Anaconda Copper Mining Company (later the Anaconda Company), which operated Butte's mines and the Anaconda smelter into the 1970s (Malone et al. 1991, 230-231).

Though far overshadowed by Butte, a second major mining district also operated in the Clark Fork watershed, at Philipsburg on Flint Creek. Although the Flint Creek Valley was the scene of several rich gold placers, it soon became apparent that important silver lodes lay in the hills around Camp and Fred Burr creeks. By the early 1870s, at least three stamp mills and one crude smelter worked ore from more than a dozen active mines. Despite hard times during the 1870s, the district rebounded. By the late 1880s, it boasted the world's leading silver producer and one of the world's largest silver mills, the Granite Mountain properties. Philipsburg's days as a major silver producer ended in the early 1890s, with the collapse of silver prices and the financial Panic of 1893. Silver mines shut down throughout the West, many of them permanently. Philipsburg's mines resumed production during the late 1890s and early 1900s, but

the silver market remained vulnerable to low prices and operations never regained their pre-1893 stature (Malone et al. 1991, 192; Wolle 1963, 242-254; Neu 1983; Chadwick 1982, 16-31).

After the demise of the silver giants, Philipsburg continued to figure prominently in the production of manganese, particularly during and after World War I. From 1880 on, much of the camp's milling activity had involved the reprocessing of old silver mill tailings. In 1913, Granite BiMetallic installed a 500-ton cyanide plant to leach tailings "in the series of slum ponds which extend for several miles" (Engineering and Mining Journal 1913, 205). Still larger mills operated during the 1920s and 1930s, working tailings and manganese, zinc, and lead ores (Neu 1983, 18; Emmons 1913).

Besides Butte/Anaconda and Philispburg, other significant mining activity in the watershed should be noted. Extensive hydraulic mining operations occurred at Gold Creek, Flint Creek, Bear Gulch, and Cedar Creek from the 1870s through the 1930s. From the 1890s to the early 1940s, floating dredges worked old placers, including those at Gold Creek, Henderson Gulch on Flint Creek, Bear Gulch, and Cedar Creek. Dryland or traction dredges and drag-line mines were also common prior to World War II. Hundreds of hardrock mines were scattered through the mountains of the watershed, including many mill or cyanide plants prior to 1940.

The effects of mining and mineral processing on the Clark Fork and its tributaries have been enormous. From the Butte/Anaconda area downriver, mill and smelter tailings, smelter fume emissions, and acid mine discharges damaged soil, range vegetation, timber, and fisheries. As early as 1872, observers noted the damage to the river from placer sediments. During the early 1900s, ranchers in the Deer Lodge Valley lost stock to arsenic poisoning from airborne smelter emissions. Waterborne tailings also contaminated farmlands along the river. These damages resulted in protracted litigation against the Butte mining companies beginning around 1910 (Ingman and Bahls 1979; Bakken 1991, 30; MacMillan 1973, 105-128).

As previously mentioned, railroads played a major role in the industrial development of the watershed's mining districts. Two transcontinental lines crossed the region. Completed in 1883, the Northern Pacific followed the Little Blackfoot, Clark Fork, Jocko, and Flathead rivers through the watershed to Sandpoint, Idaho. The Chicago, Milwaukee, and St. Paul Railroad passed along the Clark Fork and St. Regis rivers into Idaho. Railroad construction had considerable effects on portions of the Clark Fork and its tributaries. During construction of the Northern Pacific line in 1882-1883, the river was bridged in ten places between the Little Blackfoot and Missoula -- the bridges resting on plank cribs filled with stone. In two places along the same stretch, the Clark Fork was straightened and confined to new channels to make room for the railroad. The mouth of Gold Creek was narrowed by dikes to accommodate a

bridge. Similar alterations occurred in construction along other segments of the river system (Smalley 1883, 420-421). In 1907, the Chicago, Milwaukee, and St. Paul built its line down much the same stretch of river. Again, in narrow canyons the river was rechanneled to allow for the railroad (U.S. Army 1967, 10). (Shortly after the Milwaukee's completion, the Clark Fork's great 1908 flood washed out nearly 75 miles of the Milwaukee's new track, and a considerable portion of the Northern Pacific's roadbed as well [Stone 1913, 227]).

The mining industry and the construction of two transcontinental railroads through the watershed in 1883 and 1907 gave birth to large-scale commercial lumbering in the area. During the 1880s and 1890s, much of the logging was undertaken by affiliates of the Northern Pacific and the Anaconda Company. In the late 1880s, the Montana Improvement Company, linked to both Marcus Daly and the railroad, was prosecuted for massive timber trespass on public lands. To supply its tremendous demand for mine timbers and smelter fuel, the Anaconda Company eventually went into the lumber business for itself. By 1910 it had acquired over a million acres of timberland and was the largest timber and milling operation in Montana until 1972.

Major logging operations occurred throughout the watershed, including large areas on Mill Creek near Anaconda, the Little Blackfoot River, Big Blackfoot River, Bitterroot Valley, Nine Mile Valley below Missoula, and the Lower Clark Fork above Lake Pend d'Oreille. In most areas roads and logging railroads were used to transport saw logs, although log drives were also used on the Bitterroot, Lower Clark Fork, and Big Blackfoot. Sawmills, at the confluence of the Blackfoot and Clark Fork, constructed dams on both rivers. These dams retained the mills' sawlogs and provided electricity to both the mills and the city of Missoula. Another hydroelectric dam was built on the Clark Fork near Thompson Falls in 1913 (Malone et al. 1991, 212, 325, 332-333; Bonner School Bicentennial Committee 1976, 71-73; Koelbel 1972, 82; Van West 1987, 60-62; Dufresne 1989, 85-94).

The growth of large mining districts and the arrival of rail service was of great benefit to the farmers and ranchers of the Clark Fork watershed. By 1870, grain and hay crops flourished in the Flint Creek, Deer Lodge, Missoula, Bitterroot, and Clark Fork valleys. Truck farms in the Bitterroot and Missoula valleys produced melons, tomatoes, cucumbers, corn, and apples. Large-scale commercial farming was well-established by the 1890s, particularly in the Deer Lodge, Bitterroot, and Missoula valleys. Among the largest such ventures were the farms owned by the territory's prison contractor near Deer Lodge. Using convict labor, warden Frank Conley oversaw a diverse agricultural operation that produced hay, grains, potatoes, vegetables, hogs, beef, and dairy cattle. He introduced many new plant varieties, and was an avid horsebreeder, particularly draft animals (Horstman 1980, 16).

With the expansion of crop agriculture in the 1890s and 1900s, irrigation became more important in the semi-arid areas of the watershed. In many places farmers and ranchers expanded and adapted old mining ditch systems for irrigation purposes. During the 1880s and 1890s, farmers and ranchers formed irrigation companies to accomplish larger water projects, and from the 1900s on even more expansive reservoir and canal systems were constructed with federal involvement, particularly under the Works Progress Administration and other New Deal programs during the 1930s.

The early cattle herds of the Bitterroot and Deer Lodge valleys during the 1850s and 1860s established the foundation of the Montana cattle industry. Mountain valley cattle ranching primarily supplied local markets: mining camps, military outposts, and reservations. In the 1870s, the increase in beef production, decline of the placer boom, and increased settlement in the valleys resulted in surplus cattle, overgrazing, and overcrowding of mountain ranges. As a result, cattlemen resorted to long drives to reach new markets directly or to ship from still-distant trailheads. Faced with increasing competition in the mountain valleys, ranchers like Conrad Kohrs moved most of their large herds out of the watershed onto the open ranges of the Great Plains (Malone et al. 1991, 148-151; Kohrs 1977, 52, 59, 63-65, 73).

With the arrival of railroad service in the 1880s, farmers and ranchers in the Clark Fork watershed enjoyed improved access to distant markets. Railroads also encouraged the growth of sheep ranching, particularly in the Upper Clark Fork area. Where range was available, sheep populations grew steadily throughout the late nineteenth century and early twentieth century. By the 1940s and 1950s, the Deer Lodge Valley led the world in production of Ramboillet sheep.

The demands of mining, logging, and grazing took their toll on many of the public lands in the Clark Fork watershed. Wildlife also suffered, due to hunting and loss of habitat. From the 1860s through the early 1900s, timber harvesting for railroads, mines, smelters, and lumbermills had been indiscriminate, particularly in the Upper Clark Fork and Blackfoot drainages. Compounding the overcutting were losses to uncontrolled wildfire and disease, and in the Butte/Anaconda area, smelter emissions. National concern over the waste and abuse of the West's public lands led to the passage of the Forest Reserve Act in 1891. Under that act, the federal government set aside large forest reservations in the 1890s. Administered by the General Land Office, these reserves included lands in the Clark Fork watershed, portions of the future Helena, Deerlodge, Lolo, and Bitterroot national forests.

Prior to the establishment of these reserves, large areas around Butte, Anaconda, and Elliston had been stripped of their timber, in some places as early as 1877. A major concern for the newly created Forest Service in 1907 was the need to monitor and manage timber harvesting

on national forestland. In 1907-1908 the construction of the Milwaukee Railroad through the Lolo Forest required large timber sales. In 1909, the Lolo Forest sold 50 million board feet of timber at Seeley Lake to the Big Blackfoot Milling Company, a major supplier of lumber for both the Butte mines and the railroads. Large sales also continued on the Deerlodge National Forest, which had the largest timber sales program of any forest by 1910 (Baker et al. 1993, 61).

Fire was also a major concern to the Forest Service in the Clark Fork watershed, particularly after the catastrophic 1910 fire season. In August of that year a ten-day firestorm swept through northern Idaho and western Montana, destroying Taft, Montana, and forcing the evacuation of numerous communities in the Lower Clark Fork watershed. Three million acres of timber were destroyed and 80 firefighters died in the inferno (Baker et al. 1993, 53). With the heightened emphasis placed on fire suppression after 1910, the Forest Service expanded its trail system and constructed numerous roads, a reflection of the growing role of the automobile. Auto access facilitated logging and firefighting activity, but it also opened the forests to a growing number of recreational users in the 1920s and 1930s (Baker et al. 1993, 73).

With the onset of the Great Depression in the 1930s, many Forest Service programs received a major manpower boost through New Deal programs designed to assist the unemployed. Of particular importance was the Civilian Conservation Corps (CCC), whose crews contributed to many long-term improvements. In the Clark Fork watershed, CCC projects included the reconstruction and enlargement of the Forest Service's Savenac Nursery at Haugen and additions to the Ninemile Remount facility. CCC crews fought fires, dug irrigation ditches, and built roads, trails, and numerous Forest Service administrative and recreational facilities (Baker et al. 1993, 123-129).

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FLATHEAD RIVER WATERSHED

A major tributary of the Clark Fork, the Flathead River drains most of northwestern Montana. Its three main tributaries are the North Fork, which rises in Alberta's McDonald Range; and the Middle Fork and South Fork, both of which take their headwaters from the Flathead Range. The rivers join between Coram and Columbia Falls. Two other tributaries, the Swan and the Stillwater, join the Flathead at Flathead Lake. The largest freshwater body west of the Great Lakes, Flathead Lake covers an area of about 300 square miles. Flathead River exits its southwest corner, flowing south and west to join the Clark Fork near Paradise, Montana. The Upper Flathead is that portion of the watershed north of the Lake; the Lower Flathead includes the Flathead Valley area around the Lake, and the Mission, Jocko, and Little Bitterroot valleys.

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

Archaeological sources indicate that humans first occupied the Clark Fork and Flathead River watersheds 10,000 years ago. These early inhabitants subsisted through a combination of hunting, gathering, and fishing. By 4,000 BP people in these watersheds, like others throughout the Columbia Plateau, had adopted a seasonal pattern in which they moved from semi-permanent winter camps to various root-digging, fishing, and hunting grounds, depending on the resource available at the time (Miller 1981, 19-26; Phillips 1974, 16).

Modern tribal cultures were generally recognizable throughout the Columbia Plateau by 1300 A.D., however there is considerable debate over the origins and earliest appearance of tribal cultures identified with the Clark Fork, Flathead, and Kootenai watersheds. Most anthropologists and tribal traditions seem to agree that it was well before 1700 A.D. (Miller 1981, 22-23). The Flathead watershed's primary inhabitants, however, were three closely associated tribes: the Salishan-speaking Salish (also called Flathead) and Pend d'Oreille (also called Kalispel); and the linguistically distinct Kootenai. Together these tribes inhabited an area from the Kootenai River south to the Missouri headwaters, stretching from present-day Spokane eastward to the Continental Divide. Some bands may have lived farther east on the Great Plains.

All pursued the seasonal rounds characteristic of the Plateau culture area, although the

Salish placed a greater emphasis on bison and hunting in general, while the Lower Pend d'Oreille had a greater orientation toward fishing. Their seasonal rounds took them throughout the Flathead and Clark Fork watersheds and beyond, with each tribe favoring a particular home area. For the Salish this was the Bitterroot Valley. The Upper Pend d'Oreille, who were closely associated with the Salish, lived in both the Bitterroot and Flathead valleys and along the Little Bitterroot, sometimes ranging as far north as present-day British Columbia. The Lower Pend d'Oreille generally were found along the Lower Clark Fork and Pend d'Oreille rivers, although they shared hunting grounds to the north with the Kootenai. The Kootenais' customary territory lay in the Kootenai and Flathead River watersheds. In the Flathead Valley, the Kootenai frequently favored the west side of Flathead Lake and the country southwest of the lake. All three tribes regarded the area along the Clark Fork from the Missoula Valley downriver to present-day Plains as common ground (Phillips 1974, 21-26, 37, 43, 57, 236-237; Knight 1989, 161-162, 194-196; Chalfant 1974, 4; Fahey 1986, 31; Deaver and Deaver 1986, 8, 33, 47; Biggar 1951, 32).

Protohistoric Settlement Activity (1500 to 1800)

The Protohistoric era is characterized by the appearance of Euro-American influence on native culture. Euro-American settlement set off a chain-reaction of tribal dislocations. Epidemics of European-borne diseases often decimated tribes far in advance of actual contact with the newcomers. By the early 1700s, horses reached the Northern Rockies and Plains, revolutionizing native ways of life long before Euro-Americans penetrated those regions. Likewise, European or Euro-American trade goods also frequently preceded direct contact between the tribe and non-native trade sources. Around 1700, Shoshone bands in the Great Basin and Snake River Plain acquired horses, allowing them to expand their range northward across much of present-day Montana, increasing their generally benign contact with the tribes of the Clark Fork Basin, including the Flathead watershed. When the Blackfeet acquired guns around 1750, they repelled the Shoshones and became unrelenting enemies of the Plateau tribes, making frequent incursions into the Flathead watershed. During the 1700s, small groups of Mountain Assiniboine also hunted in the extreme northwest section of the watershed, in

present-day Glacier National Park (Buchholtz 1976, 4).

The Salish, Pend d'Oreille, and Kootenai all obtained horses around 1730. Like other Plateau tribes who acquired horses, they quickly adapted to a semi-nomadic lifestyle -- embracing expanded territories, including seasonal buffalo hunts on the Great Plains. They extended their trade contacts throughout the inland West and in doing so adopted many elements of Plains and Coastal cultures. Horses flourished in the Bitterroot, Clark Fork, and Flathead valleys, but were perhaps not so numerous in the rugged country of the Kootenai. The sizable Salish and Pend d'Oreille horse herds, along with the more accessible nature of their valleys, attracted regular raids by the Blackfeet (Phillips 1974, 7, 51; Fahey 1986, 37-38; McLeod and Melton 1986, 5:27).

Smallpox decimated the Salish, Pend d'Oreille, and Kootenai tribes between 1760 and 1770, although the disease may have appeared among them as early as the 1730s. Subsequent epidemics occurred in 1780s, 1790s, and again in 1838. According to one estimate, by the 1840s disease had reduced Plateau tribes as much as 94 percent (Fahey 1974, 24-25, 46; McLeod and Melton 1986, 7:5; Miller 1981, 128-129, 134).

Preindustrial Settlement Activity (1775 to 1865)

Although the Kootenai may have had some contact with British or Canadian traders during the 1790s, the first recorded contact between the tribes of the Clark Fork and Flathead watersheds and Euro-Americans occurred in 1805, when the Lewis and Clark Expedition passed through the Bitterroot Valley and over the Lolo Trail into the Clearwater country. On their return in June 1806, the two captains divided their forces and pursued separate routes, with Clark returning up the Bitterroot to the Beaverhead, while Lewis led his party across the Missoula Valley and up the Blackfoot River to the Continental Divide. Although the explorers did not enter the Flathead watershed, their visit initiated friendly relations between Euro-Americans and the tribes who dwelled there (Thwaites 1969 [1905] 3:52-64; 5:165-194; 5:245-249; Phillips 1974, 10).

For four decades following the Lewis and Clark Expedition, the United States and Great Britain vied for control of the Pacific Northwest. Much of the struggle took the form of rivalry

for the region's fur resources, a rivalry that brought both British and American fur companies into the Clark Fork watershed. In 1809 David Thompson of the North West Fur Company established a trading post on the Clark Fork near Thompson Falls. Over the next few years Thompson and other employees of the Canadian company traveled extensively throughout the Kootenai, Flathead, and Clark Fork watersheds, establishing a profitable trade with the Kootenai and various Salish tribes. Before leaving the mountains in 1812, Thompson explored the Upper Clark Fork and Flathead drainages, mapping Flathead Lake and much of Flathead River. In an attempt to gain a foothold in the North West Company's domain, the British Hudson's Bay Company sent Joseph Howes into the watershed in 1810. He wintered in a temporary post, Howes House, north of Flathead Lake. American interests also moved into the area. In 1811 John Jacob Astor's Pacific Fur Company dispatched Ross Cox to trade among the Salish and Kootenai tribes along the Clark Fork, Lower Flathead River, and Flathead Lake. Cox continued his trading activities in the area as a North West employee, after that company bought out Astor's Pacific firm in 1813 (Biggar 1951, 39-51; Malone et al. 1991, 41-59; Phillips 1974, 26-29).

Following several years of violent competition throughout the Pacific Northwest and Northern Plains and Rockies, the Hudson's Bay Company (HBC) absorbed the North West Company in 1821. In an effort to discourage American fur interests from entering the Columbia Basin, the company attempted to trap out the upper reaches of the Columbia. It was in connection with this policy that HBC brigades entered the Upper Clark Fork and Flathead watersheds during the 1820s. American trappers also explored these watersheds during the 1820s, including groups led by Jedediah Smith, David Jackson, and Joshua Pilcher. Fur trade activity in the region peaked in 1831 and 1832, when British and American trappers noted that beaver were growing scarce in the region. Although the fur trade declined along the Clark Fork and Flathead rivers during the 1840s, the Hudson's Bay Company continued to trade in the area, particularly for buffalo products from the Salish and Kootenai hunts on the Plains. It abandoned its Flathead House on the Clark Fork, building a new post south of Flathead Lake in 1847. Located near present-day St. Ignatius, Ft. Connah continued as a major trade center for buffalo hides and horse hair items until its closure in 1871 (Malone et al. 1991, 42-45; Phillips 1974, 30-31; Biggar 1951, 53, 58; Mcleod and Melton 1986, 5:29).

During the fur trade era, the tribes of the Clark Fork and Flathead watersheds had learned of Christianity through the French-Canadian trappers and Christianized eastern tribesmen employed by the fur companies. In their desire to learn more about the religion, the tribes requested that Church authorities in St. Louis send missionaries to them. It was in response to

these requests that Jesuits led by Jean-Pierre DeSmet established St. Mary's Mission in the Bitterroot Valley in 1841. For the next nine years the Jesuits worked among the Salish, Pend d'Oreille, and Kootenai, making many visits to the Flathead watershed. In 1850 relations between the tribes and the missionaries soured, and the mission was closed.

Three years later, the Jesuits selected a new mission site south of Flathead Lake to replace both St. Mary's and a discontinued mission among the Lower Pend d'Oreille on the Spokane River. In 1854, Father Adrian Hoecken established St.Ignatius Mission at the south end of what is now the Mission Valley. As at St. Mary's, the missionaries taught both religion and agricultural practices to the tribes. By 1855, a settlement of several hundred tribal members had gathered around the mission and with the proximity of Ft. Connah, the community became an important trade center during the late 1850s and 1860s. The mission farm flourished and soon included an irrigation system and small herds of livestock. The mission's herds were soon joined by those of several traders, who had acquired worn out stock along the Oregon Trail and driven them to the Jocko and Mission valleys to fatten. These herds and the mission farm represented the beginning of agriculture in the Flathead watershed (Phillips 1974, 33; Biggar 1951, 59-62, 69, 84-85; Fahey 1986, 8-12, 17; Fahey 1974, 64-88; Malone et al. 1991, 62-63; Water Resources 1963, 40).

In 1855, territorial governor I.I. Stevens conducted a series of treaty councils with the tribes of Washington Territory, including those in the Clark Fork and Flathead watersheds. It was Stevens' goal to place the tribes on large reservations, thereby opening areas for transportation troutes and settlement, and avoiding the type of conflicts that had occurred along the Oregon Trail. In July 1855 he met with the Salish, Pend d'Oreille, and Kootenai tribes in the Missoula Valley, urging them to accept a reservation of nearly 1,300,000 acres in the Jocko, Mission, and Flathead valleys. Because it included much of their preferred territory, the Pend d'Oreille and many Kootenai approved the location. The Salish, however, were unwilling to surrender their beloved Bitterroot Valley. In order to gain the tribes' participation in the treaty, language was inserted allowing the Salish to remain in the Bitterroot until the lands could be surveyed. At that time, the President would decided whether the tribe could remain in their valley or move to the Jocko Reservation. Much confusion and heartache later resulted from this portion of the treaty, as the Salish were removed from the Bitterroot in 1891 (Fahey 1974, 89-112; Malone et al. 1991, 116-117).

Two years earlier, Stevens had commanded a Pacific Railroad survey reconnaissance of potential railroad routes through the Northern Rockies. As a part of Stevens' survey, parties

explored much of the Flathead watershed in 1853-1854. Their explorations led them to conclude that a portion of the most practical northern railroad route lay along the Jocko and Flathead rivers. Two other surveys passed through the Flathead watershed during this era: the British government-sponsored Palliser Expedition in 1858, and the Northwest Boundary Survey in 1860. Both groups traveled through the wild and remote North Fork country (Buchholtz 1976, 23; Elwood 1989, 3; Biggar 1951, 62).

During the preindustrial period, Euro-American settlement in the Flathead watershed was small, localized around the trading hub of Ft. Connah and St. Ignatius mission in the Mission Valley portion of the Lower Flathead. The greatest effect of this early Euro-American settlement was the transformation of the region's native culture. The acquisition of horses, European-borne diseases, and guns radically affected the Kootenai tribe's subsistence patterns and the nature of inter-tribal warfare. The introduction of trade goods, alcohol, and Christianity further altered their traditional ways of life, value system, and land andresource use.

Modern Era Settlement Activity (1865 to 1940)

Until the construction of the Northern Pacific Railroad across the southern tip of the watershed in 1883, the area drained by the Flathead river system remained largely unsettled. Much of the lower watershed was included in the Flathead Reservation, and therefore closed to nontribal settlement. A few prospectors worked streams in the Upper Flathead but, save for a few scattered homesteads, the upper reaches of the watershed were too wild and remote to appeal to those seeking agricultural land. Cattlemen, however, were attracted to the wild hay of the Flathead Valley, and grazed increasing numbers of stock on ranges north of the reservation line during the 1860s and 1870s. By the 1880s, stock-raising was well established on the lands west and north of Flathead Lake. Reservation herds also flourished, numbering 9,335 horses and 5,785 cattle by 1879. Crop agriculture expanded, aided by the construction of small irrigation canals from the Jocko River and Finley Creek. During the early 1870s, nearly 2,000 tribal members cultivated small farms, growing hay, wheat, grains, and vegetables (Buchholtz 1976, 28; Elwood 1989, 6; Biggar 1951, 75, 81-88; Historical Records Survey, Lake Co., 240).

In 1883, completion of the Northern Pacific's main line along the Jocko and Flathead

rivers opened the door to rapid settlement of the watershed. Homesteaders and stockmen poured in to take up lands north of the reservation, along the Lake, in the Upper Flathead Valley, and even in the wilderness of the North Fork. By 1884 small settlements clustered around stores, sawmills, and other businesses vital to the new settlers. Because the roads around the lake were so poor, a thriving steam navigation industry emerged. By the late 1880s a fleet of steamboats operated on Flathead Lake, carrying freight and passengers from the landing at present-day Polson to points on the west and north shore. At the head of navigation on the Stillwater River above Flathead Lake, the settlement of Demersville gathered around a trading post and steamboat landing. Its location made it a logical trade and transportation hub, and the landing eventually grew into the city of Kalispel (Elwood 1989, 8; Biggar 1951, 97, 126; Shaw 1967, 4).

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KOOTENAI RIVER WATERSHED

The Kootenai River headwaters rise on the west slope of the Canadian Rockies within a few miles of the Columbia River headwaters. The Kootenai's course takes it south, west, and north in a great loop below the U.S. and Canadian border. After it reenters Canada, the river flows into the Columbia by way of Kootenay Lake. The U.S. segment of the river, also known as the "loop" or Middle Kootenai, runs from the broad Tobacco Plains area of the Rocky Mountain trench through a series of narrow, deep valleys in the Salish, Purcell, and Cabinet ranges.

Prehistoric Settlement Activity (12,000 BP to 1500 A.D.)

While humans probably were present in the watershed as early as 12,000 BP, most archaeological evidence indicates that small but expanding numbers of people occupied the Middle Kootenai on a seasonal basis beginning around 11,000 BP. These seasonal occupants subsisted primarily through hunting, although fishing and gathering became increasingly important. By 4,500 BP, there was extensive human habitation in the watershed. By this time, the people of the Middle Kootenai, like others throughout the Columbia Plateau, had adopted a seasonal pattern in which they moved from semi-permanent winter camps to various root-digging, fishing, and hunting grounds, depending on the resource available at the time. Modern tribal cultures were generally recognizable throughout the Columbia Plateau by 1300 A.D. The primary inhabitants in the watershed were the Kootenai people, from whom it takes its name. Although there is considerable debate over the origins and earliest appearance of the linguistically unique Kootenai tribe, most anthropologists and tribal traditions seem to agree that it was well before 1700 A.D. (Thoms and Burtchard 1987, 10, 26-27, 214-224; Miller 1981, 19-26; Phillips 1974, 26).

The traditional nucleus of the Kootenai homeland was the Tobacco Plains, although the tribe eventually evolved into two divisions. The Upper Kootenai, who lived in the portion of the watershed above Kootenai Falls, remained oriented around Tobacco Plains. While fishing and gathering were a part of the seasonal round, the Upper Kootenai subsistence pattern emphasized

hunting. For some bands this included bison hunts on the Great Plains. The Lower Kootenai moved to the south and west of Tobacco Plains, to a portion of the watershed below Kootenai Falls in an area between Kootenay Lake and Pend d'Oreille Lake. Although hunting and gathering were also important activities, the Lower Kootenai exhibited a greater reliance on fishing (Isch 1948, 8-9; Thoms and Burtchard 1987, 136-138; Elders of the Kootenai Nation 1990, 3; Phillips 1974, 57).

Protohistoric Settlement Activity (1500 to 1800)

The Protohistoric era is characterized by the appearance of Euro-American influence on native culture. In some instances, such influence was indirect. Euro-American settlement set off a chain reaction of tribal dislocations. Epidemics of European-borne diseases often decimated tribes far in advance of actual contact with the newcomers. By the early 1700s, horses reached the Northern Rockies and Plains, revolutionizing native ways of life long before Euro-Americans penetrated those regions. Likewise, European or Euro-American trade goods also frequently preceded direct contact between the tribe and non-native trade sources. Around 1700, Shoshone bands in the Great Basin and Snake River Plain acquired horses, allowing them to expand their range northward across much of present-day Montana. When the Blackfeet acquired guns around 1750, they repelled the Shoshones and became unrelenting enemies of the Plateau tribes, usually including the Kootenai (Phillips 1974,42-44, 51).

By the early 1700s, the Kootenai people frequently associated with Salishan-speaking tribes in the watersheds to the south and west of the Kootenai River, particularly the Salish, Pend d'Oreille, Kalispel, and Spokane peoples. An extensive trail system enabled the tribes to travel between the Kootenai, Flathead, Clark Fork, and Pend d'Oreille watersheds. The Kootenai and their Salish neighbors all obtained horses around the 1730s. By 1800 the Kootenai had developed respectable horse herds, though probably not so large as those of their Salish neighbors. Like other Plateau tribes who acquired horses, they quickly adapted to a semi-nomadic lifestyle, embracing expanded territories including seasonal buffalo hunts on the Great Plains (Phillips 1974, 6-7, 51.)

Smallpox devastated the Kootenai tribe in 1780-1781, although they may have

experienced an epidemic as early as the 1730s. They were also quite likely affected by outbreaks similar to those that decimated the Salishan tribes during the 1760s, 1770s, 1790s, and again in 1838. According to one estimate, by the 1840s disease had reduced Plateau tribes as much as 94 percent (Fahey 1974, 24-25, 46; Miller 1981, 128-129, 134).

Preindustrial Settlement Activity (1775 to 1865)

Euro-American activity began in the Kootenai River watershed with the arrival of fur trappers and traders in the region during the early 1800s. The Kootenai tribe had attempted to establish contact with traders in Canada as early as the mid-1790s. A few trappers may have worked in the area around 1800. The fur trade itself, however, did not move into the Kootenai country until 1806-1807, when North West Company (NWC) trappers under the direction of David Thompson established trading houses on the upper reaches of the Columbia and Kootenai rivers. Over the next few years, Thompson and his men explored much of the Upper Columbia watershed, including the Kootenai, Clark Fork, and Flathead drainages. The Canada-based NWC opened a profitable trade with the Plateau tribes, including the Kootenai, through posts on the Kootenai River (near present-day Libby, Montana), on Lake Pend d'Oreille, on the Clark Fork River (near present-day Thompson Falls, Montana) and on the Spokane Plain. Although both the British Hudson's Bay Company (HBC) and the American-owned Pacific Fur Company sent trappers and traders into the area during the 1810s, the NWC maintained a near-monopoly on the Upper Columbia trade until 1821, when it was merged with the HBC.

The HBC focused its activity in the region around former NWC posts on the Clark Fork and on the Kootenai. The fur trade in the Kootenai watershed declined sharply between 1835 and 1845, with the pelts taken in 1845 amounting to only one-tenth of the pelts taken in 1825. The company continued to operate its Kootenai post, although it was relocated upriver several times, into the Tobacco Plains area and later into Canada before its closure in 1861 (Spritzer 1979, 33-34; Goetzmann 1966, 10-13; Malone, Roeder, and Lang 1991, 45; Miss 1994, 41).

With the decline of the fur trade in the 1840s and 1850s, the Euro-American presence in the Kootenai watershed consisted primarily of Jesuit missionaries and a several exploring parties. The Kootenai people had encountered Christianity through the fur trade, mainly through

French-Canadian trappers and Christianized eastern tribesmen employed by the fur companies. In 1841-1842, the Jesuits established missions in the Bitterroot Valley and in the Coeur d'Alene country. In 1845, they built a mission station or chapel on the Tobacco Plains among the Kootenai. Missionaries from St. Mary's in the Bitterroot and (after 1854) from St. Ignatius Mission in the Flathead Valley visited the Kootenai once or twice a year. In 1873, another Catholic missionary order established St. Eugene's Mission at the confluence of the St. Mary's and Kootenai Rivers (Miss 1994, 38).

Among the explorers who entered the area during the 1840s and 1850s were parties attached to the Pacific Railroad (PR) Survey, investigating possible western railroad routes. Led by newly appointed territorial governor Isaac I. Stevens, the reconnaissance examined several routes through the Northern Rockies in 1853-1854. Among Stevens' survey parties was one led by Lt. John Mullan, who explored portions of the Kootenai and Fisher rivers in 1854 (Miss 1994, 90; Isch 1948, 62-63).

Stevens' zeal for railroad building led him to conduct a series of treaty councils with the tribes of Washington Territory, including the Kootenai and Salish. It was Stevens' goal to place the tribes on large reservations, thereby opening areas for transportation routes and settlement, and avoiding the type of conflicts that had occurred along the Oregon Trail. In July 1855 he met with the Salish, Pend d'Oreille, and Kootenai tribes in the Missoula Valley, urging them to accept a reservation of nearly 1.3 million acres in the Jocko, Mission, and Flathead valleys. Not all the Kootenai accepted the reservation. Chief Michelle's band eventually moved to Windermere, British Columbia, while the Lower Kootenai under Chief Abraham remained in their old domain near Bonners Ferry as a non-treaty faction until 1895 (Spritzer 44; Fahey 1974, 89-112; Malone, Roeder and Lang 1991, 116-117; Miss 1994, 131).

Among the exploring parties in the Kootenai watershed during the late 1850s were the British government's Palliser Expedition. Directed to explore western Canada, Palliser's group explored the Kootenai River from its headwaters to its mouth in 1857-1858. The British and U.S. crews of the Northwest Boundary Commission traversed the Kootenai country between 1857 and 1859, and a Canadian group calling itself the Northwest Exploring Expedition examined the watershed in 1857, in hopes of charting a feasible trans-Canada wagon road (Miss 1994, 42-46; Spritzer 38-43).

In 1858, gold strikes on the Fraser and Cariboo rivers brought thousands of goldseekers into southern British Columbia. These prospectors streamed into the province over a variety of routes, including the north-south trails through the Kootenai from Walla Walla and the Mullan

Road. The traffic multiplied as subsequent gold discoveries in central Idaho and southwestern Montana attracted more miners to the northern Rockies in the early 1860s. The Kootenai itself was the scene of a notable gold rush in 1863, when paying placers were located on Wild Horse Creek, 50 miles north of the Canadian border. By mid-summer 1864, 1,000 miners worked the diggings. Supplies for the Wild Horse mines were freighted from sources as far south as Salt Lake City.

In addition to the Wild Horse mining camps, scattered settlements took hold on arable lands and along major travel corridors in the watershed as small farms, ranches, and trading posts started up to supply the miners. The community of Bonners' Ferry, Idaho had its beginning in the ferry and businesses that accumulated around a major crossing of the Kootenai River on the road to the mines (Miss 1994, 46, 87; Livingston-Little 1965, 68; Spritzer 1979, 45-54).

During the preindustrial period Euro-American settlement was small, dispersed and, for the most part, transient. The activities of Euro-Americans had the greatest effects on the original inhabitants of the region. The acquisition of horses, European-borne diseases, and guns radically affected the Kootenai tribe's subsistence patterns and the nature of inter-tribal warfare. The introduction of trade goods, alcohol, and Christianity further altered their traditional ways of life and value system.

Modern Era Settlement Activity (1865 to 1940)

During the Wild Horse strike of the early 1860s, prospectors fanned out throughout the Kootenai watershed in search of gold. Small placer deposits were found on Libby Creek in 1867, resulting in a short-lived stampede. The Libby rush ended within a year with the placers struggling on until 1870, when work virtually ceased. The Wild Horse mines also played out in the early 1870s with miners departing for more promising diggings elsewhere. The end of the early mining boom and the departure of many Kootenai bands for the Flathead Reservation left the watershed noticeably depopulated during the 1870s (Wolle 1963, 287; Miss 1994, 131,141, 178; Spritzer 1979, 53).

In the mid-1880s a second mining boom occurred in the Kootenai country, north of the Canadian border. Rich silver-lead deposits were discovered on Kootenay Lake, at a site were the

Kootenais and fur trappers once obtained lead for ammunition. Prospectors found additional large deposits of silver, lead, copper, and zinc in southern British Columbia near present-day Nelson, Trail, Slocan, and Ft. Steele.

With the completion of the Great Northern Railroad in the early 1890s, the way was opened for large-scale development of mines in the Canadian Kootenai. Smelters were constructed in the mid-1890s at Nelson, Pilot Bay on Kootenay Lake, and at Marysville. Butte mining baron F. Augustus Heinze built a massive mining and smelting complex at Trail, B.C. Later sold to the Canadian Pacific Railway, the Trail smelters became the processing center for mines throughout the Kootenay Valley, attracting ore shipments from other mining districts throughout the Northwest for much of the next century.

The efficient operation of major industrial mines and mineral processing plants required a reliable and inexpensive power source. The West Kootenay Power and Light Company was organized in 1896. The company built a dam and hydroelectric plant on the Kootenai River at Lower Bonnington Falls, between Kootenay Lake and the Columbia River (Spritzer 1979, 135). In 1906, several Canadian Kootenai mining interests merged to form the Consolidated Mining and Smelting Company, later known as Cominco. Among Consolidated's holdings were the Trail and Kimberly smelting works and the Sullivan mine, Canada's leading lead-zinc producer. After the 1920s, the Kootenai Valley mines and smelters quadrupled their production, due to improved smelting processes and the construction of several additional hydropower dams on the the Kootenai River (Spritzer 1979, 55-67, 127).

The Canadian Kootenai mining boom also contributed to mining expansion in the American area of the watershed, leading to its first permanent settlement. During the 1880s, several small placer discoveries were made along tributaries of the Kootenai River, including Libby Creek, West Fisher River, Vermilion River, Yaak River, and Rainey Creek. These discoveries led prospectors to quartz deposits near the head of West Fisher River, on tributaries of the Yaak River, and on Silver Butte Creek. Completion of the Great Northern railroad made development of these lodes possible in the early 1890s. By the late 1890s and early 1900s, amalgamation mills, concentrators, and flotation plants operated at several locations near Libby, Troy, and at Sylvanite in the Yaak district. Small producers in comparison to the giants of the British Columbia and Coeur d'Alene districts, the Middle Kootenai lode mines produced semi-regularly through the 1930s. In addition to the metals mines, the watershed also contained vermiculite deposits, which were first developed in 1924 with production continuing into the 1990s.

Placer operations also continued well into the twentieth century, with extensive hydraulic mining practiced at several placers, including those on Libby Creek, Cherry Creek, and West Fisher River. Between 1902 and 1909, the Libby Placer company bulldozed and hydraulicked some 15,000 cubic yards of gravel from the east side of Libby Creek, resulting in a pit measuring 1,600 feet long and 400 feet wide. Dragline excavation was also used in the area's placers during the 1920s and 1930s (Spritzer 1979, 68, 72; Miss 1994, 88, 147, 179-188, 204, 209; Wolle 1963, 298-307; Minerals Yearbook 1940, 361; see also Mineral Resources, appropriate years).

During the Great Depression of the 1930s, a third mining boom of sorts occurred throughout the Rockies as thousands of the jobless turned to subsistence mining for a livelihood. The Middle Kootenai watershed shared in this boom, with many unemployed people taking up abandoned placer grounds and re-opening inactive lode mines, supplementing their mining activities with hunting, trapping, fishing, and wood-cutting (Miss 1994, 207-209; Spritzer 1979, 126).

Railroads were a key component in the development of the mineral resources of the Kootenai watershed during the modern era. Along with the Kootenai River steamboats, the railroads made possible the exploitation of lode mines and low-grade placers through the application of industrial mining methods involving heavy equipment, and by providing efficient transportation of mine products to distant markets. The Great Northern entered the watershed in 1891-1892, laying its track down Wolf Creek, the Fisher River, and along the Kootenai River to Bonners Ferry, Idaho. Its northern rival, the Canadian Pacific was also completed during the 1890s, and both railroads built extensive branch lines through the watershed, competing for business in the major mining areas during the 1890s and early 1900s. Construction of the railroads spurred the development of numerous towns along their lines, and encouraged the growth of both agriculture and the timber industry (Mercier and Simon-Smolinski 1990; Miss 1994, 100-105, 144-148; Livingston-Little 1965, 78; Spritzer 1979, 102).

Small sawmills had turned out lumber in the Kootenai since the early 1860s, but the timber industry developed slowly, remaining geared to local demand until the mining boom of the 1880s and the arrival of the railroad in the early 1890s made expansion possible. With the depletion of timber stands in the Upper Midwest during the 1890s, Great Lakes lumbermen turned their attention to the forests of northern Idaho and northwest Montana, bringing to those areas the capital necessary for large-scale development of timber resources. Large Midwestern lumber concerns, like the Weyerhaeuser family and Julius Neils, bought vast tracts of timberland during the 1890s and 1900s, touching off a lumber boom. Along with the lumber interests,

mining companies and speculators alike engaged in a rush to acquire private timberlands, often resulting in abuses of the 1878 Timber and Stone Act and other homestead measures (Miss 1994, 229). Logging companies, mills, and milltowns grew up almost as quickly as mining towns at Libby, Gateway, Eureka, Troy, Fortine, Warland, and other sites along the Great Northern line.

By 1900, almost 94 percent of all private timberland in the Northwest was controlled by large companies. During the early 1900s, the major logging and milling operations in the Kootenai were the Weyerhaeusers' Bonners Ferry Lumber Company, J. Neils Lumber Company, Eureka Lumber Company, and Dawson Lumber Co. The largest timber owners in Lincoln County, Montana, in 1911 were the Anaconda Copper Mining Company, 178,158 acres; J. Neils (Libby Lumber Company), 74,162 acres; the Northern Pacific Railroad, 61,263 acres; Bonners Ferry Lumber Co., 18,153 acres; and Eureka Lumber, 10,950 acres (Miss 1994, 230). By 1913, the Anaconda Company had acquired all of Northern Pacific's Lincoln County timber, and J. Neils owned nearly the entire Fisher River watershed (Livingston-Little 1965, 63; Miss 1994, 225-228, 283; Spritzer 1979, 103-105; Arrington 1994, 2:498; Beal and Wells 1959, 1:196).

Between 1900 and 1925, lumber was the major industry in the American Kootenai. Besides the major operators, dozens of small mills and portable sawmills turned out lumber and timbers, particularly in the Eureka area prior to World War I. Log drives were an important part of the timber industry at this time, as millions of board feet of logs were carried to mills each year by the Kootenai, Tobacco, Elk, and Yaak rivers, as well as by smaller driveable streams in both the United States and Canada. Lumber companies constructed splash dams on many of the smaller streams to supplement streamflow for log drives. Among the most elaborate dam systems was that of Eureka Lumber, operating a series of five large dams on Fortine Creek in 1905-1907, the largest of which was 320 feet wide by 24 feet high (Shea 1977, 180).

From the 1890s until 1909, great annual log drives occurred on the Kootenai River, as logs were floated downstream all the way to mills on Kootenay Lake. In an attempt to capture the milling profits from these drives, Bonners Ferry Lumber Company established a major mill at Bonners Ferry in 1900. The annual Kootenai drives ended in 1909, however, when both Canadian and Montana authorities banned the transport of unmilled logs beyond their borders. Local drives continued well into the 1920s, when they were largely replaced by logging railroads and trucks (Miss 1994, 228, 238, 246-247, 253; Spritzer 1979, 108-115; Strong 1970, 67; Shea 1977, 215).

The northwest lumber boom collapsed in the mid-1920s, triggered by tumbling prices, timber shortages at some mills, and increasing transportation costs. Beginning in 1925, mills

throughout the region closed in quick succession. In the Kootenai, J. Neils Lumber survived, but many other large firms did not, Bonners Ferry and Eureka Lumber among them. Neils and smaller operators recovered with business from New Deal construction projects during the 1930s, and the lumber industry continued to play a major role in the Middle Kootenai economy, but it never regained its pre-collapse stature (Miss 1994, 255).

Agriculture in the Kootenai River watershed was closely tied to the development of mining, railroads, and lumbering. The earliest farms and ranches in the area began in response to the demands of mining camps during the 1860s. Due to the topography of the watershed, agricultural activity was largely limited to two areas: the lower end of the Canadian Upper Kootenai and Tobacco Plains, and the Lower Kootenai between Bonners Ferry and Kootenay Lake.

In the Upper Kootenai and on Tobacco Plains, early agricultural activity took the form of open range stock-grazing, beginning during the 1860s mining rush and greatly expanding to supply the British Columbia mines during the 1880s. Following the winter of 1892-1893, when over half the area's livestock died, stockmen fenced the Tobacco Plains ranges and added hay crops to their operations. During the early 1900s, farming activity increased as homesteads were taken up and the area was actively promoted by the Great Northern railroad. By 1910, nearly 300 farmers cultivated lands in Montana's Kootenai Valley, where barely a dozen farms had existed twenty years earlier (Miss 1994, 148-149).

The growth of agriculture in the Tobacco Plains area during the early 1900s led farmers to organize the 4,245-acre Glen Lake Irrigation District in 1910, with canal and ditch construction beginning in 1914. Although the district itself failed, the ditches and a 14-foot storage dam on Glen Lake remained in use. Agriculture prospered in the Tobacco Plains area, and in 1913 local farmers reportedly shipped "hundreds of railroad cars of hay, grain, potatoes, meat, and produce each year" to logging and mining camps (Miss 1994, 139). By 1920, nearly 60,000 acres of the Tobacco Plains were under cultivation or ready for it (Spritzer 1979, 72-74; Miss 1994, 131-139; Shea 1977, 162).

Homesteading activity also increased in the Libby and Troy area and along the Yaak River during the early 1900s, as settlers claimed lands under various settlement acts, including the 1906 Forest Homestead acts. Many were attracted to the loop by the Great Northern railroad's promotion of its fruit-growing potential, but the area proved unsuitable, and many homesteaders resorted to subsistence farming, ranching, and logging. The availability of cutover lands sold by lumber companies also contributed to settlement in the Libby and Troy area

(Spritzer 1979, 72; Miss 1994, 132-136, 147).

The watershed's other major agricultural area lay in region of the Middle and Lower Kootenai around Bonners Ferry and Kootenay Lake. Farmers were attracted to the area's rich valley lands during the 1880s mining boom. By the 1890s the Bonners Ferry/Lower Kootenai area produced excellent crops of hay, wheat, and vegetables, as well as livestock. From 1900 to 1922, a commercial fruit industry also flourished in the area, but cherry blight and low prices eliminated it during the 1930s.

Because annual flooding hindered large-scale agricultural development of the area, several schemes were advanced to regulate the river, including one during the 1880s that called for diverting Kootenai River waters into the Columbia at their headwaters. Finally by the 1910s, an extensive reclamation project near Creston, B.C., utilized 53 dikes to control the Kootenai's waters. The project resulted in 25,000 additional acres of bottom lands placed under cultivation (Spritzer 1979, 74, 78, 128-129; Elders 1990, 13).

Among those affected by this and similar projects in Idaho were non-treaty Kootenai, who had remained in the Bonners Ferry area after the 1855 Hellgate Treaty. Most members of the non-treaty band had also refused to accept lands on the Colville Reservation, set aside for several Northwest tribes by executive order in 1872, and had resisted repeated offers of lands on the Flathead Reservation. Most continued to live on lands along the river between Bonners Ferry and Kootenay Lake. Faced with encroachment on these lands during the mining boom of the 1880s, the tribes obtained allotments in severalty to these lands in the early 1890s. They remained along the Kootenai, farming and ranching their lands in spite of continued pressures from homesteaders and reclamation projects that imposed on allotted lands during the early 1900s (Elders 1990, ix, 7-8; Mercier and Simon-Smolinski 1990; Spritzer 1979, 44; Schwantes 1991, 45).

Throughout the West, indiscriminate timber harvesting, overgrazing, and forest fires had caused considerable damage to public forestlands. In 1891, public concern over the situation resulted in the passage of the Forest Reserve Act. In 1897, the Kootenai watershed lands were included in the Flathead and Kootenai forest reserves under the jurisdiction of the General Land Office. After the creation of the U.S. Forest Service in 1905, the reserves were eventually reorganized into several national forests, including the Cabinet and Kootenai national forests in 1908. The Canadian government had created forest reserves in British Columbia's Kootenai in 1880, with the British Columbia Forest Service assuming their management in 1912.

During the early 1900s, the U.S. Forest Service's primary tasks were timber and range

management, fire suppression, prevention of timber trespass and homestead fraud, and construction of trails and administrative facilities. With the rapid depletion of private timber stands, the Forest Service's role expanded into timber sales and reforestation of cutover lands. The Forest Service later directed major efforts against pine bark beetle and blister rust infestations during the 1920s and 1930s.

After the massive destruction of forests and property during the 1910 fire season, the Forest Service to intensified its fire suppression program. Within a few days, the 1910 fires had destroyed more than 8 billion board feet of timber on 3 million acres in North Idaho and western Montana. The fires burned much of the Kootenai watershed, including the town of Sylvanite and countless other mines, homesteads, logging camps, and lumbermills. In 1911, the Kootenai and neighboring forests joined private timber owners in the Northern Montana Forest Protection Association. The Forest Service greatly enlarged its system of roads and trails, lookouts, and telephone links. Increased congressional funding for forest access roads allowed the Kootenai Forest to assist in building U.S. Highway 2 between Troy and Libby.

The expansion of forest roads, coinciding with the increased use of automobiles by the general public, resulted in a greater recreational use of forestlands -- a use that the Forest Service actively promoted during the 1920s. The growing interest in recreation led to the creation of the Cabinet Primitive Area in 1935. A portion of the 88,715-acre primitive area lay within the southern Kootenai watershed.

All of these programs-- fire suppression, pest and disease control, reforestation, and recreation-- received a major manpower boost from the New Deal programs of the 1930s, especially from the creation of the Civilian Conservation Corps (CCC). At least eight different CCC camps operated in the Kootenai watershed between 1933 and 1942. Crews based at Troy, Pipe Creek, Pete Creek, Rexford, Stryker, Sylvanite, Keeler Creek, and Libby took part in a wide variety of projects, including the building of bridges, roads, and trails; telephone systems and lookouts; fire-fighting; and blister rust control and reforestation. By 1937, CCC-built recreational facilities had increased the Kootenai National Forest's developed recreation acreage from seven acres in 1931 to thirty acres. Other New Deal programs affecting the Kootenai watershed included the Works Progress Administration (blister rust control and irrigation projects), the Emergency Relief and Construction Act, and the National Industrial Recovery Act. The forests also benefitted from the private sector during the Depression, as financially strapped lumber companies cut their tax burdens by donating large sections of cutover land to the forests.

Unlike many other Western forests, those of the Kootenai watershed experienced

relatively light grazing pressure during the late nineteenth and early twentieth century. After the 1910 fires, bands of sheep grazed large burned-over areas in the Cabinet National Forest, but the Kootenai Forest attracted no sheep until 1914. The first bands to graze there experienced high losses to plant poisoning and herders did not return. However, two large sheep companies did graze ranges north of Troy from 1928 to 1936 (Miss 1994, 138; Baker et al. 1993, 72, 134).

Among the major effects of modern settlement in the Kootenai watershed were those caused by mining and logging activities. In the American Kootenai, mining-related effects included erosion and the washing of sediments into water courses by placer activities, especially hydraulic and dragline operations; and the deposition of mill tailings and other wastes from hardrock mining and mineral processing. On the Canadian side of the border, major industrial mining impacts included large deposits of toxic smelter wastes and fume emissions; the release of much greater quantities of mine wastes and mill tailings; and the damming of the river for hydropower facilities. The lumber industry also significantly affected the watershed through large-scale clearcutting, with sawdust wastes and log drives damaging streams and rivers. Agricultural activities also interfered with the Kootenai River through extensive diking of that stream below Bonners Ferry.

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UPPER SNAKE RIVER WATERSHED

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

Although there is ongoing debate over the nature of human adaption and ways of life throughout the entire Columbia Basin during the prehistoric period (c.12,000 BP to c.1500 A.D.), some general conclusions can be based on evidence secured at archaeological sites throughout the region. It is more difficult to arrive at discrete prehistoric chronologies specific to individual watersheds. The Upper Snake River watershed is a part of what is known as the Plateau Culture area. In this area, various peoples, with different linguistic backgrounds exhibited ways of life with many common characteristics.

The human presence in the Upper Snake River watershed can be traced back at least 12,000 years, possibly 15,000 years, through evidence unearthed at archaeological sites throughout the drainage. The earliest known site is that of Wilson Butte Cave, near Dietrich, Idaho (c.12,000 BP). Artifacts recovered there and at other locations contribute to the picture of an early Paleoindian culture centered around the hunting of big game animals. During the period 12,000 BP to 8,000 BP, the game consisted of so-called Pleistocene fauna such as mammoth, giant bison (bison antiquus), camel, and sloth. The climate, which had been cool and moist, underwent profound changes beginning around 11,000 BP. As the climate warmed and dried, grasslands expanded, and treelines moved upslope. With such alterations in vegetation and habitat, many Pleistocene species became extinct or in the case of the bison, evolved into a much different animal. Hunting activites by humans may have played a role in these extinctions. Modern species, including deer, bighorn sheep, and mountain goats expanded into the biological niche left by the extinctions in the Upper Snake River watershed. Some modern bison found their way into the area from the Great Plains.

As game species and populations adjusted to the new climate and habitats, so too did the ways of life of the people who had depended on game for their subsistence. They continued hunting, but they relied on a more diverse food base, including small animals such as rabbits and ground squirrels. Gathering activities involving camas and other plants played an increasingly important role in human subsistence. For people who lived along the Snake River and its tributaries, fish and waterfowl began to figure more prominently in their diet. Between 7,500

BP and 4,500 BP, a second warming trend occurred. Characterized by high temperatures and a dry atmosphere, the altithermal affected vegetation, animal habitat, and water supplies in the Columbia Plateau and North Rockies. Also influencing the environment were episodic volcanic eruptions, including the Mazama explosion which occurred around 6,800 BP Between 6,800 B.P. and 4,500 B.P., the climate began to moderate, approaching modern conditions (Miller 1981, 17-20; Arrington 1994, 1:25-29).

By 2,300 BP, humans living in the Columbia Plateau area, including the Upper Snake River, practiced subsistence patterns resembling those later used by modern tribal cultures. These ways of life were typified by use of the bow and arrow, use of nets and fish weirs, residence in semi-permanent villages, and reliance on seasonally available resources, which eventually included buffalo on the Great Plains (Miller 1981, 26).

Modern tribal cultures were generally recognizable among the people in the Upper Snake River watershed by 1300 A.D., and probably earlier. These tribal cultures included the Shoshone, Bannock, Northern Paiute, and Nez Perces. The Shoshone, Bannock, and Paiutes had moved northward from the Great Basin onto the southern edge of the Columbia Plateau beginning around 1,900 BP Tribal traditions maintain that the Nez Perces resided in the valleys of the Snake, Salmon, and Clearwater from time immemorial, and archaeological evidence would seem to indicate that the Nez Perces were present in the area from a very early period.

The ways of life of these and other tribal groups within the Plateau culture were similar in many ways. The primary elements of their economy were fishing, hunting, and food gathering. Each of these activities had its own season and place, resulting in a structured pattern of activities repeated annually. Although the seasonal round required travel, the Plateau peoples were not nomads, preferring instead to live in semi-permanent villages during the winter.

Still encamped in villages, they began their round in the spring, hunting for waterfowl and rabbits and, in some instances, gathering river mussels and edible roots. Root gathering occurred with warmer weather, as groups departed the villages for root-digging grounds, where women gathered stores of various tubers, including bitterroot, wild onions, and wild carrots -- enough to last the year. Men hunted or fished in nearby streams. With the spring salmon run, camps were moved to traditional fishing sites, where large and often intertribal temporary villages formed. Salmon and trout, lamprey eels, suckers, and sturgeon were taken by a variety of spears, snags, nets, and weirs. The fish were then cooked, dried, and stored for the winter. By mid-summer, women gathered and dried a wide variety of wild fruit including serviceberries, blackberries, chokecherries, huckleberries, strawberries, and currents. Edible plant seeds were

also gathered. As autumn approached, the summer villages disbanded with various groups dispersing. Some remained at fishing grounds for the fall salmon run, hunting local game and harvesting seasonal vegetation. Others traveled to higher elevations to dig fall roots (such as camas and kouse), or to hunt. Deer, elk, bear, bighorn sheep, waterfowl, and upland game birds were all hunted at this time, as were beaver and otter.

Hunting parties followed a network of traditional trails throughout the mountains. The Shoshone, Bannock, Northern Paiute, and Nez Perces all hunted buffalo, both in the Snake River Plain and eastward on the Great Plains, as a part of their seasonal round. Prior to the acquisition of the horse, buffalo-hunting groups on the Great Plains might remain there from six months to two years. It has been suggested that, since their pre-horse carrying capacity was limited, hunters returning to the Upper Snake from the eastern Plains carried primarily articles of trade value, such as horns and robes, rather than large quantities of meat.

By mid-October, a tribe's various groups (with the exception of those remaining in buffalo country), returned to winter village sites, settling in for the season to pursue traditional winter activities such as story-telling, leather-working, sewing, tool-making, and the weaving of baskets and mats. People occasionally resorted to winter hunting or fishing if food supplies ran short, and in times of extreme want, would eat lichens or the inner bark of trees (Miller 1981, 25-47). According to Miller, bison, bighorn sheep, and pronghorn antelope, all of which had been present on the Columbia Plateau, disappeared as a food source between 1300 A.D. and 1700 A.D., with the result that salmon played an increasingly important role in the human food supply for the region (Miller 1981, 90-92; Hultkrantz 1956, 191-199).

Protohistoric Settlement Activity (1500 to 1800)

The beginning of the Protohistoric era is marked by the evidence of Euro-American influence, however indirect, on native cultures. The earliest influence in the Upper Snake watershed probably occurred as a result of the dislocation of tribes far to the east and south as Europeans penetrated inland. In seeking to relocate themselves, dislocated peoples in turn exerted pressure on other tribes in a ripple-like effect that, within a surprisingly short timespan, had reached the interior of the continent.

Another influence that far outdistanced the advance of European and Euro-American settlement in North America was that of disease. Epidemics of European-borne diseases frequently decimated tribes who were far removed from direct contact with the newcomers (Miller 1981, 128-129, 173-174).

During the 1680 Pueblo Revolt in the Southwest, large numbers of horses passed into native hands for the first time. Through breeding and trading, horses moved northward, reaching the Columbia Plateau sometime around 1700, profoundly changing the lifestyle of the Plateau peoples. As the horse furnished greater mobility, it also represented an additional responsibility. Hunters and fishermen could now travel great distances within a season, and could return much greater quantities of meat and fish to their villages, but the presence of horses also required that hunting camps be placed near good grazing, instead of steep, rocky areas. With the change in hunting terrain, there was probably less bighorn sheep and more elk and venison in the human diet. Likewise, buffalo consumption increased along with the volume of buffalo robes, horns, and bone. In most cases, the changes in diet were matters of degree, although it is possible that the horse provided access to food not previously part of some tribes' experience. Village sites also may have been determined by the need to provide grazing. Traditional fishing season activities were altered to include time for tending the herds.

The Upper Snake River, like much of the rest of the Columbia Plateau, was a favorable environment for horses, with few predators, relatively good grazing, and generally moderate weather. Under these conditions, horse herds increased at a rapid rate. The horse herds, along with the increased food and trade goods, greatly added to the trading power and prestige of the Plateau tribes and significantly increased their contact with Plains tribes. Such wealth also made the Plateau dwellers inviting targets for horse raids, possibly increasing the instance of warfare (Miller 1981, 96-101).

Originally residents of the Great Basin, the Shoshone were probably the first people in the Upper Snake River watershed to acquire horses, probably around 1700 from Comanches on the southern Great Plains (Schwantes 1991, 19). For nearly fifty years after they obtained horses, the Shoshone were a powerful force in the Northern Plains and Rockies, ranging throughout the Upper Snake River basin, across a broad expanse of present-day Wyoming and Montana, and north to Canada. The acquisition of horses and guns by the Blackfeet and increased competition from other Plains tribes in the late 1700s challenged the Shoshones' power. By the early 1800s, the northern edge of Shoshone territory had receded to the area surrounding the Missouri River headwaters and the Upper Snake River watershed (Miller 1981,

106-107).

Several different groups of Shoshone made their home in the watershed. The heart of Shoshone territory in the Upper Snake was an area near the confluence of the Snake and Portneuf rivers, where the abundance of game and edible roots provided a comfortable wintering ground. The area was an important intertribal gathering point, for both buffalo hunts (herds were present in the area until the 1840s) and an annual trade rendezvous. Some Shoshone bands, however, favored the Boise and Payette River valleys, while others lived in the Bear Lake Valley and in the Salmon River drainage (Mercier and Simon-Smolinski 1990, Vol. 1; Gulick 1971, 38).

The Bannock, who were of Northern Paiute origin, moved into the Snake River Plain and western Wyoming from the Great Basin around 1500. Prior to the acquisition of the horse, they depended primarily on small game, nuts, and seeds. With the mobility provided by horses, the Bannock added bison, deer, antelope, and bighorn sheep to their diet. They also were able to travel to distant root-digging grounds at Smith Prairie and Camas Prairie on Wood River. By 1805, the Bannock were closely associated with certain bands of Shoshone in the Upper Snake watershed. Most members of both tribes spoke both languages, and together they were known as the Shoshone-Bannock (Arrington 1994, 1:45-47; Hultkrantz 1956, 192-195).

The Northern Paiute were part of a large language and cultural grouping that extended throughout the Great Basin and northward into Oregon and Idaho. Like the Shoshone and Bannock, the Paiute came from an arid to semi-arid region where they relied on small game and sparse vegetation. The horse expanded both their range of travel and hunting activity throughout the Upper Snake River watershed, although their home territory was primarily in the Owyhee/Camas Prairie vicinity.

By the 1700s, the Upper Snake River watershed represented the southern range of territory inhabited by the Nez Perces. Of Sahaptian linguistic stock, the Nez Perces traditionally inhabited an area from the Snake River north to the Clearwater River canyons, from the Wallowa country on the west to the Bitterroot Mountains on the East. Around 1710, the Nez Perces obtained horses from the Shoshones, and they, too, became a semi-nomadic people and integrated many elements of both Plains and Coastal societies into their own culture through their extended trade contacts (Schwantes 1991, 19; Mercier and Simon-Smolinski 1990, INA, 5).

Population statistics for the early tribes are unreliable, but it has been estimated that by 1805 there were 3,000 Shoshone and Bannock and a few hundred Northern Paiute in the watershed (Arrington 1994, 1:45). Although statistics specific to the Upper Snake River watershed are not available, at least one source speculated that disease had reduced the Plateau

population by as much as 94 percent betweem 1800 and 1850 (Miller 1981, 134). It seems likely that such epidemics were closely tied to the encroachment of the fur trade frontier. By the 1790s, the fur trade exerted a direct influence on the tribes of the Columbia Plateau, including those along the Upper Snake. Plateau-dwelling tribes actively sought contact with traders on the Upper Missouri in the hopes of obtaining guns, but the fur trade frontier itself would not reach the Upper Snake until 1810, when Andrew Henry and a party of Missouri Fur Company trappers built a winter post on Henry's Fork of the Snake (Miller 1981, 179-180).

Preindustrial Era Settlement Activity (1775 to 1865)

The Missouri Fur Company men who reached the Snake River in late 1810 had failed in their attempt to establish a trading post at the Three Forks of the Missouri River. Driven from that area by Blackfeet, Andrew Henry and his men traveled south over the Continental Divide onto the headwaters of the Snake. There, on Henry's Fork near the mouth of the Teton, they built a small post in the fall of 1810. Intended only as winter quarters, it consisted of two or three cabins and a dugout. Named Ft. Henry, it was the first trading post in the Columbia River Basin. The trappers passed a rugged winter at the post, forced by the scarcity of game to subsist largely on horseflesh. However, when they abandoned Ft. Henry in the spring of 1811, they had secured 40 packs, or about 3,200 beaver pelts (Chittenden [1935] 1986, 1:144; 2:947; Schwantes 1991, 26).

Ft. Henry was briefly reoccupied in October 1811 when a party of "Astorians," employees of John Jacob Astor's Pacific Fur Company, under the leadership of Wilson Price Hunt crossed Teton Pass from the Green River en route to the mouth of the Columbia (Chittenden [1935] 1986, 1:190; Schwantes 1991, 26-27). Hunt's group split after a disastrous attempt to float the Snake's rapids. Three scattered parties improvised routes through the Snake River watershed to the Columbia. Based on that experience, Astorians returning east in 1812 pioneered a portion of the route south of the Snake River that later became an important segment of the Oregon Trail (Chittenden [1935] 1986, 1:458; Schwantes 1991, 40).

During the war of 1812, the American-owned Pacific Fur Company sold out to the North West Company (NWC), a major Canadian firm that introduced trapping brigades to the Snake

River country. Initially conceived as a means of reducing the expense and uncertainties of negotiating with the tribes, brigades were large bodies of experienced men who travelled the wilderness trapping rather than trading for fur. The base for the company's so-called Snake River brigades was Ft. Nez Perces, near the confluence of the Snake and Columbia rivers. Under the leadership of Donald Mackenzie, the 1819 brigade explored Hell's Canyon. During this expedition, three of Mackenzie's employees disappeared on a southern tributary of the Snake. Because the missing men were Hawaiians, the tributary was thereafter known to trappers as the Owyhee River (Schwantes 1991, 28, 40; Mercier and Simon-Smolinski 1990, Vol. 1, ASP, 3).

In 1821, the British government ordered the NWC and the Hudson's Bay Company (HBC) to merge. The HBC acquired seven posts in the Pacific Northwest, including Ft. Nez Perces. The company continued the Snake River brigades into the 1830s, as it competed with American interests for the fur resources of the Snake River. In 1824, Hudson Bay's governor-general, George Simpson, ordered brigade leader Peter Skene Ogden to trap the Snake River country to the point of extinction. By creating a fur-barren region the company hoped to discourage the American presence in the Columbia Basin and strengthen British claims to the area (Chittenden [1935] 1986, 1:288). However, American trappers had already discovered the Snake's rich fur resources and were trapping throughout the watershed.

In 1825, the American-owned Rocky Mountain Fur Company (RMFC) initiated its annual trade rendezvous in the Green River country east of Teton Pass. For fifteen years the rendezvous would be held on or near the headwaters of the Snake, drawing fur trappers, traders, and tribes from throughout the Rockies and Pacific Northwest to the event. During the 1830s, the HBC claimed that as many as 500 to 600 Americans trapped in the Snake River country each year (Schwantes 1991, 1:32). Whatever the number of trappers operating in the watershed, the records of the fur men themselves indicate that more than a decade of intensive trapping by both British and Americans had taken its toll on the resource. When the Hudson's Bay Company brigade led by Alexander Ross trapped the Lost, Wood, and Boise River areas in 1824, they gathered around 5,000 beaver pelts (Arrington 1994, 1:97). Ten years later, HBC trappers under John Work would report that very few beaver were left in those same watersheds. Some trappers believed that the entire Snake country had been trapped out by the 1830s (Schwantes 1991, 32; Arrington 1994, 1:97; Beal and Wells 1959, 1:189; Gulick 1971, 45).

Nonetheless, when American trader Nathaniel Wyeth found himself saddled with a large stock of merchandise originally intended for the 1834 Green River rendezvous, he determined to build his own trading post, Ft. Hall, near the confluence of the Snake and Portneuf rivers.

Within weeks, the Hudson's Bay Company responded to Wyeth's action by building Ft. Boise near the confluence of the Snake and Boise rivers. With the presence of two trading posts in the watershed, the Snake River brigades were discontinued. However, with the declining amount of fur available, Wyeth could not compete with the British company's traders. In 1837 he sold Ft. Hall to the Hudson's Bay Company, allowing the HBC to regain its virtual monopoly of the Snake River fur trade. The fort remained an important gathering and trade place for the next two decades, particularly with the
arrival of Mormon settlers in Utah in 1847 and the growing traffic along the Oregon Trail in the 1850s (Schwantes 1991, 33; Chittenden [1935] 1986, 1:450-455).

In 1846, the United States and Great Britain agreed to the division of the Oregon country at the 49th parallel, the Americans having won the struggle for dominance of the Columbia Basin. Over the next ten years, the Hudson's Bay Company withdrew from the region in the face of falling fur profits and an established American presence. Overtrapping had exhausted the fur resources, and changing fashion had deflated the market for beaver felt. The American fur interests also felt the pinch--the last Rocky Mountain rendezvous had been held in 1840.

The final remnants of the fur trade in the Snake River country were increasingly threatened by a growing tide of emigrants along the Oregon Trail, and by the resentment that traffic aroused in the region's tribal residents. In the 1840s, trappers near Ft. Hall found greater profit in hunting meat for overland travelers than in trapping. For a time, newly arrived Mormon settlers in the Salt Lake Valley traded regularly at Ft. Hall for supplies. However, by 1850, the Mormons were stocking stores of their own and competing with HBC traders for the overland trade, aided by the Hudspeth cutoff, which diverted emigrant traffic south of Ft. Hall. In 1856, Hudson's Bay Company withdrew from both Ft. Hall and Ft. Boise, signalling the end of the organized fur trade in the Snake River watershed (Schwantes 1991, 33-34, 43).

Directly or indirectly, the fur trade had numerous effects on the watershed. The fur-bearing animal population, especially beaver, had been depleted. The introduction of European diseases and alcohol abuse had devastating effects on tribal populations. Widespread distribution of guns as well as metal points and blades revolutionized hunting and warfare. As both hunter and warrior became more lethal, traditional power and economic relationships among the tribes shifted, and traditional resource uses altered. Even such innocuous trade goods as blankets, cloth, and beads altered traditional ways of life.

The introduction of Christianity to the tribes affected traditional culture and values. The tribes of the Snake River Valley first encountered Christianity through their early contacts with

French-Canadian fur men and their guides, who were frequently Iroquois or Delaware. Missionaries did not arrive in the Snake River watershed until 1834, when two Methodist ministers, Jason and Daniel Lee, accompanied Nathaniel Wyeth to the site of Ft. Hall. The Lees did not remain in the area, but continued westward to a mission in the Willamette Valley. The following year, Presbyterian minister Samuel Parker traveled up the Henry's Fork into the Salmon River watershed with a party of Nez Perces and Salish. In 1836, two missionary couples, the Whitmans and the Spaldings -- also passed along the Snake River on their way to establish missions at Walla Walla and Lapwai. Their missionary work influenced the tribes of the watershed, as did Mormon missionaries on the Malad and Lemhi rivers (Schwantes 1991, 33-34).

The presence of large numbers of American fur men in the Pacific Northwest, almost literally on the heels of the Lewis and Clark Expedition, solidified the American claim to the region. The fur trade also contributed much to the Euro-American understanding of geography of the Northern Rockies and Columbia Plateau. In their wandering to and through the Snake River watershed, trappers and traders learned what Native Americans had known for centuries -- much of the main Snake River drainage formed an important, if challenging, passage from the crest of the Rockies to the Columbia Valley. The eastward trek of the Astorians in 1812, together with Jedediah Smith's 1824 discovery of South Pass, confirmed the essential elements of the Oregon Trail. In 1834, Captain Benjamin L.E. de Bonneville proved the possibility of bringing wagons through South Pass, then across the Snake River Plain to Walla Walla (Chittenden [1935] 1986, 425). The exploration and mapping of trails through the Rockies to the Pacific, reports of the wealth of resources accessible via those trails, and the presence of permanent Euro-American populations at trading posts along those trails, opened the way for a tremendous influx of Euro-American settlers to and through the Snake River watershed.

The great westward migration of the 1840s and 1850s was driven by a variety of factors, including the lure of Western resources, improved knowledge of and access to the region, and the desire to strengthen American claims to the Oregon country. Moreover, in the late 1830s and early 1840s, major floods devastated farmland in much of the midwest, particularly Illinois, Missouri, and Iowa. The floods were frequently followed by epidemics. A nationwide economic depression triggered by the financial Panic of 1837 struck midwestern farmers especially hard. Although westward emigrants came from all sections of the country, midwesterners, particularly Missourians, predominated the 1840s migrations. An added factor was the positive reports received from the Oregon country as a result of the explorations of

Fremont and others (Schwantes 1991, 43).

The emigrants followed routes established and publicized by explorers and fur traders. The primary route -- from Independence, Missouri, along the Platte River, over South Pass, along the Snake River to the Columbia Valley -- was the Oregon Trail. At Ft. Hall, a second trail turned south to the Humboldt country and California. Known as the California Trail, it skirted the southern edge of the Snake River watershed near the upper reaches of the Portneuf and Raft rivers (Arrington 1994, 1:151).

The first overland migration of settlers along the Oregon Trail occurred in 1841, but the trail west of Ft. Hall was so rough that the party left their wagons at the post and proceeded down the south side of the Snake by packtrain. In 1843, nearly 1,000 men, women, and children in a 200-train wagon made the journey to Oregon, crossing southern Idaho in August with 5,000 head of cattle. The arrival of this train in the Willamette Valley established the feasibility of travel from "the states" by wagon, and in a sense, opened the floodgates of migration (Arrington 1994, 1:150-151). The numbers increased steadily. In 1844, 1,500 made the trip in a season; in 1845, 2,500 came; and in 1846, 6,300 crossed the Oregon Trail (Schwantes 1991, 40-43; Arrington 1994, 1:151).

With this increase in use, new bypasses (called "cutoffs") were found, river crossings were improved, ferries and way-stations were built, and small trade centers grew up at supply points. Initially, the California Trail received less traffic, only 260 travelers in 1845. In 1846, the year of the Mexican War, 1,500 people followed the route, but travel in 1847 and 1848 declined to around 400 emigrants annually. In 1849, however, the California gold rush was under way, and an estimated 25,000 travelers took the California Trail from Ft. Hall. In the process, a new bypass, the Hudspeth Cutoff, was pioneered. Since it bypassed Ft. Hall, saving two days of travel for California-bound traffic, it became the preferred California route. During the early 1850s, nearly 50,000 emigrants per year traveled the California/Hudspeth Cutoff. By 1855, many Oregon-bound travelers were following the Hudspeth because of its shorter travel time. In 1859, another cutoff, Lander's Road, was completed. Leading from South Pass to Ft. Hall via Ft. Piney, it shortened travel time by nearly five days. The Lander Cutoff was popular, and remained in use until the early 1900s (Arrington 1994, 1:151-153).

Based on various estimates as many as 250,000 people passed through southern Idaho on the Oregon and California trails between 1840 and 1860. From 40,00 to 50,000 of these followed the Oregon Trail along the Snake River from Ft. Hall to Ft. Boise. During this twenty-year period, few emigrants saw the semi-arid Snake River Plain as a favorable place to

settle. The process of their passing, however, left its mark. Groups of fifty to several hundred people usually traveled by wagon. Their trains frequently included loose stock ranging from a solitary milk cow to large herds of horses and cattle. They usually arrived at Ft. Hall in late summer, with trail-weary stock and worn-out equipment. Earlier trains had exhausted the forage along the trail, forcing later emigrants with stock to move farther from the main trail in search of grazing. Most travelers hunted whenever possible to avoid consuming their precious supplies. As a result, wild game was scarce along the trail, as was firewood. Such impacts on wildlife and vegetation also affected the Snake River tribes who depended on the same resources for their own sustenance.

Competition for resources led to friction, and eventually to violence. In view of the numbers of emigrants, incidents of violence with tribes were relatively rare but the Snake River Plain was considered the most dangerous stretch of the Oregon Trail during the mid-1850s (White 1991, 198). Confrontations resulted in both an increased military presence along the trail and increasingly repressive federal policies toward the tribes. As the flood of emigration increased, so did the semi-permanent Euro-American population centers along the route, particularly at supply points. Finally, as with the explorers and fur trappers before them, those emigrants who completed the journey reported on their experience to others, often encouraging them to follow.

The first government survey of the Upper Snake River watershed occurred during John C. Fremont's 1843 Oregon reconnaissance. Fremont's initial route brought him through the Portneuf Valley, past Ft. Hall, south to Great Salt Lake, and back to the Upper Snake via Bannock Creek. The area around the confluence of the Snake and Portneuf rivers impressed him as a green, rich valley bottom. His description of the Snake River Plain west of Ft. Hall, was not so inviting:

> There does not occur, for a distance of nearly three hundred miles . . . a fertile spot of ground sufficiently large to produce the necessary quantity of grain, or pasturage enough to allow even a temporary repose to the emigrants. On their recent passage, they have been able to obtain, at very high prices, and in insufficient quantity only such assistance as could be afforded by a small and remote trading post [Ft. Boise] (Jackson and Spence, 520).

Fremont's party traversed Raft River and Goose Creek, to Rock Creek, then returned to

the Snake at Kanaka Rapids. From there they traveled downriver to Ft. Boise, where they crossed the river into Oregon and continued west.

Fremont's report of his 1843 expedition portrayed the Pacific Northwest as a land of opportunity ripe for settlement. Published immediately after its presentation to Congress, the report contained detailed maps, precise distances, and information about landmarks, river crossings, and campsites. It served as an invaluable guide to overland immigrants for the next two decades.

In the decade following the California gold rush of 1849, prospectors pushed the mining frontier toward the interior of the continent -- moving from California into the Great Basin and Rocky Mountains, along the Columbia River Basin, onto the headwaters of the Platte River in Colorado and Wyoming, and into the desert highlands of the Southwest. By the late 1850s, mining stampedes were under way in Colorado, Nevada, Eastern Washington, and British Columbia. Prospectors returning from the British Columbia goldfields found gold on the Clearwater River in 1860, touching off Idaho's first gold rush.

The first recorded discovery of gold in the Upper Snake River watershed occurred on August 2, 1862, at Grimes Creek in the Boise Basin. Despite the fact that one of the discoverers was killed by Shoshones shortly afterward, a stampede to their diggings was under way within two months. Over the next year, more than 16,000 people swarmed into the area, making it Idaho's most populous district. Its major camp was Bannock (later renamed Idaho City), near the confluence of Elk and Moore's creeks. Smaller camps -- called Centreville, Placerville, and Pioneer City -- grew up along Grimes Creek. By the summer of 1863, Idaho City recorded over 6,000 residents, including about 500 women, while the Grimes Creek camps totalled about 8,000 (Sloane 1970, 198-200; Idaho Historical Society, Atlas, 14-15; Arrington 1994, 1:196).

Besides the Oregon Trail, a major travel routes for Boise Basin stampeders was the overland route from the Columbia River at Umatilla, by way of the of the Blue Mountains and Grand Ronde Valley. In 1862, Tim Goodale pioneered a road from Ft. Hall west to Lost River, across Camas Prairie to the Boise Valley (Arrington, I, 1994, 155; Idaho Historical Society, Atlas, n.d., 13-15). The combination of rising tribal hostility toward emigrants on these trails and political tensions related to the Civil War prompted the federal government to station a military garrison near the Boise Basin camps. The new Ft. Boise was erected below the mouth of Grimes Creek on the South Fork of Boise River, a site chosen for its access to wood, water, grass, and fertile land. These elements, along with its proximity to emigrant routes and mining camps, contributed to the growth of a community near the post. Platted on July 7, 1863, Boise

City quickly flourished as a trade and transportation hub. By 1864 it boasted a population of 7,000, briefly ranking as the largest city in the Pacific Northwest (Schwantes 1991, 116, 184).

During the spring and summer of 1863, numerous other mining strikes were made in southwestern Idaho, most notably the South Boise and Owyhee districts. The South Boise District was located along the Feather and South Boise rivers, with its central camp at Rocky Bar. The towns of Silver City, Ruby City, Happy Camp, and Boonville (later Dewey) were among several that sprang up that summer along Jordan and Reynolds creeks in the Owyhee Mountains.

For the most part, the mining districts of the Upper Snake River watershed originated as placer districts, essentially involving water to wash gold from stream gravels. By the spring of 1864, it was apparent that the greatest wealth of the Boise, South Boise, and Owyhee districts lay in their hardrock (quartz) ores, which required crushing and chemical treatment to liberate their precious metals. Initially these ores were worked in crude grindstone arrangements known as arrastras, with as many as eighty arrastras operating in Owyhee alone during the summer of 1864. In September 1864 a five-ton stamp mill arrived at Rocky Bar, and within a few weeks, mills were also in place at Placerville in the Boise district, marking the beginning of industrial mining in the Upper Snake River watershed (Arrington 1994, 1:233; Wolle 1955, 237-247).

The most immediate effect of early mining was the introduction of a large, technologically advanced population into the Upper Snake River watershed. The population consisted of many diverse groups: emigrants from the border states and Civil War South; displaced midwestern farmers; European immigrants, particularly the Irish; and a growing number of Chinese. The Boise area also had a notable segment of French-Canadians. A large portion of this mining population had come to the Snake River from other mining centers in the West (Arrington 1994, 1: 252-253; Mercier and Simon-Smolinski 1990).

As mining camps grew, so did their demands on the area's resources. In the early days of a district, prospectors provided for their own sustenance and shelter, supplementing their "grub stake" of supplies with game and fish. Tents might house them for a time, but most prospectors eventually built cabins or dugouts. However, hundreds or thousands of "stampeders" created long-term demands for food and shelter that usually outpaced local resources. Commercial agriculture emerged largely to feed the mining camps and traffic on the emigrant trails. Farmers placed land under cultivation, altered vegetation, and introduced herds of domestic livestock to the watershed. Miners also created a demand for fuel and lumber, leading to local logging and sawmilling activities and their subsequent impacts on timber stands near the mining districts.

The mining process itself contributed to the degradation of resources. Placer mining washed tremendous amounts of sediments into water courses. Streams were diverted and dammed, stream banks and beds were excavated, and mercury used in the mining process frequently escaped into soil and water. The effects of hardrock mining included exposed piles of waste rock and ore, and minewater drainage, which was sometimes highly acidic. The milling process released large volumes of tailings, frequently in or near streams. These wastes often carried arsenic, sulphur, mercury, and other potentially toxic materials.

The incursion of mining camps and related traffic into the traditional territories of the Shoshone, Bannock, and Northern Paiute had tremendous implications for people whose entire way of life centered around the natural resources of the Upper Snake River watershed. Degradation of vegetation, wildlife, and water quality, and the encroachment of alien cultures within tribal homelands interfered with traditional ways of life and resulted in conflict between the tribes and Euro-American settlers.

Agriculture in the Upper Snake River watershed may be traced to the early 1700s and the management of horse herds by area tribes. The first Euro-American agriculture in the watershed occurred during the 1830s in the form of crops and livestock associated with the trading posts at Ft. Hall and Ft. Boise (Beal and Wells 1959, 1:295; Chittenden,[INSERT B: page #]). As emigration increased along the Oregon Trail in the late 1840s and 1850s, way-stations and supply points also maintained livestock and possibly some garden truck for trade. Ft. Hall played a role in the birth of the western cattle industry during the 1850s. As the fur trade waned, former trappers frequently rounded up cattle abandoned along the emigrant route, or traded for trail-worn stock. After grazing for a year in mountain pastures, the restored animals were driven to Ft. Hall, where they were sold or traded to travelers in need of stock (Stuart, 119-121). By the late 1850s, Mormon farmers had established settlements at Rexburg and other sites within the Upper Snake River watershed. These farmers, many of whom were Swiss and Scandinavian immigrants, actively marketed their surplus crops and livestock along the Oregon Trail (Mercier and Simon-Smolinski 1990).

It was the mining boom of the early 1860s that established commercial agriculture in the Upper Snake River watershed. Most miners were too actively engaged in the pursuit of gold to farm successfully, although nearly all mining camps featured some subsistance farming or gardens. As the Chinese moved into the Idaho mining districts in the mid-1860s, they intensively worked terraced gardens on the steep hillsides near the mines (Fee 1991, 69-76). For the most part, however, miners paid high prices for foodstuffs hauled over great distances. Many

would-be miners or emigrants turned to farming when they recognized the profitable market in the mining camps and overland trail traffic. Lands in the fertile Boise and Payette River valleys were quickly appropriated, and crops of oats, wheat, and barley flourished (Schwantes 1991, 97).

Fresh meat was also at a premium in the camps, and herds were driven long distances to the mines. In 1864, William Byron brought 500 head of cattle from Washington Territory to the Boise Basin mines. When Byron and others discovered that the sage and bunchgrass of the Snake River Plain provided excellent forage for cattle, commercial stock growing took hold in the watershed (Schwantes 1991, 99; Beal and Wells 1959, 1:423).

The establishment of agriculture in the Upper Snake River area brought additional settlement to farmable lands. Initially these lands were along river and stream bottoms, but with the development of irrigation systems, a wider range of land was placed under cultivation. In many instances, mining ditch systems were adapted to serve agricultural purposes, but in others, farmers constructed their own reservoirs and ditches. Farmers also introduced non-native vegetation in the form of grasses and grains that seemed suited to the climate and soil. The discovery that cattle thrived on the vegetation of the Snake River Plain resulted in the introduction of large domestic herds to the range, which also competed with wildlife and traditional tribal uses such as root-digging.

As British and American interests competed for control of Pacific Northwest fur resources, each attempted to exploit rivalries among the region's tribal powers to their own advantage. The tribes, in turn, pursued their own economic interests by confronting or cooperating with Euro-American traders and trappers. During the 1820s and early 1830s, the relationship of the Shoshone and Bannocks with fur traders was usually one of accommodation. Although some violent incidents occurred, the Snake River tribes generally regarded the fur trade as a source of firearms and other sought-after goods. However, by the mid-1830s, the tribes were increasingly resentful of the growing numbers of Euro-American trappers intruding in the area (Billington 1974, 386-387; Gulick 1971, 45).

Beginning in the late 1830s, traffic on the various overland trails through the Upper Snake River watershed interfered with traditional tribal resource use as game, forage, and firewood were consumed by emigrant trains. Tension and resentment gave way to open violence during the late 1840s. To protect travelers, the federal government stationed military units along the Oregon trail in 1849. Cantonment Loring, a temporary garrison, was constructed near Ft. Hall that year (Utley 1967, 98, 103). The military presence and government pressure on Plateau tribes to surrender traditional territory in favor of reservations did little to reassure the tribes.

From the mid-1850s through 1862, the Snake River Plain was considered the most dangerous stretch of the Oregon Trail for overland travelers due to the hostility of the Shoshone, Bannock, and Northern Paiute (Schwantes, 1991, 43). Early prospectors in the Boise Basin and Owyhee Mountains were also subject to attack. During the early 1860s, troops at Camp Connor (near Soda Spring) and at Ft. Boise provided escorts for emigrant and trade traffic through the Upper Snake River watershed (Arrington 1994, 1:152; Beal and Wells 1959, 2:412; Utley 1967, 226-227).

The presence of federal troops served to intensify Euro-American settlement in the watershed. Troops protected travelers, residents, and trade, and provided an economic boost to the area's surrounding military garrisons. Military posts were welcome markets for agricultural and mercantile trade. For Native Americans, however, the presence of troops represented a disruption of and threat to their traditional way of life.

Following the placer boom of the early 1860s, mining activity spread throughout the mountains of the Upper Snake watershed, and placer operations were common along the Snake River itself. The most productive districts remained the areas around Boise Basin and Owyhee Mountains, with the addition of a major silver-lead discovery in the Wood River district during the 1880s.

The discovery of rich quartz lodes led to the investment of outside capital in the camps and the construction of dozens of mills throughout the mining country. Although the Boise/Owyhee quartz boom was interrupted in 1875 with the failure of the Bank of California during a financial panic. Most lode mines and mills closed, and many were unable to reopen until the mid-1880s when the Oregon Short Line railroad arrived and business conditions improved. The expansion of hardrock mining in the watershed led to the exploitation of ore bodies containing large quantities of lead, particularly the silver-lead deposits in the Wood River district. This type of ore required treatment in smelters to extract the silver. Many mines continued to ship smelter ore to plants at Salt Lake City and Tacoma, but a few mining companies constructed their own smelters with varying degrees of success. The most notable smelter operations in the Upper Snake River watershed were those in the Wood River district around Hailey and Ketchum. The 1880s resurgence of silver mining was short-lived, however, as the Panic of 1893 and demonetization of silver again closed most silver producers. Gold production continued. By the early 1900s, new methods -- including cyanide leaching and flotation concentration -- made it feasible to rework old tailings and lower grade ores (Wolle 1955, 227-247; Mineral Resources 1907, 1:288; Lindgren 1898, 625-736; Arrington 1994,

1:235).

Placer mining continued, although the boom was largely over by 1865 when new strikes in Montana and British Columbia drew miners away from the Snake River districts. At this time, large numbers of Chinese miners moved into the camps, mostly from other Western mining regions, particularly California and Nevada. By 1870, over half the miners in Idaho were Chinese, with half of those (over 2,000) working placer claims in the Boise Basin. Other ethnic groups who moved into the Boise and Owyhee mines during the late 1860s and 1870s included Germans, Portuguese Azorians, and a small number of African Americans. By the early 1870s, placering included extensive use of hydraulic mining in which pressurized water washed whole hillsides into miners' flumes.

From the 1890s into the late 1930s, dredges and draglines excavated entire streambeds in the Boise and Owyhee districts. Dredging operations took place on the Snake River below Blackfoot, American Falls, Glenn's Ferry, and Weiser. With the onset of the Great Depression in 1930, silver prices plummeted, but increased gold prices touched off a minor placer boom throughout the West, including the Snake River watershed as unemployed men took up claims and engaged in subsistence mining (Arrington 1994, 1:252-253; Mineral Resources 1905, 1:219; Mineral Resources 1913, 1:767; Mineral Resources 1921, 1:399; Minerals Yearbook 1934, 143; Minerals Yearbook 1939, 309-335; Wolle 1955, 228; Schwantes 1991, 203; Murray 1990, 2-14; West 1982, 108-120).

The effects of late nineteenth and early twentieth century mining on the watershed were considerable. Improved methods, whether for placering or hardrock mining and milling, meant that increased amounts of gravel and ore were worked, magnifying the amount of sediments, tailings, waste piles, mine drainage, and timber consumption that potentially affected the environment. For example, in 1913 a single dredging operation near Moore Creek in the Boise Basin excavated 4 million cubic yards of gravel along the stream course in one season. In the Wood River district, each of the six smelters required the steady operation of 20 or more charcoal kilns to feed furnaces--requiring enormous amounts of wood. Hardrock mining led to the establishment of long-term communities, providing markets for local agriculture and impetus for transportation construction. Roads, steamboat service, and railroads all resulted from the growth of the mining districts (Lindgren 1898, 625-736; Mineral Resources 1913, 1:767; Arrington 1994, 1:349).

Between 1867 and 1872, the U.S. Army sponsored a survey entitled the Geological and Geographical Exploration of the Ft.ieth Parallel. Directed by civilian geologist Clarence King,

the survey encompassed a broad belt of the West, stretching from the Sierra Nevada to the front range of the Rockies. The southern lip of the Upper Snake River watershed overlapped the survey's northern fringe. In October 1867 King and noted mining geologist James D. Hague examined the Owyhee silver country as a part of their study of Great Basin geology The following year King explored the Snake River canyons and the scientist was so impressed that he wrote a highly descriptive article about his experience for Bret Harte's Overland Monthly magazine. The maps and massive volumes of the Fortieth Parallel Survey report constituted the first systematic scientific examination of the Western environment and its resources (Goetzmann 1966, 441, 445, 466).

In June 1871, the U.S. Geological Survey of the Territories under the direction of Frederick V. Hayden passed through the Snake River scablands. The expedition was en route from Salt Lake City to Virginia City in the Montanta Territory (M.T.) for an exploration of the mysterious Yellowstone headwaters region. As a result, Hayden's party engaged in only a brief study of the Snake River watershed. In 1872, a survey party under James Stevenson passed through Ft. Hall to the Henry's Fork and Pierre's Hole before rejoining the main Hayden expedition in Yellowstone. Hayden's highly descriptive survey reports did much to publicize the scenery and resources of the Yellowstone and Snake headwaters area (Goetzmann 1966, 504, 511).

During the late 1860s, the nearest rail connection to the booming western Montana mining camps was the Union Pacific Railroad (UPRR) at Corinne, Utah. A busy freight route connected Virginia City and Corinne via Monida Pass, Pleasant Valley, Eagle Rock, Ft. Hall, Marsh Creek, and Malad. The profitable Montana trade aroused the interest of Salt Lake investors who saw the potential for a north-south rail line between the Montana mining country and the Union Pacific line. With additional backing from eastern capitalists, the Utah Northern Railroad began construction in 1872. By 1874 the line had reached Franklin, Idaho when financial problems halted its progress. Reorganized by Union Pacific officials in 1878 as the Utah and Northern (UN) line, construction resumed on a route that would take the line directly through the Ft. Hall Indian Reservation. Railroad officials obtained a right-of-way through the reservation in exchange for a cash settlement with the tribes. The railroad's route through the Upper Snake River watershed to Monida Pass connected Pocatello, Blackfoot, Eagle Rock, Camas, and Spencer. The Utah and Northern was completed to Butte, M.T., in 1881. Originally a narrow-gauge line, it was rebuilt to standard gauge in 1887.

With the burgeoning settlement of the Columbia River Valley during the 1870s, UPRR

officials saw the value of a line connecting their railroad to the Pacific Northwest. In 1881 construction began on the Oregon Short Line (OSL), a railroad to provide a direct link between the UPRR at Granger, Wyoming, and Union Pacific's subsidiary Oregon Railway and Navigation Company at Huntington, Oregon. Running along the Snake River, the OSL route would connect Montpeli-er, Soda Springs, Pocatello, Minidoka, Shoshone, King Hill, Mountain Home, Nampa, Riverside, and Weiser. In 1882 work on the main line was suspended to construct a spur to Ketchum and the booming Wood River mining district near Ketchum. The OSL, including four crossings of the Snake River and a 740-foot bridge at Huntington, was completed in November 1884. Five years later it was consolidated with the UN to create the Oregon Short Line and Utah Northern Railway Company. In 1898 both routes were absorbed into the Union Pacific Railroad. Throughout the 1890s and 1900s, the UPRR expanded its network of feeder lines throughout southern Idaho.

The railroads played a vital role in the development of the Upper Snake River watershed. Construction of the early UN line during the 1880s drew an influx of Mormon farmers to lands along its route. The Idaho and Oregon Land Improvement Company, the land division of the Oregon Short Line, aggressively promoted settlement along its route during the 1880s by selling land and platting townsites along its line. Later, the Union Pacific continued settlement efforts by building spur lines and advertising the region's agricultural potential nationwide.

Numerous communities grew up along the rail line, both at agricultural shipping points and railroad operations facilities. The most notable of the railroad towns was Pocatello, at the junction of the UN and OSL lines (Schwantes 1991, 131). The Union Pacific hired large numbers of Italian immigrants to maintain the UN and OSL lines and a large Italian community grew in Pocatello (Mercier and Simon-Smolinski, Mercier 1990, ISE, 12). Large numbers of Japanese and Greek laborers hired by the railroads settled in communities along the routes, adding to the ethnic diversity of the region (Schwantes 1991, 130-131; Mercier and Simon-Smolinski 1990).

Crop agriculture and the livestock industry benefitted directly from more efficient rail transportation and access to distant markets. Railroads also encouraged industrial mining by hauling heavy equipment necessary for large-scale mining and ore processing, and by transporting mine products to market more efficiently. The Union Pacific also played a major role in building tourism in the area. In 1936 the railroad converted a 4,000-acre sheep ranch into the Sun Valley Lodge and ski resort (Schwantes 1991, 86, 94).

The settlement and development spurred by railroad construction in turn intensified the

impacts of agriculture, mining, and urbanization on the Upper Snake River watershed and its resources. Agricultural expansion and increased use of irrigation altered native vegetation as well as fish and wildlife habitat. Industrial mining, made possible by railroads, spawned greater amounts of streambed disruption, placer sediment, mine drainage, and mill tailings--all of which adversely affected water quality, fisheries, and wildlife. Smelter complexes, such as those served by the Ketchum spur, consumed large quantities of wood and exuded toxic emissions into the air and water. In the course of construction, the railroads themselves contributed to resource degradation through extensive use of timber for ties and trestles, channelization of streams, and roadbed excavation.

During the early 1860s, agriculture in the Upper Snake River watershed was largely confined to bottom lands along creeks and rivers near mining districts and emigrant routes. These lands were easily irrigated and had ready access to local markets. By the mid-1860s, most bottom land in the Weiser, Payette, Boise, Owyhee, and Bruneau River valleys was under cultivation. Eventually farming expanded to benchlands, but diversion dams and canals needed to carry water longer distances were beyond the means of most individuals. The expense involved in constructing large-scale irrigation projects required corporate or cooperative efforts. Some large ditches were constructed by private water companies during the 1870s and 1880s, but farmers frequently balked at the water rates charged by these firms. Cooperative efforts of farmers proved more successful in irrigating the benchlands. Among the earliest projects was the diversion dam built by the Duck Valley Shoshone and Paiutes on the Owyhee River in 1877 to irrigate their farms.

During the 1880s construction of irrigation systems accelerated, particularly in established farming areas, as the productivity of previously arid lands was proved. In 1894 farmers cooperated to build a feeder dam on the South Fork of the Snake River, diverting 110,000 inches of water for agricultural use. When it was completed in 1895, it was the largest single irrigation project in the world. The first dam on the main channel of the Snake was a joint venture between the Idaho Canal Company and the Great Western Canal Company, representing local farmers' co-ops. Built in 1900, the dam consisted of a log, lumber, and rock crib 12 miles north of Idaho Falls; It was replaced in 1912 by a concrete dam. As sizeable as these projects seemed, the passage of the Carey Land Act in 1894 resulted projects that dwarfed them in comparison (Beal and Wells 1959, 2:126; Murphy 1953, 177-184).

Under the Carey Act, the federal government gave each Western state 1 million acres of desert land to be distributed in no more than 160-acre parcels, provided that the state government

brought about irrigation of the land. The effects of the Carey Act in the Upper Snake River watershed were significant. In 1900 the Twin Falls Land and Water Company contracted with the state of Idaho to develop over 200,000 acres of land. Completed by 1905, the Twin Falls Project included construction of Milner Dam, through which 1,295 farms on 244,000 acres were watered by gravity flow. The Twin Falls North Side Project used water from the Jackson Lake Reservoir in Wyoming to cultivate an area that, by 1919, totaled around 120,000 acres and attracted some 15,000 new settlers to the area. Two additional dam projects, the Salmon Falls Creek Project and the Goose Creek Project, watered 12,000 and 21,000 acres, respectively. Under the Carey Act, the Idaho State Board of Land Commissioners supervised twenty-five other projects that irrigated a total of 850,000 acres in the Upper Snake River watershed. Lands cultivated under Carey Act projects probably added 50,000 to Idaho's population, mostly in the Snake River Plain (Beal and Wells 1959, 2:133, 145-155; Schwantes 1991, 176; Lovin 1985, 2-14; Lovin 1986, 9-15).

In 1902, the Newlands Reclamation Act opened reclamation project areas to Homestead entry, provided that the costs of dam and canal construction were covered by the sale of arable land. Among the first of the federal reclamation projects under this act were two in the Upper Snake River watershed, the Minidoka Project and the Boise Project.

The Minidoka Project combined water storage in Jackson Lake, a diversion dam on the Snake River, and gravity and pumped distribution to water 120,000 acres on both sides of the Snake River near Minidoka Rapids. Minidoka Dam impounded 107,000 acre-feet in Lake Walcott. The project is estimated to have increased the population of the project area by 14,500 new settlers. The Minidoka dam also generated electricity, and local homes and farms were electrified long before most rural areas in Idaho (Schwantes 1991, 209).

The Boise Project added water storage and improved existing canals to supplement the water supply to farms in the Boise Valley. It involved the construction of Lake Lowell in Canyon County, and Arrowrock Dam and Reservoir on the Boise River. Completed in 1915, Arrowrock Dam was the tallest dam in the world. Its reservoir stored 276,000 acre-feet of water -- providing irrigation to 170,000 acres of land and serving the cities of Boise, Nampa, and Caldwell. In 1917, the U.S. Reclamation Service also assumed control of two smaller Carey Act projects, serving 15,000 acres in the King Hill area (Beal and Wells 1959, 2:186; Schwantes 1991, 166-169, 209; Perry 1985, 15-23).

Funded through the Indian Service, the Ft. Hall Irrigation Project was developed between 1906 and 1912 using water from the Snake and Blackfoot rivers, as well as Lincoln, Little

Indian, Ross Fork, and Bannock creeks. When completed in 1912, irrigation was extended to 73,000 acres of Ft. Hall Reservation lands (Beal and Wells 1959, 2:133).

Irrigation projects under the Carey and Newlands acts, along with active promotion by railroads, state agencies, and local boosters, caused Idaho's population to increase by as much as 164,000 between 1900 and 1910. Many of the newcomers were immigrants representing a wide variety of ethnic backgrounds. Germans established farming colonies on Camas Prairie. A colony of Hollanders settled south of Twin Falls. Swedish, German, and Italian communities grew up around Minidoka Dam. Through irrigation the arid lands of the Upper Snake River watershed became a major agricultural region, particularly noted for its production of sugar beets, potatoes, and peas. During the early 1900s, sugar companies recruited Russian Germans to produce the beets, but by 1910 nearly all sugar beets were grown by Japanese farmers. The expansion of large-scale agriculture created a need for seasonal farm labor, drawing Hispanic workers to Idaho from Mexico and the Southwest (Mercier and Simon-Smolinski 1990; Schwantes 1991, 131).

The livestock industry also flourished in the Upper Snake River watershed. With the discovery of the nutritional value of the Snake River range in the mid-1860s, open range cattle ranching expanded rapidly (Beals and Wells, I, 423). By the 1870s, the Snake River Plain supported cattles herds as large as 30,000 animals. Thousands of cattle were driven each year over old emigrant trails to railheads at Cheyenne, Wyoming, and Winnemucca, Nevada. In the 1880s, the railroads opened more distant markets and reduced shipping losses, but they also contributed to the overstocking of the rangeland as cattle were shipped to the Snake River range by train. Severe winter losses during the mid-1880s caused cattlemen to reduce the size of their herds and adopt more intensive management practices. During the 1880s and 1890s, sheep shared the range with cattle as high mutton and wool prices encouraged the growth of that industry. As with cattle, the railroads played a major role in stocking the ranges and transporting sheep and wool to market. Mountain Home, Ketchum, and Soda Springs were all major shipping points for woolgrowers.

However, competition between cattle and sheep ranchers flared into violence in the 1880s and 1890s, as both competed for dwindling range resources. By the 1890s, the impacts of overgrazing were visible throughout the Upper Snake watershed. Lands previously covered with sagebrush and perennial bunchgrasses had been taken over by Russian thistle, mustards, and cheatgrass. The most severely overgrazed portions of the Upper Snake watershed in the 1890s were those on the east and north: the Boise and Payette drainages, the southern slopes of the

Sawtooth area, and the watershed above Idaho Falls. By 1903, overgrazing in the watershed above Pocatello had so damaged water quality in the area that the city petitioned for the creation of a forest reserve to protect nearby forest and rangeland (Alexander 1987, 19, 23, 43).

The era of the open range ended in the 1900s with the expansion of crop agriculture in the Snake River watershed and with the imposition of federal grazing fees and permits. After the 1900s, stockmen relied heavily on state and federally owned range, particularly in the national forests and on state school sections (Schwantes 1991, 102; Brosnan, 1918, 151-152).

The agricultural boom of the early 1900s ended abruptly in 1919. The end of World War I brought plummeting farm prices nationwide at a time when many Snake River farmers had overproduced and overextended to take advantage of high war-time prices. Farm values crashed and many rural families were forced from their land. Many of the nearly 51,000 people who migrated out of the state during the 1920s had earned their living in agriculture (Schwantes 1991, 189-190).

Compounding the problem was a severe drought that left the Twin Falls canal able to furnish only 30 percent of its normal water supply and caused major crop losses among Twin Falls water users (Schwantes, 194). The situation led the federal government to embark on the American Falls Dam Project to increase water storage on the Upper Snake. The federal government acquired 70,000 acres of land, including nearly 40,000 acres of the Ft. Hall Indian Reservation and the entire townsite of American Falls. Dam construction began in July 1925, and by July 1927, the American Falls Reservoir was filled with 1.7 million acre-feet of water, extending up the Snake River for 25 miles. The reservoir allowed the reclamation of 115,000 additional acres of public land north of the Minidoka Project, and supplied supplemental water for more than 1 million acres above and below the facility. It also submerged the traditional wintering ground of the Shoshone and Bannock near the mouth of the Portneuf (Beal and Wells 1959, 1:148).

Idaho's economy had barely begun to recover from the effects of the farm depression and drought in 1929 when the Great Depression struck (Schwantes 1991, 189). Idaho's farm incomes, already low, dropped by 57 percent between 1929 and 1932. Drought conditions worsened, with 1934 the driest year on record. The average water supply in irrigated portions of the state was 56 percent of normal. An estimated 30,000 people in those areas needed relief. Added to this was an in-migration of thousands of Dust Bowl refugees from the Plains states, most of whom went to the agricultural areas of the Upper Snake watershed (Schwantes 1991, 201-203).

Of the New Deal programs designed to deal with the depression, the most important assistance to the economy of the Snake River watershed was the Agricultural Adjustment Act of 1933. It authorized payments to farmers to decrease planting of surplus crops and to devote acreage to pasture, summer fallow, and other practicies. In 1936, this program was replaced by the Soil Conservation and Domestic Allotment Act. The Public Works Administration provided funding for a variety of irrigation-related water projects, including the 150,000-acre Owyhee Reclamation Project and the construction of storage reservoirs on the Upper Snake near Ashton. When completed, the Island Park and Grassy Lake reservoirs stored a total of 144,000 acre-feet of water. Other significant New Deal programs that affected watershed agriculture were those creating the Farm Credit Association, the Farm Security Administration, and the Rural Electrification Administration (Beal and Wells 1959, 2:169-188; Schwantes 1991, 205).

The effects of agriculture in the Upper Snake River watershed have been profound: the construction of dams and reservoirs on the Snake and its tributaries changed its aquatic habitat and fishery; the irrigation and cultivation of hundreds of thousands of acres of formerly arid land destroyed wildlife and native plant habitat, and damaged soil through alkali percolation; and non-native plants were introduced. Overgrazing by livestock led to a wide range of problems, including the elimination of native plants, the introduction of less desirable vegetation, erosion, and water quality degradation.

By the mid-1860s, the Shoshone and Bannock bands in the Upper Snake River watershed found themselves under increasing pressure from Euro-American encroachment on their territory. The patterns and methods of land use associated with mining and farming brought new settlers into escalating conflicts with the tribes who sought to pursue their traditional patterns of hunting, fishing, and gathering. During the late 1850s and early 1860s, the Shoshone and Bannock had harassed emigrant trains, stockmen, and others along the Oregon Trail and in the newly booming mining districts. In 1863 and again in 1864, miners in the Boise Basin and Owyhee districts formed citizen militia and engaged in open battles with Shoshone and Bannock raiders.

In an attempt to relieve tensions and end hostilities, Idaho territorial governor Caleb Lyon negotiated the Bruneau Treaty with certain bands of the Shoshone and Bannock. Under the treaty, these groups were to receive a reservation in exchange for the Boise Valley, and a mutual cessation of hostilities was accepted. Unfortunately, Congress refused to ratify the treaty, preferring a military approach to the problem. The result was the so-called Snake War of 1866-1868, a series of violent confrontations between the military under General George Crook

and tribes from southern Idaho, Oregon, and Washington. The conflict ended with the signing of the Ft. Bridger Treaty in 1868. Under terms of that treaty, an executive order provided approximately 1,100 Bannock and 500 Shoshone with lands within the Ft. Hall Reservation (Arrington, 1:297-298; Beal and Wells, 1:374).

Created for the Shoshone and Bannock in 1867, the Ft. Hall Indian Reservation originally consisted of around 1,800,000 acres of land in the vicinity of the Portneuf, Blackfoot, and Snake rivers. A second reservation, the Duck Valley Reservation, was set aside in 1877 for bands of Shoshone and Northern Paiute. The Duck Valley Reservation's 300,000 acres straddled the Idaho-Nevada border. In spite of the arid nature of much of the land, some tribal members had farmed in the area, even prior to the establishment of the reservation. In 1877, the Duck Valley tribes constructed a diversion dam on the Owyhee River to irrigate additional farmland (Beal and Wells, 1:56).

Although some bands at Ft. Hall turned to agriculture, many of them, particularly the Bannocks, continued to pursue their traditional seasonal rounds during the late 1860s and 1870s. Despite the fact that the Ft. Bridger Treaty had reserved root-digging grounds in the Camas Prairie Valley for tribal use, an increasing number of stockmen and their herds were attracted to the valley during the 1870s. In 1878, Bannock groups from Ft. Hall arrived at Camas Prairie to find both horse and cattle herds, and swine destroying the traditional digging grounds. Already restless due to conditions at the agency, the Bannock responded by running the stockmen and their herds out of the valley. The Bannock then engaged in a series of raids that took them into the Bruneau Valley and westward into Oregon where they were joined by other tribes. The so-called Bannock War of 1878 ended when the tribes were defeated by troops under O.O. Howard, and the Bannocks from the Upper Snake returned to Ft. Hall. The Sheepeater Shoshone joined the Ft. Hall bands in 1879 when they were displaced from their traditional territory in the Salmon River country. The following year, the Lemhi Shoshone agreed to relinquish their reservation in the Lemhi River Valley for lands at Ft. Hall. By 1908, nearly all the Lemhi group had resettled on the Ft. Hall reserve (Beal and Wells, 1:456; 1:466-473; Mercier and Simon-Smolinski).

With the passage of the Dawes Severalty Act of 1887, reservation lands in the Upper Snake watershed were reduced by as much as three-quarters between 1887 and 1934. Intended to encourage tribes to farm and assimilate into Euro-American society, the act attacked the tribes' traditional collective property relations by assigning alloted acreage to tribal members. Although some lands remained held in trust for the tribes, most of the remaining acreage was

opened to non-Indian settlement. The Ft. Hall lands were reduced from nearly 2 million acres to 544,900 restricted acres.

Most of the Ft. Hall lands were used for grazing, but in 1906 the Indian Service planned the Ft. Hall Irrigation Project to enable the tribes to expand crop agriculture on the reservation. Constructed under the U.S. Bureau of Reclamation, the Ft. Hall project eventually irrigated nearly 73,000 acres (Beal and Wells, 2:133). The Duck Valley Reservation had 6,000 acres under irrigation during the early 1900s. Settlement in Nevada, however, had increased demands on the Owyhee River, and the reservation lands experienced growing water shortages. Beginning in 1911, the Duck Valley Shoshone and Northern Paiutes sought the construction of a dam and reservoir to provide a more reliable water supply for the reservation. Finally, with the completion of the Wildhorse Reservoir in Nevada in 1937, the Duck Valley tribes had sufficient water to irrigate an additional 13,000 acres (Mercier and Simon-Smolinski). As a result of the 1934 Indian Reorganization Act, additional programs were instituted to expand irrigation and agricultural use of reservation lands.

Prior to the mining rushes of the 1860s, logging and lumbering were small-scale activities generally carried out by individuals. With the onset of mining, however, timber cutting occurred on a larger scale. Lumber was needed for cabins, flumes, and for hardrock mine timbers. Early lumber operations relied on whipsaws and hand labor, but as demand increased, sawmill equipment was imported. Some early mills were water-powered, but by 1863 steam-powered mills were in use in the Boise Basin. By the 1870s, several dozen mills were operating throughout the Upper Snake watershed from the Payette Valley and Boise Basin to the Beaver Creek and Henry's Fork drainages (Alexander 1987, 9). Construction of the railroads and expansion of industrial mining during the 1880s increased the demand for timber, and large-scale cutting operations were soon under way in the Boise and Payette watersheds, including large log drives on those rivers during the 1880s and 1890s (Arrington 1994, 1:495-496; Beal 1942, 351-352; Alexander 1987, 9-10).

In 1902, the Barber Lumber Company was organized. Affiliated with the Weyerhaeuser interests of northern Idaho, Barber Lumber held 25,000 acres of timber on Grimes and Moore's Creeks in the Boise watershed. In the same year, the Payette Lumber and Manufacturing Company was also organized, acquiring stumpage and timberland in the Payette Basin totalling 33,000 acres. With additional acquisitions, Payette Lumber held 154,000 acres of timber by the end of 1913. In December 1913, Payette Lumber and Manufacturing Company merged with Barber Lumber to form Boise Payette Lumber Company. A subsidiary of Weyerhaeuser, Boise

Payette controlled 200,000 acres of timber in the Boise and Payette watersheds and was the largest logging and milling concern in the Upper Snake watershed. In conjunction with the Oregon Short Line, the Boise Payette Company formed the Intermountain Railway in 1915 to haul logs to its mill at Emmett via Centerville and Arrowrock Dam Junction. The Emmett mill had a capacity of 200 million board feet per 10-hour shift. The company also operated major mills at Boise, Cascade, and Cabarton.

Controlling some of the most abundant stands of ponderosa pine in the intermountain west, Boise Payette prospered until the 1930s. With the onset of the Great Depression, the lumber market declined until there was virtually no demand for Idaho timber beyond local markets. Moreover, by the mid-1930s, Boise Payette's timberland in the Boise Basin were largely depleted, and the Barber mill was dismantled. In 1934, the Intermountain Railway ceased operation, with the state of Idaho acquiring its abandoned right-of-way as roadbed for new highways. Smaller timber interests in the region could not survive the hard times, and by 1940 most had been absorbed by Boise Payette (Arrington 1994, 1:499-500; Schwantes 1991, 86, 104, 106, 203; Alexander 1987, 65, 101, 117-178).

By 1890, large-scale forest and range deterioration was a problem throughout the West, and the Snake River watershed was no exception. As early as the 1880s, some areas of the watershed had been stripped of their timber, particularly those in proximity to mining districts and the railroads. Public rangeland had also suffered extensive overgrazing, particularly the ranges east of Soda Springs and Pocatello, the south slopes of the Sawtooths, and the Boise area. As a result of public demand for the protection of timber resources and watershed, Congress passed the Forest Reserve Act in 1891, allowing President Benjamin Harrison to set aside forest reservations on public land, to be administered by the General Land Office. The early reserves included portions of what later became the Caribou, Boise, Payette, Targhee, Teton, and Sawtooth national forests. With the creation of the Forest Service in 1905 and the reorganization of the reserves, lands in the Upper Snake watershed were included in eight national forests: Payette, Boise, Sawtooth, Targhee, Caribou, Lemhi, Pocatello, and Minidoka.

The initial goals of the Forest Service in 1908 were the following: protection of forests against fire and trespass; management of timber harvest and protection of watersheds; improvement of timber stands; protection of water supply; use and improvement of forest ranges for grazing; and establishment of the necessary Forest Service facilities, including transportation and communication networks. Overgrazing, particularly by sheep, remained a problem on forestlands throughout the early 1900s. In spite of grazing regulation, the problem actually

worsened on some ranges, particularly under the influence of wartime demands during the years 1914-1919.

On forests where grazing was a major activity, predator control was also a concern. During the early 1900s, the U.S. Biological Survey eradicated large numbers of coyote, bear, and mountain lion using hunters, trappers, and experimental poisons. A wide range of other wildlife management problems also confronted the Forest Service during this period. In some areas of the Upper Snake watershed, hunting and fishing pressures and loss of habitat had severely reduced populations. In others, such as the winter elk range at Jackson Hole, overpopulation had resulted in starvation and disease. After the catastrophic North Idaho fires of 1910, fire suppression became a priority for the Forest Service. By the 1920s, fire prevention efforts included the use of lookouts, improved communications and fire-fighting techniques, and cooperative fire-fighting agreements with state agencies and private citizens.

During the depression era of the 1930s, many Forest Service programs received a major personnel boost through New Deal programs designed to assist the unemployed. Of particular importance was the Civilian Conservation Corps (CCC). Numerous CCC camps were established in the forests of the Snake River watershed, with enrollees employed in erosion control, fire-fighting, reforestation, and the construction of roads, trails, and administrative and recreational facilities. With the participation of CCC participants during the 1930s, the Forest Service dramatically expanded its system of forest roads and trails. The improved system served not only Forest Service personnel, but also provided access to remote areas for the increasing numbers of recreationists who used national forests during the depression (Alexander 1987, 19-25, 33-38, 45-47; Wildesen 1982, 74).

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SALMON RIVER WATERSHED

The intricate Salmon River watershed drains 14,000 square miles of central Idaho, including some of the most rugged and remote lands in the Columbia River Basin. From its headwaters in the Sawtooth Valley, the Salmon River falls more than a vertical mile in its 390-mile journey to the Snake River. From its junction with the North Fork of the Salmon, the river flows westerly through the Salmon River Canyon, one of the deepest canyons in North America. From its furious whitewater and inaccessibly steep terrain, the Salmon earned the name "River of No Return."

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

Archaeological sources reveal that humans inhabited the Salmon River watershed as early as 12,000 BP, living in small, nomadic groups that subsisted by hunting large game such as deer, elk, and mountain sheep. Between 8,000 and 4,000 BP, the climate warmed and dried, resulting in changes in vegetation, habitat, and water supplies throughout the Northern Rockies and Columbia Plateau. During this time the Salmon River increased in depth, volume, and velocity. Although inhabitants continued hunting and gathering, fishing took on added emphasis. Winter campsites found along the Salmon indicate that during this period some groups had begun moving between the Salmon and Snake rivers on a seasonal basis. By 4,000 BP, inhabitants of the Salmon River watershed, like others throughout the Columbia Plateau, had adopted a semi-nomadic seasonal pattern of fishing, hunting, and gathering activities, depending on available resources (Miller 1981, 19-26; Wildesen 1982, 81-89; Arrington 1994, 1:28-20).

By 1300 A.D., modern tribal cultures were recognizable among the people in the Salmon River watershed. These tribal cultures included the Sahaptian-speaking Nez Perces, and the Shoshone and Bannock of Uto-Aztecan linguistic stock. Nez Perces tribal traditions maintain that the tribe resided in the valleys of the Snake, Salmon, and Clearwater rivers from time immemorial, and archaeological evidence indicates that the Nez Perces were present in the area at a very early date. The Shoshone and Bannock moved into the Snake and Salmon watersheds from the Great Basin beginning around 1,900 BP. Among the Shoshone, two groups in particular

were associated with the Salmon River watershed: the Lemhi Shoshone of the Lemhi Valley and the Tukudeka or "Mountain Sheepeaters" who inhabited the rugged Salmon River Mountains. The Nez Perces counted lands in the lower watershed between the mouth of the Little Salmon and the Snake River as part of their tribal homeland (Miller 1981, 25-47; Mercier and Simon-Smolinski 1990, 6-7; Haines 1955, 8-9; McLeod and Melton 1986, VII-13, 17; Wildesen 1982, 52).

The ways of life of these and other tribal groups within the Plateau culture were similar in many ways. The primary elements of their economy were fishing, hunting, and food gathering. Each of these activities had its own season and place, resulting in a structured pattern of activities repeated annually. Although the seasonal round required travel, the Plateau peoples were not nomads, preferring instead to live in semi-permanent villages during the winter and to travel to fishing, hunting, and root-digging grounds during the appropriate seasons. They followed a network of traditional trails that connected the Salmon River country with the Clearwater, Snake, Missouri, and Bitterroot watersheds. The rounds of the Nez Perces, Shoshone, and Bannock all eventually included buffalo hunts on the Great Plains. Prior to the acquisition of the horse, buffalo hunters might remain on the Plains anywhere from six months to two years, returning to the Plateau with only those items of trade value, such as horns and robes, rather than large quantities of meat (Miller 1991, 25-47, 90-92; Shawley 1977).

Protohistoric Settlement Activity (1500 to 1800)

The beginning of the Protohistoric era is marked by the evidence of Euro-American influence, however indirect, on native cultures. The earliest such influence in the Salmon River watershed probably resulted from the dislocation of tribes far to the east and south, as Europeans advanced inland. In seeking to relocate themselves, dislocated peoples in turn invaded other tribes' territories, in a ripple-like effect of contact, confrontation, and displacement that, within a surprisingly short timespan, affected even the most remote tribes. In conjunction with the readjustment of tribal domains came the scourge of European-borne diseases, frequently decimating tribes who were still far removed from direct contact with non-Indians. The Nez Perces may have experienced epidemics during the late 1700s (McLeod and Melton 1986,

VII-17; Beal and Wells 1959, 1:54). Although statistics specific to the Salmon River watershed are not available, at least one source speculated that between 1800 and 1850, disease reduced the Plateau population by as much as 94 percent (Miller 1981, 128-129, 134, 173-174).

Large numbers of horses passed into native hands for the first time in the Southwest during the late 1600s. Horses moved northward among the tribes through trade and feral migration, reaching the Columbia Plateau in the hands of the Shoshones sometime around 1700. The horse dramatically altered Plateau lifestyles. With greater mobility and carrying capacity, hunters and fishermen were able to travel greater distances and return large quantities of food and trade items to their people. Horse herds, along with greater abundance of food and trade goods, improved tribal economic status. This in turn made some Plateau tribes inviting targets for raids, possibly increasing the incidence of warfare. The responsibility of caring for horses also altered traditional ways of life, as campsites and the seasonal round were adjusted in response to grazing needs. This may have been particularly true of the Nez Perces, who selectively bred and managed their horse herds (Miller 1981, 96-101).

For nearly fifty years after they obtained horses, the Shoshone were a powerful force in the Northern Plains and Rockies, ranging across eastward across Wyoming and northward through Montana to Canada. When the fur trade placed guns in the hands of the Blackfeet, who also had horses, the balance of power shifted. By the late 1700s, the Blackfeet had driven the Shoshone southward toward the headwaters of the Missouri, and made frequent raids into the country surrounding the Snake, Salmon, and Clearwater watersheds (Miller 1981, 106-107, 123-125; Schwantes 1991, 14).

Preindustrial Settlement Activity (1805 to 1864)

In August 1805 the Lewis and Clark Expedition crossed the Continental Divide at Lemhi Pass and camped among the Shoshone near the confluence of the Lemhi and Salmon rivers, where the tribe was engaged in fishing. The explorers noted that the Lemhi possessed a few horses as well as some Euro-American items obtained in trade from other tribes. William Clark and a small party investigated the navigability of the main Salmon for several miles downstream, where churning rapids and impassable terrain convinced them that a western passage along the

Salmon was impractical. The expedition then took its course out of the watershed, up the North Fork of the Salmon to Lost Trail Pass and the Bitterroot Valley (Thwaites [1905] 1969, 3:3-52; Idaho Atlas, 2).

While descending the Missouri on their return in 1806, Lewis and Clark encountered American fur trappers headed to the Yellowstone country. By 1811, British and American trappers had carried the fur trade deep into the Northern Rockies and Columbia Plateau. Over the next four decades, numerous trappers and traders would skirt the fringes of the Salmon watershed, though few ventured into its rugged interior. The valleys surrounding the Lemhi and North Fork rivers provided a convenient travel corridor between the headwaters of the Snake, Green, Missouri, and Bitterroot watersheds. Despite the threat of Blackfeet raiding parties, the area became a popular wintering ground among fur men. The Lemhi Shoshone who resided there, as well as the Sheepeater Shoshone from the Salmon River Mountains, the Bannock, and the Nez Perces who frequented the area, were all generally hospitable to the traders. Early visitors noted the presence of bison, antelope, elk, and deer in the Lemhi Valley. However, by the mid-1820s and 1830s, expeditions found both game and grazing scarce in the area, possibly due to overgrazing by Shoshone and Nez Perces horse herds in competition with wildlife (Franzen 1978, 25-35, 53).

Fur-bearing animals were also growing scarce on the southern and western fringes of the Salmon watershed. In its attempts to discourage American trapping activity in the Columbia Basin, the British Hudson's Bay Company (HBC), had pursued a deliberate policy of overtrapping. By 1831, Hudson's Bay employee John Work could report that the Salmon country contained too few beaver to attract opposition trappers (Arrington 1994, 1:106). American trader Benjamin Lewis Bonneville confirmed Work's opinion. Spending the winter of 1831-1832 near the mouth of the Lemhi, Bonneville found both game and beaver in short supply (Chittenden 1986 [1935] 1:399-400).

The number of trappers in the Salmon River watershed apparently peaked during the years 1832-1833, when groups led by John Work, Kit Carson, Benjamin Bonneville, Nathaniel Wyeth, and Warren Ferris operated on its eastern and southern fringes. Activity declined over the following decade as depletion of the fur resource, increased hostility on the part of the tribes, and changes in the international fur market combined to choke off the Rocky Mountain and Pacific Northwest fur trade during early 1840s and early 1850s. Nonetheless, in four decades of operation, the fur trade had exploited only the accessible exterior portions of the Salmon River watershed, leaving much of the watershed along the Middle Fork and Salmon River canyons

unexplored. In 1832 four HBC trappers from John Work's brigade descended the Salmon River Canyon. Only two survived to reach the company's base at Ft. Nez Perces on the Columbia, and the tale of their experiences may have dissuaded similar attempts (Beal and Wells 1959, 1:168, 2:409).

In 1855, a group of twenty-seven Mormon missionaries traveled to the Lemhi Valley to settle among the Shoshone. It was they who named the valley Lemhi after a king in the Book of Mormon. The Mormons were not the first missionaries in the Salmon River watershed. In 1835, Presbyterian minister Samuel Parker accompanied a group of Nez Perces and Salish up the North Fork of the Salmon and across the Southern Nez Perces trail. By the time the Mormons arrived, the Shoshone and Nez Perces had been exposed to Euro-American religious ideas from a variety of sources, including Protestant missions on the Columbia and Clearwater rivers, and Catholic missions in the Bitterroot and Coeur d'Alene valleys. Consisting of thirteen cabins and a mud-walled fort, Ft. Lemhi as the Mormon mission was called, was established as an agricultural settlement. The settlers constructed an irrigation system, planted crops, and operated a sawmill and gristmill. The Mormons also joined the Shoshones in trapping salmon, sending eight wagonloads of smoked fish to Utah in 1856. In working among the Shoshones, the missionaries attempted to learn their language and customs, and some intermarriage occurred. Nonetheless, relations soured, and following a Shoshone raid on the mission in 1858, Ft. Lemhi was abandoned (Schwantes 1991, 38; Arrington 1994, 1:166).

Except for the missionaries in the Lemhi Valley and some individual trappers scattered throughout the mountains, there was little Euro-American activity in the Salmon River watershed following the decline of the fur trade. That situation changed drastically in 1860 with the discovery of gold to the north in the Clearwater country. The influx of goldseekers to the Clearwater country inevitably led to the exploration of the surrounding region, including the Salmon River and its tributaries. In August 1861 prospectors found gold on Slate Creek, setting off a stampede from the Clearwater mines. The Summit mining district was organized around the Slate Creek diggings and the new camp of Florence. By May 1862, 6,000 men worked in the Summit district placers, with an additional 3,000 prospecting the surrounding area. In July 1862 a second strike was made on Warrens Creek, and thousands of prospectors scoured the Salmon River watershed in search of gold. Subsequent placer strikes occurred in the Sawtooth Valley (1863), on Panther Creek (1866), and on Loon Creek of the Middle Fork (1869) (Beal and Wells 1959, 1:296; Arrington 1994, 1:191; Schwantes 1991, 50-52).

These early Salmon River gold strikes occurred on lands reserved to the Nez Perces

under terms of an 1855 treaty. In 1863, the federal government bowed to public pressure and negotiated a second treaty with the Nez Perces. The new treaty reduced reservation lands to one-tenth their 1855 acreage. The tribe retained the use of about 800,000 acres, but reservation boundaries no longer included lands along the lower Salmon. Dissension over the 1863 treaty polarized the Nez Perces into treaty and non-treaty factions (Schwantes 1991, 47; Mercier and Simon-Smolinski 1990; Beal and Wells 1959, 1:291-292; Arrington 1994, 1:191; Haines 1955, 139-140, 158, 162).

Modern Settlement Activity (1865 to 1940)

The onslaught of thousands of miners into a territory previously regarded by Nez Perces and Shoshone bands as their own resulted in an escalating series of conflicts during the 1860s and 1870s. Miners, farmers, and businessmen all exerted pressure on the federal government to remove or restrict the tribes, and the government yielded to the pressure. In 1875, an executive order created a reservation for the Lemhi Shoshone near present-day Agency Creek in the Lemhi Valley, thereby opening the valley to settlement by stockmen and farmers. For the next three decades the Lemhi bands struggled to survive on 160 square miles of land too barren to support them. Finally, in 1907, the Lemhi moved from their valley to the Ft. Hall Reservation on the Snake River (Schwantes 1991, 48; Beal and Wells 1959, 1:263).

Friction between the non-treaty Nez Perces and the miners and stockmen of the Salmon and Clearwater watersheds came to a head in 1877, when the federal government attempted to coerce the non-treaty bands onto the reservation lands defined in 1863. The resulting clashes between the Nez Perces and the military, and the tribe's legendary 1,100 mile odyssey are well documented. In the end, the non-treaty Nez Perces endured years of exile, first in Kansas and later in Oklahoma, before returning to the Lapwai and Colville reservations in the Northwest during the 1880s (Haines 1955, 243-334; Beal and Wells 1959, 2:427).

Of the tribes in the Salmon River watershed, the Mountain Sheepeater band of Shoshone frequented the most remote regions, the nearly inaccessible mountain and canyon country. Nonetheless, their solitary ways did not spare them from the mining invasion. In 1879 the band was implicated in a series of attacks on miners. Following a lengthy pursuit through the Salmon

River canyons, the Sheepeaters surrendered to federal troops and were moved to Ft. Hall in 1880 (Schwantes 1991, 48, 75; Beal and Wells 1959, 1:56; 1:474-477; 2:427).

Agriculture in the Salmon River watershed grew out of the market created by the mining camps. The farms nearest to Florence and Warrens were those of the treaty Nez Perces, who supplied eggs, corn, and cattle to the newcomers. Goods shipped overland by freight wagons or by steamboat to Lewiston were brought to the camps by packtrains -- a time-consuming, expensive, and unreliable process. Such conditions initiated local agriculture. Lands below the Little Salmon were planted by settlers who saw an opportunity for profit in supplying the miners. These lands became and remained the major agricultural district in the watershed. Stockmen who drove cattle to the Salmon River mines in the early 1860s discovered that the steep canyons and narrow valleys provided sheltered winter grazing. As mining moved into the eastern and southern portions of the Salmon River watershed, supply centers grew up at Salmon and Challis. Farmers and stockmen moved into the Lemhi Valley during the early and mid-1860s, establishing the foundation of a long-term ranching economy in the valley.

The miners themselves often gardened, farmed, or ranched wherever conditions permitted. Small crops of locally produced vegetable and fruit, and small herds of livestock could be found in many remote districts. At Warrens, Chinese miners tended gardens on terraces cut into the district's steep hillsides. By the mid-1860s, gold excitement had subsided in the canyon country, and most prospectors had moved on to new diggings. Those who remained often eked out a living through a combination of mining, farming, ranching, hunting, and trapping--a subsistence pattern that persisted in the interior watershed well into the twentieth century (Wolle 1955, 225; Schwantes 1991, 50-52; Cochrell, 23; Beal and Wells 1959, 1:423, 427; Bailey 1935, 513; Fee 1991, 15; Mercier and Simon-Smolinski 1990; Elsensohn 1951, 1:87).

The early district-sized booms of the Salmon River watershed were short-lived, largely played out by the late 1860s. With their passing, the character of mining changed. The number of men working placer ground sharply declined, with only a few hundred remaining at Florence and Warren. Most of these were Chinese miners reworking old diggings. Other placers were scattered throughout the watershed, worked by individuals or small groups at a subsistence level. Numerous small quartz mines operated on a similar basis. With the exception of the inter-war years, subsistence mining remained a common activity in the watershed until the early 1940s.

The period between the mid-1860s and early 1890s was one of expansion for hardrock mining in the watershed, with the discovery of dozens of quartz lodes in the region between the Middle and South Forks of the Salmon. Lode ore was also mined with less success at Buffalo

Hump and the old camps of Florence and Warren. Development of quartz mines required large sums of capital, installation of heavy mining and milling equipment, and road construction, all of which were well under way by the late 1870s. Hydraulic mining also became more important after the mid-1869s. By working huge quantities of placer ground with high pressure hoses, even worked-over areas could yield a profit (Bailey 1935, 139-141).

In the early 1890s, a crash in silver prices and a nationwide financial panic closed most silver producers, many of them permanently. Surviving Salmon River metals mines adopted new mining and milling methods during the 1890s and early 1900s, including cyanide leaching. Dredge mining also made its appearance during the late 1890s, and soon up to a half dozen dredges were in various parts of the watershed. Low gold prices during and after World War I discouraged some small producers, but mining activity was relatively steady in most districts during the 1910s and 1920s (Schwantes 1991, 101; Packard 1983, 4-10).

The onset of the Great Depression in 1930 and a boost in gold prices ignited a twentieth century placer boom throughout the West. Hundreds of unemployed men and impoverished families camped near streams and rivers in the Salmon watershed, placering for small quantities of gold. There was, one witness recalled, "almost a continuous lineup along the river bank" throughout the lower Salmon River Canyon (Bailey 1935, 469-471). Another source noted that depression-era prospectors had reoccupied abandoned Chinese earth dwellings in the Salmon River Canyon (Fee 1991, 79). The 1930s "gold rush" ended with the onset of World War II, the availability of jobs in the war effort, and wartime regulations suspending gold mining.

In addition to the activities of farmers and miners in the watershed after 1865, the federal government played a prominent role in the use and management of the region's resources. Public concern over widespread forest and range deterioration in the West led to the passage of the Forest Reserve Act in 1891, empowering the president to reserve public forestlands. Early reserves included large portions of the Salmon River watershed. With the creation of the U.S. Forest Service in 1905 and the reorganization of forest reserves in 1907, watershed lands were included in the Idaho, Salmon, Challis, Nez Perces, Weiser, Payette, and Lemhi national forests (Alexander 1987, 16-17, 36).

The early mission of the Forest Service focused on six tasks: the protection of forests against fire and trespass; management of timber harvest and protection of watersheds; improvement of timber stands; protection of water supply; use and improvement of forest ranges for grazing; and establishment of Forest Service facilities, including communication and transportation networks. Forest conditions in the interior Salmon watershed were generally

good in the early 1900s due to relatively light demand on remote range and timber lands. In the more accessible portions of the watershed, overgrazing and poor timber-cutting practices continued to be problems as late as the 1930s. Overgrazing, mostly due to sheep, was worst in the southern and eastern portions of the watershed. It in turn contributed to a relatively high incidence of larkspur and camas poisoning on the Salmon and Lemhi ranges. Although grazing regulations had been imposed during the early 1900s, the problem actually worsened on some ranges, particularly during 1914-1919, when wartime demands led to overstocking (Bailey 1935, 391-392, 444; Alexander 1987, 19, 43, 85-89).

Predator control in the watershed was also a concern to both the Forest Service and state agencies. During the early 1900s, the U.S. Biological Survey eradicated large numbers of coyote, bear, and mountain lion using hunters, trappers, and experimental poisons. During the 1920s and 1930s, the state of Idaho posted bounties on mountain lions throughout the state, including the wild areas of the Salmon. A wide range of other wildlife management problems also confronted the Forest Service during this period. In some areas of the Salmon watershed, hunting and fishing pressures and loss of habitat had severely reduced populations, particularly in areas around active mining districts. As part of a statewide concern for wildlife populations, the Big Creek Game Preserve was established in 1917 in the Pashimeroi Valley (Alexander 1987, 45; Rees 1918, 45; Bailey 1935, 365; Fee 1991, 15-16).

After the catastrophic North Idaho fires of 1910, fire suppression became a priority for the Forest Service. By the 1920s, fire prevention efforts included the use of lookouts, improved communications and fire-fighting techniques, and cooperative fire-fighting agreements with state agencies and private citizens.

During the depression era of the 1930s, many Forest Service programs received a major personnel boost through New Deal programs designed to assist the unemployed. Of particular importance was the Civilian Conservation Corps (CCC). Enrollees played a vital role in the construction of roads and trails in the Salmon River watershed. Prior to the 1930s only a few roads served the watershed, and these were generally associated with hardrock mining districts. Most miners, farmers, and other travelers still relied on packtrails or one-way river skiffs to reach remote areas. Among the major CCC projects was a road down the Salmon from the North Fork to the Middle Fork, as well as a road along the South Fork. Improvements to roads and trails in the watershed not only served the Forest Service and residents, but also provided access to remote areas for increasing numbers of recreationists. Recreational interest in the area was stimulated in part by the creation in 1931 of the Idaho and Sawtooth primitive areas and a 1933

National Geographic expedition down the Salmon River. Canyon-dwellers, who subsisted on mining and ranching, found additional income as guides and boatsmen for growing numbers of tourists who visited the area during and after the depression, marking the beginning of yet a another pattern of activity in the watershed (Alexander 1987, 19-25, 33-38, 45-47, 107, 113; Wildesen 1982, 74-77; Elsensohn 1951, 1:72, 83, 122-123; Bailey 1935, 433, 445; Beal and Wells 1959, 2:380).

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CLEARWATER RIVER WATERSHED

The Clearwater River and its major tributaries the Lochsa, the Selway, and the South Fork, drain much of north central Idaho. From the Bitterroot Divide, the Lochsa and Selway flow westward through heavily forested canyons to their junction at Lowell, Idaho, forming the Middle Fork of the Clearwater. The South Fork courses north and west from the Clearwater Range, joining the Middle Fork at Kooskia. The North Fork, flowing southwesterly from the Bitterroot Mountains, enters the main river below Orofino. Below Kooskia, the mountainous terrain gives way to the Camas and Weippe prairies, and the Palouse grasslands surrounding the Clearwater's confluence with the Snake River.

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

Archaeological sources indicate that humans first occupied the Clearwater River watershed 8,000 years ago, and possibly earlier. These early inhabitants subsisted through a combination of hunting, gathering, and fishing. By 4,000 BP people in the Clearwater watershed, like others throughout the Columbia Plateau, had adopted a seasonal pattern in which they moved from semi-permanent winter camps to various root-digging, fishing, and hunting grounds, depending on the resource available at the time (Miller 1981, 19-26; Wildesen 1982, 81-89; Arrington 1994, 1:28-30).

By 1300 A.D. modern tribal cultures were recognizable throughout the Columbia Plateau. Traditional Nez Perces territory encompassed nearly 14 million acres in an area between the Clearwater and Salmon rivers, from the mouth of the Snake to the Bitterroot Divide. Although Shoshones and Bannocks from the south, Salish from the Bitterroot, and Coeur d'Alenes from the north entered the Clearwater River watershed on a seasonal basis, by the early 1700s, the Nez Perces were the watershed's primary residents. The bands apparently congregated in large winter villages along the Clearwater River, such as the village near Kamiah where Lewis and Clark found them in 1805. In the summer, these villages would disperse into smaller groups to travel to root-digging grounds and fishing sites. In the process of pursuing

their seasonal rounds, the Nez Perces and other Plateau tribes developed an extensive trail system throughout the Clearwater and surrounding watersheds. The most heavily used were the Lolo or Northern Nez Perces trail, along the Clearwater and Lochsa rivers, and two Southern routes that skirted the fringes of the Salmon and Clearwater drainages (Miller 1981, 25-47; Mercier and Simon-Smolinski 1990; McLeod 1984, 24, 30-31; Shawley 1977).

Protohistoric Settlement Activity (1500 to 1800)

The Protohistoric era is marked by evidence of Euro-American influence on native culture, no matter how indirect. In many instances, such early evidence appeared in the chain reaction of tribal dislocations set off by Euro-American settlement. With the readjustment of tribal domains came the scourge of European-borne diseases, frequently decimating tribes far in advance of direct contact with the newcomers. Beginning in the late 1600s, horses spread from the Southwest northward through the Rockies and Plains, revolutionizing native ways of life long before Euro-Americans penetrated those regions. Likewise, European or Euro-American trade goods also frequently preceded direct contact between the tribe and non-native trade sources. While the Nez Perces territory was not appreciably altered by pressure from dislocated tribes, their tribal culture was influenced by the arrival of horses, Euro-American trade goods, and epidemics.

Around 1710, the Nez Perces obtained horses, most probably from the Shoshone. Like all Plateau tribes who acquired horses, the Nez Perces quickly adapted to a semi-nomadic lifestyle, embracing an expanded territory including seasonal buffalo hunts on the Great Plains. They developed extensive trade contacts throughout the inland West and in doing so adapted many elements of Plains and Coastal cultures into their own ways of life. The Nez Perces became famous for the quality and size of their horse herds, a fact which greatly enhanced their economic status while also exposing them to a greater frequency of raids from surrounding tribes (McLeod 1984, 31-32; Mercier and Smolinski 1990; Miller 1981, 96-101; Schwantes 1991, 19; Haines 1955, 20-25).

During the late 1790s, epidemics swept through the Plateau tribes, reducing their population in some instances by as much as 94 percent over the next fifty years. The Nez

Perces were among the tribes who experienced an epidemic sometime around 1800, although the extent of its impact on the tribe's population is unclear. It has been estimated that by 1805, the Nez Perces population totaled around 3,000 people (Miller 1981, 128-129, 134; McLeod and Melton 1986, VII-17; Beal and Wells 1959, 1:54).

Preindustrial Era Settlement Activity (1775 to 1865)

The ancient trails of the Clearwater watershed, particularly the Lolo or Northern Nez Perces Trail and the Southern Nez Perces Trail, continued to be significant travel routes throughout the nineteenth century. The first Euro-Americans to enter the Clearwater country were members of the Lewis and Clark Expedition who arrived via the Lolo Trail in 1805-1806. Due to a scarcity of game and other food sources, the explorers suffered intense hunger on their westward trek along the trail above the Lochsa and Clearwater rivers in September 1805. On Weippe Prairie, the explorers met some Nez Perces, who supplied them with buffalo meat, dried berries, roots, and dried salmon. There the expedition constructed canoes and continued its journey via the Clearwater, Snake, and Columbia rivers. Although delayed by heavy snows in June 1806, the explorers' return passage over the Lolo Trail was greatly expedited by the assistance of Nez Perces guides and the presence of abundant game (Thwaites [1905] 1969, 3:62-97).

The Lolo Trail was not a major travel route for fur traders, who were the next Euro-American visitors to the Clearwater watershed. Although the upper Clearwater was rich fur country, and trappers undoubtedly worked the area from the 1810s through the 1840s, they left few records. Large trapping parties seemed to avoid the Lolo Trail, preferring instead the broad corridors along the Clark Fork and Bitterroot valleys, or other trails connecting the Clearwater to surrounding watersheds. Among the documented instances of fur trade activity in the upper reaches of the Clearwater was the westward passage of John Work's Hudson's Bay Company (HBC) brigade along the Lolo Trail in September and October 1831. Fur men had traversed the lower portions of the watershed as early as 1811, when members of Wilson Price Hunt's brigade crossed Camas Prairie and descended the Clearwater below Orofino. The lower Clearwater became a regular trading area for British fur companies until the decline of the fur

business during the 1840s (McLeod 1984, 44; Elsensohn 1955, 2:395, 462; Beal and Wells 1959, 2:406; Haines 1955, 46-56).

With the fur trade came missionaries. In 1835 Reverend Samuel Parker met a group of Nez Perces at the annual fur rendezvous, and traveled with them along the Southern Nez Perces Trail, skirting the southern lip of the Clearwater watershed. Parker did not remain with the tribe, but continued westward into Oregon. Organized missionary activity in the Clearwater began the following year, with the establishment of a Protestant mission thirteen miles east of present-day Lewiston, near the mouth of Lapwai Creek.

Methodist minister Henry Spalding and his wife Eliza played major roles in acquainting the Nez Perces with Euro-American culture. The mission eventually included a schoolhouse, church, an irrigated farm (the first in Idaho), a blacksmith shop, and a gristmill. Spalding also acquired a printing press, with which he published religious and education tracts in the Nez Perces language. The missionaries urged the Nez Perces to abandon their semi-nomadic life, including their annual buffalo hunt, and to adopt an agrarian lifestyle. By 1843, 140 Nez Perces had embraced Christianity and agriculture, farming small plots near the mission and tending herds of cattle, sheep, and hogs. Although many Nez Perces accepted various aspects of the missionaries' teachings, most continued to pursue their traditional ways of life (Schwantes 1991, 34-35; Elsensohn 1955, 2:422-423.

Although removed somewhat from the main emigrant route, the Spalding mission was not immune to the resentment growing among Plateau tribes over the invasion of their territories. After measles contracted from overland travelers killed large numbers of Cayuse, that tribe responded in a violent reprisal against missionary Marcus Whitman in Oregon in 1847. The unrest and suspicion ignited by these incidents caused the Spaldings to leave the Clearwater for the Willamette Valley. When they abandoned Lapwai in 1847, the mission had 44 acres under cultivation and a total of 164 head of livestock (Schwantes 1991, 36; Haines 1955, 98-118).

During the early 1850s, the newly appointed governor of Washington Territory, Isaac I. Stevens, was authorized to survey a possible transcontinental railroad route through the Northern Rockies and Columbia Basin. As part of this survey, Lt. John Mullan examined the Lolo Trail route in 1852. It was his view that the Clearwater country was "one immense bed of rugged, pinnacled, and difficult mountains" and therefore impractical as a railroad route (cited in McLeod 1984, 46) (Malone, Roeder and Lang 1991, 72).

In his role as territorial governor, Stevens later undertook several agreements with Plateau and Northern Plains tribes. One of these treaties was concluded with the Nez Perces at

Walla Walla in 1855. Under the terms of the Walla Walla Treaty, the Nez Perces retained their homeland in central Idaho, Oregon, and Washington. However, two strong factions emerged within the tribe -- the Christianized Nez Perces supported the treaty and other traditional bands opposed it (Schwantes 1991, 47; Haines 1955, 119-147).

In 1860 prospector E.D. Pierce found gold on reservation lands near the western terminus of the Lolo Trail, touching off a major gold rush to the Clearwater and to subsequent strikes in the Salmon River watershed. Hearing of Pierce's discovery, hundreds of goldhunters swarmed into the region. By May 1861, as many as 1,000 prospectors were exploring the Clearwater Valley. By the end of June, that number had increased to more than 3,000, with hundreds more pouring into the watershed via the Lolo, Southern Nez Perces, and Montana trails.

The major placer camps in the Clearwater watershed were Pierce City and Orofino on Orofino Creek (1860), and Elk City and Newsome, about sixty miles south of the Orofino camps (1861). Other placer activity was scattered around the watershed, including small camps at Moose Creek (1862) and Allison Creek (1863). The boom town of Lewiston soon flourished at the confluence of the Clearwater and the Snake. Lewiston's location--at the convergence of several trails and on navigable water on the Snake--made it an important river port and supply point serving both the Clearwater and Salmon River mines, and later mining rushes to the Boise Basin and Owyhee Mountains (Elsensohn 1955, 2:42; Wolle 1955).

The early Clearwater and Salmon gold strikes occurred on Nez Perces land, in violation of the treaty of 1855, and over the strenuous objections of the tribe. By 1863, the clamor of goldhunters and businessmen demanding the opening of the reservation to prospectors and settlers caused the federal government to negotiate a new treaty with the Nez Perces. Under the 1863 treaty, Nez Perces lands were reduced to roughly one-tenth of the acreage reserved in the Walla Walla Treaty of 1855. Most of the 800,000 acres retained by the tribe lay within the lower Clearwater watershed, the traditional territory of the Christian, pro-treaty bands. The areas opened to settlement in 1863 were the homelands of Nez Perces who had opposed the 1855 pact, including their beloved Wallowa Valley. Rejecting the new treaty, the non-treaty bands continued their seasonal round on their traditional territories, beyond the bounds of the redefined reservation, making conflicts with aggressive miners and settlers inevitable (Beal and Wells 1959, 1:55, 459-460; Haines 1955, 154-164).

Modern Era Settlement Activity
(1866 to 1940)

In May 1877, the federal government issued an ultimatum to the non-treaty Nez Perces, giving them thirty days to vacate the Wallowa Valley and settle on the Clearwater Reservation. In June, confrontations between the band and settlers in the Salmon River country escalated into a battle with U.S. troops at White Bird Canyon. After defeating the army at White Bird, the Nez Perces withdrew onto the Clearwater River near Kamiah, where they were attacked by troops under O.O. Howard. From Kamiah, the military pursued the Nez Perces through the watershed along the Lolo Trail, over Lolo Pass and into Montana. After an epic three-month, 1,100-mile journey and four major battles, the non-treaty Nez Perces surrendered in north central Montana in October 1877. From there, they were exiled to Kansas and Oklahoma, before returning to the Northwest and the Colville Reservation in the 1880s (Haines 1955, 242-337; Space 1964, 27-29; Schwantes 1991, 74).

Although the initial mining booms subsided after 1864, mining in the Clearwater River watershed continued steadily from 1865 well into the twentieth century. Many camps like Orofino City were abandoned within a year or two of their founding, while others like Pierce and Elk City survived in scaled-down form
(Space 1964, 25; Wolle 1955).

Hundreds of Chinese miners reworked diggings at Pierce and Elk City during the 1870s and 1880s. Most left in the face of extreme anti-Chinese prejudice when Euro-American mining activity was renewed in the 1890s. The discovery of quartz lodes, the application of new mining and milling technology, and improved transportation rejuvenated the Clearwater districts at that time. During the 1890s and early 1900s, quartz lodes were developed at Elk City, Pierce, Oro Grande, and other sites. Better roads and improved access to rail lines made it possible for mining companies to erect stamp mills for ore reduction and to import hydraulic pipe and dredge equipment for the reworking of old placer ground. In 1899, thirteen teams hauled dredge equipment to Red River, marking the beginning of the dredge era in the Clearwater mines. Over the next four decades, additional dredges worked ground at Pierce, Elk City, Newsome Creek, and Oro Grande. Between 1900 and 1940, at least a dozen stamp mills operated in the watershed. Beginning in the early 1900s, cyanide plants leached ore at Pierce, Oro Grande, and Elk City (Wolle 1955, 221-222; Livingston-Little 1965, 48; Elsensohn 1955, 2:26-34,49;

Mineral Resources 1905, 232-237; Mineral Resources 1906, 262; Mineral Resources 1907, 299-304; Mineral Resources 1909, 348-351; Mineral Resources 1913, 771-777).

Agriculture in the Clearwater watershed traced its beginnings to the careful management and husbandry of horse herds practiced by the Nez Perces, and to the farms instituted by the Spalding mission in 1837. But commercial agriculture began in earnest with the onset of the mining rushes in the early 1860s. The success of the treaty Nez Perces in marketing surplus produce and livestock to prospectors did not escape notice. Many of the early gold rush participants were farmers from the Willamette Valley, then in the midst of an agricultural depression. Discovery of the fertile lands of the lower Clearwater and the booming mining camp markets encouraged many to resume farming in the region, producing grain, vegetables, and fruit. Stockmen rapidly filled Camas Prairie and other ranges with large herds of cattle and horses. By the 1880s, large bands of sheep summered in the nearby Craig Mountains. Homesteads and small "milk ranches" near mining districts produced smaller quantities of beef, pork, dairy products, and vegetables for the camps. Italian railroad workers took up agricultural land, planting orchards along the river east of Lewiston (Elsensohn 1955, 2:37, 209, 521, 531; Bailey 1935, 62; Mercier and Simon-Smolinski 1990).

In 1895 the Dawes Act opened much of the Lapwai reservation to Euro-American settlement, and farmers rushed to homestead the rich Camas Prairie lands. The Nez Perces, however, had been successful farmers dating back to the Spalding mission in the 1840s. By 1895, the Nez Perces owned 8,000 cultivated acres and 10,000 acres of fenced range. Their livestock totaled 7,500 cattle and at least 15,000 horses (Schwantes 1991, 132; Rees 1918; Simon-Smolinski 1990; Elsensohn 1955, 2:14).

In the booming agricultural economy of the lower Clearwater, farmers and ranchers soon produced more than local markets could absorb. Large herds of cattle and horses were driven overland to railheads in the Dakotas and eastern Montana over the Lolo Trail, as well as to markets in Spokane and other urban areas in the Northwest. The need for access to more distant markets led to agitation for improved roads and the construction of railroads. Rail service finally reached the lower Clearwater during the early 1900s, when both the Northern Pacific and Union Pacific completed branch lines into the area (Elsensohn 1955, 2:37, 532-533; Livingston-Little 1965, 66, 75-76, 79-80; Bailey 1935, 125).

Railroads also contributed to the growth of the timber industry in the watershed. Prior to the 1890s, nearly all logging and lumbering on the Clearwater was associated with nearby mining camps and farms. Early steam sawmills in the region operated in conjunction with stamp

mills at the mines. The first sizable commercial logging occurred in the 1880s, when railroad construction created a demand for the Clearwater's cedar stands, considered among the finest in North America. Cedar was particularly valued by railroads for use in trestlework and pilings. During the early 1890s, cedar logs were regularly harvested along the upper Clearwater and floated downstream to sawmills at Lewiston (Space 1964, 25, 108-109; Elsensohn 1955, 2:7-8, 35, 41).

In the late 1890s, the depletion of timber stands in the Upper Midwest led Great Lakes lumbermen to the forests of the Northern Rockies and Columbia Basin. In 1900 Minnesota timber baron Frederick Weyerhaeuser discovered great stands of highly prized white pine on Clearwater lands belonging to the Northern Pacific Railroad. Weyerhaeuser formed the Clearwater Timber Company to acquire these and other stands in the watershed. By the 1920s, the firm held over 200,000 acres of white pine forests. As lands further north in the Coeur d'Alenes and St. Joe Valley were cutover, the timber industry shifted its focus to the Clearwater. In 1924, Clearwater Timber began construction of a sawmill on the Clearwater at Lewiston. When completed in 1927, it was the world's largest electrically driven sawmill, drawing power from a hydroelectric dam constructed across the Clearwater River. With the new mill and a 41-mile railroad line to its camp at Headquarters, Idaho, Clearwater Timber began harvesting its stands on a massive scale, transporting logs to the mill by rail and river drives.

Log drives were not new to the Clearwater. The Nez Perces brought saw logs down the river to Reverend Spaldings sawmill in 1840, and such drives were common by the 1880s. By the 1920s, Clearwater timber and other large operators floated as much as 15 million feet of saw logs annually (Elsensohn 1955, 2:10). The practice scoured the river's bed and eroded its banks. To facilitate passage of the logs, obstructions were routinely dynamited, as was done to the landmark Three Devils near Kooskia in 1922 (Elsensohn 1955, 2:8, 41, 43, 45, 213, 362, 411; Arrington 1994, 2:124-125).

No sooner had the Clearwater mill opened than an economic depression struck the lumber industry. The collapse of the home construction industry during the general depression of the 1930s, and a growing shortage of saw logs in many areas, signalled the end of the timber boom, although logging continued to play a major role in the Clearwater watershed for many years.

Public outrage over damage to forests by overcutting, overgrazing, and fire led to passage of the Forest Reserve Act of 1891. Followed by the creation of the U.S. Forest Service (1905) and the national forests (1907), the act marked the beginning of an active federal role in natural

resource management. Among the reserves set aside in 1897 was the Bitterroot Forest Reserve, encompassing much of western Montana and north-central Idaho. The Bitterroot Reserve was later subdivided into a series of national forests. By 1908 the Lolo, Clearwater, and Nez Perces national forests administered lands in the Clearwater watershed. Unlike heavily used forests where overgrazing and erosion were major problems, much of the Clearwater remained primitive wilderness at the turn of the century, although livestock use was increasing in the lower reaches of the watershed. The major concerns for forest managers at this time were timber management, trail and cabin construction, and fire suppression (Space 1964, 52-53; Elsensohn 1955, 2:353-358).

Prior to 1910, the watershed's most recent major fires had occurred in the late 1880s and 1890s, particularly along the South Fork. But these were nothing compared to the fires of 1910, which ultimately burned 3 million acres in northern Idaho and western Montana. In the Clearwater watershed, the 1910 fires were particularly destructive near Elk City and along the Lochsa River. In the aftermath of the 1910 fires, forage vegetation in burned areas multiplied, creating new grazing lands, particularly for sheep. During the 1920s and 1930s large bands of sheep were moved from Washington and Oregon onto burned-over lands to feed on fireweed and hollyhock. Between 1922 and 1924, a major sheep driveway was constructed connecting the Clearwater drainage with the transcontinental railroad lines at Superior, Montana. Grazing on much of the Clearwater, however, remained relatively light. The Nez Perces National Forest received the heaviest grazing pressures, peaking in 1918-1919 with 13,992 cattle and over 70,000 sheep. Sheep grazing on the Clearwater National Forest peaked in 1933 at 33,000, with overgrazing and erosion becoming a problem in some areas (Elsensohn 1955, 2:337-342; Alexander 1987, 66; Baker 1993, 69, 72; Space 1964, 59-60, 76-80).

In the Clearwater country, 1919 and 1934 were also severe fire seasons. During the 1934 Pete King fire, nearly 5,000 men manned the firelines in the Lochsa-Selway River area (Elsensohn 2:262). Many of these firefighters were drawn from the ranks of the Civilian Conservation Corps (CCC). Designed as a New Deal program to provide jobs, the CCC provided a tremendous personnel boost to the Forest Service during the 1930s. Fourteen CCC camps operated in the Clearwater watershed, including those at Glover Creek, Canyon Creek, O'Hara Creek, Meadow Creek, Santiam and Red River (Elsensohn 1955, 2:331). In addition to firefighting, CCC crews were used in road and trail construction, facilities construction, tree-planting, and the Blister Rust Control program. Road projects included the completion of the Lolo Motorway over the Bitterroot divide (1935) and the Fog Mountain Road in the Selway

area (Space 1964, 76, 91-94, 103-105; Elsensohn 1955, 2:238-239).

The most visible effects of human settlement in the Clearwater watershed between 1865 and 1940 were the result of mining, agriculture, and logging activities, which attracted a sizable population to the area. In seventy-five years of mining, placer sediments and mill tailings were released into watercourses. Hydraulic mining blasted away entire hillsides. Dredges obliterated streambeds and buried floodplains under mounds of cobble. Mercury frequently escaped into soil and water from placers, arrastras, and amalgamating mills. Acid mine drainage, mine and mill wastes, and metals leaching are only some of the other problems associated with historic mining activity. Agricultural practices introduced non-native plant species, increased grazing pressures on rangeland, and diverted streams for irrigation. Logging, as it was practiced in the nineteenth and early twentieth centuries, denuded entire mountainsides through logging and burning. The results included altered vegetation, disturbed watercourses, erosion, and the loss of wildlife habitat. Log drives, dams, and sawmill wastes all adversely affected streams and fisheries (Elsensohn 1955, 2:13, 29, 35, 43; Minerals Yearbook 1905, 233).

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COEUR D'ALENE RIVER WATERSHED

Together with the St. Joe River and its river's chief tributary, the St. Maries, the Coeur d'Alene River provides most of the waters of Coeur d'Alene Lake and the Spokane River. The Coeur d'Alene and St. Joe rivers head on the west side of the Bitterroot Range, each following a course of nearly 100 miles through the densely forested Coeur d'Alene and St. Joe Mountains.

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

Human activity in the Coeur d'Alene River watershed probably began around 10,000 years ago, and possibly earlier. The area's early inhabitants subsisted through a combination of fishing, hunting, and gathering. By 4,000 BP, people in the Coeur d'Alene watershed, like others throughout the Columbia Plateau, had adopted a seasonal pattern in which they moved from semi-permanent winter camps to various root-digging, fishing, and hunting grounds, depending on the resource available at the time (Miller 1981, 19-26).

By 1300 A.D. modern tribal cultures were recognizable throughout the Columbia Plateau. The primary inhabitants of the Coeur d'Alene watershed were the Salishan-speaking Coeur d'Alene tribe, who occupied nearly the entire headwaters areas of the Spokane River -- nearly 4 million acres stretching from south of Lake Pend d'Oreille to the northern side of the Palouse River watershed, from the Bitterroot Divide on the east to the Spokane Plain on the west (Bischoff 1974, 1; Chalfant 1974, 36, 41-44, 50-53). The tribe's various bands congregated in large winter villages along the Spokane, Coeur d'Alene, and St. Joe rivers. In the summer, these villages would disperse into smaller groups to travel to fishing sites and root-digging and hunting grounds. In the process of pursuing their seasonal rounds, the Coeur d'Alene and other Plateau tribes developed an extensive trail system along the St. Joe and Coeur d'Alene watersheds and into surrounding drainages, including the northern reaches of the Clearwater, where the Coeur d'Alene frequently fished (Miller 1981, 25-47; Mercier and Simon-Smolinski 1990; Crowell and Asleson 1980, 1; Beal & Wells 1959, 1:36; Chalfant 1974, 48).

Protohistoric Settlement Activity
(1500 to 1800)

The Protohistoric era is marked by evidence of Euro-American influence on native culture, no matter how indirect. In many instances, such early evidence appeared in the chain-reaction of tribal dislocations set off by Euro-American settlement. With the readjustment of tribal domains came the scourge of European-borne diseases, frequently decimating tribes far in advance of direct contact with the newcomers. Beginning in the late 1600s, horses spread from the Southwest northward through the Rockies and Plains, revolutionizing native ways of life long before Euro-Americans penetrated those regions. Likewise, European or Euro-American trade goods also frequently preceded direct contact between the tribe and non-native trade sources. Like the other Plateau tribes, the Coeur d'Alene tribe was heavily influenced by the acquisition of horses and Euro-American trade goods, and by the effects of epidemics on their population.

After obtaining horses during the early 1700s, the Coeur d'Alene quickly adapted to a semi-nomadic lifestyle. Their seasonal round came to include annual buffalo hunts on the Great Plains, often in the company of their Salish and Pend d'Oreille neighbors to the east. They developed extensive trade contacts throughout the inland West and in doing so, adapted many elements of Plains and Coastal cultures into their own ways of life. By the 1800s, the Coeur d'Alene had developed large horse herds, a fact that greatly enhanced the tribe's economic status (Mercier and Simon-Smolinski 1990; Miller 1981, 96-101; Chalfant 1974, 48; Beal and Wells 1959, 1:50-51).

During the late 1790s, epidemics swept through the Plateau tribes, reducing their population in some instances by as much as 94 percent over the next fifty years. The Coeur d'Alene probably experienced similar cycles of epidemics as the other Plateau tribes during the late 1700s and early 1800s. Anthropologist James Teit estimated that the Coeur d'Alene population totaled between 3,000 and 4,000 people prior to smallpox epidemics in 1831-1832 and 1850 (Chalfant 1974, 45-46; Miller 1981, 128-129, 134; Beal and Wells 1959, 1:54-55).

Preindustrial Settlement Activity
(1775 to 1865)

The first Euro-Americans to enter the Coeur d'Alene watershed were, in all likelihood, fur trappers. In 1808, David Thompson of the Canada-based North West Company (NWC) led trappers into the Northern Rockies. Between 1808 and 1811, Thompson and his men thoroughly explored the Kootenai, Coeur d'Alene, and Clark Fork watersheds, establishing strong trade contacts with the tribes of those areas. Because the Coeur d'Alenes would not permit a trading post in their territory, they traded with the NWC at its Spokane House post, built in 1810 among the Spokanes west of the Coeur d'Alene country.

The North West Company soon faced competition from trappers of the British Hudson's Bay Company (HBC) and from a second trading post, erected near Spokane House in 1812 by the American-owned Astor interests. The competition was too much for the Astor post, Ft. Spokane, and it was sold to the NWC in 1813. The larger post became the NWC's trade headquarters for a huge area, including the territories of the Spokane and Coeur d'Alene tribes.

In 1821, the North West Company itself was absorbed by its more powerful British rival, and the Hudson's Bay Company acquired the North West posts on the Kootenai and Clark Fork rivers, in addition to Ft. Spokane which operated until 1826. Although the fur trade continued in the Northern Rockies into the 1840s, the Coeur d'Alene watershed ceased to be an important trade area by the 1830s (Beal and Wells 1959, 1:30; Bischoff 1974, 1; Peltier 1982, 21-22).

With many of the British and Canadian trappers came Iroquois or other eastern tribesmen who initiated many of the trappers' trade contacts with tribes in the Northern Rockies. The Iroquois also brought with them concepts of Christianity which they spread among the western tribes. In response to requests from the Salish and Nez Perces during the 1830s, missionaries began to enter the region. The first of these in the Coeur d'Alene country was probably the Reverend Samuel Parker who traveled among the Spokane on the western edge of Coeur d'Alene territory in 1836.

In 1841, the Coeur d'Alene tribe sent a delegation to Jesuit missionaries working among the Salish in the Bitterroot Valley. Father Jean-Pierre DeSmet visited the Coeur d'Alene people in 1842, and at DeSmet's direction, Father Nicholas Point established a mission among the Coeur d'Alene later that year, on the banks of the St. Joe River near present-day St. Maries, Idaho.

Over the next three years a settlement of nearly 100 Coeur d'Alene families gathered around the mission on the St. Joe. Unfortunately the St. Joe site was prone to frequent flooding, forcing the mission's relocation to the South Fork of the Coeur d'Alene in 1846.

Rebuilt on high ground in a fertile valley, the Mission of the Sacred Heart continued to teach both Christianity and agriculture to the Coeur d'Alene people. Because it was led by Father Joseph M. Cataldo for much of the following three decades, the mission was widely known as the Cataldo Mission. By 1864, missionaries and tribal members had cultivated several hundred acres, growing large crops of oats, barley, wheat, peas, and potatoes (Cody 1930, 16-23; Bischoff 1974, 2-5, 47-48; Beal and Wells 1959 1:211-212; Peltier 1982, 25).

Among those impressed by the mission was newly appointed territorial governor Isaac I. Stevens, who visited the Coeur d'Alene Valley in 1853. Enroute westward to take up his duties, Stevens also was directing a survey of potential railroad routes through the Northern Rockies and Pacific Northwest. Aware that the tribes posed a potential obstacle to railroad construction, he undertook a series of treaties in 1855 to encourage several Plateau and Northern Plains tribes to accept large reservations removed from potential railroad corridors. At the advice of the Jesuit missionaries, the Coeur d'Alenes had requested a treaty council with Stevens, believing that a treaty was the only means of protecting their land from encroaching settlement. Stevens' duties called him elsewhere, and the council with the Coeur d'Alenes never occurred (Cody 1930, 32; Dozier 1962, 2).

Despite the fact that the Coeur d'Alenes' territory was still somewhat removed from the major emigration routes to the Columbia Valley, they shared the resentment and tension felt by other Plateau tribes who were being inundated by settlement. In 1858, many Coeur d'Alenes joined with factions of the Spokane, Palouse, and Yakima in a confrontation with U.S. troops near present-day Rosalia, Washington. Defeated by a military force under Colonel George Wright later that year, the Coeur d'Alenes signed a peace agreement and continued to seek a treaty protecting their lands (Dozier 1962, 2-3; Goetzmann 1959, 278-283; Cody 1930, 32; Beal and Wells 1959, 1:214-215; Utley 1967, 200-210).

During the Stevens railroad reconnaissance in 1853, army engineer Lt. John Mullan had become convinced of the feasibility of a wagon road through the Rockies, connecting the heads of navigation on the Missouri and Columbia rivers. Congress approved the plan for a Walla Walla-Ft. Benton road, and construction began in eastern Washington in 1859. The route entered the Coeur d'Alene watershed from the Palouse Prairie and passed around the southern tip of Coeur d'Alene Lake, crossing the St. Joe River four miles east of the lake. From the St.Joe,

the road ran eastward up the Coeur d'Alene Valley and the South Fork of the Coeur d'Alene to the Bitterroot Divide and St. Regis (Sohon's) Pass. During construction of the Coeur d'Alene segment, Mullan's crews cut 130 miles of roadway through dense timber and engaged in extensive blasting and earthwork, particularly near the lake. A portion of the road was later rerouted via Fourth of July Pass, due to frequent flooding along the Coeur d'Alene River (Malone et al. 1991, 72; Beal and Wells 1959, 1:405; Wood 1983, 4; Strong 1970, 1).

By the time of the Mullan Road's completion in 1862, prospectors were already exploring parts of the Coeur d'Alene watershed. The Fraser River and Colville placer finds had drawn some emigrants through the Coeur d'Alenes in the late 1850s, but the Clearwater discovery in 1860 and subsequent placer strikes along the Salmon River and in the Missouri headwaters area drew thousands of prospectors and adventurers into the Northern Rockies. Many of these followed the Mullan Road into and through the Coeur d'Alene country, with the predictable result that some would prospect in the watershed during the early 1860s. The Coeur d'Alene tribe continued to seek a treaty to protect their lands, but their requests met with little response until after the Civil War, and even then the establishment and protection of reservation lands proved to be an involved and protracted process (Dozier 1962, 3; Bischoff 1974, 23-25).

Modern Era Settlement Activity (1865 to 1940)

Although only minor amounts of placer gold were found in the Coeur d'Alene watershed during the early and mid-1860s, scattered settlement began to take hold. Recognizing the agricultural potential of the Coeur d'Alene Valley, and the large meadows along the Coeur d'Alene and St. Joe rivers, small farms and ranches appeared in those areas. These were mostly subsistence operations, but with nearly 20,000 people passing over the Mullan Road in 1866 (Wood 1983, 4), they found a ready market for their surplus. In 1868, a small gold discovery on the North Fork attracted a stampede of some 700 miners to the diggings. By the early 1870s, small settlements had grown up along the Coeur d'Alene River at Post Falls and Rathdrum (Bischoff 1974, 5-7; Strong 1970, 15).

These settlements alarmed the Coeur d'Alene tribe, who understood that a treaty was the best protection for their lands. An 1867 executive order reserved 250,000 acres in the vicinity of

the lower St. Joe River, but the tribe refused to accept such a small territory. An 1873 treaty council arrived at an agreement acceptable to all parties, enlarging reservation boundaries to include an area from the Pine Creek/Latah divide on the south, to the headwaters of the Coeur d'Alene River, eastward to the Idaho/Washington border. The treaty also provided for remuneration to the tribe for lands not included in the reservation.

Unfortunately, the treaty was withdrawn from consideration by Congress when President Ulysses Grant issued an executive order creating the Coeur d'Alene Reserve in late 1873. Although the ordered reserve conformed to the boundaries set forth in the treaty, other issues such as remuneration were not addressed. Because the agreed-upon treaty had not been ratified, the Coeur d'Alene refused to accept the reservation. They continued to live at will upon their traditional lands until the winter of 1877-1878, when most tribal members moved onto the reservation, convinced that it was the only way to protect reserved lands from continuing encroachment until a treaty could be obtained.

Such a treaty was not ratified by Congress until 1891, and then only after the 1873 treaty terms had been rewritten by the Northwest Indian Commission in 1886. Under the revised treaty, the Coeur d'Alene shared the reservation with a portion of the Spokane tribe, and surrendered over 2.3 million acres of territory, including most of the land surrounding Coeur d'Alene Lake, Coeur d'Alene River, and the Cataldo Mission (Dozier 1962, 4-7; Chalfant 1974, 29).

The concessions imposed on the Coeur d'Alene tribe in 1886 were a direct result of a major mining boom during the early and mid-1880s. Although both placer and quartz gold had been found in the watershed during the 1860s and early 1870s, the amounts were too small to generate much excitement. However, in 1882, Andrew J. Prichard reported a sizable gold strike near present-day Murray. By 1883 a stampede was under way, greatly facilitated by the Northern Pacific (NP) Railroad. The railroad's newly completed main line passed within 35 miles of the Prichard placer diggings, and the railroad actively promoted the Coeur d'Alene goldfields (Livingston-Little 1965, 84-85). By late 1883, between 800 and 1,000 prospectors had made their way to Prichard's Creek, giving rise to the camp of Eagle City. The camp had a population of 2,000 by the summer of 1884, with an additional 4,000 arriving later in the season (Bischoff 1974, 10). As prospectors swarmed throughout the nearby streams, additional strikes were made and new boom camps sprang up at Beaver City, Carbon City, Delta, Butte City, Raven City, Murraysville, and Myrtle. By 1885, every foot of placer gravel for miles around had been staked out (Greenough 1947, 16-17; Wolle 1955, 248-249, 253; Bischoff 1974, 11-12).

The Coeur d'Alene placers were relatively short-lived, with production declining by 1885. By that time, however, it was already clear to mining men that the real wealth of the Coeur d'Alene lay not in the placer gold of the North Fork, but in the enormous silver-lead deposits unearthed on the South Fork. From those deposits emerged one of the world's great mining districts -- a 270-square mile area reaching from the Bitterroot divide westward to Pine Creek, extending roughly five miles along either side of the Coeur d'Alene River. Within this district during the mid-1880s, mining towns mushroomed around major lodes at Kellogg, Burke, Gem, Mace, Wallace, Mullan, and Wardner.

Unlike placer deposits, which were worked by a variety of relatively simple washing and sorting techniques, the Coeur d'Alene ores required industrial concentrating and smelting processes to extract their silver, lead, and zinc values. This in turn required enormous capital investment, large-scale production, and the employment of large numbers of skilled hardrock miners, millmen, and smeltermen. As a result, the mining towns that grew up along the South Fork mines were far different from earlier placer camps, with a more stable, long-term existence and an ethnically diverse population drawn from mining districts throughout the United States and Europe. Although labor issues were hotly contested between corporate mineowners and miners in almost any hardrock district, the Coeur d'Alene mines were the scene of some of America's most violent labor confrontations during the 1890s and 1900s (Greenough 1947, 3, 17, 23; Wolle 1955, 255; Mercier and Simon-Smolinski 1990).

From the 1890s through the 1930s, the Coeur d'Alene District was among the nation's largest producers of silver, lead, and zinc. Leaders were the Bunker Hill and Sullivan mine, which by 1947 was the largest single lode producer of lead and zinc in the United States, and the Sunshine mine, which between 1930 and 1947 ranked as the largest single lode producer of silver in the world (Greenough 1947, 29-31). By the 1940s, the Coeur d'Alene district had produced more than 1 billion in lead, silver, and zinc, nearly 90 percent of the dollar value of all metals ever produced in Idaho (Beal and Wells 1959, 1:575; Greenough 1947, 37). In the process, massive volumes of ore were mined and concentrated, resulting in huge accumulations of mine, mill, and, after 1917, smelter wastes (Greenough 1947, 29, 35; Arrington 1994, 2:128).

By the early 1900s, the fine sediments of concentrator tailings had choked the South Fork of the Coeur d'Alene and its tributaries, forcing the mining companies to dredge the channels. In 1906 alone, 7,165 tons of tailings were taken from creek beds, leached or remilled for silver and lead values, and shipped to new dumping grounds in the valley (Mineral Resources 1905, 241; 1906, 245, 263-265). Placering also took its toll on the Coeur d'Alene watershed. The

played-out placers near Murray were extensively hydraulicked during the 1890s and dredged from the late 1890s into the 1920s or 1930s, leaving the creek bed between Murray and Eagle full of debris (Mineral Resources 1905, 238; Wood 1983, 6, 98; Wolle 1955, 254).

Transportation was a key component in the growth of the Coeur d'Alene mining district. The Mullan Road and the Northern Pacific Railroad played important roles in bringing miners and equipment to the mines. With the development of lode mining and its dependence on heavy equipment, cost-efficient freight and ore shipment was a priority. The nearest smelters capable of refining Coeur d'Alene ores were located on the West Coast and at Butte and Helena, Montana. In 1883, the eve of the Coeur d'Alene mining boom, the Northern Pacific completed its transcontinental line, which ran within 35 miles of the new district. Thompson Falls, on the NP line in Montana Territory, became an important supply point and "jumping off" place for Coeur d'Alene-bound miners. At least one major producer, the Tiger Mine at Burke, freighted its ore overland to the railroad at Thompson Falls (Woods 1983, 12). Other mines relied on steamboats to carry ore from the head of navigation on the South Fork, a point near the Cataldo Mission, downstream to Coeur d'Alene Lake, where overland, rail, or other water connections were made (Scott 1967, 320).

Beginning in 1886, a series of local and branch rail lines were constructed during the late 1880s to link the towns of the mining district with the steamboat landing and later to the city of Coeur d'Alene itself (Beal and Wells 1959, 1:547). By the early 1890s, branch lines of the NP had also reached the district over Lookout Pass. By 1909, the Chicago, Milwaukee and St. Paul Railroad main line was completed through the St. Joe River drainage and around the south end of Coeur d'Alene Lake (Woods 1983; Greenough 1947, 21-23).

Tied to the rise of hardrock mining and railroad construction in the Coeur d'Alenes was the watershed's timber industry. Mines consumed vast quantities of lumber in order to build the mines, frame mills, and fuel steampower plants and smelters. Railroads heavily depended on wood for ties, trestlework, and fuel. The area's first sawmills operated at Post Falls and Ft. Coeur d'Alene during the late 1870s and early 1880s, filling a purely local market. With growing settlement and the mining boom of the early 1880s, the number of local sawmills increased throughout the watershed.

As large mines and concentrators developed along the South Fork, many mining companies built sawmills and framing plants to supply their own needs. Numerous shingle mills also provided roofing materials for the rapidly expanding mining towns. By the late 1880s, sawmills operated at several locations around Coeur d'Alene Lake and on the St. Joe River. In

several places, sizable communities grew up around the mills, such as the milltowns of St. Maries on the St. Joe River and Harrison near the mouth of the Coeur d'Alene River (Scott 1967, 191; Strong 1970, 20).

With the depletion of timber stands in the Upper Midwest during the 1890s, lumbermen from the Great Lakes region turned their attention to the forests of the Northern Rockies and Pacific Northwest. In the Coeur d'Alene and St. Joe watersheds they found extensive stands of white pine, red cedar, Douglas fir, and western larch, forests largely untouched in spite of the enormous demands of the Coeur d'Alene mines and railroads. In 1898 an estimated 31 billion board feet of timber stood in the Coeur d'Alene/St.Joe watersheds (Strong 1970, 2). The rivers and their tributaries were ideally suited for driving millions of feet of logs to millsites along the lower rivers and on Coeur d'Alene Lake. Storage for millions of feet of sawlogs was available in the big lake's bays and in countless smaller lakes and sloughs accessible from the rivers. The Pacific slope climate was generally conducive to logging and milling activities. In addition to these natural assets, the rail and water transportation system developed for the mines offered advantages to the timber industry as well (Strong 1970, 5, 7, 25, 83, 130).

Beginning in the late 1890s the Coeur d'Alene and St. Joe watersheds experienced a timber excitement not unlike earlier mining booms. Several major Midwest lumber concerns, including Frederick Weyerhaeuser, bought up extensive timberlands in the area and undertook logging and milling of the region's timber resources on a massive scale (Strong 1970). The Weyerhaeuser interests alone purchased 26,000 acres of NP white pine stands and 30,000 acres of state lands for its subsidiary, the Edward Rutledge Timber Company in 1902 (Arrington 1994, 2:497-498; Beal and Wells 1959, 1:196). Federal and Coeur d'Alene Reservation lands were also subject to extensive logging (Scott 1967, 191). Many small parcels of timberland were taken up fraudulently under the 1878 Timber and Stone Act and the various homestead acts, only to be sold to lumber companies for their timber value (Strong 1970, 25, 30; Scott 1967, 229).

From the late 1890s until 1925, logging operations and mills expanded at a phenomenal rate. The number of sawmills in the watersheds doubled from 34 in 1900 to 77 in 1910. Lumber production also multiplied, from 100 million board feet in 1900, to 300 million board feet in 1910, to 420 million board feet during the 1910s and early 1920s. Production peaked at 490 million board feet in 1925 (Strong 1970, 34).

Log drives were an important part of the Coeur d'Alene timber industry from the late 1880s until the early 1940s. Annual events on nearly all the sizable streams in the Coeur d'Alene and St. Joe drainages, the spring drives averaged around 40 million board feet. Drives also

occurred during unseasonal highwater events and where the use of splash dams supplemented the available water supply (Strong 1970, 120-121). In addition to the drives, a flotilla of tugboats operated constantly on Lake Coeur d'Alene and its tributaries, moving and sorting logs for the mills (Strong 1970, 127).

River driving required constant maintenance of channels, with natural obstructions bulldozed or blasted from the stream, natural bends straightened, and gravel bars excavated. The main channel of the St. Joe was dredged to facilitate log traffic. The drives themselves scoured streambeds and banks, and tugboat wakes contributed to stream bank erosion. All of these impacts affected the aquatic habitat and fisheries, as well as contributed to flooding problems (Scott 1967, 230-232; Strong 1970, 120-121, 129). Railroads also played a major role in the Coeur d'Alene lumber boom, with twenty or more separate systems and nearly 300 miles of track constructed -- most of it into the North Fork of the Coeur d'Alene. Until truck transportation took over in the mid-1920s, railroads handled nearly all logs and timbers not floated to the mills (Wood 1983, 99-100, 114; Strong 121-125).

A variety of factors combined to bring the Coeur d'Alene logging boom to an end in 1926. Several mills closed after suffering extensive damage from floods and fire during the mid-1920s, and subsequent economic conditions made it unprofitable to reopen. Others experienced a shortage of sawlogs, particularly those that depended on white pine. Primarily it was the sharp downturn in lumber prices after 1925 that depressed the lumber industry nationwide. With the onset of the Great Depression in 1929, home construction virtually ceased and lumber prices collapsed. Between 1926 and 1931 more than half of the large mills in the Coeur d'Alene-St. Joe area closed. Of the 77 mills that had operated in 1910, fewer than 29 were still in existence, and many of those were idle or working at low production rates. Production fell from its peak of nearly 500 million board feet in 1925 to 160 million board feet in 1932, recovering in 1940 to less than half its 1925 output. Although the lumber industry remained important in the Coeur d'Alene and St. Joe watersheds, it never regained its pre-Depression dimensions (Strong 1970, 36-37, 47, 68).

Tied to the growth of mining and logging activity in the Coeur d'Alene watershed was the agricultural economy of the area. Agriculture in the watershed traced its beginnings to 1842 and the Jesuit mission near Cataldo. There the Coeur d'Alene tribe cultivated several hundred acres including crops of oats, barley, wheat, peas, and potatoes, as reported by John Mullan in 1864 (Bischoff 1974, 47-48). Despite the fact that much of the Coeur d'Alene Valley belonged to the tribe during the 1850s and 1860s, its agricultural potential, coupled with trade along the Mullan

Road, encouraged some to take up farms and ranches in the area. After the departure of the Coeur d'Alenes to reserved lands south and west of the Valley, the rate of settlement increased, as Euro-American settlers moved onto lands vacated by the tribe. The construction and manning of Ft. Coeur d'Alene (later Ft. Sherman), a military post on Coeur d'Alene Lake, led to the growth of Coeur d'Alene City, and provided an additional market for agricultural products from the surrounding area. With the mining boom of 1883-1884, miners' demands for both agricultural produce and livestock provided the basis for a commercial agricultural economy in the Coeur d'Alene watershed.

By the late 1880s, most agricultural land along the South Fork of the Coeur d'Alene had been taken up. In 1887 the area produced 100,000 bushels of potatoes, 25,000 bushels of vegetables, and 1,000 acres of hay. Farming and ranching expanded to include areas around Coeur d'Alene Lake and along the St. Joe River where large natural meadows provided excellent grazing and were easily cultivated for crops (Bischoff 1974, 23, 47-50).

The demands of mining and logging took their toll on many of the public lands in the Coeur d'Alene and St. Joe watersheds. Wildlife also suffered, due to hunting and loss of habitat. From the 1880s through the 1920s, timber harvesting for railroads, mines, smelters, and lumbermills had been largely indiscriminate. Compounding the overcutting were losses to uncontrolled wildfire and disease. National concern over the waste and abuse of the West's public lands led to the passage of the Forest Reserve Act in 1891. Under that Act, the federal government set aside large forest reservations in the 1890s. Administered by the General Land Office, these reserves included some lands in the Coeur d'Alene and St. Joe watersheds (Baker et al. 1993, 46).

In the early 1900s, the major concerns for the newly created Forest Service in the Coeur d'Alene were poor timber harvesting practices, particularly on public lands; timber theft from national forests; fraudulent use of the Timber and Stone Act; and fire suppression. Fire became a major concern to the Forest Service after the catastrophic 1910 fire season. In August of that year a ten-day firestorm swept across northern Idaho and into western Montana, burning large areas of the Coeur d'Alene and St. Joe national forests, particularly along the lower Coeur d'Alene River, its north fork, and the headwaters areas of the Coeur d'Alene and St. Joe rivers. The inferno forced the evacuation of many communities along the Upper Coeur d'Alene and destroyed 100 buildings in the city of Wallace. Three million acres (6 billion board feet) of timber burned, much of it in the St. Joe and Coeur d'Alene watersheds. For several years after the fire, foresters and lumbermen in the region were engaged in the salvage of fire-killed and

damaged timber (Strong 1970, 40; Wood 1983, 141; Baker et al. 1993, 53).

With the heightened emphasis placed on fire suppression after 1910, the Forest Service expanded its trail system and constructed numerous roads, a reflection of the growing role of the automobile. Auto access facilitated logging and firefighting activity, but it also opened the forests to a growing number of recreational users in the 1920s and 1930s (Baker et al. 1993, 73).

With the onset of the Great Depression in the 1930s, many Forest Service programs received a major staffing boost through New Deal programs designed to assist the unemployed. Of particular importance was the Civilian Conservation Corps (CCC), whose crews contributed to many long-term improvements on the forests. In the Coeur d'Alene and St. Joe watersheds, CCC projects included blister rust control and construction of a road along the St. Joe River (Baker et al. 1993, 127; Crowell and Asleson 1980, 13). CCC crews also fought fires, built forest roads and trails, and numerous Forest Service administrative and recreational facilities (Baker 1993, 123-129).

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THE COLUMBIA PLATEAU

Bounded by the Cascade Mountains of Washington and Oregon states to the west, by the Rocky Mountains of Northern Idaho to the east, by the desert lands of the Northern Great Basin in southern Oregon to the south, and by the Okanogan Highlands in north and central Washington to the north, this vast area
comprises what has been known for many years as the Columbia Plateau. This region was created through a combination of floods, glacier recession, and volcanic eruptions. The Cascade Mountains serve as a barrier to moisture for these lands which means that most of the water for this vast area comes from the melting snows of spring, leaving a parched desert look to the landscape by late summer.

People have lived on some part of the Columbia Plateau from 13,000 BP. Until about 10,000 BP, the climate of the area supported megafauna which the first plateau peoples hunted for a number of years. With climate stabilization that occurred on the plateau about 7,000 years ago, the large game disappeared with the culture of the people who lived there assuming a steady rhythm.

Plateau culture was generally uniform. Fishing, hunting, and gathering, not agriculture, sustained these people over the millennia. A discernable cycle pattern of life began to develop as of 3,000 to 2,000 BP. During the winter months, these people lived in pithouse villages in sheltered locations along the Columbia River and its tributaries, surviving on stored fish, roots, and berries as well as some meat. In the spring, the villages would break into small bands to trek to the rocky, arid uplands in the case of those living in the Scablands area and to the meadows in the forested areas of the Cascade, Blue, and Rocky mountains. In June with the start of the first of several salmon runs of the season some groups, mainly the men, would meet at sites along the Columbia River and its tributaries to harvest the salmon bounty from the river.

By the late eighteenth century this cycle of life had been drastically disrupted with the arrival of the horse, the rifle, and disease. The first two affected peoples' daily lives to be sure. But the greater attack on the social fabric and way of life for the Plateau peoples, however, was disease that Euro-Americans brought either personally or through other native peoples to the Columbia River Basin. It has been estimated that a smallpox epidemic in the 1780s halved the population of the native peoples on the Columbia Plateau. Such population decimation suggests that the units of people needed to gather, forage, fish, and hunt for survival had altered greatly by

the beginning of the nineteenth century, an alteration that proved irreversible in the face of the coming of the Euro-American.

The nineteenth century began with the 1804-1806 expedition of Lewis and Clark to the Pacific Northwest that introduced the region to the Americans who soon went in to competition with the Canadians and the English in the fur trade. This first wave of Euro-American presence was followed by Protestant and Catholic missionaries who seriously tried to farm in the region for the first time and also introduced sheep and cattle. When the Oregon Trail migrations began in the 1840s by people mostly from the Midwest, few settlers stayed east of the Cascades in this desert looking land for they were headed for the Willamette Valley, a place well watered and forested, more like the land that they had left.

With the settlement of most Native Americans who lived on the Columbia Plateau on to reserved lands by the 1860s along with the discovery of gold in Canada, northeastern Washington, Idaho, and the Blue Mountains in Oregon, thousands of people headed east of the Cascades, some to seek their fortunes in the gold camps, others to supply them by means of the cattle and sheep that also went east in vast numbers.

The mining enterprises that actually took place on the Columbia Plateau from the 1860s to 1940 were not the major industrial undertakings that occurred in this same period in Idaho and Montana. Those mining sites on the Columbia Plateau were mainly concentrated in the Blue Mountains in northeastern Oregon, in north central and northeastern Washington state in Okanogan, Stevens, Ferry, and Pend Oreille counties, and finally in the Cascade Mountains around the Blewett Pass area.

Ranching was much more widespread across eastern Oregon and Washington from the 1860s. The abundance of bunchgrass on public domain lands along with the demands of the mining camps encouraged the first stockmen. Between the 1860s and the 1880s, they grazed their animals relatively free from interference from either the government or from the farmer. Hundreds of cattle and sheep were especially prevalent on the ranges in the watersheds of eastern Oregon. There many thousands of these animals in eastern Washington, but the dominance of the stockman passed more quickly there with the coming of the homesteader than in eastern Oregon where in the cattle baron remained supreme well into the twentieth century.

Following the Civil War, the railroad companies became interested in the Northwest, built track by means of land grants from the public domain, and provided a means of transportation for people to settle. This new mode of transport along with the discovery in the late 1870s that the bunchgrass on the ranges of eastern Washington and Oregon grew in rich

volcanic soil that seemed to yield endless bushels of wheat by the end of the nineteenth brought even more settlers, mainly from the Midwest, to settle the lands of the Palouse, Walla Walla, the Big Bend, and even Yakima Valley.

Everyone knew that major irrigation projects would be needed to take advantage of the potential of this land. Such endeavors did not occur until after the 1940s. There were a few projects down the Deschutes River near Prineville. However, most of the major irrigation undertakings that occurred before 1940 other than small private ditches took place in the Yakima and Okanogan valleys with Bureau of Reclamation projects. Some people reported that at least in the Yakima Valley the salmon migration was being affected by these irrigation ditches. But for the most part, it would not be until the construction of the dams after World War II that the farmer would truly thrive and the salmon would meet its demise.

Finally initial logging took place for basic homestead needs followed by the mines and railroad construction, the last of which consumed probably the most wood of any enterprise in the Pacific Northwest before World War II. Logging for profit began to take place in the late nineteenth century with the arrival of the railroad in northeastern Washington, down the Deschutes River and in the Blue Mountains.

UPPER COLUMBIA RIVER WATERSHED

When many people study the Columbia River within the boundaries of the United States, they refer to that part of the river that runs from the Canadian border to Priest Rapids south of the Saddle Mountains as the "Upper Columbia" (Schalk 1982, 5). An area quite diverse in geography, the river begins its southerly course from Canada through the forested Okanogan Highlands. Just passed the mouth of the Spokane River, the Columbia turns abruptly west through lands on its north bank watered by many tributaries such as the Sanspoil, Nespelem, and Okanogan rivers which flow through the Colville Indian Reservation. In stark contrast to the moist country to the north on its westerly course, the Columbia's south bank borders one of the most naturally arid areas in the United States, the "Big Bend Country," which has traditionally included the land of modern-day Lincoln, Douglas, Franklin, and Adams counties. Studded by dried-out creek beds, referred to locally as coulees, the agricultural potential of this area would one day be known with the completion of the Grand Coulee Dam, one of the largest in the world.

As the Columbia heads south again after it passes the mouth of the Okanogan River, the lands now to its west remain moist for they reside in the rain shadow of the Cascade Mountains. East of the Columbia between its turn south and Priest Rapids lay the Scablands, an area quite desolate, created over 15,000 years ago through massive erosion when the ice dam at the mouth of the Clark Fork River failed -- causing one of the largest and most powerful floods ever to affect the face and shape of the landscape. So dry is this section of the Columbia Plateau between the Spokane and Snake rivers that the only tributary that enters the Columbia River from the south and then from the east is Crab Creek.

Such diversity in geography challenged the way of life not only for the people who initially inhabited the Upper Columbia region thousands of years ago but also for the Euro-American.

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

The earliest indication of human occupation in the Upper Columbia River area was the

Richey Clovis Cache, a collection of hunting tools, dating about 11,000 BP. The cache was discovered on the east side of the Columbia across the river from present-day Wenatchee, Washington (Gramly 1993). To the south near Priest Rapids, archaeologists have determined that people lived here around 6,000 BP (Greengo 1986). Evidence of prehistoric human habitation from 8,000 BP was found on both sides of the Columbia from the Methow River to the Lower Okanogan River (Chatters 1982, 201). And finally, people were living in prehistoric times on the Upper Columbia River from the Kettle Falls area to Hunters, Washington (Ruby and Brown, 35).

Weather played a major factor in early peoples' lives as to where and how they lived. Although there is disagreement about the details of climate change that took place over time on the Columbia Plateau, there is general agreement that 13,000-8,000 BP was a cool, moist period; 8,000 to 4,000 BP, a warm, dry period; and from 4,000 BP to the present a stabilization in climate occurred that has remained to modern times (Schalk 1982, 11-12).

Moving from south to north across the Upper Columbia region, the way of life of inhabitants of the area stabilized from 4,000 BP onward. Hunting and gathering, not agriculture, sustained these people over the millennia. For those who lived in and around the Soap Lake Scablands, the Saddle Mountains, and the Ephrata Fan, and generally across the Plateau, a cyclical pattern of life began to develop as of 3,000 to 2,000 BP. During the winter months, people lived in pithouse villages in sheltered locations along the river, surviving on stored fish, roots, and berries as well as some meat from hunting efforts in the hills and canyons. By April, the villages would break into small bands to trek to the rocky, arid uplands in the case of those living in the Scablands area and to the more forested areas for those who lived west and north of the Columbia River. The latter had berries in addition to root foods, while those who foraged to the east found mainly roots in the rocky soils of the interior to process for the upcoming winter (Chatters 1982, 140-142).

Less dependent on root crops were those people who lived to the north along the Columbia River in the area between Chief Joseph and Grand Coulee dams. Situated on migration routes for fowl, with feeder streams into the Columbia River from the north for water and driftwood from the river for fuel, the more permanent settlements from 5,000 BP indicated an economy and lifestyle dependent on shellfish from the river and game from the forests and fields (Lohse 1986, 116-17; Daugherty 1973, 51). People who lived near Kettle Falls, the furthest point north in the Upper Columbia River area, had salmon in addition to meat as a staple in their diet. However, most salmon made their way up the Snake River and its tributaries to

spawn. There were few rapids to the north until Okanogan and Kettle Falls. Crab Creek is the only tributary of the Columbia River to the east between the Snake and Spokane rivers.

Protohistoric Settlement Activity (1500 to 1800)

Tradition holds that the Salishan-speaking people passed through the Columbia Plateau in ancient times, took up residence on the plains in Alberta during the Altithermal period, and returned to the Plateau when temperatures cooled down after 4,000 BP. People occupying the area of the Upper Columbia River region, which also includes the watersheds of the Spokane, Okanogan, and Wenatchee rivers, have been identified both traditionally and by scholars as Salish (Miller 1985, 21-23). It was this central, interior Salish group that represented the oldest settlers -- the core of the Columbia basin culture and least influenced by the coastal and plains peoples. From 4,000 BP, an economic and cultural stability was established by these people that lasted until the coming of the Euro-Americans and their influences in the eighteenth century. They sustained life through the seasons, hunting for fowl at the end of winter, gathering roots in early spring, fishing in the summer, foraging for berries in high summer, fishing again in the late summer and early fall, and ending the year with the fall and winter hunt for meat. Only those Salish who lived to the northeast on the Plateau, close to the Rocky Mountains and the Plains Indians, knew the effects of the horse on their livelihood in any major way (ibid., 40-41; Ray 1937, 107).

Anthropologists have included among the Okanogan people, numbering nearly 10,000 altogether in 1800, the Okanogan, Sanpoil, Colville, and Lake groups (Boas 1985, p. 162; Chatters 1982, pp. 33 ff). Occupying lands along the Colville River near Kettle Falls and south on the Columbia River to Hunters, Washington, were the Colville people, who hunted from the Sanpoil River to the Rocky Mountains and as far south as the Snake River. Inhabiting the furthest point in the northeast on the Plateau, the Colville people obtained the horse from the Kalispel in the eighteenth century. This acquisition changed the trading patterns on the Plateau by expanding the trade network from The Dalles to the Rocky Mountains. While the Lake people lived on the Columbia River through the Okanogan Highlands, the Sanspoil and Nespelem occupied the lands on the west side of the Columbia River to the Big Bend and from

there lived on both sides of the river to the mouth of the Okanogan River. Also living on the south side of the Columbia at the Big Bend were a group known as the Lower Spokane. Tradition holds that there groups lived in harmony, sharing the resources that the land provided.

As the Columbia River heads south just passed the mouth of the Okanogan River to the Priest Rapids area, other native groups lived on or near the river. Numbering about 4,000 prior to Euro-American contact, these people included the Chelan who occupied the area to the west and around Lake Chelen, the Wenatchee people who lived on the west bank of the Columbia River from the mouth of the Entiat River to just south of Colocham Creek, and finally the Wanapam and Columbia peoples, the former living on the west side of the Columbia River from Saddle Mountains to Priest Rapids, and the latter residing on the east side on the river between these mountains and rapids (Schalk 1982, pp. 67, 80 ff).

Into this harmonious, generally peaceful cycle of life on the Columbia Plateau in the late eighteenth century entered the horse, the rifle, and disease, three of the most destablizing elements that could be introduced into these Native Americans' world. The need for horses led to raids among the Plateau peoples in the eighteenth century, conflicts that lessened by the nineteenth century when the animals became more plentiful. But also with the horse came greater contact with the ways to the east of the Rocky Mountains, the warring ways of the Plains' inhabitants -- the Blackfeet and the Shoshone -- whose possession of the rifle and need for horses led to capture and enslavement of many of the Plateau's native peoples. An even greater attack on the social fabric and way of life for the Plateau peoples, however, was the disease that Euro-Americans would either bring personally or through others to the Columbia River Basin. It has been estimated that a smallpox epidemic in the 1780s halved the population of the native peoples on the Columbia Plateau (Chalfont, 282). The units of people needed to gather, forage, fish, and hunt for survival had altered greatly by the beginning of the nineteenth century, an alteration that proved irreversible as more Euro-Americans arrived.

Preindustrial Era Settlement Activity
(1775 to 1865)

Most of the human activity and settlement in the Upper Columbia River region during the preindustrial period took place in the northern part of the area. The descriptions of the land

made by early explorers as well as the fur trade, mission, and mining activity all took place north and east of the Okanogan River. Very little, if any, Euro-American presence was felt from the mouth of the Okanogan River south to Priest Rapids until the latter part of the nineteenth century.

The early explorers did not travel extensively in the Upper Columbia River region of the Plateau. On his trip down the Columbia River in the summer of 1811, David Thompson passed through the territory by water, noting the natives and the landscape he saw along the way but not exploring the areas beyond the river. On their return trips to Canada, Gabriel Franchere (1814) and Ross Cox (1816) both traveled the river to Kettle Falls (Thompson 1915, passim; Franchere 1969, 154 ff.; Cox 1957, 144 ff.). But it wasn't until the Americans arrived in the 1830s and 1840s that there was a more intense look at the landscape and its people. Samuel Parker's search for lands to establish missions in 1835 led him through the area near Priest Rapids. And Charles Wilkes' expedition in 1841-1842 resulted in mapping and identifying much of the interior territory of the Oregon country, which included that part of the Columbia River from Priest Rapids to Kettle Falls (Wilkes 1845, vol. IV, 443 ff.; Meinig 1968, 119).

The first serious Euro-American activity and settlement in the Upper Columbia River region occurred with the coming of the fur trade in the early nineteenth century. John Jacob Astor's Pacific Fur Company opened Ft. Okanogan at the confluence of the Columbia and Okanogan rivers in 1811 in an effort to establish an American foothold to compete with the British in the Columbia River Basin. Later sold to the North West Company in 1813 and then absorbed by the Hudson's Bay Company (HBC) in 1821, Ft. Okanogan remained a center in the trade for northern forest skins until it closed in the 1860s (Brown 1914, passim).

Ft. Colville was opened by the HBC in 1826 as a center for trade with the native mountain peoples to the east, namely the Kalispel, Kootenai, and Coeur d'Alene. John Work became the factor at this post and cultivated the first land on the Columbia Plateau to supply the post with food in 1827 (Phillips 1961, vol. 2, 452 ff.; Maloney , xvi).

As the fur trade declined in the late 1830s because of the Panic of 1837 in addition to the preference for nutria and silk for hats, activity at these posts also declined. No significant alteration to the landscape or major depletion of the fur-bearing mammal population occurred. But on another level, the native population experienced the introduction of European goods, disease, farming, and a permanent Euro-American presence in the northern part of the Upper Columbia River region. A number of French Canadians left the fur trade with their native wives to settle in the Colville Valley (Peltier 1983, 15).

Only the Jesuits, led by Pierre DeSmet, set up missions in this region. St. Pauls' at Kettle Falls (1845) and a mission school, St. Regis, just east of Colville, Washington, in the 1870s provided the points of focus for conversion of the natives. The French Canadians also proved to be a natural congregation for the fathers who said mass, properly married couples, baptized children, and performed the last rites during their visits to these places (Bischoff 1945, 61, 156).

Future settlers to the Upper Columbia River region had a better sense of the lay of the land after Isaac Stevens completed his survey in 1853. The first and most extensive of its kind, this survey of the Columbia Basin mapped the area, naming streams and rivers, including those in the Upper Columbia River area. It was Stevens who saw the potential for wheat production across the Big Bend area and believed that this land was similar to the steppes in Russia where wheat grew abundantly (Meinig 1968, 196-198).

What initially brought the most people to the region in the preindustrial era, however, was mining. Such activity fore- shadowed much of why and how Euro-Americans came to the region in later years. Mining stampedes created placer mining gold camps in the Ft. Colville area (1855) and on Fraser River (1858) in British Columbia. Cattle followed to provide meat for the camps, the first such animals in that part of the region.

Those in search of gold traveled to the camps in several ways. Through a series of trails throughout the Yakima and Kittitas valleys, the prospectors traveled to the foot of Priest Rapids where they were ferried across the Columbia to continue their trip overland. Others came by steamer as far as White Bluffs, in those years a point 30 miles south of the rapids, where they then went overland to the mining camps. In 1858 a steamer began delivering cargos of mining supplies to the White Bluffs area, some 30 miles south of Priest Rapids, which then were ferried across the river and overland to the mining areas, thus bypassing the entire area between Priest Rapids and Ft. Okanogan in the 1850s (Schalk 1982, 117-118; Meinig 1968, 210ff.).

Not only did Euro-Americans come from California and the Willamette Valley to these camps in the Upper Columbia River region, but also Chinese, as many as 1,000, panned for gold on the bars of the river between Colville and Priest Rapids during the 1860s and 1870s. Never popular with the Native Americans, a Chinese camp near Chelan, Washington, was abandoned due to Indian hostilities by 1874 (Schalk 1982, 118; Illustrated History 1906, 70, 521). Some who failed to strike it rich opted to settle and became the cattlemen in the north who first supplied the Idaho Panhandle and in Montana mining camps where more lucrative strikes were found.

During the last decade of the preindustrial era, 1855-1865, the conflict that occurred on

the Columbia Plateau between the Native Americans and the American citizens only touched the Upper Columbia River region in a peripheral way. The U.S. Army sent several forays north from Ft. Simcoe in the Yakima Valley during the conflict with the Yakima people in 1856. A few years later soldiers crossed the Big Bend country again when they punished the Spokane and Palouse peoples after their attacks on U.S. military forces. In 1859 the Army abandoned Ft. Simcoe and opened Ft. Colville fourteen miles southeast of where HBC's post had been, thus establishing a military presence in the Upper Columbia River region (Meinig 1968, 160ff.,203-04.).

Modern Era Settlement Activity
(1866 to 1940)

Greater settlement and development activity took place in the Upper Columbia River region with the coming of the railroad in the 1880s. The railroads aided the mining operations that opened in Stevens County on the Colville and Columbia rivers as well as provided transportation for many of those who came to farm. However, it would not be until the construction of the Grand Coulee Dam in the 1930s that this arid area would receive the necessary water resources for major commercial agriculture ventures. This is not to say that there were no settlers who came to the area prior to this time to farm and ranch. The number of cattle in the 1870s followed by the increase of sheep from the 1880s altered the rangelands of central Washington. But by the beginning of the twentieth century, those with a better understanding of the land saw the true potential for lucrative agricultural endeavors through the irrigation initiatives of the Bureau of Reclamation.

The most significant area for mining in the Upper Columbia River region lay in Stevens County to the northeast. As early as 1883 some minerals had been discovered there, but serious mining didn't begin until the coming of the railroad at the turn of the century and the construction of a smelter in the Northport district by Union Smelting and Refining Company of Canada. Even though a strike in 1902 closed the smelter for many years, the county's mineral potential had been promoted at the 1905 Lewis and Clark Centennial in Portland and led to the incorporation of the United Copper Mining Company in 1906. A copper operation began in 1906 in the Chewelah district and operated for many years.

Across Stevens County as many as nine mining districts operated at one time or another between 1905 and 1940 (see map, Exhibit A). Orient District proved to be the largest gold producer in the state as of 1907. The Bossburg, Chewelah, and Northport districts were among the most productive over the years, producing silver, copper, and lead (see tables, Exhibit B). Over time lead was the number one mineral extracted from Stevens County. The county's mining endeavors, however, never approached the major industrial mining efforts that occurred Idaho and Montana. The mines ranged from a ten-stamp mill at the Napoleon mine in the Orient District in 1910 to a seventy-five-ton concentration plant erected by the United Copper Company in the Chewelah district in 1911 that treated soft oxidized ore by amalgamation and cynidation. The largest operation within the county by World War I was the United Copper Mine in the Chewelah District. It processed 250 tons per day through the oil-flotation process. Because of the high costs of labor and supplies, most of the smelting took place in Trails, British Columbia.

The depression in the price of metals following World War I was followed by a brief upsurge in the price for gold, silver, copper, lead, and zinc that brought greater activity in the Northport area by 1923. With the depression years of the 1930s came an increase in the price of silver and gold and a precipitous decline in lead, which meant a general economic downturn for the county as a whole for a number of years (Fulkerson 1958, passim.).

The mining area in the Upper Columbia River region had little if any access to railroad transport, but the Big Bend country experienced directly the competition of the great railroad companies that resulted in the beginnings of settlement by farmers largely from the Middle West. The Great Northern, the Northern Pacific railways as well the smaller trunk lines, the Seattle, Lakeshore and Eastern Company, and the Central Washington Railroad all constructed lines across Adams, Lincoln, and Douglas counties in the 1880s. The Lincoln County towns of Harrington and Wilbur were put on the map during the 1880s when the railroads completed construction of track and began operating across the Big Bend country. When no more land was available under the Homestead Act for the newcomers, the railroads advertised their own lands in their promotion to bring people to the area. They began both to lease and to sell some of their land-grant lands. With access to markets, the region's farmers could begin to realize the profits in wheat produced from the rich volcanic soil that supported the bunchgrass in this arid country (Illustrated History 1906, 147, 165-66, 791; McGregor 1986, 88).

In terms of agricultural pursuits in the Upper Columbia River region, the stockmen preceded the farmers by two decades. Cattle drives headed north to the mining camps in the Ft. Colville area during the 1850s. After peace had been made by 1859 with the Native Americans

who lived east of the Cascades, the government encouraged settlers to come to the area. The Yakima and Walla Walla valleys provided the point of departure for the stockmen whose livestock came to the northern and eastern sections of the Upper Columbia River region as well as into Central Washington in the 1860s. For ranchers in the Colville Valley, range was plentiful between the benchlands along the Columbia River and the higher elevations of the Okanogan Highlands. For others, initially, cattle and then sheep were driven to graze on the bunchgrass prairies in the Big Bend country. Wintering in the Scablands, the bands of sheep spent their summers in the higher ranges of the Bitterroot and Coeur d'Alene mountains while the cattle grazed on the lower riparian areas (ibid., 84-85).

Attempting to capitalize on the mining stampedes to the Upper Columbia River, Idaho, Montana, and eastern Oregon, stockmen moved their sheep and cattle onto the bunchgrass-covered lands across the Big Bend country and into the Colville Valley. The stock venture proved to be quite profitable even for the earliest arrivals. Free shelter and fodder from the vast lands on the public domain fostered herds of horses, cattle, and sheep, some of which new settlers purchased on arrival. What also helped the growth of the cattle business in the 1870s in all parts of the Upper Columbia River area was the demand for stock for Wyoming and Montana ranches and for meat from the growing urban centers east of the Rocky Mountains. Companies such as Lang and Ryan of Kansas City, Missouri, were developing ranches in Montana and Wyoming and purchased thousands of head of cattle from eastern Oregon and Washington in the late 1870s. In 1880, these enterprises purchased 62,000 head from Washington alone.

How many of these animals were grazing on lands within the Upper Columbia River area is difficult to determine. The state government did not draw the modern-day county lines for most of the area until the 1890s. It could be surmised, however, that stockmen in the Upper Columbia River country participated in this boom until the devastating winter of 1880-1881 when much of the cattle and sheep in the state east of the Cascades froze to death. In some counties in eastern Washington as much as 78 percent of all the stock died, which also meant an exodus of many of the people. But stockmen continued to drive cattle and sheep east into this watershed via the Yakima Valley as well as north from Oregon. Lands in the western part of the Palouse country, considered unsuitable for farming, were all that were left for those stockmen arriving in the late 1880s (Oliphant 1946, 25-30; Illust Hist/CenOr 1905, 561; Illust Hist/SE 1906, 662; Paul 1976, 49ff.; Yoder 1942, 141-43).

One of the last major drives from eastern Washington occurred in 1882 when Lang and Ryan drove out 12,000 cattle and 30,000 sheep. Some have suggested that such large drives

took place in the 1880s because the range was wearing out and the farmers were coming. Indeed, the governor of the Washington Territory wrote the secretary of the interior in 1888 that "bunchgrass is giving place to fields of wheat and other cereals" (Oliphant 1946, 40).

Some people, like Jacob Harder of Denmark who came to the Northwest in the 1870s after his country was annexed to Prussia during the Franco-Prussian War, became stockmen with their families, remaining in the business into the twentieth century. Starting out with his stock on the Snake River on the unfenced range south of Washtucna, Harder and his brothers pushed further north when the homesteaders arrived in the 1880s. Buying scabrock lands in the area west of Spokane in today's Lincoln County, Harder drained the swampland and made it into pastureland, thriving there as a cattle rancher for several decades. When farmers began to fail in the twentieth century in the northern part of Adams County, the family bought the acreage and by 1937 had a ranch of 110,000 acres (Wirsing 1977, 31ff).

Others, such as the McGregor brothers originally of Ontario, Canada, changed their use of the land as times changes. Arriving with the first major migration to the Columbia Plateau after the Civil War, Archie and Peter McGregor homesteaded initially in the sandy desert of the Big Bend country. Not succeeding as farmers, they abandoned their lands as many others did at that time, and became sheepherders in 1883. Within three years, they had a flock of 2,000 sheep. They, along with other sheepmen in the 1880s and 1890s, grazed over 1 million of these animals across the Big Bend area that had formerly supported cattle. The town of Sprague became a major sheepshearing center in those years. Wintering their animals in the scablands, the McGregors along with other sheepmen trailed their flocks 150 miles to graze in the summer pastures of the Bitterroot Mountains of Idaho and the Okanogan Highlands of northern Washington. By the 1890s, it was reported that these pastures, having been overgrazed for decades by cattle, had become infiltrated with a second growth of forbs that had been unwittingly introduced from Europe and Asia. The "Jim Hill" mustard grass turned out to be a better plant for seasonal sheep feed than the native grasses had been. While the cattle failed to fatten on this plant, the sheep thrived. The meat market may have been an erratic one for the cattleman, but the wool market proved to be a steady one with the option to sell surplus sheep for mutton (McGregor , 84-86; Meinig 1968, 291-292).

Not only did the collapse of wool and mutton prices during the Panic of 1893 drive many sheepherders out of business in eastern Washington, but so did the pressures of the Northern Pacific Railroad Company (NP). A land grant railroad, the NP got an injunction against the sheepherders who had been using as much as 2 million acres of the railroad's land in the Big

Bend area for winter range. Demanding that the stockmen lease lands from them, in 1896 the McGregors leased 22,359 acres for $200 for the first year and $400 for each year after for 10 years. A year later John McGregor bought outright, for $1 an acre, 5,389 acres on Rattlesnake Flat in the Big Bend. The railroad believed that this land was totally useless and would soon be overgrazed completely. The major miscalculation on the railroad's part was the richness of this land that had supported bunchgrass for so long. In 1903, when Ritzville became the number one shipping point for wheat in the United States, John McGregor sold his 5,389 acres for over $30,000, or five times the amount that he had paid for it. This was the start of the family's transition from purely stockraising to major agribusiness in the twentieth century (McGregor , 87-88).

Most stockmen did not make the transition that the McGregors did as homesteaders began to arrive in even greater numbers by the 1890s and into the twentieth century. Supported by numerous federal land laws, the farmer purchased public domain land that the stockmen had used for free for decades. Unable to purchase enough land on which to graze his animals, the stockman lost out to the farmer for the most part.

In the northern part of the Columbia River area, the Colville National Forest was created in 1907 from 869,520 acres of public domain lands. This brought greater range control and even access to rangeland for the stockmen. By the 1930s, some 19,000 sheep were grazing on benchlands along the Columbia River through the Okanogan Highlands, where in prior decades hundreds of thousands of sheep had roamed freely (Davis 1983, 753; Forest Survey 2:1936-1937, 3; Meinig 1968, 293-294).

Fifteen years before the NP had filed an injunction against the sheepmen of the Big Bend country, it had built track across the southern portion of the area, putting the cities of Sprague, Davenport, and Harrington on the map by the mid-1880s.

The railroads saw two ways to build through the Big Bend country during the 1880s, creating essentially two patterns of settlement for homesteaders. People found that the land southwest of Ritzville was good for farms as was the higher, wetter, and richer area directly west from Davenport across the Big Bend Country. By 1890 a band of farms stretched across the Big Bend from Davenport to the Grand Coulee (ibid., 275).

The 1890s brought the arrival of the Great Northern Railway, which completed track across Lincoln County in 1892. New homesteaders met with success as farmers using dry farming techniques. By 1897, 6.5 million bushels of wheat had been produced by 1,500 farmers in Lincoln County. Of the 800,000 acres under cultivation, 350,000 were producing wheat.

With news of this farming success, hundreds more settlers came to settle in the county. By the turn of the century, production of wheat was thriving -- the area around Creston was producing 300,000 to 400,000 bushels of wheat annually. Odessa, settled by Russians, also proved to be a major wheat producing area, shipping 600,000 bushels in 1900. By 1904 no more government land was available for homestead entry in Lincoln County. Throughout the 1890s and into the twentieth century, settlers continued to come to Adams, Douglas, and Franklin counties in the Big Bend country. The prescient Isaac Stevens had proved to be correct in his assessment of the land's potential nearly 50 years before (Illustrated History 1906, 111-112, 142, 195, 587, 793, 921ff.; Meinig 1968, 196-198; Wirsing 1977, 38-39).

To the north of the Columbia River across from the Big Bend area lay the lands of the Colville Indian Reservation. Executive orders in 1872 and 1879 created the Colville and the Moses reservations, respectively. (It should be recalled that the Salishan-speaking Okanogan people did not sign the treaty with Isaac Stevens in 1855 at the Walla Walla meeting and thus continued to occupy lands that they had used for subsistence for centuries.) The Moses Reservation was located west of the Okanogan River and north to the Canadian border. The Columbia River provided the eastern and southern boundaries for the Colville Reservation, while the Okanogan River bounded the territory to the west.

The northern part of the Colville Indian Reservation that had been created by Executive Order in July 1872 also fell to the pressure of mining interests who saw the potential of mineral wealth from the area. By 1892, the northern lands had been returned to the public domain, which led to the opening of thousands of acres to mineral entry in 1896 with the southern lands (or present reservation) opened to miners by 1898. While homesteaders legally entered the northern lands in 1900 (Mooney 1976, 7), the southern lands were not open to settlers until 1916. However, staking a mining claim on the southern lands gave a foothold to many future white settlers there. Most of the more than 12,000 mining claims in the southern portion of the reservation proved to be unproductive. But by establishing a claim on future prime farmland, these people prevented allotments being made to the natives from these lands (Gough 1990, 66-67).

Gold prospecting occurred in the Chesaw, Myers, and Mary Ann Creek areas in the north for a number of years (Mooney 1976, 6-7). During World War I, there was a demand for iron ore from Copper Mountain (ibid., 16-17). The people who settled in and around Republic in these years came because of the mines (ibid., 44).

As it turned out, however, there were only two productive mines on lands in the southern

area of the reservation; namely the Shamrock Mine, which produced mainly silver and lead, and the Apache Mine, which produced about $250,000 in gold between 1908 and 1940 (Gough 1990, 67).

Ferry County includes part of the reservation and part of the Colville National Forest. The lay of the land did not lend itself to irrigation so dry farming was practiced there in the twentieth century. By 1834 there were only 32,000 acres under cultivation with 140,000 for grazing and grasslands. Agricultural development lay within the main valleys producing hay, small grains, and fruit (Forest Survey 2:1936-1937, 2).

The main timber activity in the Upper Columbia Region took place in Ferry County since the Big Bend area was nearly treeless with the exception of Badger Mountain, which the homesteaders had stripped bare by 1900. Ponderosa pine covered the southern portion of Ferry County, extending to the north to the valleys of the San Poil and Kettle rivers. Over 70 percent of this pine tree lay within the Ferry County section of the Colville Indian Reservation. The federal government, through the Colville National Forest, owned the second largest amount of timber in this county as of 1934, estimated to be at 1.5 billion board feet of Douglas fir and western larch. Its timber sales operations remained relatively small from 1921 to 1930 with the exception of a sale of 67 million board feet on Sherman Creek in the eastern part of Ferry County. By the mid-1930s, most of the cedar in the county had been cut and what remained was of poor quality (ibid., 7-8).

Irrigation for the Big Bend country of the Upper Columbia River area had been talked about since 1892. When 2 million acres of good land that had been under cultivation for the World War I effort yielded nothing in the summer of 1918, the idea sprang up for what eventually became the Grand Coulee Dam. William Clapp of Euphrata and others knew that in prehistoric times the lands of the Columbia Basin had been at the bottom of a lake that had covered all of Central Washington. This area became the wheat country of eastern Washington. During the glacier period, the Columbia River had been dammed by a glacial drift that turned the flow into the Grand Coulee. Some time later the river abandoned the coulee and returned to its original course. If the Columbia River had been dammed once in this place, why not again?

The battle over what form the irrigation effort would take lasted for well over a decade. The Bureau of Reclamation (BOR) agreed to a project in 1932 that would provide for a 400-foot high concrete dam at a cost of $100 million. The water would be the source of irrigation for the farmers of the Big Bend country and would give cheap power for rural areas through hydroelectricity (Mitchell 1965, 10-13).

With the election of Franklin D. Roosevelt in 1932, the project was pushed forward as a jobs creation measure under the Public Works Administration (PWA). The BOR supervised construction. With $377,000 from the state of Washington to help with the preliminary work, the job was under way by September 1933. Just a year before, the population of Grand Coulee had been six. By the end of 1934, it had grown to 7,000. To make way for the waters to be backed up by the dam, ten towns had to be razed and moved. Kettle Falls and Marcus were moved to higher ground. Towns such as Peach, Fruitland, and Lincoln were razed and never rebuilt. Workers burned entire structures to the ground and cut all trees and scrub; 33 million board feet of marketable timber was cut and taken to private sawmills. Finally, a huge cable was dragged across the 151 mile area in the final weeks of site preparation to scrape all the vegetation from the land, leaving no possibility for anything to float to the surface and cause trouble.

The Native Americans of the Upper Columbia had for generations traditionally used Kettle Falls as a site for chinook salmon fishing. What had once been rapids now became a pond. Even if the falls had not been submerged, salmon could not get over the dam. Compensation by the government did not replace this great loss of livelihood to these people as well as the disruption to their entire culture (Morgan 1949, n.p.; Roe 1992, 95-98).

The first dam built and in operation on the Columbia River before 1940 was the Rock Island Dam, completed by the Puget Sound Power and Light Company in 1931. Starting in 1930, adult salmon and steelhead migrating up the Columbia River were trapped at Rock Island Dam fishways and then transported to four tributaries below the Grand Coulee site, namely the Wenatchee, Entiat, Methow, and Okanogan rivers. Fifty percent of the adults were held in ponds, artificially spawned, and the eggs incubated at three fish hatcheries constructed in the Wenatchee, Entiat, and Methow watersheds. Officials did this for four years. Finally, beginning with the 1934 migration, all barriers to upstream movement had been eliminated at the Rock Island Dam, and salmon began to return to their newly adopted streams where they had been spawned (Holbrook 1965, 58).

There is no question that the face of the Upper Columbia River would change after 1940 when the Grand Coulee Dam began its operations. But even before this time, through some mining, grazing, logging, immigration, and railroad construction, the landscape had been altered, especially in the north near the Canadian border with mining and logging and across the Big Bend country with the railroads and the ranchers.

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PEND OREILLE RIVER WATERSHED

Part of the Northern Rockies watershed system, the Pend Oreille River is tucked in the northeast corner of Washington state. This rugged, mountainous, terrain saw little settlement or development until the late nineteenth and early twentieth centuries. Located at the southern end of the Canadian Selkirk Mountains, the Pend Oreille River Valley is generally u-shaped with steep-sided slopes. The many rapids on the river hindered navigation for years. Although this watershed contained a variety of fish and wildlife, its heavily forested slopes along with a scarcity of flat land discouraged settlement to any great degree until modern times. The Lower Pend Oreille River flows northwest out of the Rockies -- its source -- and into the Columbia River.

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

There is no evidence of prehistoric habitation in the Lower Pend Oreille watershed, probably because of the rugged terrain, the nearly unnavigable river, and the severity of the climate (Bussey 1981, 8-9).

Protohistoric Settlement Activity
(1500 to 1800)

Tradition and evidence indicate that the Kalispel people, Salishan speakers, lived on the east side of the Pend Oreille River from Newport to Cusick, Washington, and were affiliated culturally and linguistically with the Flathead and the Kutenai. Tradition holds that the Kalispel lived east of the Rocky Mountains until the Blackfeet wars that began around 1700. Through several migrations, the Kalispel finally crossed the Rockies by the mid-eighteenth century, determining their lands to be south of the 49th parallel or the international boundary with Canada, from Priest Lake and up the Pend Oreille River.

Roaming over an area as large as 4 million acres, they hunted, gathered, and fished -- the typical means of living for mountain-oriented Native American people. The Kalispel's seasonal migration led them to the camus fields near Cusick, Washington, to gather this valued root, sharing the area with the Spokane and Colville peoples. These latter Native Americans permitted the Kalispel people to come to their fishing sites during the salmon runs that occurred between June and October each year. The spring and summer months were passed in gathering food for the winter, and the winters were spent forty miles west of Lake Pend Oreille on both shores of the Pend Oreille River for a distance of nine miles. This life style along with the lay of the land made these people reputed for their skills with canoes, much like that of the Nez Perces with the horse (ibid., 11-13; Carriker 1973, 3-15).

Into this harmonious, generally peaceful cycle of life in the late eighteenth century entered the horse, the rifle, and disease, three of the most destabilizing elements that could be introduced into these Native Americans' worlds. Among the first to receive the horse, the Native Americans who lived in the Pend Oreille River watershed participated early in the trade east of the Rocky Mountains. An even greater attack on the social fabric and way of life for these people, however, was disease that Euro-Americans brought personally or through others to the Columbia River Basin region. The Kalispel tribe experienced a small-pox epidemic in 1800 that greatly reduced their population, a disaster that happened to all of the native peoples on the Columbia Plateau and the surrounding regions. Such population decimation suggests that the units of people needed to gather, forage, fish, and hunt for survival had altered greatly by the beginning of the nineteenth century -- an alteration that proved irreversible as more Euro-Americans arrived (ibid., 6; Miller 1985, 110 ff.).

Preindustrial Era Settlement Activity (1775 to 1865)

The early explorers did not travel extensively in the Lower Pend Oreille River watershed. David Thompson's "Voyage of a Summer Moon," which he made in 1811 was not his or other fur traders' first trip through the watershed. Three years before, in 1808, he along with other members of the Northwest Company (NWC), had expanded the enterprise southwestward from the Saskatchewan River to the headwaters of the Clark Fork and Kootenai rivers to open trade

with the Kalispel or Pend Oreille natives. Lake Pend Oreille became a central trading place with the establishment by Thompson of the "Kullyspell House" on the northeast shore of the lake in 1809. Some fur traders passed through here in the early years. However, this watershed never became a regular route for the Canadians because the Pend Oreille River, the chief means of transportation through the country, flowed north and away from the Columbia River, which many believed to be central to the trade in the Pacific Northwest. In addition, the Kalispel themselves did not encourage trade and generally were left alone until the 1840s.

When John Work opened Ft. Colville for the Hudson's Bay Company (HBC) in 1826, he established an important trading route through the Pend Oreille watershed between this post and the Rocky Mountains (Thompson 1915, 412; Carriker 1973, 1-3; Meinig 1968, 78).

Canadian and English traders traversed the watershed to Ft. Colville at Kettle Falls until the 1840s. As a result of this trade, the Pend Oreille people came to know the trade goods of the Euro-Americans as well as their diseases.

Unlike the fur traders who were merely passing through, the Jesuit missionaries, led by Father Pierre DeSmet, established St. Ignatius Mission in 1844 on the east bank of the Pend Oreille River near Brown Creek. It was the Jesuits who introduced farming to the Kalispel people. A shortage of deer meat in the harsh winter of 1844-1845 due to overhunting in past years by these Native Americans resulted in terrible suffering and starvation. Responding to this near catastrophe, the mission fathers were determined to teach these people how to farm. It took three years before the mission achieved a successful harvest because the 300 acres of wheat-sown lands near Lake Calispel were flood prone. In 1854 a flood destroyed the mission, and it was moved to the Flathead Valley in Montana. Unhappy with life there, the Lower Kalispel returned to their lands on the Pend Oreille River a year later. Unable to return immediately to their lives as farmers, many of the Kalispel turned to drink and gambling. In 1856, a Dr. Lansdale, an emissary of Isaac Stevens, the territorial governor of Washington, met with the tribe to discuss removal to the Jocko Reservation in Montana. Chief Victor and his brother refused to leave their lands on the Pend Oreille River (Dingee 1930, 11-13; Carriker 1973, 37-41).

Some Americans also passed through this area in the preindustrial era. Lansdale's meeting with the tribe's leaders was not the first time one of Stevens' representatives had passed through the Pend Oreille River watershed. Dr. George Suckley and his men had separated from Stevens at the Clark Fork River in 1853, continued to Lake Pend Oreille, and then went westward on the Pend Oreille River, making good time in their canoes. Surveys for the Mullen Road in 1859 brought scouting parties of the U.S. Army into the watershed on a reconnaissance

mission which determined the terrain was too harsh for permanent settlement. This was the only military foray into the watershed in these years because the troops who pursued the Yakima, Palouse, and Spokane warriors during the Yakima War between 1855-1858 stayed to the south of this area (Carriker 1973, 32, 42-43; Mullen 1863, 14).

The discovery of gold on the Pend Oreille River in the Colville area in 1855, followed by that on the Pend Oreille River in 1860 near Metaline Falls, did not greatly disturb the Kalispel /Pend Oreille people. It was the Wild Horse Creek strike of 1863 in British Columbia that brought hundreds of people through the watershed and trespassing across Kalispel lands. Even though placer miners had exhausted the area by 1860, a few stockmen -- former HBC traders or Iroquois "freemen" -- established a presence to support the Colville, Idaho, and Canadian mining camps (Dingee 1930, 15; Carriker 1973, 43-45).

Modern Era Settlement Activity (1866 to 1940)

Like other Native American Salishan-speaking peoples who lived in the watersheds east of the Cascades in Washington state, the Kalispel people were not removed to reserved lands by the 1855 treaty that Governor Isaac Stevens had made with the Sahaptian-speaking peoples of the Columbia Plateau. Despite efforts made by U.S. Indian agents in the late nineteenth century, Chief Victor and his descendants refused to leave their lands along the Pend Oreille River, having once again made their farmlands come to life by the 1860s. In the 1880s, when other Native Americans of the Pacific Northwest were living miserable lives on crowded reservations, the Kalispel continued to gather the camas and to fish and to hunt in the Pend Oreille watershed much as their fathers had. The tranquility of this existence came to an end with the arrival of the railroad (Carriker 1973, 45-53).

Permanent settlement by Euro-Americans in the Pend Oreille watershed occurred in the late nineteenth century with the coming of the railroads. At the eastern end of the watershed in the 1880s, surveyors and engineers from the Northern Pacific Railway Company (NP) began laying track around the shores of Lake Pend Oreille. This activity did not disturb the main villages of the Kalispel people that were located further west. The more track that the NP laid, the greater the land grant it received. Between 1881 and 1887, the NP disposed of 75 acres in

this area for $26,323, all of which was invested for further construction.
Along with the railroad came surveyors from the General Land Office (GLO), who began surveying lands along the Pend Oreille River in 1884.

Since there was no formal treaty with the Kalispel, their lands were treated as any other land in the public domain. White settlers would soon come. And just one year after completion of the GLO's survey of the Pend Oreille or Kalispel Valley, engineers from the Great Northern Railway (GN) arrived in Pend Oreille County. Not a land grant railroad as its competitors were, the GN spent a fortune promoting the lands through which it passed. Operations through the watershed began in 1892. Final government surveys of lands for settlement did not take place until 1900, at which time a number of people came to settle in the northern part of the county as homesteaders. In 1907, the Idaho and Washington Northern Railroad, a branch of the Chicago, Milwaukee, and St. Paul Company, laid track as far as Newport and extended it to Ione in 1910, which meant further settlement downriver toward Metaline Falls (Dingee 1930, 20-24; Carriker 1973, 63-64).

Supporting the construction of the railroad were several sawmills located in the southern part of Pend Oreille County. Wood's Portable Mill cut the first ties for the Great Northern. The county's first permanent mill was Brace Mill, located in Newport, which opened by 1892 (Dingee 1930, 27).

The extent of environmental degradation that occurred in this watershed due to railroad construction is not certain. However, there is no question that the use of timber for the railroads could have resulted in soil erosion, landslides, and some stream spoilation.

The railroads did provide economic development, and the timber industry was one of the first groups to take advantage of this new means of transport to market. By the turn of the twentieth century, several timber companies saw the potential of profit from the forests in the Pend Oreille River watershed. In 1902 both the Empire State Lumber Company and the Newport Milling Company began operations; the former in Cusick, the latter in Newport. The following year, Dalton Kennedy Lumber Company came to Dalkena. Within the decade, the Panhandle Lumber Company had acquired 65,000 acres of Northern Pacific Railway timberlands. This acquisition together with the opening of the Idaho and Washington Northern Railway to Ione in 1910 resulted in the Panhandle Company opening a mill in Ione in the same year.

In the first decades of the twentieth century, the Panhandle, Dalkena, and Phelps lumber companies dominated the downriver country around Ione. The Humbrid Lumber Company was

the number one entity in the Newport area further upriver. By the 1920s and the 1930s, match companies entered the wood products' industry in Pend Oreille County. Diamond Match opened a plant at Cusick, and the Ohio Match Company opened one further downriver at a point just north of Metaline (Dingee 1930, 27-28).

The timber industry was not the only business enterprise that the railroads assisted during these years. As early as 1906, some 34,100 pounds of lead were mined from the Metaline District in Pend Oreille County (Fulkerson 1958, 12). But in contrast to neighboring Stevens County with its nine mining districts, there were only two in the Pend Oreille River watershed, the Newport and Metaline districts. The Newport area, located in the southeastern corner of the county, proved to be only a minor producer of metal. The more active of the two districts was the Metaline, located over a 400 mile square mile area in the western part of the county and cut by the Pend Oreille River valley (See map, ibid., 3). It produced a tremendous amount of lead and zinc between 1905 and 1940.

Major mining operations began in the Metaline District with the completion of a branch of the Idaho and Washington Northern Railroad by 1910. The following year, over 20,000 pounds of zinc produced from the Oriole mine in the Metaline district -- the first zinc ever mined in northeastern Washington -- was shipped out to British Columbia to be processed at the smelter there. Some of the Metaline mines lay idle for several years while the owners upgraded their production capacity. For example, the Lead and Zinc Company, a property of the Clark conglomerate, did not return to production until 1915 when the a planned 250-ton concentration plant -- with 2 Blake crushers, a Chilean mill, classifiers, jugs, and tables was installed. This Clark property shipped zinc concentrate and oxidized crude ore for the first time since 1911 from a concentration plant with a 100 ton increased capacity. Such improvements made to this and to other mines in the Metaline district must have taken place for in that year alone, more than 244,000 pounds of zinc were shipped out to be smelted. By the time of the U.S. entry into World War I, the British Columbia smelter had been shut down because of strikes and a shortage of coke. As a result, the northeastern mines shipped the ore to a smelter in Tacoma. But even with this greater distance, the Metaline District produced 129,639 pounds of lead and more than 1 million pounds of zinc in 1917.

Several factors brought about a decline in mine production in the years following the war. Shipbuilding in the Puget Sound area led to a labor shortage. The 1918 influenza epidemic compounded the problem, together with the general decline in the price of metals worldwide until the mid-1920s. The Metaline District was revived with the acquisition of a zinc mine ten

miles north of Metaline Falls by the Pend Oreille Lead and Zinc Company. With the exception of 1930, this mine helped to boost the district's production from more than 2 million pounds of zinc in 1929 to over 27 million pounds by 1940. By 1937, the Pend Oreille mine had installed a 5,000 horsepower hydroelectric plant on the Pend Oreille River below Metaline Falls. This was followed two years later by a modern 700 ton flotation mill (Fulkerson 1958, 7-9).

What was the effect on the landscape and the environment as a result of these mining efforts within the Lower Pend Oreille River watershed? Of great significance was the absence of a smelting operation, which results in lead and arsenic runoff that can damage water, trees, and wildlife. However, timber had to be cut to support the mine. Where and how much is not known, but soil erosion and landslides would have altered both stream flow as well as streamlife. Tailings from the mills probably had some amount of mercury and other heavy metals that could have polluted nearby streams and the Columbia River itself.

Compared to the timber and mining industries, there were few, if any, commercial agricultural undertakings in the Pend Oreille River watershed. Something of a land rush took place between 1891 and 1892 with the help of the GN. In these two years alone, settlers acquired more than 8,000 acres of Kalispel lands. The Panic of 1893 slowed settlement, but the railroad companies continued to acquire Kalispel lands and waited for future settlers.

With the return of good times at the end of the 1890s, steamboats, cramped with homesteaders, plied the waters of the Pend Oreille River northward from Newport. As many as twelve different boats became a regular sight on the river by 1900. In that year, settlers filled the land south and west of Newport, and scattered farms appeared on the hills for 50 miles down river. The nucleus of settlement was focused at Joe Cusick's farm where the Great Northern Express Company opened an office. Mostly subsistence homesteaders came at first to stake a claim, but the land did not lend itself to major farming or ranching endeavor. Only about 13 percent of the entire area of Pend Oreille County was under cultivation in 1930. Ten years later the value of all the farm products sold in the county was less than $250,000 (Fahey 1993, 75-84; Department of Commerce 1932, 432; 1942, 226).

Washington state and the federal government offered little in terms of irrigation projects for the area until after World War II.

But a federal presence was felt on other levels. Federal surveys had opened lands for settlement in the late nineteenth and early twentieth centuries (Dingee 1930, 23). With creation of the Colville and Kaniksu national forests in 1907, over 800,000 acres just for the Colville were removed from settlement. District rangers established a higher profile for the federal

government on these forestlands, mainly for fire protection. Prior to World War II, not much timber was cut. Besides the U.S. Forest Service, the Bureau of Indian Affairs of the Department of the Interior worked with the people who lived on the Kalispel Indian Reservation, which was created in 1914 (Davis 1983, 53).

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SPOKANE RIVER WATERSHED

The Spokane River rises in the Rocky Mountains and flows in a northwest direction for about 200 miles until it empties into the Columbia River. The flood that resulted when the ice dam broke on the Clark Fork River near Missoula, Montana, quite likely formed the landscape through which is passes. From its mouth, some 200 feet wide, to the falls at Spokane, the river flows through deep canyon country that is quite difficult to cross for a distance of 70 miles. Although the soil's mixture of loam and gravel was cultivated successfully from earliest times by the Euro-Americans, the arid nature of the land had to await major irrigation in the twentieth century to be productive
on a major scale.

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

People were living in the Spokane River watershed as early as 8,000 BP (Walker 1977, 6). Over the millennia there was increased contact between these Columbia Plateau natives and those who lived on the Idaho Panhandle and even south into Oregon.

Weather played a major factor in early peoples' lives as to where and how they lived. Although there is disagreement about the details of climate change that took place over time on the Columbia Plateau, there is general agreement that 13,000-8,000 BP was a cool, moist period; 8,000 to 4,000 BP, a warm, dry period; and from 4,000 BP to the present, a stabliization in climate occurred that has remained to modern times (Schalk 1982, 11-12).

Moving south to north across the Upper Columbia region, the way of life of inhabitants of the area stabilized from 4000 BP onward. Hunting and gathering, not agriculture, sustained these people over the millennia (Chatters 1982, 140-142).

Protohistoric Settlement Activity
(1500 to 1800)

A Salishan-cultural group, the Spokane people occupied the lands and valleys on both sides of the Spokane and Little Spokane rivers in eastern Washington as well as the territory along Latah and Chamokane creeks. There were essentially three bands of the Spokane people. The Upper Spokane lived from Spokane Falls east to near the present-day border of the states of Washington and Idaho. The Middle Spokane occupied the area around Hangman's Creek as well as the lands on and near the Little Spokane River. And finally, the Lower Spokane resided to the west down the Spokane River to its confluence with the Columbia (Spier 1936, 8; Ruby and Brown 1981, 217).

For all of these groups, Kettle Falls provided a major and important site for salmon fishing for many years. In addition to this, the Lower and Middle Spokane peoples fished the Little Spokane River for trout. In the summer and fall these people gathered and hunted in the Plateau country south of the Spokane River near Davenport and south into the Palouse. They shared the camas prairie near Cusick, Washington, with the Colville and Kalispel peoples. Not confined strictly to the Plateau for subsistence, the Upper Spokane acquired the horse in the eighteenth century and hunted in the Rocky Mountains and on the Great Plains with the Flathead, Kalispel, and Nez Perces peoples (ibid., 218). Other native peoples who occupied lands in this watershed included the Coeur d'Alene who migrated seasonally from headwaters of the Spokane River, just above Spokane Falls to Lake Coeur d'Alene (ibid., 7).

Preindustrial Era Settlement Activity
(1775 to 1865)

The early explorers traveled somewhat more in the Spokane River watershed. During his descent of the Columbia River in the summer of 1811 on his "Voyage of a Summer Moon," David Thompson passed the mouth of the Spokane River as he made his way south to Astoria. However, on his return later that summer, he took a shortcut on his ascent of the Columbia River by continuing on the Snake River to the mouth of the Palouse River where he secured horses for an overland trip to the Spokane House. While shortening his return by avoiding the longer water

voyage around the Big Bend, he also traversed the Spokane River watershed in August. He commented that the soil and grass improved as he approached the forested borders of Spokane country, but that the land was "parched for wanting rain, which rarely or never falls during the summer months" (Meinig 1968, 38). Three years later Gabriel Franchere traveled north on the Columbia River on his return trip to Montreal and passed the mouth of the Spokane River as well, but he did not enter the watershed area and thus gave no description of the landscape inside.

Others who explored the watershed area included David Douglas in 1826, a noted botanist, who recorded vegetation found there. Ten years later Samuel Parker explored the interior of the Columbia Plain for potential mission sites of the American Board of Commissioners for Foreign Missions. The Spokane people were among those he met as he traversed their country. And finally, the report and map that Charles Wilkes produced from the 1841 expedition on behalf of the U.S. government resulted in greater firsthand knowledge of the interior regions. Wilkes observed that the lands between Lake Coeur d'Alene and the Columbia River would be good for some farming and that the valleys had grasses that would support stock (Davies 1961, 64ff.; Meinig 1968, 119; Wilkes 1849, 54).

In 1810, the year before David Thompson made his trip down the Columbia River, the North West Company (NWC) had sent representatives Jaco Finlay and Finan McDonald to open a trading post -- the "Spokane House" -- at the juncture of the Spokane and Little Spokane rivers. The company selected this site because they believed that its location in the transitional zone between the mountains to the east and the Columbia Plain would offer a focal point for the fur trade with the Coeur d'Alene, Kalispel, and Kootenai to the east. The Americans also believed in the merits of the location. The Pacific Fur Company, John Jacob Astor's company, opened the rival Spokane Post on the Spokane River just a few miles from the NWC operation. A year later, during the War of 1812, Alexander Ross sold the Pacific Fur property to the NWC.

When the North West Company merged with the Hudson's Bay Company (HBC) in 1821, the HBC ran the Spokane House until it closed in 1825. Indeed, the British continued to dominate the fur trade on the Columbia Plateau almost entirely. On acquiring the NWC in 1821, the HBC tasked George Simpson, then the governor of the Northern Department of Rupert Land, to survey the operations of the newly acquired posts with an eye toward greater efficiency and profitability. Spokane House's reputation over the years for its high overhead and low volume in the fur trade made it a target for elimination. Donald Mackenzie had described it in 1816 as "a useless and expensive drawback upon the trade of the interior." Simpson must have agreed for it

was closed in 1825. Neither the British nor the Americans realized at the time how far out of the forested region a Spokane Post was, nor that the Spokane people would not be interested to act as partners in the trade (Meinig 1968, 57ff.; Wishart 1992, 119). In addition, there were few fur-bearing mammals in the Spokane River watershed.

The fur desert policy of the HBC never applied to this watershed. Knowing that in 1828 a treaty would be renegotiated between Great Britain and the United States regarding the ownership and occupation of the Oregon country, the HBC's goal was to trap out as many of the beaver and other fur-bearing animals in the area as possible in order to leave fewer potential profits for the Americans (Merk 1968, xxiiff.).

Actually, the decline of the beaver trade had already begun to set in by the late 1820s when the Spokane House was closed. Competition from the Americans and the introduction of the steel trap were some of the reasons (Lewis and Phillips 1923, 47-48).

Some have suggested that the Spokane people were never really interested in participating as partners in the fur trade (Meinig 1968, 65). Others have argued that the population decline of the native peoples in the nineteenth century led to a greater demand on their time for their own subsistence activities and thus less time for the fur trade. Trade within the watershed and at the post itself never flourished (Grabert 1973, 121-22). The North West Company, however, brought Iroquois to the Oregon country to participate in the trade. More experienced in the entrepreneurial trading ways of the Euro-American, these Native Americans proved to be more active and useful partners for the fur trade than those who were native to the Columbia Plateau (Nicks 1980, 90-92).

Not only did these Iroquois participate in the trade, many of them as "freemen" became settlers in the southern Colville and Spokane watersheds after retiring from the HBC in the 1840s. One of the more famous of these people was Antoine Plante who settled in the Spokane Valley in the 1850s. Running a stock farm to supply traders, immigrants, and miners with as many as 400 to 500 head, this enterprising individual, part French and part Native American, also operated the first ferry across the Spokane River in 1856 (Peltier 1983, 12ff.).

Of great significance importance to the Spokane and to all the native peoples of the Columbia Plateau was this tribe's relationship with George Simpson. When two Spokane and Kalispel chiefs suggested that they would like for their sons to be educated, Simpson more than readily responded by sending two of the boys to the mission school in Red River Valley in Saskatchewan. Upon returning from the school, these people would go to St. Louis in 1834 to request missionaries to come to the Pacific Northwest. Both Protestants and Catholics would

respond to this request, leading to the arrival of the missionaries on the Columbia Plateau in 1836 (Miller 1985, 209ff.; Meinig 1968, 117). A real definition of the Spokane River country and its potential for the future development of the Columbia Plain did not take place until Isaac Stevens came to Washington in 1853 as territorial governor and superintendent of Indian affairs. He made a comprehensive land survey of the eastern Washington state area between the Cascades and the Rocky Mountains. Commissioned by the War Department to conduct the survey of the Columbia Plateau, Stevens' task was to assess the potential for railway travel through the Northern Rockies. Stevens' report of the late 1850s stressed the potential for the Spokane River watershed area as a major axis for future railroad construction across the Plain. Seeing the old fur trade route from the Clark Fork to Coeur d'Alene, he believed that the Spokane River and its tributaries could provide paths for railroad links to the interior Columbia Plain. This survey led to greater government and public awareness of the Spokane River watershed and its resources (ibid,, 173-174).

Stevens' survey came at time when the federal government had discouraged settlement in the Oregon country east of the Cascades because of unrest between natives and Americans. In November 1847, some Cayuse people had massacred 14 Americans, including Marcus and Narcissa Whitman, Protestant missionaries, who had run the mission at Waiilatpu since 1837. As a result of this conflict, a brief war against the Cayuse took place that resulted in the prohibition of American settlement in the lands east of the Cascades and north of the Columbia River. Wearing his hat of Indian superintendent of the Washington territory but also with an eye toward obtaining "rights of way" for railroad development on Indian lands, Stevens negotiated a treaty in 1855 at Walla Walla with members of Sahaptian-speaking peoples. These were the people who lived from the Yakima Valley to the south and east -- the Yakima, Walla Walla, Cayuse, Umatilla, and Nez Perces. The treaty resulted in the native peoples giving up over 50,000 square miles of their lands in return for reserved lands which ranged from the Yakima Valley to a small area in the Umatilla River Valley. While the Nez Perces signed away all their lands in the Palouse, they, for the most part, retained most of their territory in Idaho and northeastern Oregon (Miller 1985, 341-44).

Very significant is the fact that none of the Salishan-speaking tribes came to the meeting or negotiated for "reserved" lands in 1855. Thus, when the Yakima War broke out in 1855 and lasted for three years, tribes to the north of the Yakima Valley such as the Spokane, made great efforts to protect their lands and people. While in pursuit of some Palouse whom the U.S. Army had believed to have stolen some government cattle, Colonel E.J. Steptoe and his forces

trespassed on Spokane lands. Fearing treachery from the whites, the combined forces of nearly 1,000 Palouse and Spokane warriors nearly defeated Steptoe near Pine Creek in the spring of 1858.

Colonel George Wright, the commander of the military operations, ordered immediate retaliation against the Spokane. Two armies attacked the Spokane who suffered people and valuable property losses. Over 900 horses were killed and nearly all of their stores of grain, vegetable, and dried roots were destroyed. Such conflict not only discouraged white settlement in this watershed for several decades, but also meant the beginning of the end of the Spokane peoples' way of life. Although retaining their lands, the Spokane suffered a terrible blow to their livelihood from which they would never truly recover (Stratton, 1991, 68).

Some of what had prompted the Yakima unrest and discontent in 1855 and the military's response were miners on their way to the gold camps in the Colville and Fraser river areas. These people had been crossing Yakima territory in increasingly large numbers. Desirous to keep the peace on the Columbia Plain as the stampedes began to grow, Wright had believed that immediate and decisive action against the natives had been necessary. As the number of gold strikes in Idaho and Montana increased, many of those in search riches in the early 1860s crossed the Spokane country on their way to the mining camps. Steamboat service existed on the Columbia River as far as Priest Rapids where prospectors from California, Oregon, and Nevada would then take trails across the interior Big Bend country. They would use Antoine Plante's ferry to cross the Spokane River, to continue their journey to Idaho and Montana. From the south, the Colville and Texas roads enabled people to travel north from the Snake River, which provided steamboat service as far as these points as well (Schalk 1982, 117-18; Meinig 1968, 214ff.; Peltier 1983, 30). Although not the source of mineral extraction in these years, the Spokane watershed became familiar land to many of the miners, traders, and stockmen who traversed its lands.

Modern Era Settlement Activity
(1866 to 1940)

Fierce competition among railroad companies in the 1880s encouraged settlement and migration to the Pacific Northwest, literally putting the Spokane River watershed on the map.

For nearly 20 years prior to this, there had been settlement and growth in the Walla Walla country. But with the completion of the Northern Pacific's transcontinental railroad through Spokane Falls in 1881, the history of permanent settlement by Euro-Americans in the Spokane River watershed began (Schwantes 1993, 101-02; Lyman 1919, 267-69). Railroad magnates, such as Henry Villard, the president of Northern Pacific Railroad in the 1870s, found Isaac Stevens' maps and reports of the 1850s about the potential for railroad development across the Columbia Plain.

Many of these planners believed as Stevens did that from a geographical, economic, and developmental standpoint, Spokane Falls, later to become the city of Spokane, would provide the axis for transportation and connection across the Columbia Plain. So significant was the coming of the railroad for population growth in the Spokane River watershed that the village of Spokane, which began the 1880s with a population of 350, had grown to 19,222 by the end of the decade. Spokane evolved during the 1880s to become the chief commercial center for eastern Washington and northern Idaho. The Great Northern arrived in 1892 along with branch lines such as the Spokane and Inland Empire in the 1890s, the Chicago, Milwaukee, and St. Paul Railway and Spokane, Portland and Seattle line, both in 1909. The population of near 20,000 in 1890 had grown to an astounding 104,402 by 1910 (Meinig 1968, 174, 257, 460; Avery 1961, 288; Schwantes 1993, 100-101).

As president of both the Oregon Railway and Navigation and Northern Pacific companies, Villard proved to be one of the Pacific Northwest's greatest boosters for immigration to and settlement of the area. At his suggestion, the Northern Pacific opened offices in Boston, Topeka, Omaha, and Portland to promote the immigration of "the better sort" of people, namely those of Anglo-Saxon descent or from Northern Europe in general. By 1883 the Northern Pacific was sending more than 900 agents to Great Britain, Sweden, Norway, Denmark, Switzerland, and Northern Germany in an effort to advertise the opportunities that the Pacific Northwest offered. Transportation there would be provided at reduced fares courtesy of the Northern Pacific Railway (Hedges 1928, 183-203). Despite the huge efforts by railroads and the states themselves to promote settlement, most of those who came between 1885 and 1910 came from east of the Rockies and not directly from overseas, mostly because of the distance and isolation of Washington and Oregon (Meinig 1968, 506-507).

As settlers began to arrive in the Spokane River watershed, it became apparent that the Spokane people needed to have a reservation designated since no treaty had been made with them in 1855. By executive order in 1880, President Rutherford B. Hayes created the Spokane

Reservation. The lands originally designated for reservation began, "at a point where Tshimakin Creek crosses the forty-eighth parallel of latitude; then down the east bank of said creek where it enters the Spokane River; Thence across said Spokane River westwardly along the southern bank there of to a point where it enters the Columbia River; Thence across the Columbia River northwardly along its westerly bank to a point where said river crosses the said forty-eighth parallel of latitude thence east along said parallel to the place of beginning" (Wynecoop 1969, 31).

Differences prevailed among the Lower, Middle, and Upper Spokane peoples regarding a move to these reserved lands. Most of the area designated for reservation lay in Lower Spokane territory -- lands considered not at all desirable by the Middle and Upper Spokane. There were religious differences as well. St. Michael's Mission had been established by the Jesuits at Spokane Falls in 1866, creating an area of the Middle and Upper Spokane occupied by Roman Catholics. People in the Lower Spokane had been converted to Christianity by Protestants whose mission base was on Tshimakin Creek (Bischoff 1945, 169-70; Drury 1976, passim.). Lastly, the Middle and Upper Spokane peoples wanted payment for lands with aboriginal title ceded to the U.S. Government. Too poor to pay the filing fees required for the areas surveyed on their reserved lands, and reduced to near starvation, the Middle and Lower Spokane groups finally agreed in 1887 to move to the Coeur d'Alene Reservation in Idaho (Deutsch 1956, 45-46; Wynecoop 1969, 31-33).

In 1902 the government began giving allotments to members of the Spokane tribe. By 1906 a total of 651 people from the tribe had been allotted 64,750 acres for farming and grazing purposes. In anticipation of reservation lands being opened to white settlement, squatters appeared at this time as well. The total number of homesteads awarded in 1909 when the government allowed official entry was only about 40 (ibid., 33,36; Ruby and Brown 1981, 218).

Settlers were not the only people interested in the Spokanes' lands. The railroads also encouraged the timber industry by opening up several ways to transport goods to market. In 1918 the first contracts for timber sales on the Spokane Reservation were put out for bid (Mason 1920, 11). Known as the Chamokane Unit, this sale included yellow pine, Douglas fir, and larch among the proposed 260,000,000 board feet of timber. The Deer Park Company, located north of the reservation, won the contract and produced 203,611,765 board feet, which sold for $542,523.55. Another unit for sale from the reservation in 1918 was the Ford Unit, which included 6,000,000 board feet and was awarded to the R.E. Reed, producing 5,872,300 board feet. Other units for sale in the 1920s included the Wellpinit Unit, which was purchased

by the Deer Park Company in 1924 and produced over 19,696,370 board feet; the Wilson Unit in 1926 with over 7,000,000 board feet located in the southeastern part of the reservation; and in the western part, the Garry Unit, with some 10,000,000 board feet, but producing 13,742,810 board feet (Kenny 1963, 166).

Nearly all of these sales suggest clearcuts which could have altered the streamflow, wildlife habitat, and perhaps erosion occurred within the watershed, at least on reservation lands.

Between railroad promotion and Indian removal, the lands best suited for agriculture in and near Spokane had been taken by 1908. Not having good soil, water sources, or climate, the Spokane River watershed could not support the level of profits from orchards that the Wenatchee River and Yakima River watersheds enjoyed at this time. Irrigation efforts had been made by groups such as the Spokane Valley Land and Water Company, which built a system of canals in 1905 to water 15,000 acres between the city of Spokane and the Idaho state boundary. By 1910 there were seven irrigation projects around the city of Spokane, the water for which came from lakes and was supplemented by wells. By 1919, the number of irrigated acres in the watershed had grown to 16,453 -- a number that did not change substantially over the next 20 years (Vandervere 1948, 66ff.; Department of Commerce 1942, map, Exhibit C).

Developers had a plan to cultivate apples in two specific areas in the early years of the twentieth century. The Spokane Valley had a relatively flat floor, some thirty miles long and three to eight miles wide, stretching from the eastern border of Spokane to Coeur d'Alene, Idaho. The other area was Arcadia, located in cutover timberland to the east and south of Deer park, a town 22 miles north of Spokane. The planned-for irrigation of 10,000 to 20,000 acres in the valley and 4,000 to 6,000 near Arcadia never materialized because of lack of government help. The 1940 census map indicates that the Spokane River directly irrigated only 16,553 acres and Latah Creek, 371 acres (Fahey 1993, 7-9; Department of Commerce 1942, map, Exhibit C).

By the twentieth century, because of its geographical location with significant railroad connections, the Spokane River watershed became a major trading center for the farming area of the Palouse, the lumbering area of Northern Idaho and Northeast Washington, and the mines of Northern Idaho and British Columbia. On a single day in October 1905, the Northern Pacific moved 35 freight trains and 16 passenger trains from Spokane with 71 locomotives, 100 passenger cars, and 2,700 freight cars. That same day the Great Northern used 25 locomotives for 48 passenger cars and 592 freight cars. Local boosters were predicting a population growth to over 500,000 in the next decade, a prediction that did not come true (Grande 1992, 185) and it

would remain so until 1940.

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LOWER OKANOGAN RIVER WATERSHED

With the retreat of the Fraser ice sheet from the Okanogan River Valley 9,000 years ago, the landscape that people began to occupy shortly thereafter had been formed. Prior to this time, during the Miocene epoch, the numerous and repeated outflowings of lava formed a massive basalt layer, the dominant geological feature of this area. The deposition and erosion that subsequently took place resulted in a land of gently rolling or moderately hilly topography (Turner 1980, 2-4).

The mouth of the Okanogan River where it enters the Columbia River is labeled by some geographers as the apex of the triangle that forms the Columbia Plateau. During the ice age, a long tongue of ice made its way down the Okanogan Valley, pushing huge boulders with it and onto the Columbia Plateau (Meinig 1968, 12). Although not settled until the late nineteenth and early twentieth centuries, the valley provided a highway to the Fraser River country to the north for many years.

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

The earliest indication of human occupation in the Lower Okanogan River watershed dates from 8,000 BP. Archaeologists have determined that people were living on both sides of the Columbia River from the Lower Okanogan to the Methow River. Further north, research has revealed human settlement on the Lower Okanogan River from 5,000 BP as well (Chatters 1986, 200-201).

Protohistoric Settlement Activity
(1500 to 1800)

Tradition and evidence hold that the Okanogan, a Salishan-speaking people, lived along the Lower Okanogan River in north central Washington. Referred to as the Sinkaietk or "Southern Okanogan," the other groups that made up the Okanogan people included the

Nespelem/Sanpoil, Methow, Colville, and Lake peoples. The Moses band of Columbia would arrive in the nineteenth century. With Okanogan Falls and Kettle Falls as centers for salmon fishing, these people also hunted game that lived in their territory in and around the Lower Okanogan River as well as near Lake Okanogan in British Columbia.

Prior to the introduction of the horse in the late eighteenth century, the Okanogan people traded extensively using the canoe on the many waterways within the watershed. When the Kalispel brought the horse to this region, greater trade took place between Okanogan and Kettle Falls as well as on a north-south corridor along the Columbia River from the Dalles. Even with the horse, however, the continued presence of salmon at both Okanogan and Kettle Falls made these two sites important centers for trade into the nineteenth century.

Tradition holds that the only major conflict with other people that the Okanogan knew before the arrival of the Euro-American occurred in the late eighteenth century. A party of Nez Perces attacked a Sanpoil village when the men were hunting. The deaths of more than 200 women, children, and elderly resulted in retaliation and the end of any friendly relations with the Nez Perces. This group of about 10,000 people also experienced the population decimation that smallpox brought to the natives of the Columbia Plateau in the late eighteenth and early nineteenth centuries. Such population decimation suggests that the size of the units of people needed to trade, gather, forage, fish, and hunt for survival changed dramatically at the beginning of the nineteenth century, an alteration that proved irreversible as more Euro-Americans arrived (Ray 1933, 107; Webber 1989, 150ff.; Boas and Teit 1985, 167; 175; 211ff.; Grabert 1973, 112; Wilson 1990, 16).

Preindustrial Era Settlement Activity (1775 to 1865)

The early explorers did not travel extensively in the Lower Okanogan River watershed. David Thompson's "Voyage of a Summer Moon," which he made in 1811, only passed the mouth of the Lower Okanogan River as he made his way on the Columbia River to Astoria. Three years later when Gabriel Franchere traveled north on the Columbia River on his return trip to Montreal, he would have passed the mouth of the Okanogan River as well. Neither of these people entered the watershed area and thus gave no description of the landscape inside.

The report and map that resulted from the 1841 expedition made by Charles Wilkes on behalf of the U.S. government resulted in greater firsthand knowledge of the interior regions, including a few remarks on the Okanogan River and surrounding lands. Observing that this river was the largest one in the northern portion of the middle section of the plateau, he also commented on the timberland that could supply settlers on the treeless prairies to the south and, when cut, would be excellent lands for ranching (Wilkes 1849, 48; Meinig 1968, 178, 180).

When David Thompson made his trip down the Columbia River in 1811, representatives of the Pacific Fur Company, the Astorians, made their way up river to open a trading post in the Okanogan country. Led by David Stuart and Alexander Ross, this party -- that included two Sandwich Islanders and two or three Canadian voyageurs -- established Ft. Okanogan just above the mouth of the Okanogan River. The traders selected this site because of its location on the border between the mountains and the Columbia Plain. It also became the terminus of a trail that led north to the South Thompson River area (Wishert 1992, 119). Sold to the North West Company (NWC) in 1813 during the War of 1812, this post was finally absorbed by the Hudson's Bay Company (HBC) in 1821 when the NWC merged with the HBC (Brown 1911, 17; Merk, 1968, xxii).

During the years of the North West Company's ownership of the post, the fur trade focused on a north to south route down the Okanogan River, a route that the HBC changed to a more western orientation to the mouth of the Fraser River. While the beaver population was exhausted in the Okanogan country by 1817, over the years Ft. Okanogan proved to be an excellent supply station for the rich fur-producing area in western Canada until it closed in 1860 (Brown 1911, 21; Wilson 1990, 41-42).

Because of a treaty made in 1818 between Great Britain and the United States, the area that today includes the states of Washington and Oregon became a neutral zone for each country to exploit or to settle for a period of 10 years. One of the most obvious avenues for profitable exploitation in this era was the fur trade. Some historians have suggested that the Lewis and Clark Expedition had been organized for the chief purpose of determining the potential for the fur trade in the trans-Missouri west. Indeed, Thomas Jefferson himself had encouraged John Jacob Astor to form the Pacific Fur Company as a way for the Americans to compete with the British for trade in the Pacific Northwest (Wishart 1992, 18, 116).

In reality, the British dominated the fur trade on the Columbia Plateau almost entirely. On acquiring the NWC, the HBC tasked George Simpson, then the governor of the Northern Department of Rupert Land, to survey the operations

of the new posts with an eye toward greater efficiency and profitability. Desirous to eliminate the wasteful practices that Simpson believed had hurt the profits of the NWC, one of his new policies called for the self-sufficiency of all posts if at all possible. Observing that potatoes were already growing at the Okanogan post, he believed that the soil could also support wheat (Merk 1968, 50).

An even greater effect on the land than the beginnings of cultivation, however, was the company's policy and Simpson's enforcement of "fur desert." Knowing that in 1828 the treaty would be renegotiated between Great Britain and the United States regarding the ownership and occupation of the Oregon country, the HBC's goal was to trap out as many of the beaver and other fur-bearing animals in the area as possible in order to leave fewer potential profits in the fur trade for the Americans. Officially the government encouraged a conservation policy toward the beaver, but there was little effort to enforce it (ibid., xxiiff.).

Although the Columbia Plateau was never as rich in furs as the Snake River country or the Rocky Mountains, throughout the 1820s a relatively large number of furs passed through Ft. Okanogan from the north and the east. John Work, the factor at the post in the 1820s, reported shipping 138 packs of furs, weighing some 12,420 pounds, from the Spokane and Okanogan country to Ft. Vancouver in 1828. Quite probably most of them were beaver, but they could have also included other fur-bearing mammals from the mountains such as otter, elk, deer, marten, and mink (Work 1921, 104ff.).

Actually, the decline of the beaver trade had already begun to set in by the late 1820s due to competition from the Americans and the introduction of the steel trap. The trade and companies never fully recovered from the Panic of 1837. This economic setback together with the change in hat styles from beaver to nutria meant that the trade was nearly finished by the 1840s when only 12,000 beaver pelts were taken from the Columbia River country (Lewis 1923, 47-48).

Some historians have argued that the population decline of the Okanogan natives in the nineteenth century due to disease put a greater demand on their time for their own subsistence activities and left less time for the fur trade. In effect, trade within the watershed and at the post itself never flourished (Grabert 1973, 121-22). However, the NWC brought Iroquois to the Oregon country to participate in the trade. More experienced in the entrepreneurial trading ways of the Euro-American, these Native Americans proved to be more active and useful partners in the fur trade than those who were native to the Columbia Plateau (Nicks 1980, 90-92) and quite likely, the Okanogan River watershed was no exception.

Introduced into this watershed by the fur traders were Euro-American trade goods as well as disease, both of which altered the cycle of life for the native peoples living there. But it is doubtful that the policy of "fur desert" decimated the fur-bearing mammal population in the Lower Okanogan River watershed.

The Iroquois and French Canadians made a natural congregation for the Catholic priests and their mission efforts. As early as 1838, priests came to the Lower Okanogan River watershed to preach, but no permanent mission was ever established there (Bischoff 1945, 154-156).

During the preindustrial era, some placer mining for gold took place in the Lower Okanogan River watershed. The miners -- Euro-Americans, French Canadians, Iroquois "freemen," and Chinese -- participated in the mining stampedes, some to the camps in the Myers Creek area within the watershed (1858), the Colville area (1855), but even more to the Fraser River area in Canada (1858). The trail that the fur traders had established north from Ft. Okanogan provided an excellent route to the sites in Canada on the Fraser River (Meinig 1968, 54-55).

Some of the unsuccessful miners returned to the Okanogan country to start ranches to supply the camps in Canada, the Colville area, as well as the mines in the Idaho Panhandle. In addition to those who settled within the watershed, ranchers from points further south, such as the Yakima Valley and even northern Oregon, used the Okanogan River country as thoroughfare for many years for cattle drives from the south to the camps in Canada. Between 1859 and 1870, a total of 22,256 head entered British Columbia by way of the Okanogan Trail (ibid., 221). Through cattlemen who supported the mines, a permanent Euro-American presence, if not settlement, existed in the Lower Okanogan River watershed.

In these years prior to the Civil War, no major conflicts occurred in the watershed between the Okanogan people and the Euro-Americans, although there were skirmishes between the native peoples and the miners who headed north through Okanogan territory. The Indian agent for the Washington Territory reported from the Yakima Agency in 1859 that all the native peoples in his district had been subdued except the Okanogan (Gough 1990, 66). But no major massacre or encounter with army patrols took place. In 1858, some U.S. Army troops from Ft. Simcoe in the Yakima Valley passed through the area as a result of the conflict with the Spokane and Palouse peoples that year (Meinig 1968, 167-168). The lands of the Okanogan people would hold the key to the watershed's development in the modern era.

Modern Era Settlement Activity
(1866 to 1940)

Significant settlement and development in the Okanogan River watershed did not take place until the opening of the reservation lands of the Okanogan people. The impetus to designate a reservation for the natives who had lived in this watershed for centuries was mining. As the number of gold discoveries in north central Washington grew in the 1860s, the federal government realized that some arrangement needed to be made to reserve lands for the Okanogan, perhaps in an area west and south of Ft. Colville near a favorite salmon fishery. Executive orders in 1872 and 1879 created the Colville and the Moses reservations, respectively. (It should be recalled that the Salish-speaking Okanogan people did not sign the treaty with Isaac Stevens in 1855 at the Walla Walla meeting and thus continued to occupy lands that they had used for subsistence for centuries.) The Moses' reservation's lands were located west of the Okanogan River and north to the Canadian border. The Columbia River provided the eastern and southern boundaries for the Colville Reservation while the Okanogan River bounded the territory to the west.

As it turned out, however, those lands that had been set aside as the Moses Reservation coincided with the area that had been created in 1860 as the Okanogan and Similkameen Mining District, which was renamed in 1874 as the Mount Chopaca and Similkameen Mining District. Miners pressured Congress for three years following the establishment of the Moses Reservation and prevailed when these lands were brought back into the public domain in 1883 through a presidential proclamation. At first placer miners worked the area for gold and silver. By 1886, low-grade silver ore was being worked in Salmon City in the Conconully area. These people were followed by the hard-rock miners who sought to tap mother lodes by dynamiting to build tunnels, shafts, and drifts into the foothills of the Cascades. The strikes and claims of 1888 began on the north shore of Conconelly Lake and to the north. In Ruby Canyon, lode claims were worked on Ruby Hill and also north of Palmer Mountain. Along the fifteen mile strip, strikes were made all the way toward the Canadian border to three miles south of Loomis (Gough 1990, 66; Wilson 1990, 73-74, 100). When the price of silver fell in 1892 followed by the Panic of 1893, much of the mining in this area ceased and many miners left (Yates 1968, 13). Located in the northwest corner of modern Okanogan County, gold prospecting took place in the area for several years.

The northern part of the Colville Indian Reservation that had been created by Executive Order in July 1872 also fell to the pressure of mining interests who saw the potential of mineral wealth from the area. By 1892, the northern lands had been returned to the public domain, which led to the opening of thousands of acres to mineral entry in 1896. The southern lands (or present reservation) were opened to miners by 1898. While homesteaders legally entered the northern lands in 1900 (Mooney 1976, 7), the southern lands were not open to settlers until 1916. However, staking a mining claim on the southern lands gave a foothold to many future white settlers there. Most of the more than 12,000 mining claims in the southern portion of the reservation proved to be unproductive. But by establishing a claim on future prime farmland, these people assured that no allotments would be made to the natives from these lands (Gough 1990, 66-67).

Some gold prospecting occurred in the Chesaw, Myers, and Mary Ann Creek areas in the north for a number of years (Mooney, 6-7). During World War I, there was a demand for iron ore from Copper Mountain (Mooney 1976, 16-17). The people who settled in and around Republic in these years came because of the mines (ibid., 44).

As it turned out, however, only two productive mines were found on lands in the southern area of the reservation, namely the Shamrock Mine, which produced mainly silver and lead, and the Apache Mine, located about two miles west of the Nespelem River, that produced about $250,000 in gold between 1908 and 1940 (Gough 1990, 67; Wilson 1990, 118).

Mining also brought the first settlers to the Methow River Valley. The first town established in this valley, a part of the Lower Okanogan River watershed, was Silver in 1890. The main mining camp in the Methow Valley at this time was on Squaw Creek, about two miles up from a fast tributary of the Methow River. In the spring of 1892 there were more gold strikes near Hunter Mountains, where a five-stamp mill was set up along with two arrastras. By 1897 the Red Shirt Mine was the most productive in the Methow Valley, operating a twenty-stamp mill and employing 58 people with a payroll of $800 a month (ibid., 105).

For a number of years in the late nineteenth century, the Okanogan country had a reputation as being cattle country. When settlers began arriving in the Yakima Valley in the 1860s, cattlemen, looking north, sought the unoccupied open range in the Lower Okanogan River watershed. The nutritious bunchgrass that grew on the higher bench lands across the watershed provided excellent feed for the animals and attracted ranchers (Yates, 14). A few stockmen had made their way to the Okanogan area to support the mines in the Colville region as well those on the Fraser and Thompson rivers. Ranchers and a few farmers occupied the area

between Aeneas and Wauconda, land in the northern section of the Colville Indian Reservation (Mooney 1976, 44). However, the severe winters of 1861-1862, 1880-1881, and 1889-1890 ruined many of the cattlemen of eastern Washington. Ranchers in the Lower Okanogan River watershed were hit especially hard with most never recovering from their losses while others took twenty years more to repay their debts (Glimpses 1921-24, 9).

As with mining, ranchers found especially good grazing lands within the southern part of the Colville Indian Reservation. Years before the reservation lands were either allotted to the Indians or opened to homestead settlement, successful stock ventures by both Indian and whites had taken place on the reservation's grazing lands. As early as 1889, Matt Duly began ranching in the Duly Lake area and for a number of years his cattle ranged for miles over sections of the southwest portion of the reservation (Gough 1990, 55).

Duly's successor, Ed Schrock, handled over 1,600 head of cattle in the Duly Lake area by 1916. The reservation lands opened to homesteaders in 1916. Those who knew the land saw that these 350,000 acres would provide excellent range for herds of cattle and bands of sheep. A quotation from the Spokesman-Review that year describes the potential for the rancher: "The great bulk of this land (opened for settlement) lies south and southwest of Omak Lake.. . . This region is the largest area of bunchgrass on the reservation. Last year's grass can be found that measures to the waist and the stand this year is from 6 to 8 inches high.. . . Bunch grass is preferred by animals of all kinds above everything else" (ibid., 55).

Sheepmen came to the reservation as well, choosing the country around Nespelem for their range. In the spring of 1916, some 20,000 sheep were ferried across the Columbia River to the Nespelem Valley. Sitdown Creek and Hall Creek served as centers for large sheep operations within the borders of the reservation (ibid., 55-56).

Wild horses also roamed the lands of the reservation, providing a good living for both the native and white rancher. It was reported that as many as 10,000 such animals lived in the area between Inchelium and Keller in the 1920s. Another 2,000 to 3,000 horses occupied the Duly plain in 1916 (ibid., 56).

How much the presence of all this livestock in the watershed altered the landscape is not certain. Just Okanogan County covers an area greater than 4,500 square miles. If the Methow River were included as part of the watershed in this geographical unit, there is an even larger amount of area to consider. By 1913, fewer than 13,000 people were living in Okanogan County. According to the 1910 Census records, there were 23,035 head of cattle and 15,499 sheep on farms within the county. By the 1920 Census, after the southern part of the Colville

Reservation had opened up to settlers, there were 42,820 cattle and 13,540 sheep across the county. By the end of the 1920s, the number of cattle was beginning to decline, 36,652, but the number of sheep were more than six times the amount of ten years before at 72,264 -- numbers that had evened out to about 50,000 each by the mid-1930s (Department of Commerce 1913, 842; 1922, 298; 1932, 461; Forest Survey 2:1936-1937, 8).

If sheep continued to be concentrated in the Nespelem Valley, overgrazing might have occurred. But a government report reveals that while both sheep and cattle used the summer range on the surrounding forestlands in the county, the flocks and herds wintered in the low lying areas in other counties of central Washington state (ibid., 8). However, this area receives less than 12 inches of rainfall a year and most of this moisture is from the melting snows. Consequently, due to this lack of water, the rangeland in this watershed would have been more vulnerable than that in a region with greater precipitation.

Settlement in this watershed was discouraged by the lack of water resources and lands to homestead as well as the relative isolation of the area until the Great Northern Railway completed a branch to Oroville in 1914 and then to Molson by 1917. The company considered this town to be a great trade center for the shipment of livestock, agricultural products, and lumber to market. However, due to depressions in nearly all of these industries, railroad ceased operations to Molson in 1926. Many of the ranching families left for towns in the Okanogan Valley. Those who stayed increased the size of their herds (Mitchell 1965, 4; Mooney 1976, 37).

Even before the rise and fall of the railroad's presence, people came to the Lower Okanogan River watershed to farm despite the lack of adequate water. The earliest settlers in the Lower Okanogan River watershed encountered and tried to deal with this lack of water. One of the first such individuals of record was Hiram "Okanogan" Smith who irrigated lands for his apple orchards in the early 1860s. Settling at the mouth of Osoyoos Lake, close to the Canadian border, he built a ditch to divert water from Nine Mile Creek to water his 1,200 apple trees (Vandervere, 16-17). Later in the nineteenth century near current-day Conconully, some settlers observed the bunchgrass produced by the volcanic-rich soil in the watershed, and began raising hay for feed. To water their crops, they dried up Salmon Creek each year by diverting it to their fields. Ranchers who used Salmon Creek responded to this problem in 1897 and formed the Conconully Lake Reservoir Company. Purchasing easements and rights of way, the company planned for the necessary canals and reservoirs. However, the settlers lacked the needed capital to build and maintain an adequate irrigation system.

Shortly after Theodore Roosevelt signed the Newlands Reclamation Act in June 1902,

citizens from the Okanogan area petitioned the new agency in Washington to undertake a reclamation project in the Lower Okanogan River watershed (Yates 1968, 14-17; Vandervere 1948, 157). While federal officials were at first reluctant to initiate a project there because of costs and poor transportation, pressure from Wesley L. "Yakima" Jones, one of Washington state's congressmen, resulted in the award of a project to irrigate 1,000 acres. This project began irrigating acres in 1908, but it was never the hoped-for success because of inadequate water in the area. At the height of the project's expansion in 1918, there were 8,000 acres under irrigation and by 1946 this number had dropped to 4,000 (ibid., 159-160). By 1940, there were about 32,000 acres of irrigated lands across the Lower Okanogan River watershed, including the 12,000 acres along the Methow River -- hardly a landscape-altering effort over a 4,500 square mile area (Department of Commerce 1942, map, Exhibit C).

The federal government's interest in providing adequate water resources in the watershed encouraged fruit farmers to migrate there. These "apple ranchers," largely from the Midwest, chose lands west of the Okanogan River that had formerly been part of the Moses Reservation. They, along with the ranchers, had encouraged the Bureau of Reclamation's interest in their project near Conconully. In 1914, more than 11,000 acres had been planted with fruit trees. With the coming of the Great Northern Railway into the watershed by the end of the year, land values increased to as much as $1,500 per acre in 1915. A year later, when the federal government opened the southern portion of the Colville Indian Reservation to homesteaders, the new settlers purchased more than 164,000 acres of land at Omak and Okanogan right across the Okanogan River from the reclamation project (Yates 1968, 48-56; Johansen 1967, 380; Forest Survey 2:1936-1937, 8). Fruit production became and remained the dominant agricultural effort in the watershed until World War II (Arpke 1945, 1).

Occupation and settlement of reservation lands by members of the Colville tribe remained spotty over the years. The General Allotment Act, also known as the Dawes Act, was passed by Congress in 1877. Its purpose was to acculturate Native Americans to the Euro-American farming practices by bringing an end to communal living through ownership by the individual of his or her own land. It failed in most places and the Colville Reservation was no exception. When asked to accept their allotments of 160 acres of land per family (the amount given to settlers under the Homestead Act) and 80 acres for each individual in June 1916, it is reported that 1,500 Colville refused. The government then proceeded to allot them lands without their choice or consent. The Indians received 2,318 allotments under this schedule of land division, totalling 287,418.97 acres.

Less than a month later, potential white settlers began making their applications for homestead entry into reservation lands, those lands classified as irrigable, grazing, or arid. In addition to these lands, white settlers would be interested in leasing some 1,800 allotments of the Colvilles' lands at $2.00 per acre annually (Gough, 52-54). But by 1924 half of the allotments near Omak Lake had been abandoned by both white and native peoples. While many of the Colville did not want to give up their communal way of living, a 160-acre, or even a 320-acre parcel of land under the Enlarged Homestead Act could not support a family given the inadequate water supply and terrain in the watershed (ibid., 54).

Following this land distribution, within the boundaries of the reservation 475,529 acres remained of unalloted timber- lands. Before an act in 1910 that allowed timber sales on the Colville Indian Reservation lands, most logging had been for local and domestic purposes. Between 1873 and 1915, the total number of board feet cut from the Colville Indian Reservation forests was about 20 million. From 1919 to 1942, the average cut on an annual basis was 22 million board feet. Much of the story of the harvesting of this timber is that of the Biles-Coleman Company, which started timber operations in the watershed in 1919. Most of the timber operations between 1910 and 1918 took place at the government-owned timber mills at Nespelem, Omak, and Hall Creek in Ferry County (ibid., 53, 69). The first extensive timber industry operations in the watershed got under way on the western side of the reservation.

In 1919, the Omak Manufacturing Company was awarded the first contract for a timber sale amounting to 25 million board feet on the Omak Creek Logging Unit. The company built a mill on the western slope of Omak Mountain but was unable to complete the contract because of transport problems and general lack of experience. The Biles-Coleman Lumber Company, based originally in Leavenworth and Wenatchee, bought the rights to the contract in 1921. They dealt immediately with transportation problems by building a short (only 5 miles in length) narrow gauge track that was moved as cutting proceeded. Seeing this Bureau of Indian Affairs contract coming to an end in 1923, Biles bought the Moses Mountain Unit contract early in that year -- a sale of an estimated 435 million board feet. This timber was to be harvested over a 25 year period. Biles put in a bid for the Mission Creek Unit in 1924 and a year later won the bid. This second unit meant that Biles controlled all the timber between Omak and Disautel. With a mill being built in Omak and a narrow gauge railroad under construction up Omak Creek toward Disautel from Omak, it was decided that the Mission Creek Unit would be cut first. Logging operations continued nearly uninterrupted in this area, even in the years of the Great Depression. Biles-Coleman had successfully cultivated a loyal clientele over the years, which resulted in the

loss of few customers even in the 1930s.

Logging did not begin on the eastern side of the reservation until 1924 when the Hedlund Box and Lumber Company of Spokane was awarded a contract for the Twin Lakes Unit -- potentially 240 million board feet. Actual logging did not begin until a 16 mile track was laid by the Great Northern Railway from Kettle Falls in 1928. Because of the Great Depression, operations ceased here at the end of 1929 without much timber having been cut. The other major contract obtained by the Bedlund Company in 1926 was the West Fork Unit in the San Poil Valley, representing 80 million board feet. By the time of the company's demise and bankruptcy in 1929, only 20 million board feet had been cut (Gough 1990, 69ff.; Kinny 1950, 167).

Grazing, mining, logging, and farming had taken place in this watershed over the decades. The demise of the beaver population in the early nineteenth century followed by the activities of miners, ranchers, and loggers by 1900 would have resulted in damage to riparian areas, stream life in general, water quality in particular, and some alteration of streamflow due to irrigation.

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WENATCHEE RIVER WATERSHED

The Wenatchee River flows eastward into the Columbia River out of the Cascade Mountains, its source. From a physical standpoint, this watershed lies outside the Columbia Plateau but is considered part of the drainage of the Columbia River Basin. The upper part of the drainage is heavily forested and the lower part consists of timberless hills and ridges covered mostly with sagebrush. Because of its isolation from the transportation patterns that developed on the Plateau, settlement of the area did not take place in any significant way until the late nineteenth and early twentieth centuries.

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

Archaeological research indicates that people were living in the Wenatchee River watershed as early as 11,000 BP. The Richey Clovis Cache, a collection of hunting tools, dates at about this period and was found just across the Columbia River from the city of Wenatchee (Gramly, 1993, n.p.).

Protohistoric Settlement Activity
(1500 to 1800)

Tradition and evidence indicate that Wenatchi people lived along the Wenatchee River to Leavenworth as far north as the Wenatchee Mountains. The Wenatchi along with the Chelan and Entiat occupied permanent villages west of the Columbia River and north of the Yakima River, with seasonal migration for spring and summer foraging and gathering at Lake Wenatchee as well as for fall hunting in the mountains (Ruby and Brown 1981, 266; Chalfont 1974, 329).

Into this harmonious, generally peaceful cycle of life in the late eighteenth century came a major disruption, namely disease. It has been estimated that a smallpox epidemic in the 1780s halved the population of the native peoples on the Columbia Plateau and surrounding regions. Introduced into the area by the Euro-American or through native peoples, disease meant a major

attack on the social fabric and way of life of these people. Disease, not the horse and the rifle, altered the lives of those who lived in the Wenatchee River watershed before the arrival of the Euro-American settler. Such population decimation suggests that the units of people needed to gather, forage, fish, and hunt for survival had changed greatly by the beginning of the nineteenth century, an alteration that proved irreversible as more Euro-Americans arrived.

Preindustrial Era Settlement Activity (1775 to 1865)

The early explorers did not travel extensively in the Wenatchee River watershed. David Thompson's "Voyage of a Summer Moon," which he made in 1811, only passed the mouth of the Wenatchee River as he traveled on the Columbia River to Astoria. Three years later when Gabriel Franchere went north on the Columbia River on his return trip to Montreal, he would have passed the mouth of the river as well. Neither of these people entered the watershed area and thus gave no description of the landscape inside. The map that resulted from the 1841 expedition made by Charles Wilkes on behalf of the U.S. government resulted in firsthand knowledge of the interior regions, including the Wenatchee River watershed. Lt. Robert Johnson, a member of the expedition, reported meeting some Wenatchi people at the mouth of their river and that they were growing potatoes. But this was more of an exploring rather than a surveying expedition (Meinig 1968, 178, 180; Ruby and Brown 1981, 266; Chalfont 1974, 346).

It was not until Isaac Stevens came to Washington in 1853 as territorial governor and superintendent of Indian affairs that a comprehensive land survey was made of the eastern Washington state area between the Cascades and the Rocky Mountains. Commissioned by the War Department to conduct the survey of the Columbia Plateau, Stevens was to assess the potential for railway travel through the Northern Rockies. Stevens' report resulted in a greater government and public awareness of the Wenatchee River watershed and its resources. Capt. George McClellan surveyed the Wenatchee area, but, this did not lead to immediate settlement (Meinig 1968, 155-56; Brown and Ruby 1981, 266).

Fur traders, miners, missionaries, and homesteaders passed this area until the late nineteenth century. During the last decade of the preindustrial era, 1855-1865, however, the conflict that occurred on the Columbia Plateau between the Native Americans and American

citizens touched the Wenatchee River watershed in a peripheral way. The U.S. Army dispatched troops that would have passed through the watershed on forays. One group went north from Ft. Simcoe in the Yakima Valley during the conflict with the Yakima people in 1856. Another band of troops traversed the area two years later as a result of the hostilities with the Spokane and Palouse peoples (Meinig 1968, 160ff, 203-04).

It should be noted here that Wenatchi leaders signed the 1855 treaty that resulted in the loss of most of the native peoples' lands on the plateau and that some of the tribe's members joined with the Yakima in the war that lasted from 1855 to 1857. Then in 1858, Wenatchi attacked gold miners who trespassed on their lands on the way north to the gold fields. This could have been the reason that soldiers crossed their watershed in that year as well. Having refused to go to the Yakima Reservation as a part of the 1855 treaty between Isaac Stevens and the Sahaptian-speaking peoples who lived in the Washington Territory, the Wenatchi remained on their lands within the watershed well into the modern era (Ruby and Brown 1981, 266; Scheuerman 1982, 126ff.).

Modern Era Settlement Activity (1866 to 1940)

Settlement and development activity took place in the Wenatchee River watershed with the coming of the Great Northern Railway (GN) in 1892. As a result of this new means to market, the city of Wenatchee and its watershed lands became a major entrepot for trade goods from the north and points further east in Washington state. Supplies for the gold and silver mining camps in the Okanogan region, wheat and stock from farms in the Big Bend country, and meat and produce from the Wenatchee and Methow river valleys now all had a cheaper route to market (Mitchell 1965, 3; Wenatchee Commercial Club 1910, 6).

Surveys for this line began in 1889 along with the settlement of more Americans in the watershed. In that year, a post office opened. Plans for the huge Peshastin Ditch were under way as well. Unfortunately for the Wenatchi, all of this proposed development had been planned on lands that the tribe believed belonged to them. An Indian agent from the Department of the Interior had tried addressing this problem in 1888 when the Wenatchi claimed that their fisheries reserve extended from Mission Creek to Wenatchee Falls. No resolution was made during this

visit. In 1892, a second Indian agent arrived to survey the Wenatchi lands that should have been surveyed over 30 years before and found white settlers scattered throughout the valley from the town of Wenatchee to the mouth of Icicle. In this same year, the GN had platted for a new town named Icicle. Not wanting to upset the majority of the white settlers, the agent selected a site some fifteen miles up the Wenatchee River to its juncture with the Chiwawa River -- a thirty-six square mile area that stretched from Lake Wenatchee across rugged terrain to the Chiwawa. Members of the tribe argued that this territory was not suitable even for bears. Eventually some of the tribe moved to the Colville Reservation and some were able to obtain allotments in the Wenatchi Valley itself (Schuerman 1982, 127-150).

With the natives being removed, the railroads could continue to build and to bring settlers. The GN brought in people other than those from the Middle West who had Anglo-Saxon roots. Italians, Chinese, and Japanese came to build the railroad and [illegible] stayed. As early as 1891, Italians from California had settled on the south or sunny side of Lake Chelan and planned to start vineyards with cuttings from California (Byrd 1972, 2).

The extent of environmental degradation that occurred in this watershed due to railroad construction is not certain. However, there is no question that the use of timber from within the watershed for the construction of railroads could have resulted in soil erosion, landslides, and some stream flow damage. The GN also built a hydroelectric plant at Leavenworth in 1909 for power to operate trains through the Cascade Tunnel. Construction of this plant, the Cascade tunnel, and a tunnel built in 1925 under Stevens Pass would have caused some landscape alteration (Marshall 1914, 5; Schwantes 1993, 175-76).

Irrigation was important as the railroads to the development of the Wenatchee River watershed. As early as 1887, the Wheeler Hill Irrigation Company built a seven-mile ditch in the Squilchuck Creek area (Vandervere 1948, 42ff). But the irrigation project that brought a significant number of settlers to the Wenatchee Valley was the Highline Canal, completed in 1903 by W.T. Clark of Yakima. Capable of irrigating 20,000 acres of land, this canal directed water from the Wenatchee River near Peshastin and distributed it over a twenty-five mile area, even piping it across the Columbia River at the town of Wenatchee. By 1940, the Wenatchee River watershed had over 30,000 acres in irrigation (Wenatchee Commercial Club 1910, 6; Arpke 1945, 1; Department of Commerce 1942, irrigation map, Exhibit C).

Between 1900 and 1910, an important migration of people came to the Pacific Northwest. Those who settled in Washington state were mainly farmers from Illinois, Iowa, Wisconsin, Missouri, and Minnesota. Drawn to the area because of better wages and more moderate

climate, many of these people were older and had recovered financially from the depression of the 1890s. With little, if any, public domain land left, these people arrived with money in their pockets as well as experience in farming. Many of them became the "apple ranchers" of Wenatchee Valley who came into their own between 1900 and 1915 as the number of trees planted and bearing fruit increased along with the land values. By 1910, there were 4,500 acres of "full-bearing" trees whose fruit was worth over $3 million. In that year as well, the average farm in the state of Washington was priced at $11,000, compared to the national average of $6,444. The number of farms grew from 450 in 1900 to 4,000 in 1910. Four years later, some of the Wenatchee bearing orchards were valued as high as $1,925 per acre (Wenatchee Commercial Club, 8; Johansen, 372-74, 380; Arpke, 14ff.). Most of these profitable orchards were located along the Wenatchee and Entiat rivers. In the 1920s, the Wenatchee Valley produced one-fourth of the nation's commercial apples (Martin 1935, 134).

By the 1930s, there were over 50,000 acres were ready for farming in Chelan County. There was some dry farming, but most of what was produced came from irrigated lands. The Wenatchee area alone had more than 25,000 acres for apple orchards. By the end of the decade, the city of Wenatchee with a population of 11,600 had become the trading center for the area covering Chelan, Douglas, and Okanogan counties. The acres irrigated by the Wenatchee River numbered more than 22,000, by the Entiat River 2,561, and by Lake Chelan 5,837 (Arpke 1945, 1; Forest Survey 2:1936-1937, 2-3; Department of Commerce 1942, irrigation map, Exhibit C).

Despite the number of acres irrigated, this watershed also knew the hard times of the Great Depression in the 1930s. Sales of fruit that reached a new high in 1929, valued at $11,862,919, fell ten years later to a low of $5,995,787. During the 1930s, orchard owners pulled up many of these trees because of disease and a market due to the Smoot-Hawley Tariff, and planted pear trees that also proved to be productive (Arpke 1945, 18; Department of Commerce 1942, 224).

Farming was far more successful and had a greater economic effect on the Wenatchee River watershed than mining ever did. In the 1890s, the Great Northern shipped supplies from Wenatchee for the gold and silver mines of the Okanogan area. Some mining enterprises within the watershed took a number of years to develop, the Holden Mine in Railroad Valley being the prime example. Located and staked by James Henry Holden in 1896, it took 42 years of promotion for real exploitation of the minerals, mainly copper, to begin. In 1938, with the completion of a power line to the mine, the long planned for mill was finally ready to receive ore from underground.

A new method, the shrinkage-bulldozing method, had been developed to assure an uninterrupted flow of ore from the mine to the mill. By undercutting a section of the ore body and drilling a series of long holes for blasting, the ore could then be drawn off through a bulldozing chamber after the dynamite exploded. Instead of drilling and blasting from the top of the broken ore, once the undercut was complete and dynamited, no one entered the stope again.

On March 22, 1938, the first ton of copper ore was milled. By the end of the month the mill was processing 1,000 tons daily, the figure that had been forecast several years before. By the mid-April the production was up to 1,400 tons daily and to 2,000 tons daily by the end of the year. Over the next 20 years, metals valued at $66 million were taken from this mine -- 212 million pounds of copper, 40 million pounds of zinc, 2 million pounds of silver, and 600,000 ounces of gold (Adams 1981, 68-73).

There were other mining enterprises in the watershed over the years. In the Blewett Pass area, the Culver Mining Company erected a ten-stamp mill on Peshastin Creek that was eventually taken over by the Washington Meteor Mining Company that erected a twenty-stamp mill at the mouth of the creek. By 1905, it was reported that over $2 million in gold had been taken from this site as well as others in the Blewett Pass area. Placer and quartz mining were both under way within the watershed by 1910 when 16 claims had been located on a series of iron-oxide outcroppings to the south of the Blewett District (Dow 1963, 105-06).

Other attempts at mining in the watershed in the years prior to World War II were made by the Wenatchee Orchard Land Company, which tried to develop a coal seam at Moses Coulee near Wenatchee in 1918. Failure to produce any significant amount of the mineral forced the endeavor to shutdown in 1922 (Melder 1931, 22).

Slightly more active than the mining interests were those of timber in the Wenatchee River watershed. With the formation of the Wenatchee National Forest in 1908, the U.S. Forest Service controlled about 1 million acres of timber or 71 percent of the forested area in Chelan County. Most of the timber was lodgepole pine from sub-alpine forests. However, there were some private logging interests for ponderosa pine and Douglas fir on Stevens Pass near the highway. By the 1930s, thirteen active mills were trying to meet the wood demands that ranged from fuel to shingles to milled timber for boxes in which to ship the Wenatchee River watershed's fruit to market. Between 1925 and 1934, the average annual lumber production in Chelan County was 45,784 M board feet (Davis 1983, 787; Forest Survey 2:1936-1937, 4-9).

Having the Cascade Mountains for a backdrop to this watershed, it thus followed that people came to hunt, camp, and fish from the urban areas of Seattle and Spokane. Not only did

the national forest encourage recreational pursuits, but so did the Wenatchee Commercial Club, so typical of local groups that touted the business, health, and social opportunities in promoting an area (ibid., 9; Wenatchee Commercial Club, passim).

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THE YAKIMA RIVER WATERSHED

Rising in the Cascade Mountains, the Yakima River flows in a southeasterly course and enters the Columbia River near current day Richland, Washington. The northern part of the watershed rests in the forested foothills of the Cascade Range. It contains a wide mountain valley with many tributaries that opens into the broad basin containing the Kittitas Valley. As the Yakima River continues to flow southeastwardly through a narrow gorge, the Naches River flows into it from the northwest. The lower part of the Yakima River watershed contains a broad, flat valley from ten to fifteen miles wide and fifty miles long. The vegetation of this dry, flat country in the lower part of the Yakima Valley was initially sagebrush with tall grasses along creeks amidst sloping hills from south to north. Cut by many streams and creeks from which the first occupants fished, this watershed would hold great potential for supporting irrigation projects.

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

The territory of the people originally occupying this watershed extended as far east as the confluence of the Snake and Palouse rivers where human beings hunted mega fauna 10,000 years ago. During this same prehistoric period, toward the south, this native group also fished for salmon at Five Mile Rapids near Celilo Falls on the Columbia River (Daugherty 1973, 6-8).

Weather played a major factor where and how the early inhabitants lived. Although there is disagreement about the details of climate change that took place over time on the Columbia Plateau, there is general agreement that 13,000-8,000 BP was a cool, moist period, 8,000 to 4,000 BP, a warm, dry period; and from 4,000 BP to the present, a stabilization in climate occurred that has remained to modern times (Schalk 1982, 11-12). The way of life of Plateau inhabitants stabilized from 4,000 BP onward. Hunting and gathering, not agriculture, sustained these people over the millennia (Chatters 1982, 140-142).

For those who lived in this area and generally across the Columbia Plain, a cyclical pattern of life began to develop from 3,000 to 2,000 BP. During the winter months, native peoples lived in pithouse villages in sheltered locations along the Yakima and Columbia rivers to

avoid the bitter winter winds. They survived on stored fish, roots, and berries as well as some meat from hunting efforts in the hills and canyons. By April, the villages would break into small bands to trek to the more forested areas west in the Cascade Mountains or south across the Horse Heaven Hills to begin gathering the early plants of spring. A major fishing site for catching salmon at the confluence of the Snake and Columbia rivers and at Celilo Falls on the Columbia River provided major meeting places for Native Americans on the Plateau. The early runs of Chinook would begin in late April followed by other runs in the latter part of June and early July, with the largest and most important run for winter stores occurring in September and October (ibid,. 140-142; Hunn 1990, 119ff.; Daugherty 1973, 16; Smith 1910, 146).

Protohistoric Settlement Activity
(1500 to 1800)

Sahaptian-speaking peoples occupied the lands of the Yakima River watershed. While hunting, gathering, and fishing were the chief means that provided for their subsistence, the Yakima people also acquired the horse in the eighteenth century. Although their herds were never as large as those of the Nez Perces or Cayuse, they were part of the transportation revolution on the Columbia Plateau that took place starting in 1730 (Meinig 1968, 25). Relatively undisturbed and at peace with those peoples around them, the Yakima met with major population reduction like others on the Plateau starting in the late 1700s. Smallpox brought population decimation to the natives on the Columbia Plain in the late eighteenth and early nineteenth centuries. The size of the units of people needed to trade, gather, forage, fish, and hunt for survival changed dramatically at the beginning of the nineteenth century, an alteration that proved irreversible as more Euro-Americans began to arrive (Ray 1933, 107; Webber 1989, 150ff.; Boas and Teit 1985, 167, 175, 211ff.; Grabert 1973, 112).

Preindustrial Settlement Activity
(1775 to 1865)

While the Lewis and Clark Expedition did not travel through the Yakima River

watershed, these famous explorers met leaders and members of the Chimnapam or Yakima tribe when they traveled down the Middle Columbia River in the fall 1805 and on their return home in 1806. In both passages, they stopped to meet with the Yakima quite likely in eastern Klickitat and western Benton counties (Journals of Lewis and Clark 1988, vol. 5, 287-288; ibid., 1991, vol. 7, 165-167). David Thompson's "Voyage of a Summer Moon," which he made in 1811, only passed the mouth of the Yakima River as he traveled on the Columbia River to Astoria. When Gabriel Franchere traveled north three years later on the Columbia River on his return trip to Montreal, he would have passed the mouth of the river as well. Neither of these people entered the watershed area and thus gave no description of its landscape. The map that resulted from the 1841 expedition made by Charles Wilkes on behalf of the U.S. government meant firsthand knowledge of the interior regions, including the Yakima River watershed (Meinig 1968, 178, 180).

Having neither a major fur-bearing mammal population nor being located even on the periphery of a mountainous region, the Yakima River watershed remained uninhabited by the Euro-Americans during the fur trading years from 1810 to 1840. The Yakima people did acquire some of the new items that the white people brought to trade. These natives began to raise cattle obtained by trade with the Hudson's Bay Company, and beef became a part of their diet. Actual exploitation of the fur-bearing mammal population in the watershed did not take place (Yakima River Basin 1986, 53).

The missionaries comprised the first permanent presence and settlement by Euro-Americans in the Yakima River region. As early as 1839, William Gray, one of the missionaries sponsored by the American Board of Commissioners for Foreign Missions, had suggested a mission site at the mouth of the Yakima River. The Protestants may have had the idea, but the Oblate Catholic fathers actually opened the first mission, St. Joseph, in the Yakima Valley in 1847 on Ahtanum Creek. Started in the same year as the Whitmans' massacre at Waiilaptu, this mission was still in operation in 1853 when it was reported that the fathers had planted an orchard and had convinced the Yakima to grow potatoes (Meinig 1968, 130, 154; Bischoff 1945, 182; Yakima River Basin 1986, 89ff.). The Yakima War of 1855 brought withdrawal of the missionaries from the watershed, not the Whitmans' massacre.

When the federal government formed the Washington Territory in 1853, Isaac Stevens was appointed its first governor as well as the superintendent of Indian affairs. In the two years following, he conducted a survey of the lands, especially for railroad construction. His extraordinarily detailed map showed the geography of the region and the lay of the land for the

first time. Seeing the potential for settlement and development, he realized that the native peoples of the Columbia Plain would hinder the region's growth that many wanted as the emigrants proceeded over the Oregon Trail (Miller 1985, 340ff).

Trying to anticipate the inevitable loss of their lands, leaders from the Yakima, Klickitat, Cayuse, Walla Walla, Nez Perces and Umatilla peoples met in Grande Ronde Valley in the summer of 1854. They devised a strategy for countering the Euro-Americans' proposals, but it did not work for them (ibid.)

The details of the meeting of the Sahaptian-speaking Plateau tribes with Stevens and Palmer at Walla Walla in 1855 have been outlined by others (ibid.). Kamiakin, the Yakima leader, agreed to a tract of 1 million acres in south central area of the Washington Territory that would be reserved for his people (Ruby and Brown 1970, 58).

Within months after the signing of the treaties, the Yakima War broke out. During the war years of 1855-1858, members of the Palouse tribe supported and sided with the Yakima Nation. The attack by some of the members of the Yakima Nation and the Klickitat on the Army's supply train at the Cascade portage in the spring of 1856 prompted Colonel George Wright to send military forays through the Yakima, Kittitas, and Wenatchee valleys in the summer of 1856. This reconnaissance led to the establishment of Ft. Simcoe, located between Simcoe and Toppenish creeks in the Yakima Valley. Thus, a permanent military presence had been established in the Yakima Valley and a road built between the fort and The Dalles (Meinig 1968, 163; Yakima River Basin 1986, 103).

The high point of the war for the Yakima Nation and the Palouse people was the near defeat of Colonel Edward J. Steptoe and his force of 157 men in the spring of 1858 near modern-day Rosalia, Washington. Barely escaping total annihilation, these American army forces retreated to Ft. Walla Walla. In late summer of that year, Colonel Wright retaliated for the "Steptoe disaster" by marching with 600 troops against the Yakima Nation and other tribes. Unable to hold their own against such a force, the natives had to surrender, losing not only many of their leaders, but also many of their supplies and horses. Refusing to go to the reservation, Kamiakin moved to Rock Lake in 1865 and resided there until his death (Trafzer 1991, 65-69; Ruby and Brown 1970, 52).

During the Yakima War years, settlement east of the Cascades was discouraged. But miners heard of strikes in Idaho, the Upper Columbia, and Fraser river areas and began stampeding to camps in that direction. Their trespass on the Yakima lands was one of the precipitating factors of the Yakima War.

By the early 1860s, placer mining was starting in northeastern Oregon as well. People from the Willamette Valley, seeing the potential to supply camps on the Clearwater and Lower Salmon rivers and Boise Basin, as well as those in eastern Oregon on the Powder and John Day rivers, headed east to take advantage of the business opportunities that the mining strikes offered. Many of these people passed through the Yakima Valley because of the roads that had existed there for several years. The earliest one of these was the road from Walla Walla to Ft. Steilacoom. It was constructed between 1853 and 1854, and crossed Naches Pass. Other routes included the Snoqualmie Pass, Satus Pass from the Yakima Valley to the fishing sites at Celilo Falls on the Columbia, and the military road built by Wright in the summer of 1856 from Ft. Simcoe that crossed the Simcoe Mountains west of Satus Pass and continued to The Dalles. This network of roads and trails enabled people to cross the Kittitas and Yakima valleys, and then be ferried across the Columbia River at various points between Crab Creek and Priest Rapids. Many thousands of people crossed the watershed. The only gold strike of any significance that took place in the Yakima Basin in these years was in 1864 near Ringold Bar, but it drew mainly Chinese and no permanent settlers (Yakima River Basin 1986, 51, 103-05; Schalk 1982, 117).

In 1858 the steamship, Colonel Wright, was launched just east of the mouth of the Deschutes River to transport more people and supplies to the camps. In 1863, steamship travel was possible up the Columbia River to the Priest Rapids area where prospectors could head north to camps in British Columbia, and on the Colville River where they could head northeast to camps on the Clearwater River or on Wild Horse Creek in Montana. A portage railroad overtook the teamster method of crossing the difficult 12 mile portage between The Dalles and Celilo Falls by 1863, which meant even more people could be transported to the mining areas. Between the years 1861 and 1864, the Oregon Steamship and Navigation Company (OSN) transported 93,000 passengers and over 60,000 tons of freight on the stretch of the Columbia River above Celilo Falls (Meinig 1968, 212-214).

Modern Settlement Activity
(1865 to 1940)

The missionaries and the members of the Yakima tribe had been raising both cattle and sheep within the Yakima River watershed as early as the 1830s. Large numbers came to the

watershed from the Willamette Valley in the 1860s to provide meat for the mining camps in British Columbia, the Ft. Colville area, as well as in eastern Oregon, Idaho, and Montana. Migration to eastern Washington also was encouraged by the settlement of most of the native peoples in eastern Oregon state and the Washington Territory on reserved lands by 1860. This relocation coincided with the gold strikes in Rocky Mountains and eastern Oregon.

The first settlers in the watershed were nomadic stockmen who came with their sheep and cattle from west of the Cascade Mountains by boat to The Dalles or overland on the Barlow Road. The abundance of natural feed on the public domain along with access to the northward-bound roads to the mines only encouraged migration of stockmen to the Yakima River watershed. Grazing on the open range year round, herds of about 2,000 ate the nutritious bunchgrass throughout the summer. In early autumn, the herders burned the range to stimulate new growth and made forage for the winter. The natural bounty of the range grasses left most stockmen unprepared for the winter of 1860-1861. Failure to store hay for that winter proved catastrophic for the cattlemen east of the Cascades. Most of the stock starved and froze to death (Meinig 1968, 218-220).

Ben Snipes, John Jeffries, and F.M. Thorp were among the first Oregonian stockmen to graze their stock in the Yakima Valley. Snipes grazed his cattle along the Yakima River all the way down to the Columbia through the 1870s. Some ranchers sought grazing rights from the Yakima Nation, whose lands lay to the southwest of the Yakima River. Others stole hay from reservation lands for their stock, especially from the area on the north side of Ahtanum Creek, the northern boundary of the reservation. A boom in the cattle business lasted through the 1860s but crashed in the 1870s because of a nationwide depression and a mining bust.

The resurgence of the cattle business in the 1870s was fueled by the demand for meat from Puget Sound and from growing urban centers east of the Rocky Mountains. Cattle could be driven west of the Cascades from the Yakima River watershed either by the Snoqualmie Pass Road or by boat down the Columbia River to Puget Sound. Greater demand for cattle, however, came from the east. Companies such as Lang and Ryan of Kansas City, Missouri, as well as ranches developing in Montana and Wyoming, purchased thousands of head of cattle from eastern Oregon and Washington in the late 1870s. The mid-1870s saw the height of the cattle industry in the Yakima River watershed with 150,000 head grazing. In 1879, Lang and Ryan drove 20,000 head of cattle east just from the Kittitas Valley. Snipes and others participated in this boom until the devastating winter of 1880-1881 when 83 percent of the cattle in the watershed froze to death, 30,000 head of which belonged to Snipes and another rancher. This

loss of stock was followed by a terribly hot summer and more overgrazing that resulted in a loss of $1.5 million in livestock, a blow to the fragile economy of the Yakima River watershed in those years (Oliphant 1946, 25-30; Oliphant 1933, 149; Johansen 1967, 318; Yakima River Basin 1986, 53, 70, 107).

Competition between cattlemen and sheepmen grew in these years in addition to pressures from incoming farmers for the lands in the watershed. The cattlemen were the first to move on in the 1870s to the rangelands east of the Columbia River and north in the Okanogan country. Tens of thousands of cattle did not have the staying power that hundreds of thousands of sheep would have for access and use of the Yakima River watershed range during the 1880s and 1890s (ibid., 54).

As the number of Oregon Trail emigrants grew throughout the 1840s and 1850s, the desire for farm land in the Willamette Valley pressured the stockmen to move east of the Cascades. The eastern parts of Oregon as well as Washington had a drier climate and range covered with abundant natural grasses. So vast was the area in the east that the method of sheepherding developed differently than that in the west. Rather than the small flocks of 75 to 100 sheep that were typical of the Willamette Valley, in the east an experienced Scottish or Australian shepherd with his dog could oversee flocks of mainly Merino sheep that often numbered in the thousands. The terrible winter of 1861-1862 killed off most of the stock in eastern Washington. Only 45 of the 4,500 sheep that had been driven into the Yakima Valley in 1861 survived. While enthusiasm for this enterprise declined over the next few years, by the end of the 1860s S.M. Wait and others were driving herds of 5,000 sheep into the Yakima Valley through the Umatilla watershed (Parsons 1902, 162; Kenny 1963, 102; Meinig 1968, 218-220; Paul 1976, 49ff).

The bust in the mining industry in the 1870s discouraged cattlemen, but sheepmen had meat and wool to sell. Shearing and processing sites at Umatilla and Pendleton in Oregon were growing by the 1880s, with Washington sheepmen only too willing to bring their animals to market, especially for the wool. By the early 1890s, more than 10 million pounds of wool were shipped from Pendleton and The Dalles, about 5 million from each site. Following the Panic of 1893 that brought with it a collapse in wool and mutton prices, the sheep industry made a comeback. By 1900 Pendleton was the primary wool market in the United States (Mitchell 1895, 277; Kenny 1963, 102; Johansen 1967, 319).

So great was the influx of sheep onto the rangelands in the Pacific Northwest at the end of the nineteenth century that private citizens began writing their government expressing concern

about the overgrazing. Among others, E.B. Gambee wrote in 1891 that even though the mountain slopes in the eastern part of Umatilla County were not suited for farming, sheep that belonged to people from outside of the county were overgrazing these lands. He argued that these people should be required either to rent or purchase the lands. It was common knowledge that everyone was trying to get as much free range from the public domain as possible. When farmers expressed concern about lack of water, the sheepmen moved to other areas (Minto 1892, 982-984).

Gambee's complaint could well have been applied to the Yakima River watershed, which experienced a great increase in the number of sheep in the 1890s. The Census report of 1890 recorded 15,342 sheep in Kittitas County and 16,217 in Yakima County. Ten years later, the numbers increased more than four fold to 66,714 in Kittitas County and a staggering sixteen-fold to 261,952 in Yakima County (Department of Commerce 1896, 271-272; 1902, 491). Not only had the ready access to rangelands in this watershed encouraged the sheepherder in these years, but it should also be recalled that the Yakima Valley had access to markets. The military road from Ft. Simcoe to The Dalles, river transport down the Yakima River to the Columbia, and the railroad at Wallula provided routes to the shearing pens at Umatilla and the processing mills at Pendleton. The construction and opening of The Dalles Scouring Mills Company occurred in 1900, bringing competition to Pendleton. This operation processed 8 million pounds of wool each year, some of which was from the Yakima Valley. By 1905 an Oregon-financed portage road and a government-supported canal opened at Celilo Falls to aid in transporting wool from east of the Cascade Mountains to The Dalles and to Portland (Lomax 1948, 43-48).

Pressure from eastern conservationists in the face of irresponsible overgrazing led to the establishment of the first forest reserves from public domain lands in 1891. One, the Mt. Ranier Forest Reserve, included the Yakima River Basin watershed. Initially, the Department of the Interior (DOI) allowed sheepmen access to the reserve range for a limited number of animals between June 20 and September 20. When the excesses continued, the DOI closed the reserve to all sheep in an effort to save the watershed. The owners of the 200,000 sheep involved pleaded their case to Rep. Wesley Jones, their congressional representative. They argued that the valley lands were too dry to provide pasture for the sheep, and that they had gone to the meadows on the eastern slopes of the Cascades Mountains for twenty years. They had even helped watch for and fight forest fires. Denial of access to the mountains' lands would jeopardize the value of more than one-fourth of the total property in the Yakima Valley. Under political pressure, the DOI opened Mt. Ranier Reserve once again to 250,000 sheep from July 1 to September 25.

Unhappy with the continued destruction of the watershed, the valley's cattlemen and farmers in 1902 pressed for reducing the number of sheep allowed to graze to 172,000 under a permit system. When the reserves came under Forest Service management in 1905, stockmen were required to develop long-range plans for their use of the forest reserves. The truce between the stockmen and the government lasted for a few years, but it ended with the Forest Service's efforts to raise the grazing fees. A solution to this problem occurred with the passage of the Taylor Grazing Act in 1934, which ended all unregulated grazing on public lands (Yakima River 1986, 70-72).

The reaction to the initial creation of the Mt. Ranier Reserve was immediate. The 1910 Census shows that the number of sheep in Yakima County had declined from 261,952 in 1900 to 38,479, and had stayed about the same in Kittitas at 60,623. This decline did not last over the ensuing decade. The stockmen's resentment of any government interference together with the outbreak of World War I led to a wool subsidy. The need for wool for the war effort contributed to the increase in the number of sheep in Yakima County to 112,603 by 1920, with an even higher number of 247,434 by 1930 (Department of Commerce 1912, 842; 1922, 299; 1932, 462).

Given the naturally arid nature of the Yakima Valley, and the numbers of livestock occupying Kittitas and Yakima counties, there is no question that range damage in the watershed occurred. Stock raising continued to be important in Kittitas County into the 1930s. During 1935, 27,000 cows and 47,000 sheep grazed on the open range in the southeastern part of the county, while in the summer the ranchers took their animals to the open forest range in the northern and western parts of the county (Forest Survey 2:1936-1937, 3).

By the mid-1870s, as the number of stockmen in the watershed began to decline, other resource-exploitative interests arrived in the watershed, namely miners. In 1873 some ranchers and settlers discovered gold in the Blewett Pass area that led to claims on Discovery Bar on Williams Creek. The town of Meaghersville, the site of modern-day Liberty, sprang up on the creek. Following the initial placers, more serious miners came leading to the creation of the Swauk, Cle Elum, and Peshastin mining districts. The investors supporting these mines brought capital and technology in an effort to exploit the gold-bearing veins as much as possible. Stamp mills followed the initial arrastras setup to grind the quartz that contained gold. The cyanide process of extraction was also used at mines in operation until the beginning the twentieth century.

In 1883 coal was discovered in the Cle Elum area. Towns seemed to spring up over

night. The mining sites at Cle Elum, Roslyn, and Ronald became among the most important coal producing sites in the Pacific Northwest. So great a resource were these mines thought to be that towns, such as Ellensburg, aspired to be the "Pittsburgh of the Pacific Coast." These mines brought the first significant numbers of Europeans to the watershed, people who came from eastern Europe and kept their languages and customs longer than usual. African Americans from the South and the Midwest also came to work these coal mines. By the 1920s these mines produced as much as 2 million tons of coal a year through advanced technology. This output declined during the Great Depression to 566,000 tons in 1935. However, these mines continued to operate until the 1960s (Yakima River Basin 1986, 52-53; Forest Survey, Part 2 1936-37 3; Melder 1931, 293).

What assisted development, settlement, and exploitation of the watershed was, of course, the railroads. The Northern Pacific Railway (NPW) owned the lands where the coal mines in Kittitas County were located and constructed a branch line to the Roslyn site. This led to the extension of the railroad to Puget Sound over Snoqualmie rather than Naches Pass. The initial presence of a railroad in the watershed occurred at the very beginning of the 1880s when NP established tie and pole camps in the Yakima Valley. The railroad looked to the forests in the upper part of the Yakima River watershed for timber supplies. The Cascade Mountains provided the wood and the Yakima River the transportation to Walla Walla. The three timber contractors that operated near Cle Elem in the early 1880s put 75,000 to 100,000 board feet per day in the river to keep up with the demand from railroad construction. In just one year, a crew of 150 men from the William Harkness Company floated 10 million feet of logs.

By 1884 the NP had built track, and a train arrived in Yakima City that year. Because of the prices demanded by this city for land to build a station and rail yards, the NP established North Yakima on its own lands just four miles away. The rivalry between the two towns was under way. Two years later, in 1886, Ellensburg saw the train come through and with it hopes for growth and development as well. The coal mines and the beginning of significant immigration into the watershed prompted the completion of the NP over the Cascade Mountains to Puget Sound in 1888 through Stampede Pass.

With the presence of a transportation route to the Pacific Coast in the Yakima River watershed, there was now access to major markets for agricultural products as well as a means of transport for future settlers. The Chicago, Milwaukee, and St. Paul Company Railroad would arrive in 1909 along with the Oregon Railway and Navigation Company's (OR&N) branch line up the east side of the valley from Kennewick to North Yakima in 1911. However, it was the

NP's initial presence and interest in building that brought the first major influx of settlers and land speculators to the Yakima River watershed (Lyman 1912, 267-269; Yakima River Basin 1986, 55-58; Avery, 1961, 277-278; Meinig 1968, 268).

Enough pioneer farmers arrived prior to the 1880s that ranchers in the watershed had begun to move north to the Okanogan country and east of the Columbia River by the mid-1870s. James H. Conrad planted peach, plum, and apple trees on his 160 homestead claim along the north and south forks of Ahtanum Creek after he arrived in 1871. Typical of those who would follow him from the Midwest, these pioneers sought to control the lands on both sides of a creek and as much of the creek as possible in this arid territory.

Using the numerous land laws at their disposal, settlers with the help of the railroads began pouring into the valley in the 1880s and 1890s. The Desert Land Act proved to be a popular choice of many by 1888. Under this act, 50,000 acres were claimed on the north bank of the river near North Yakima, with the valleys nearby this land proved to be the most extensive agricultural area in the region. The successful harvests of wheat and alfalfa in these early years revealed to everyone that the volcanic soil in the Yakima Valley was productive, but irrigation would be necessary to sustain profitable agricultural pursuits in the watershed (Sickler 1942, 1-3; Yakima River Basin 1986, 54; Gates 1941, 248ff.).

With the establishment of the Christian missions, members of the Yakima Nation had practiced irrigation during the 1840s. These Native Americans then taught the first Yakima Valley settlers who developed a crude form of irrigation as early as 1866. They diverted water from the rivers and creeks along their lands using ditches and canals. Since many of these streams dried up by mid-summer, water became a disputed commodity within the Yakima River watershed (Yakima River Basin 1986, 59).

The presence of the Northern Pacific in the watershed in 1884 encouraged irrigation undertakings. In 1885 the Ellensburg Water Company was incorporated to begin work on a "Town Ditch," which by 1890 was seventeen miles long and was irrigating 2,000 acres of land. The organization of the Yakima Canal and Land Company in 1889 brought plans for a 98 mile canal that would irrigate over 200,000 acres. The Panic of 1893 brought failure to this company and others in the watershed. One of the more successful ventures was the Sunnyside Canal which was irrigating 75,000 producing acres. At the turn of the century, the Washington Irrigation Company's operation consisted of a main canal 48 miles in length, with 14 miles of branch canals and over 200 miles of lateral ditches. Through the efforts of individual pioneers, mainly from the Midwest, and private companies, more than 194,000 acres were under irrigation

by 1900 in the Yakima River watershed in the lands around Ellensburg, Yakima, Sunnyside, Prosser, and Kennewick. Because of the dryness in the Yakima Valley, pests such as the hoplouse did not invade, which allowed a thriving hops production in many places. Unfortunately, by 1905-1906, these projects were diverting most of the Yakima River's water, leaving few water resources for incoming settlers (Washington Irrigation Company 1900, passim.; Gates 1941, 248 ff.).

The realization of the need for more water for the Yakima River watershed coincided with the passage in 1902 of the federal Reclamation Act which created the Bureau of Reclamation (BOR). The Yakima congressman, Wesley "Yakima" L. Jones had been instrumental in pushing for such a federal government agency, and he encouraged the BOR to come to the valley. Initially, the agency hesitated because there was already so much irrigation already taking place through the efforts of private companies and individuals. Jones' proposal for a canal at least on the Yakima Reservation was opposed by the Washington Irrigation Company. A battle ensued at the state legislature for control of the valley's water. Most ranchers and farmers believed that federal reclamation projects were necessary to insure an adequate water supply.

In 1905 the BOR gained control of most of the valley's water rights, including the Sunnyside Canal that all believed was key to the development of an irrigation system for the lower valley. At the time of the BOR purchase, there were 55 private water systems operating from the resources of the Naches, Cle Elum, and Yakima rivers. With the rights purchased, the BOR undertook to irrigate 350,000 acres. Between 1905 and 1940, the BOR began and implemented the following projects in the Yakima Valley:

- 1905, Tieton and Sunnyside projects authorized
- 1906, first water from the Tieton Project
- 1907, fist water from the Sunnyside Project
- 1908, construction of the Tieton Diversion Dam
- 1910, completion of the Bumping Lake Storage Dam
- 1912, Lake Kachess storage dam completed
- 1914, Clear Creek storage dam completed
- 1917, Lake Keechelus storage dam completed
- 1925, Tieton storage dam completed
- 1932, Prosser power plant completed

- 1939, Roza diversion dam completed (Yakima River Basin 1986, 64-69)

The development of both private and public irrigation systems in the Yakima Valley led to an explosion in agricultural production. Potatoes were added to the timothy that Kittitas Valley farmers had been producing at the turn of the century. Apple ranchers came into their own between 1900 and 1915. Their lands produced more than 2 million boxes of apples a year by 1910 and increased in value. Aided by the enhanced water supply, these orchards could be distributed more widely across Benton and Yakima counties. Planted among these apple trees were hops, berries, peaches, and alfalfa, all of which also added to the farmers' profits. By the mid-1930s, the three natural lakes of the Keechelus, Kachess, and Cle Elum reservoir areas had increased considerably in size because of the dams constructed by the BOR. By 1940 over 400,000 acres in the watershed were under irrigation due largely to the efforts of the BOR. The once seemingly nonproductive Yakima Valley had become a fruit bearing garden of apple, cherry, apricot, plum, and peach orchards (ibid., 60-63; Johansen 1967, 380; Forest Survey 2:1936-1937, 1; Department of Commerce 1942, map, Exhibit C).

While fruit production provided most of the economic base in the watershed into the twentieth century, the timber industry also contributed to the livelihood of the people who lived there. Actually the first logging had taken place in the early 1870s to support the construction of the Walla Walla and Columbia Railroad. Cutting wood at the headwaters of the Yakima River, the timber was often run down the river in October and November. Boomed together at the mouth of the Yakima, the wood was then rafted down the Columbia River to a mill that had been built just north of the old town of Wallula (Baker 1923, 8-9). As each of the railroads built through the watershed, the forests on the eastern side of the Cascades provided the needed wood for ties, guard rails, and even fuel for a number of years.

Most of the trees that were cut in Kittitas and Yakima counties during the first three decades of the twentieth century were ponderosa pine and some Douglas fir and western larch. By the 1930s, Yakima County was producing 40,431 million board feet from logs brought in from other counties. During the Great Depression years in Kittitas County it was reported that there was far less ponderosa pine than before because of major cutting in years past. However, some forest industries were operating mills in the county during these years. The three most important sawmills in Kittitas County included a mill at Easton producing 65,000 board feet per eight hour shift, at Cle Elum producing 40,000 board feet per eight hour shift, and at Ellensburg, also producing 40,000 board feet per eight hour shift (Forest Survey 2:1936-1937, 7).

Very little logging took place on a commercial level on the Yakima Nation's lands until the 1940s. Between 1880 and 1890, the pine butterfly, centered in the Cedar Valley region, destroyed hundreds of millions of feet of ponderosa pine over a 100,000 acre area. This equated to nearly all of the merchantable timber on the natives' lands. In 1918 fires destroyed the Potato Hill area. In the 1930s, forest beetles seriously attacked the trees of the Yakima Reservation. The Civilian Conservation Corps (CCC) helped to stave off complete disaster by successfully controlling this beetle epidemic. When the 1940s arrived and with it the era of commercial timber harvests, the Yakima Indian Forest was located on the eastern slope of the Cascades with more than 500,000 acres at elevations of 2,500 to 7,000 feet (Relander 1955, 51; Kenny 1963, 248-249).

It should be recalled at this time that the Yakima Nation had been granted over 1 million acres in the treaty with Isaac Stevens in 1855. Most of the nation's members moved to the reserved lands in south-central Washington. In 1867, members of the Klickitat tribe settled on the Yakimas' lands because of pressures from settlers in the Willamette Valley. From 1879 to 1884, following the Bannock-Paiute War, the Northern Paiute were sent to the Yakima lands as well, but they left in the early 1880s for their homelands in southern Oregon (Ruby and Brown 1981, 58).

The coming of the railroad and white settlers brought encroachment on the lands of native peoples. When the Northern Pacific Railroad completed a section across the eastern border of the Yakima Reservation in 1883, a flood of white settlers came right behind. This settlement resulted in farmers diverting the creek waters for their farms, leaving the Indians downstream with no water for their farms or herds. The Dawes Act of 1887 made matters even worse. Lands were allotted to the Indians in 80 acre parcels for farming or in 160 acre parcels for timber or grazing as part of the "civilizing" effort by whites. Whatever was left over was declared "surplus" and could be offered to settlers as homesteads. Thus began the checkerboard ownership of Americans on the Yakima Nation's lands (Hunn 1990, 275ff.; Stowell 1987, 136).

In 1891, the Northern Pacific Railroad and the Kittitas and Yakima Irrigation Company began building a canal on the Yakima River at the eastern edge of the Yakima reservation about three miles below Union City. Although a violation of the treaty, the canal was not stopped, and the Yakima Nation had to buy storage water, since what was rightfully theirs had been taken from them.

Reclamation projects in the twentieth century helped return some of this water to the Yakima Nation. By 1934 there were 90,738 acres that were under irrigation on the Yakima Indian

Reservation. About 40,000 acres had been transferred to white ownership as deeded lands, with the Indians actually farming only 6,953 acres (McWhorter 1913, 9; Memorial of the Yakima Tribe 1913, 3-6ff.; Yakima River Basin 1986, 89ff.; Martin 1935, 72).

Even though irrigation endeavors were bringing fertility to the Yakima River watershed, these efforts led to the end of the salmon runs up the Yakima River. By the turn of the twentieth century, even with the initial ditch and canal undertakings, irrigation was drying up streams in the late summer and early fall when the salmon would return to spawn. This was especially true on the Yakima River where large dams blocked the salmon's upstream migration. When the young salmon would make their way downstream on their way to the ocean, they would be led into canals and then into irrigation ditches in the fields, which were largely dried up in the fall and thus the fish perished. By 1925 the salmon runs had declined dramatically, hurting a major food source of the Yakima Nation. Members of the Yakima Nation still had fishing rights at The Dalles and Celilo Falls, but this treasured fish ceased to come in the numbers to their lands as in the past (Relander 1955, 47ff.).

Japanese settlers also came to the Yakima Valley in the 1890s, initially to work on railroads, timber mills, and salmon canneries. Some came to the Pacific Northwest to farm. Seeing the agricultural potential of the watershed's rich soil, they too participated in the programs for leasing reservation lands. Japanese first settled on the lands around Toppenish and Wapato in the lower part of the Yakima Valley. By 1915 there were 500 Japanese in the Wapato area. Because of the passage of Washington's anti-alien land laws in 1921 and 1923, the Japanese could no longer lease or own land but had to sub-lease from the Caucasians if they wished to farm at all. This resulted in smaller parcels of land to farm. Rather than producing alfalfa, potatoes, or onions as in the past, they now became more like truck farmers with crops of tomatoes, sweet corn, peas, beans, cucumbers, squash, cantaloupes, and watermelons. Wapato emerged in the 1920s as the hub for the Japanese community. When the depression came in the 1930s, many of the Japanese farms were burned because of competition from these Asians and falling farm prices (Pascua 1976, 4-6; Martin 1935, 72-74).

Over time, grazing, mining, logging, and farming had all taken place within this watershed. Range damage in the late nineteenth century followed by major irrigation projects in the twentieth century would have contributed to the landscape's alteration.

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LOWER SNAKE RIVER WATERSHED

As the Snake River heads west from Lewiston, Idaho, to its confluence with the Columbia River near Pasco, Washington, high canyon walls line its banks on either side until it nearly reaches the Columbia. Just before these two great rivers meet, the land levels out. To the south of the Snake River is the northern part of the Walla Walla Valley while to the northwest are the lands drained by the Palouse River. Despite the inaccessibility of the high lands on either side of the Lower Snake River, the river provided for many years an artery for east and west travel for Native Americans and the later arrivals, the Euro-Americans. The Euro-Americans also used the Lower Snake near its mouth to access lands for settle- ment in the Walla Walla and Palouse valleys. Bateaux travel evolved to steamboat travel to train travel along this river. From thousands of years of salmon fishing by Native Americans to the modern era of affluent wheat farmers, the Lower Snake River watershed was a center of much human activity for many years.

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

Archaeological evidence indicates that people were living in the Lower Snake River watershed near the confluence of the Snake, Yakima, and Columbia rivers as early as the Windust Phase or between 11,000 and 8,000 BP. Further upriver near on the Swift Bar between Penawawa and Almota, artifacts have been found that indicate human presence in this area from 8,000 to 4,500 BP. And finally, at the mouth of the Palouse River, shelter sites have been excavated that date from 2,400 BP (Thoms 1983, 19; Sappington 1984, 11; Schalk 1982, 149; Miss 1982, 16).

Weather played a major factor in early peoples' lives as to where and how they lived. Although there is disagreement about the details of climate change that took place over time on the Columbia Plateau, there is general agreement that 13,000-8,000 BP was a cool, moist period; 8,000 to 4,000 BP, a warm, dry period; and from 4,000 BP to the present, a stabliization in climate occurred that has remained to modern times (Schalk 1982, 11-12). The way of life of

inhabitants of the Plateau stabilized from 4,000 BP onward. Hunting and gathering, not agriculture, sustained these people over the millenia (Chatters 1982, 140-142).

For those who lived in this area and generally across the Columbia Plain, a cyclical pattern of life began to develop as of 3,000 to 2,000 BP. During the winter months, people lived in pithouse villages in sheltered locations along the Snake and Palouse rivers, surviving on stored fish, roots, and berries as well as some meat from hunting efforts in the hills and canyons. By April, the villages would break into small bands to trek to the more forested areas south in the Blue Mountains or north across the prairies of the Palouse to begin gathering the early plants of spring. A major fishing site for catching salmon at the confluence of the Snake and Columbia rivers provided a major meeting place for Native Americans on the Plateau. The early runs of Chinook would begin in late April followed by other runs in the latter part of June and early July, with the largest and most important run for winter stores in September and October (ibid.; Hunn 1990, 119 ff.).

Protohistoric Settlement Activity (1500 to 1800)

Sahaptian-speaking peoples occupied the lands in this watershed. Generally speaking, the Nez Perces, Yakima, Walla Walla, Umatilla, and Wanapum peoples shared the lands and resources with the Palouse, the main occupants of the area within this watershed. Essentially three bands of Palouse who inhabited the Lower Snake River country. The Upper Palouse lived near Nez Perces villages close to current-day Alpowa, Wawawai, and Almota, all of which are below the confluence of the Clearwater and Snake rivers. The Middle Palouse lived at the mouth of the Palouse River where it enters the Snake River, and the Lower Palouse lived near where the Snake River flows into the Columbia River (Trafzer 1991, 54).

Living on the eastern side of the Plateau as they did, these people were among the first in the region to acquire the horse. The lush, flatlands in the valleys south and north of the Lower Snake River provided excellent grazing for their herds. From the early eighteenth century, this new means of transport enabled them to hunt bison on the Plains and to trade with the peoples to the east. More than just means of travel, horses of the Plateau also acquired a reputation for high quality. Native peoples often raided each other for the animals; Euro-Americans who arrived in the nineteenth century, both explorers and emigrants in need of fresh stock, sought these animals as well (ibid., 57).

These people also experienced the population decimation that smallpox brought to the natives on the Columbia Plain in the late eighteenth and early nineteenth centuries. Such population decimation suggests that the size of the units of people needed to trade, gather, forage, fish, and hunt for survival changed dramatically at the beginning of the nineteenth century, an alteration that proved irreversible as more Euro-Americans arrived (Ray 1937, 107; Webber 1989, 150ff; Boas and Teit 1985, 167, 175, 211ff; Grabert 1973, 112).

Preindustrial Settlement Activity (1775 to 1865)

The Lewis and Clark Expedition traveled down the Lower Snake River in 1805 and on their return home in 1806. In both passages, they stopped to meet with the peoples who lived in the Lower Snake River watershed. In October 1805, these famous American explorers met with some of the Palouse people at Qosispah village near present-day Pasco, Washington. On the return trip in 1806, Meriwether Lewis commented on the fertile potential of the Palouses' lands when viewing just the periphery (Journals of Lewis and Clark, vol. 5 1988, 275-277; Trafzer 1991, 56). In 1811 and 1812 on trips east, the Astorians, William Price Hunt and Robert Stuart, traveled through the watershed when they were looking for possible trading post sites that could be located on the edge of the Snake River country (Meinig 1968, 41-42). Actually the Lower Snake River proved to be a natural highway for the first explorers and trappers.

Since the Blue Mountains serve as a kind of natural bridge between the Snake and Columbia rivers, this watershed was crossed and recrossed by explorers and trappers in the nineteenth century. Benjamin Lewis Bonneville, Samuel Parker, Nathaniel Wyeth, Charles Wilkes, and John Fremont all saw the farming potential in the valleys on both the north and south sides of the Lower Snake River (Irving 1911, 453-454; Bailey 1982, 6; Meinig 1968, 110-111, 178).

The fur traders traversed this watershed on a regular basis in the first decades of the nineteenth century. As early as 1810, the English opened Spokane House where David Thompson and other North West Company (NWC) traders introduced the Palouse Indians to Euro-Americans' trade items. The company had selected this site because it believed that its location in the transitional zone between the the mountains to the east and the Columbia Plain would offer a focal point for the fur trade with the Coeur d' Alene, Kalispel, and Kootenai to the east. The Americans also beleived in the merits of the location. The Pacific Fur Company, John

Jacob Astor's group, opened the rival Spokane Post on the Spokane River just a few miles from the North West operation. A year later, during the War of 1812, Alexander Ross sold the Pacific Fur property to the North West Company. From then until it was merged with the Hudson's Bay Company (HBC) in 1821, trappers for the North West Company passed through this watershed.

The native peoples of this watershed, like others on the Plateau, did not prove to be true trading partners. In 1817 Donald McKenzie of the NWC brought Iroquois from Canada to the Oregon country to participate in the trade. More experienced in the entrepreneurial ways of the Euro-Americans, these Native Americans proved to be more active and useful partners for the fur trade than those who were native to the Columbia Plain. To be sure, these Iroquois were active participants in the expeditions to the Upper Snake River country that the NWC began in 1818 (Nicks 1980, 90-92).

While this watershed contained few, if any, fur-bearing mammals, it provided a transition into the heart of the rich fur country that existed in the watershed of the Upper Snake River. At Donald McKenzie's insistence, the company built Ft. Nez Perces in 1818, located near the mouth of the Walla Walla River where it enters the Columbia River. From that time on, most of the expeditions that the NWC began to the Upper Snake country in that year and that the HBC continued until the 1830s set out from Ft. Nez Perces and traversed at least part of the Lower Snake River watershed in modern-day southeastern Washington state (Meinig 1968, 62).

The HBC's policy for trade under George Simpson's leadership was the enforcement of "fur desert." Knowing that in 1828 a treaty would be renegotiated between Great Britain and the United States regarding the ownership and occupation of the Oregon country, the HBC's goal was to trap out as many of the beaver and other fur-bearing animals in the area as possible in order to leave fewer potential profits in the fur trade for the Americans. While the government officially encouraged a conservation policy toward the beaver, there was little effort to enforce it (Merk 1968, xxiiff.).

John Work, Peter Skene Ogden, and others led groups to the Snake River country that passed through the Lower Snake River watershed. Their journals reveal, however, that most of the animals they trapped lived in the watershed of the Upper Snake River.

Of a more permanent nature in settlement in the southeastern area of the Plateau were the missionaries who came to convert the natives. In the fall of 1836, Marcus and Narcissa Whitman opened a mission, Waiilatpu, in the Walla Walla Valley. Further up the Lower Snake River, Henry Spaulding, also a member of the Whitmans' missionary effort, selected the site for a second mission on Lapwai Creek, a few miles up the Clearwater River. While just at the edge of the Lower Snake River watershed, these missions as well as the missionaries' work among the

Indians had a profound effect on the native peoples and the lands in the Lower Snake River region. In an effort to "civilize" the Indians in a Christian way, these missionaries encouraged the natives to farm, to settle in, and to give up their nomadic ways. While the Palouse refused to accept these new ways, other native peoples accepted it, cultivating fields on land near the missions. This continued until 1845 when the emigrants on the Oregon Trail began traveling through the Lower Snake River region and found that the Nez Perces, Cayuse, and Walla Walla peoples were cultivating crops near the missions. But by 1847, the farming effort among the Indians seems to have failed (Trafzer 1991, 60ff.; Meinig 1968, 140-141).

Before the Whitman massacre in 1847, most travelers on the Oregon Trail stopped at Waiilatpu to obtain food, supplies, and good companionship after six months of hard travel. Some in a group that arrived in 1847 had measles that infected many of the Cayuse, decimating their numbers. Dr. Whitman tried to help the dying members of the tribe with medicine, but to no avail. Fearing that the white doctor was plotting to eliminate their entire people, the Cayuse attacked the mission in November 1847, killing the Whitmans and twelve other people. They also took hostages who were released when a volunteer army from the western part of the Oregon country came east the following year to avenge the deaths. The Palouse became involved in the conflict as well when they supported the Cayuse against the whites. As a result of this crisis, the government discouraged settlement east of Cascades in the Oregon country for a number of years (Trafzer 1991, 61ff.).

To retaliate for the massacre, settlers in the Willa- mette Valley raised a volunteer army in the spring led by Peter Skene Ogden and Joel Palmer. This offensive brought the rescue of the remaining missionaries and some settlers who were hostages. At first unsuccessful in identifying the killers, the volunteer troops finally tracked them down and hanged them. In addition to loss of life, the Cayuse were expelled from their lands as a reparation for the missionaries' deaths. This was the first time that any of the natives of the Columbia Plain had been expelled from their lands by the Euro-Americans. Thus, began a distrust of Euro-Americans by the Native Americans of the Columbia Plateau, a distrust that was fully realized with the treaties that some of the Plateau tribes negotiated with Isaac Stevens and Joel Palmer in 1855 (Miller 1985, 334; O'Donnell 1991, 113).

The federal government tried to deal with land issues and potential disputes between natives and settlers in the Oregon Territory. Just five days after the hangings of the Cayuse accused of the Whitmans' deaths, Congress passed the Oregon Indian Act that said that the government could purchase natives' lands in the Willamette Valley in exchange for territory east of the Cascades. The Yamhill, Molalla, and Luckiamute peoples of the Willamette Valley

refused to recognize the treaties or to leave the valley. They argued that they could not live in the desert area east of the mountains where hunting rather than gathering was the way of life. They also did not wish to leave the graves of their ancestors. In a compromise, the government gave these peoples marginal lands on the edge of the Willamette Valley for farming (ibid., 137).

By 1850, other acts of Congress had complicated these lands issues even more. While the 1848 Territorial Act had assured the Native Americans ofpossession and ownership of their lands, the Donation Land Law of 1850 promised essentially the same lands to the new settlers who came to the Oregon Territory. With such contradictory measures, it should have surprised no one that there was great distrust of the Americans (ibid., 175).

When the federal government formed the Washington Territory in 1853, Isaac Stevens was appointed its first governor as well as the superindentent of Indian Affairs. In the two years following, he conducted a survey of the lands, especially for railroad construction, that resulted in an extraordinarily detailed map. It showed, for the first time, the geography of the region and the lay of the land. Seeing the potential for settlement and development, Stevens realized that the native peoples of the Columbia Plain would hinder the region's growth in the region that so many were hoping for as the emigrants proceeded over the Oregon Trail (Miller 1985, 340ff.).

Trying to anticipate the inevitable loss of their lands, leaders from the Yakima, Klickitat, Cayuse, Walla Walla, Nez Perces, and Umatilla peoples met in Grande Ronde Valley in the summer of 1854. They devised a strategy for countering the Euro-Americans' proposals, but it was ineffective (ibid.).

The details of the meeting of the Sahaptian-speaking plateau tribes with Stevens and Palmer at Walla Walla in 1855 have been outlined by others (ibid., 340ff.). Through a terrible misunderstanding at the treaty council, Kamiakin, the Yakama leader, mistakenly signed away all of the territory that belonged to the Palouse people -- lands that would one day become the richly productive wheat fields of the Palouse Hills country. Within months after the signing of the treaties, the Yakima War broke out. During the war years of 1855-1858, members of the Palouse and Spokane tribes supported and sided with the Yakima Nation. The high point of the war for the native peoples was the near defeat of Colonel Edward J. Steptoe and his force of 157 men in the spring of 1858 near modern-day Rosalia, Washington. Barely escaping total annihilation, these American army forces retreated to Ft. Walla Walla.

In late summer of that year Colonel George Wright retaliated for the "Steptoe disaster" by marching with 600 troops against the Palouse and other tribes. Unable to hold their own against such a force, the natives had to surrender, losing not only many of their leaders, but also many of their supplies and horses. By 1865 Kamiakin had moved to Rock Lake where he

resided until his death. Wright forbade the Palouse from living south of the Snake River ever again. By 1859 the Umatilla and the Walla Walla had moved to lands reserved for them in the Umatilla watershed (Trafzer 1991, 65-69; Ruby and Brown 1981, 52).

Prior to the Whitman's deaths, most of the Oregon Trail wagon trains cut north after crossing the Blue Mountains to stop at the Whitmans' mission, bypassing the Umatilla River watershed. Following the disaster, nearly all the Oregon-bound travelers used the more southern route -- "the Umatilla cutoff" -- that took them through the watershed to the Columbia River. During the year of the massacre, nearly 4,000 emigrants came through the Lower Snake River watershed, but practically no one stayed to settle there. The Oregon Trail travelers crossed the western part in September, each time at the end of the summer when the naturally arid area looked particularly parched and desolate when compared to the fertile, lush Willamette Valley that awaited them to the west of the Cascade Mountains.

Henry Spaulding, the missionary at Lapwai in Idaho, had described the Tucannon and Palouse valleys as among the several areas that were "habitable" in this part of the Oregon country. But only the Grande Ronde Valley of northeast Oregon was seen as having potential for successful farming and settlement. The unappealing landscape, along with the native unrest east of the Cascades, discouraged interest in settling in the Lower Snake River watershed until the late 1850s (Palmer 1983, 48; Meinig 1968, 183, 201-203). It would take another decade for those emigrants, essentially from the Midwest and the upper South, to realize the truly rich nature of the volcanic soil that supported the bunchgrass-covered lands of the Palouse Hills (ibid., 195-196).

During the Yakima War years, settlement east of the Cascades was discouraged. But miners, hearing of strikes in Idaho, the Upper Columbia, and Fraser river areas, began stampeding to camps in that direction. By the early 1860s, placer mining was starting in northeastern Oregon. People from the Willamette Valley saw the potential to supply camps on the Clearwater and Lower Salmon rivers and Boise Basin, as well as those in eastern Oregon on the the Powder and John Day rivers. They headed east to take advantage of the business opportunities that the mining strikes offered. The Dalles and Umatilla served as entrepots for sending people and supplies to the mines to the east.

In 1858 the steamship, Colonel Wright, was launched just east of the mouth of the Deschutes River to transport even more people and supplies to the camps. In 1863, steamship travel was possible all the way up the Snake River to current-day Lewiston, Idaho, where prospectors could head north to the camps on the Clearwater River or on Wild Horse Creek in Montana, east to the strikes in the Boise Basin, or south into the gold belt of the Blue Mountains

on the John Day, Powder, Burnt, and Owyhee rivers. A portage railroad overtook the teamster method of crossing the difficult twelve-mile portage between The Dalles and Celilo Falls by 1863, which meant even more people could be transported to the mining areas. Between the years 1861-1864, the Oregon Steamship and Navigation Company (OSN) transported 93,000 passengers and over 60,000 tons of freight on the stretch of the Columbia River above Celilo, a good bit of which would have passed through the Lower Snake River watershed (ibid., 212-214).

Steamboat travel was not the only means of transport to the mines in these years. With most of the native peoples on reserved lands by the end of the 1850s, miners and stockmen used the old inland Indian trails that had become trappers' routes in the fur trading era. The Colville and Texas roads headed north from the Lower Snake River to the mining strikes on the Upper Columbia and Fraser rivers. Stagecoach travel began service from Walla Walla, the river city that sprang up next to the site of the old Ft. Nez Perces. By the early 1860s, on a regularly scheduled basis out of Walla Walla, stagecoaches headed east to Lewiston and Boise, north to Ft. Colville, and west to The Dalles. Under the direction of Lt. John Mullan, con- struction began on a road in 1859 from Ft. Nez Perces that headed east northeast through the Lower Snake River watershed and across the Palouse Hills in order to connect the Columbia Plain with the mines on the Upper Missouri. Completed in 1862, the Mullan Road became another artery for transportation of people and goods to the mines in Idaho and Montana. Within a few years, stockmen would also use this road to herd thousands of head of cattle to the mines and newly established ranches in Idaho, Montana, and Wyoming (ibid., 218, 236).

Although the Whitmans and the Spaldings had been raising sheep within the watershed at their missions in the late 1830s, the first major influx of stock into the Lower Snake River region consisted of cattle intended to provide meat for the mining camps in the Ft. Colville area as well as in eastern Oregon, Idaho, and Montana. The first settlers in the watershed were nomadic stockmen who crossed the Snake River with their herds that began to graze on the bunchgrass of the Palouse Hills. The abundance of so much natural feed on the public domain along with ready access to the Mullan Road only encourged migration of stockmen to the lands in the Lower Snake River watershed. The natural bounty of the range grasses left most stockmen unprepared for the winter of 1860-1861. Grazing on the open range year round, these initial herds of about 2,000 ate the nutritious bunchgrass throughout the summer. In early autumn, the herders burned the range to stimulate new growth and made forage for the winter. The failure to provide a store of hay for the animals in the winter of 1860-1861 proved catastrophic for the cattlemen east of the Cascades. Most of the stock starved and froze to death. Ninety percent of

the cattle in the nearby Walla Walla Valley died during that terrible winter (Yoder 1942, 136; Meinig 1953, 119-120).

Sheepherding in this watershed began in the 1860s as well. Both the Whitmans at Waiilaptu and the Spauldings at Lapwai were raising a few sheep at their missions at the time of the mass- acre. The ending of native conflicts together with the gold strikes in the 1850s and 1860s prompted sheepmen to come east of the Cascades. The potential for profits from the mutton and wool supplied for the mines prompted the sheepmen to come. But these stockmen also suffered great losses in the winter of 1860-1861 (Illust. Hist/SE 1906, 91).

Increasingly aware of the richness of the land within this watershed for stock and for farms, the Palouse country was poised by the end of the Civil War to take off in terms of settlement and development. Most of the natives had been removed. Walla Walla was already providing the staging area for entrance into the interior by offering various means of land and water transportation. It only took promotion by railroad companies, along with the discovery of the richness of the volcanic ash soil that supported bunchgrass, for the area to realize its destiny as a thriving agricultural center in the Pacific Northwest.

Modern Era Settlement Activity (1866 to 1940)

Typical of most areas in the interior Columbia River Basin, the stockmen preceded the homesteaders by a decade or so. The Lower Snake River watershed was no exception. Attempting to capitalize on the mining stampedes to the Upper Columbia River, Idaho, Montana, and eastern Oregon, stockmen moved their sheep and cattle to the bunchgrass-covered lands south of the Snake River as well as to the Palouse Hills to the north. The stock venture proved to be quite profitable even for the earliest arrivals. Free shelter and fodder from the vast lands on the public domain added to their herds of horses, cattle, and sheep, some of which new settlers purchased on arrival. What also helped the growth of the cattle business in the 1870s in all parts of the Lower Snake River watershed was the demand for stock for Wyoming and Montana ranches and for meat from the growing urban centers east of the Rocky Mountains. Companies, such as Lang and Ryan of Kansas City, Missouri, were developing ranches in Montana and Wyoming and purchased thousands of head of cattle from eastern Oregon and Washington in the late 1870s. In 1880, these enterprises purchased 62,000 head from Washington alone.

How many of these animals were grazing on lands within the watershed is difficult to

determine. The state government did not draw the modern-day county lines for most of the area until the 1890s. It could be surmised, however, that the Lower Snake River country participated in this boom until the devestating winter of 1880-1881 when much of the cattle and sheep in the state east of the Cascades froze to death. In some counties in eastern Washington as much as 78 percent of all the stock died, which also meant an exodus of many of the people. But stockmen continued to drive cattle and sheep east into this watershed via the Yakima Valley as well as north from Oregon. Lands in the western part of the Palouse country, considered unsuitable for farming, were all that were left for those stockmen arriving in the late 1880s (Oliphant 1946, 25-30; *Illust. Hist/CenOR 1905, 561;* Illust Hist/SE 1906, 662; Paul 1976, 49ff.; Yoder 1938, 141-143). One of the last major drives from eastern Washington occurred in 1882 when Lang and Ryan drove out 12,000 cattle and 30,000 sheep. Some have suggested that such large drives took place in the 1880s because the range was wearing out and farmers were coming. Indeed, the governor of the Washington Territory wrote the Secretary of the Interior in 1888 that "bunchgrass is giving place to fields of wheat and other cereals" (Oliphant 1946, 40).

Between 1890 and 1930, the number of cattle across this watershed remained constant. Whitman County always had the most, ranging from a high of 36,606 in 1900 to a low of 21,000 in 1910. The other counties in the watershed -- Adams, Asotin, Columbia, and Garfield -- raised cattle in the numbers of 10,000 or less over the forty-year period (Department of Commerce 1896, 312-313; 1902, 490; 1913, 840-843; 1922, 67-68; 1932, 440-441).

Sheepherding was another matter, however. From 1890 to 1910, 8,000 sheep were raised in Adams County. In 1910, the number of sheep increased by three-fold to 20,832 and remained at this level until 1930. Asotin and Whitman counties experienced the greatest number of increases in sheep during this time period with Garfield knowing a steady decline. Garfields's high of 38,671 sheep in 1890 declined constantly over each decade to a low of 6,891 by 1930. This decline in sheep population occurred, quite probably, because of the increase in the size of the average farm in this county from 300 acres in 1890 to 908 acres by 1930. Perhaps, a similar explanation could be made for Asotin County whose sheep population increased from 1,785 in 1890 to 27,750 in 1900 to a high of 50,548 in 1910. By 1930, when the size of the average farm in Asotin County was 449 acres, only 2,808 sheep were reported. Whitman County consistently had the highest number of sheep over the forty-year period, ranging from 17,143 to 66,778 in 1930 (Department of Commerce 1896, 192, 271-272; 1902, 491; 1913, 840-841; 1922, 296-297; 1932, 460-462).

Permanent settlement by homesteaders in the Lower Snake River watershed really took off after the Civil War, mainly because of the railroads. A fierce construction competition

among railroad companies began in the post-war years that resulted in the settlement of the Palouse Hills by farmers largely from the Willamette Valley or from the Midwest. At this time settlement opportunities in the Washington Territory differed from the state of Oregon. In Oregon, a dispute over land titles between the Northern Pacific Railway Company and the Eastern Oregon Land Company locked up thousands of acres in north central Oregon. Because of this unavailability of so much of the arable land in eastern Oregon, the Union Pacific and Northern Pacific decided to focus their construction of track in eastern Washington and along the Columbia River where land had clear title and awaited settlers (Mosgrove 1980, 42).

Preceding the larger competitors in railroad construction was Dr. Dorsey Baker's effort to build a railroad from Walla Walla to the Columbia River, a project that was completed in 1875 and greatly stimulated farming (Meinig 1968, 242). With larger projects in mind, railroad magnates, such as Henry Villard, the president of Northern Pacific Railroad in the 1870s, found Isaac Stevens' maps and reports of the 1850s about the potential for railroad development across the Columbia Plain to be quite useful.

As president of both the Oregon Railway and Navigation and Northern Pacific companies, Villard proved to be one of the Pacific Northwest's greatest boosters for immigration to and settlement of the area. At his suggestion, the Northern Pacific opened offices in Boston, Topeka, Omaha, and Portland to promote the immigration of "the better sort" of people, namely those of Anglo-Saxon descent or from Northern Europe. By 1883 the Northern Pacific was sending more than 900 agents to Great Britain, Sweden, Norway, Denmark, Switzerland, and Northern Germany in an effort to advertise the opportunities that the Pacific Northwest offered. Transportation there would be provided with reduced fares courtesy of the Northern Pacific Railway. On arrival, the Oregon Improvement Company, owned also by the Northern Pacific, would offer loans, supplies, and even sell railroad lands to the new settlers as a further courtesy (Hedges 1928, 183-203; Wirsing 1977, 40; Riddle 1974, 98). But because of the distance and isolation of Washington and Oregon, and despite the efforts by railroads and the states to promote settlement, most of those who came between 1885 and 1910 were from east of the Rockies and not directly from overseas (Meinig 1968, 506-507).

Even before they began major construction in the 1880s, the railroad companies had heard about the extraordinary yields of wheat from the lands in this watershed. Nearly three decades before, Isaac Stevens had observed that the bunchgrass bearing lands in eastern Washington Territory bore a great resemblance to the wheat producing steppes of Russia. His predictions rang true even with the first farmers in the Lower Snake River watershed. In 1877, 22,000 tons of wheat, flour, oats, and barley had been shipped down the Columbia River from

Walla Walla (Illust. Hist/SE 1906, 104).

During the early 1870s, people began filling the rich prairie lands south of the Lower Snake River that skirted the Blue Mountains in what today are Columbia, Garfield, and Asotin counties in the state of Washington. And by 1884 it was reported of Asotin County, "Almost all of the public land has been taken up, and the broad level expanse of the Lewiston and Asotin flats are now thickly dotted over with fine farms, every one of which is substantially fenced. . . . The farms extend from the flats well up onto the wooded hills, and the higher up toward the mountains the richer the lands appear to be" (ibid., 657). In the southern portion of the Lower Snake River watershed, farms were producing in the Tucannon Valley as well as near Dayton and Starbuck.

The products of thise farmers' harvest in the Lower Snake River watershed were not easily sent to market in the years prior to the railroad. With the uplands 2,000 feet above the Snake River, these pioneers had difficulty driving wagonloads of grain down the steep trails. In 1879, the first of several grain chutes was constructed at Moxwai. Having a diameter of 4 inches and being 3,200 feet in length, this chute along with those at Wawawai and Ilklia provided a "means to market" for farmers' grain in the early 1880s. To be sure, these settlers welcomed the railroad that arrived in the 1880s (Meinig 1968, 253-254).

Settlement north of the Snake River came a few years later. In 1872 a territorial survey crew planned for a road to run from Penawawa on the Snake River to the Palouse Forks area, and then north to Ft. Colville. The opening of a federal land office in Colfax in 1876 encouraged homesteaders to head northeast and cross the Snake River into the Palouse country. Almota, Pena- wawa, and Wawawai all had landings on the Snake River to handle products for shipment to market. By 1880, 7,000 people were living in the Palouse country (Meinig 1968, 243-245).

At first these settlers from the Midwest had difficulty adapting to the rolling terrain of the Palouse country, which starkly contrasted to the flats, meadows, and partly timbered lands they had farmed before. Many of these people passed over acres that would one day yield 40 to 50 bushels of wheat per acre. Looking for the familiar flat lands they were accustomed to, the first settlers concentrated their farms toward the northeast in the areas between the high hills where the deep, black soil and forested fringe suggested better rainfall. Advised to choose lands no farther than twenty miles west of the Idaho border because of moisture, the western part of the Palouse was left to the stockmen for a number of years. When the incredible yields from the eastern area began to come in by the early 1880s, bankers and lenders refused to lend money to anyone living to the west.

The wave of settlement started at the forks of the Palouse River and continued to upper

Union Flat Creek, Paradise Valley, the upper Palouse near the Idaho line, and for fourteen miles further north along the Idaho border. According to the memories of one homesteader, by the late 1880s, the lands spreading in every direction from Steptoe Butte were fenced and farmed with cultivated fields alternating with fallow ground. Even those farmers who came in the late 1880s experimented with farming methods for several years, and they too reaped great harvests from the rich soil. A decade of experimentation ultimately paid off. By 1890 the farmers in the Palouse country were planting and harvesting wheat all the way to the top of the Palouse Hills (Yoder 1938, "Pioneers" 140-142; Meinig 1968, 246-247; Manring 1975, 22).

On the western fringe of the Palouse country, but also in this watershed, was the territory that became Adams County. It was here that German people from Russia settled near Ritzville in 1883. Having emigrated to the northwest via Wisconsin and then Nebraska, these foreigners found success and not failure in their new home. Hardier varieties of wheat, such as Jones' Red Winter Fife and Shoe Peg, as well as the more mechanized farming methods enabled these people along with most farmers in the watershed to prosper in the 1880s (Wirsing 1977, 38; Illust. Hist/BB 1902, 793).

In the 1870s, the first farmers in the Lower Snake River watershed sowed their wheat by hand, cut it by cradle or scythe, and threshed it by flails or by tramping horses. By the end of the decade and into the 1880s, horse-powered machinery, such as dump reapers, headers, binders, threshers, and gang plows, entered the fields. Across the Palouse country in current-day Whitman County, Washington, gang plows drawn by as many as 20 mules or horses worked the steep hills (Johansen 1967, 317).

Improved farming methods were not the only factor that con- tributed to the economic boom that the farmers in this watershed experienced in the 1880s. When the Northern Pacific Railway finished laying track through Whitman County, the farmers of the Palouse country began to realize that they now had access to world markets. With the arrival of the Union Pacific into the area in 1888, the ports of Seattle, Tacoma, and Portland could receive their products, although most used Portland because of the lower rates offered by the Union Pacific. For many, the family farm was transformed from merely home to a specialized production center. Land prices increased as well. An 80-acre farm near Colfax that was bought for $277 in 1878 could be sold for $5,200 in 1891. But inspite of all the growth and prosperity, profits were hard to come by. The Union Pacific and the Portland grain dealers had a monopoly on the transport and brokering of the grain. No Interstate Commerce Commission existed at this time, which resulted in freight being more expensive to ship from eastern Washington to Portland than to Chicago. And finally, many of the farmers within the watershed, at least in Whitman County, had

mortgages. While many had experienced prosperity during the four years preceding the Panic of 1893, the panic and the rains that year ruined not only the harvest but also many of the overexpanded and overly committed farmers (Riddle 1974, 100-103).

At the beginning of the twentieth century, another significant migration from the Midwest to the state of Washington took place. These people had come through the depression of the 1890s with money in their pockets. "Independent people of means" could describe the emigrants who arrived at the turn of the century. In the first decade of the twentieth century, Washington state's population increased by 120.4 percent. Still available was public domain land that cost $1.25 per acre and even railroad land at $2.50 per acre. In 1900 it was still possible to buy land in the wheat belt, part of which was in the Lower Snake River watershed, for $7 an acre -- land that increased more than four times in value by 1910. The size of the average farm in the Palouse Hills in those years was 384 acres; in Adams County, 775 acres. Better, more resiliant kinds of wheat were introduced as well. Little Club spring wheat and Turkey Red winter wheat proved to be so successful that a farmer might harvest a crop of wheat and one of oats in the same year. In 1910 Whitman County alone produced $10 million in wheat (Johanson 1967, 372-376).

As the twentieth century progressed so did the farmers of the Palouse. The disease, "stinking smut," that attacked the wheat fields in this watershed in the early twentieth century initially brought great losses to the farmers. But by 1912, scientists had developed new seeds, such as Ridit and Albit, that proved to be smut resistent. By 1939 there were 37 varieties of wheat being grown in eastern Washington, 21 of which had been developed since 1918.

In addition to the improved seed, the farmers also took advantage of the most up-to-date farm machinery, such as tractors, seed drills, twine binders, combined reaper-threshers, as well as improved plows and harrows. Gasoline-driven machines replaced steam-driven equuipment by World War I. Everyone agreed at that time that gasoline was far less expensive than the feed needed for the teams of twenty horses that pulled the farm machines in the late nineteenth century (Fahey 1986, 54-62).

The fall of wheat prices after World War I was followed by a terrible drought in 1925. Many dryland farmers left the land. Those who stayed did quite well, however. Across the watershed the value of crops sold in 1930 ranged from a high of $15,000,000 in Whitman County to $1,505,047 in Asotin County. The Great Depression brought hardship to these farmers. The value of farm products declined by as much as 50 percent in the cases of Asotin, Garfield, and Columbia counties; 33 percent in Whitman County; and 25 percent in Adams County. Despite the losses, however, these farmers had positioned themselves well to take

advantage of the needs of the country during World War II and the decades to follow (Department of Commerce 1943, 224-227).

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MIDDLE SNAKE RIVER WATERSHED

The Middle Snake River watershed encompasses one of the most geographically diverse areas in the Columbia River Basin. Flowing into the Snake River from the west and the south are rivers such as the Grande Ronde, the Burnt, and the Powder, all of which rise in the Blue Mountains and flow through well-watered valleys. As the Snake River carved its way south along a route that defines today's border between the states of Idaho and Oregon, it created Hells Canyon, a majestic country with a canyon depth in some areas as great as 7,000 feet. Before cutting east into Idaho, the river skirts desert-like lands drained by the Lower Malheur and Owyhee rivers, which rise not in mountains but in desert lakes that survived the glacial age.

From the lush lands of the Grand Ronde Valley to the desert high country bordering the Northern Great Basin, the land use history of this watershed varies as much as the landscape that the Snake River and its tributaries help define. From foraging and hunting the mountain meadows to farming the valleys to fishing the streams to mining the mountains to logging the forests to use of the range, these activities by people over time altered some of the landscape contained in this vast area.

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

Archaeological evidence indicates that people were living in the Middle Snake River watershed as early as 9,000 B.P. Northeast of La Grande researchers have found signs of human occupation near the Stockhoff quarry (Aikens 1984, 63).

Weather was a major factor in where and how people lived. Although there is disagreement about the details of climate change that took place over time on the Columbia Plateau, there is general agreement that 13,000 to 8,000 BP was a cool, moist period; 8,000 to 4,000 BP, a warm, dry period; and from 4,000 BP to the present, a stabilization in climate occurred (Schalk 1982, 11-12). The way of life of Plateau inhabitants stabilized from 4,000 BP onward. Hunting and gathering, not agriculture, sustained these people over the millennia (Chatters 1987, 140-142). It should not be surprising, that even the most recent archaeological

research has not revealed evidence of human occupation of the lands drained by the Lower Owyhee and Malheur in prehistoric times (Aikens 1984, 8).

Protohistoric Settlement Activity (1500 to 1800)

Tradition holds that some of the Sahaptian-speaking people who occupied the northern part of the Middle Snake River watershed lived along the shores and in the valleys of the Grande Ronde, Powder, and Burnt rivers in modern-day northeastern Oregon. Cayuse and some of the Nez Perces people shared these lands with Umatilla people in the summer and fall when the latter went to the Blue Mountains and the Wallowa and Grande Ronde valleys for subsistence gathering and hunting. The Cayuse lived throughout the Blue Mountain region, gathering and hunting in the valleys there and on the slopes draining the Walla Walla, Umatilla, and Upper Grande Ronde rivers. They fished for salmon on the Lower Snake River and its tributaries along with the Umatilla and Nez Perces peoples. Some have suggested that the Nez Perces who lived in this watershed were more oriented to fishing than to hunting bison as a means of living. Whatever the orientation, by the arrival of the Euro-American in the late eighteenth century, the native peoples of the plateau regarded the Nez Perces with great respect. Their numbers, and their exposure through trade and hunt with the Chinook people west of the Cascades and with the tribes who lived on the plains, marked them as truly exceptional (Walker 1967, 9-10; Josephy 1965, passim.; Ruby and Brown 1981, 124, 133ff).

The native peoples living on the eastern side of the Plateau were among the first in the region to acquire the horse. The lush, flat Grande Ronde and Wallowa valleys sheltered grasslands that provided excellent grazing for their herds. From the early eighteenth century, their new means of transport enabled them to hunt bison on the Plains and to trade with other peoples. The horses also acquired a reputation for high quality. Native peoples across the Plateau often raided each other for the animals. Euro-Americans who arrived in the nineteenth century, both explorers and emigrants, in need of fresh stock sought the animals as well.

Further south along the Lower Malheur River and on the banks and in the valley of the Lower Owyhee River lived the Northern Paiute. Tradition holds that the Columbia Plain peoples drove these natives off the Plateau and into the desert area of the Northern Great Basin several

centuries before the arrival of the Euro-Americans. Barely able to survive the harshness of arid, desert land to the south, the Northern Paiute often raided both the Native Americans and the Euro-Americans who lived in the Middle Snake River watershed until the latter part of the nineteenth century (Minor 1979, 170-171).

The native peoples of the Middle Snake River watershed also experienced the population decimation that smallpox brought in the late eighteenth and early nineteenth centuries. The size of the units of people needed to trade, gather, forage, fish, and hunt for survival changed dramatically at the beginning of the nineteenth century -- an alteration that proved irreversible as more Euro-Americans began to arrive (Ray 1937, 107; Webber 1989, 150ff.; Boas and Teit 1985, 167; 175; 211ff.; Grabert 1973, 112).

Preindustrial Settlement Activity (1775 to 1865)

While Lewis and Clark did not explore the Middle Snake River watershed, they surely met some of the people who lived there when they first encountered the main body of the Nez Perces at the confluence of the Snake and Clearwater rivers in October 1805 and on their return in 1806. The Nez Perces, Cayuse, and Umatilla were quite probably in the group whom the explorers met later in October 1805 as they descended the Columbia River (Journals of Lewis and Clark, vol. 5 1988, 281). In 1811 and 1812 on trips east, the Astorians William Price Hunt and Robert Stuart traveled through the watershed when they explored the Grand Ronde Valley in search of possible trading post sites (Meinig 1968, 41-42). Since the Blue Mountains serve as a kind of natural bridge between the Snake and Columbia rivers, the Middle Snake River watershed was crossed and recrossed by explorers and trappers in the nineteenth century. Benjamin Lewis Bonneville visited the Grande Ronde Valley in 1834, viewing it with an eye toward hunting and grazing: "Its sheltered situation, embosomed in mountains, renders it good pasturing ground in the winter time; when the elk come down to it in great numbers, driven out of the mountains by snow. The Indians then resort to it to hunt. They likewise come to it in

summer to dig the camas root, of which it produces immense quantities. When this plant is in blossom, the whole valley is tinted by its blue flowers and looks like an ocean when overcast by a cloud'" (Dicken 1975, 20). Nathaniel Wyeth, who searched for trading sites, commented on the beauty of this land tucked into northeastern Oregon. Charles Wilkes marked this area of the Columbia Plain in his map of 1841. And finally, in 1843, John Fremont saw the farming potential for the Grande Ronde Valley as well (Irving 1911, 453-454; Bailey 1982, 6; Meinig 1968, 110-111, 178).

Fur traders traversed the Middle Snake River watershed on a regular basis in the first decades of the nineteenth century. The North West Company (NWC) sent people there as early as 1812 until it was merged with the Hudson's Bay Company (HBC) in 1821. Its trappers worked the Middle Snake River watershed in general, especially the streams of the Blue Mountains and the Grande Ronde Valley. The native peoples of this watershed, like others on the Plateau, did not prove to be true trading partners. Donald Mackenzie of the North West Company brought Iroquois to the Oregon country to participate in the trade. More experienced in the entrepreneurial ways of the Euro-Americans, these Native Americans proved to be more active and useful assets for the fur trade than those who were native to the Columbia Plateau (Nicks, 90-92), and many of them worked the Middle Snake River watershed as partners with the Euro-American traders. This watershed contained more fur-bearing mammals than most on the Columbia Plain, and it provided a transition into the heart of the rich fur country that existed in the watershed of the Upper Snake River. Most of the expeditions that the NWC began to the Snake Country in 1818 and that the HBC continued until the 1830s traversed the Middle Snake River watershed in the northeastern Oregon area.

The HBC's policy for trade under George Simpson's leadership was the enforcement of "fur desert." Knowing that in 1828 a treaty would be renegotiated between Great Britain and the United States regarding the ownership and occupation of the Oregon country, the HBC's goal was to trap out as many of the beaver and other fur-bearing animals in the area as possible in order to leave fewer potential profits in the fur trade for the Americans. While officially the government encouraged a conservation policy toward the beaver, there was little effort to enforce it (Merk 1968, xxiiff.).

John Work, Peter Skene Ogden, and others led groups to the Snake River country that passed through the northern part of the Middle Snake River watershed. Their journals reveal, however, that most of the animals they trapped lived in the watershed of the Upper Snake River (Haines 1971, 138; Davies 1961, 50).

Of a more permanent nature in settlement in the southeastern area of the plateau were the missionaries who came to convert the natives. In 1836 Marcus and Narcissa Whitman opened a mission, Waiilatpu, in the Walla Walla Valley. While they were not in the Middle Snake River watershed, their work among the Indians and their deaths had an effect on the native peoples and the lands of the northern part of the Middle Snake River region. In an effort to "civilize" the Indians in a Christian way, these missionaries encouraged the natives to farm, to settle in, and to give up their nomadic ways (Miller 1985, 280ff.). By the time the emigrants on the Oregon Trail began crossing the northern part of the Middle Snake River region in the 1840s, the Cayuse people were cultivating crops along the banks of the Umatilla River. These latter people traded wheat, corn, potatoes, peas, pumpkins, and fish to the hungry travelers for cloth and other articles of clothing (Palmer 1983, 49-50).

Before the Whitman massacre of 1847, most travelers on the Oregon Trail stopped at the Waiilatpu mission to obtain food, supplies, and good companionship after six months of hard travel. Some in a group that arrived in 1847 had measles that infected many of the Cayuse, decimating their numbers. Dr. Whitman tried to help these dying natives with medicine, but to no avail. Fearing that the white doctor was plotting to eliminate their entire people, the Cayuse attacked the mission in November 1847, killing the Whitmans and twelve other people. They also took hostages who were released when the volunteer army from the western part of the Oregon country came east the following year to avenge the deaths. As a result of this crisis, the government discouraged settlement east of Cascades in the Oregon country for a number of years (Meinig 1968, 151).

Up until 1847, most of the wagon trains on the Oregon Trail traveled through the Middle Snake River watershed when they went north to the Whitmans. Crossing the Snake River south of the Malheur River, the travelers continued north toward the Grande Ronde valley, a trip of nine days in 1845, also crossing the Burnt and Powder rivers en route. The Grande Ronde Valley contrasted with the arid, parched, and generally dried out landscape of the southern part of the Middle Snake River. Joel Palmer described it in September 1845: "Grand Ronde Valley is a valley, whose average width does not exceed twenty miles, and is about thirty miles in length; a stream of water of some twenty yards in width passes through the length of this valley, receiving considerable addition to its volume from the many rivulets that pour down their waters from the mountains, by which this valley is enclosed. The bottoms are of rich fertile earth, and afford grass of various kinds, among others that of red clover. . . . The streams are generally lined with timber and abound with salmon and other varieties of fish" (Palmer 1983, 48).

In that same year, others chose a more southern route to The Dalles in an effort to avoid the mountains of northeastern Oregon. Stephen Meeks led some wagons that left the main trail at Vale, Oregon, and headed up the Malheur River. Getting lost in the Malheur Mountains, this group never made it. However, it did suggest to others that a more southern route to the Willamette Valley might be possible. Called the Applegate Trail by 1847, Oregon Trail emigrants as well as those on their way to the gold fields in California traveled through the southern part of the Middle Snake River watershed (Mosgrove 1980, 31-32; Minor 1979, 145). The route continued across the headwaters of the Owyhee River to the South Fork of the Malheur River. From there this trail passed through Harney Valley, the Northern Great Basin to the Cascades, and then into the Umpqua Valley. Some 500 Oregon Trail emigrants took this route in 1846 (Mosgrove 1980, 34).

Following the disastrous massacre of the Whitmans, most Oregon-bound travelers ceased going to Waiilaptu and used the more southern route, "the Umatilla cutoff". Nevertheless the northern and southern parts of the Middle Snake River watershed continued to be major thoroughfares for emigrants from the late 1840s. Few people settled in this watershed, however, for several reasons. Official government policy discouraged settlement east of the Cascades until the native unrest had been settled. The desert conditions of the southern route through this watershed discouraged many emigrants, who were largely from the greener landscape of the Midwest and upper south.

To be sure, the Grande Ronde Valley appealed to many northern route travelers after the parched weeks across the Snake River plain. But this valley did not seem to offer what awaited in the fertile, lush, Willamette Valley to the west of the Cascade Mountains. The generally unappealing landscape along with the native unrest east of the Cascades that lasted until the late 1850s discouraged interest in settling in the northern part of the Middle Snake River watershed until the late 1850s (Palmer 1983, 48; Meinig 1968, 201-203). Isaac Stevens's survey saw the farming potential of the lands south of the Columbia River, "[with settlement] there will be a chain of agricultural settlements all the way from the Walla-Walla to the Dalles, south of the Columbia, along the streams", Permanent residence by Americans, however, did not happen here for a number of years. It took another decade for those emigrants, essentially from the Midwest and the upper South, to realize the truly rich nature of the volcanic soil that supported the bunchgrass-covered lands (ibid., 195-196).

Following the disastrous massacre, settlers in Willamette Valley raised a volunteer army in the spring led by Peter Skene Ogden and Joel Palmer to retaliate. This offensive brought the

rescue of the remaining missionaries and some settlers who were hostages. At first unsuccessful in identifying the killers, the volunteer troops finally tracked them down and hanged them. In addition to the Cayuse's loss of life was their expulsion from their lands as reparation for the missionaries' deaths. This was the first time that any of the natives of the Columbia Plain had been expelled from their lands by the Euro-Americans. Thus began a distrust of Euro-Americans by the Native Americans of the Columbia Plateau -- a distrust that was fully realized with the treaties that some of the plateau tribes negotiated with Isaac Stevens and Joel Palmer in 1855 (Miller 1985, 334; O'Donnell 1991, 113).

The federal government attempted to deal with land issues and potential disputes between natives and settlers in the Oregon Territory. Just five days after the hangings of the Cayuse accused of the Whitmans' deaths, Congress passed the Oregon Indian Act that said the government could purchase natives' lands in the Willamette Valley in exchange for territory east of the Cascades. The Yamhill, Molalla, and Luckiamute peoples of the Willamette Valley refused to recognize treaties or to leave the valley. They argued that they could not live in the desert area east of the mountains where hunting rather than gathering was the way of life. They also did not wish to leave the graves of their ancestors. In a compromise, the government gave these peoples marginal lands on the edge of the Willamette Valley for farms (ibid., 137).

By 1850 other acts of Congress had complicated these lands issues even more. While the 1848 Territorial Act had assured the Native Americans possession and ownership of their lands, the Donation Land Law of 1850 promised essentially the same lands to the new settlers who came to the Oregon Territory. With such contradictory measures, distrust among the peoples native to the area was great (ibid., 175).

When the federal government formed the Washington Territory in 1853, Isaac Stevens was appointed its first governor as well as the superintendent of Indian Affairs. In the two years following, he conducted a survey of the lands, especially for railroad construction, that resulted in an extraordinarily detailed map that showed, the geography of the region and the lay of the land. Seeing the potential for settlement and development, he realized that the native peoples of the Columbia Plain would be in the way of the growth in the region that so many were hoping for as the emigrants proceeded over the Oregon Trail (Miller 1985, 340ff).

Trying to anticipate the inevitable loss of their lands, leaders from the Yakima, Klickitat, Cayuse, Walla Walla, Nez Perces, and Umatilla peoples met in Grande Ronde Valley in the summer of 1854. They devised a strategy for countering the Euro-Americans' proposals, but it did not work for them (ibid., 326ff).

The details of the meeting of the Sahaptian-speaking plateau tribes with Stevens and Palmer at Walla Walla in 1855 have been outlined at great length (Shane 1950, 282-287). Of note is that the formation of the Confederated Tribes of the Umatilla Indian Reservation stem from some Cayuse, Umatilla, and Walla Walla peoples and their agreements with Stevens and Palmer. These bands agreed to be located in northeastern Oregon on the Umatilla Reservation. They ceded to Stevens and the Washington Territory 1,861,120 acres of land and to Palmer and the state of Oregon 2,151,680 acres, many of which were located in the northern part of the Middle Snake River watershed. Their own reservation lands amounted to 245,699 acres.

With many acres of grasslands within their reservation lands, these people were able to continue to raise horses relatively undisturbed for the next several decades (Ruby and Brown, 52). How well they lived is another matter. During the thirty-sixth Congress in 1859, it was reported that the native peoples who had moved to reserved lands designated by Stevens and Palmer were not doing well -- many were ill, starving, or dying. The Nez Perces had fared much better than the other Plateau tribes in these negotiations. With an understanding that they could keep their lands, those Nez Perces who had resided in the valleys of the Blue and Wallowa Mountains for generations were able to stay there (Meinig 1968, 207-208).

During the Yakima War years, settlement east of the Cascades was discouraged because of Indian unrest. But miners, hearing of strikes in Idaho, the Upper Columbia, and Fraser river areas began stampedes to camps in that direction. By the early 1860s, placer mining was starting in northeastern Oregon as well. Seeing the potential to supply camps on the Clearwater and Lower Salmon rivers and Boise Basin, people from the Willamette Valley, as well as those in eastern Oregon on the Powder and John Day rivers, headed east to take advantage of the business opportunities that the mining strikes offered. The Dalles and Umatilla served as entrepots to supply the mines to the east. In 1858 the steamship, Colonel Wright, was launched just east of the mouth of the Deschutes River to transport even more people and supplies to the mining camps. By 1863, steamship travel was possible all the way up the Snake River to current-day Lewiston, Idaho, where prospectors could then head south into the gold belt of the Blue Mountains within the northern part of the Middle Snake River watershed. A portage railroad overtook the teamster method of crossing the difficult 12-mile portage between The Dalles and Celilo Falls by 1863, which meant even more people could be transported to the mining areas (ibid., 212-213).

The center for most of the mining that initially occurred in the Middle Snake River watershed was in the Blue Mountains in what today is Baker County along the Burnt River and

in the Powder River Valley. In 1861 Henry Griffin of Portland discovered gold on a tributary of the Powder River a few miles south of the city of Baker in what today is known as Griffin Gulch. The first white settlement in the watershed was called Auburn, located five miles south of Griffin Gulch. So great was the stampede to the area that by the end of 1862 between 5,000 and 6,000 people were living in Auburn. Most agree that some of the most productive placer mines in eastern Oregon were located in what today is Baker County. Sites at Sumpter, Auburn, Pocohontas, Sanger, Rye Valley, Eldorado, and Connor Creek are among those that are the most well known. Placer mining also began near the new camp of Silver City on the Owyhee River in 1863 (Brooks 1968, 43-44; Meinig 1968, 210).

Because of the need of water for placer mining, miners constructed ditches at several of the sites prior to 1865. The Auburn ditch was in operation as early as 1863, followed a year later by the Rye Valley ditch (Brooks 1968, 43-44; Mosgrove 1980, 11; Burch 1941, 110). Placer mining continued in these areas for the next several decades.

There was also some lode mining the watershed in the 1860s near Baker and south of the Powder River on Dixie Creek. Work began at the Virtue mine northeast of Baker in 1862 and within two years, a ten-stamp mill for treating the ore had been erected on the outskirts of the town. The Mormon Basin district also provided the scene for quartz mines by 1968 (Brooks 1968, 43-47).

It would not be until the end of the 1860s that the beginnings of any significant ecological alteration at the mining sites would take place. However, it cannot be denied that the numbers and a permanent Euro-American presence would have had an effect on the timber, water, and wildlife of the watershed. Moreover, the establishment of permanent "urban" centers such as Baker in 1862 also would have had an affect on the land within the Middle Snake River watershed.

The removal of native peoples to reservations prompted the federal and state governments to encourage settlement east of the Cascades. The stockmen, mainly from the Willamette Valley, trailed the miners into the Middle Snake River watershed and were determined to find a profit by supplying the camps east of the Cascades in Montana, Idaho, and central and eastern Oregon. By using the Barlow Road before 1865, they were able to gain a foothold and claim to the range rich with bunchgrass across the watershed. Locating initially in the Grande Ronde Valley in the 1860s, these stockmen took advantage of the nutritious grasses that grew there naturally in today what is Union County, Oregon. There were also a few ranches on the Burnt and Owyhee rivers whose stock also supported the mining camps of the Middle

Snake River watershed (Horner 1942, 220; Oliphant 1946, 22).

With the growing number of Americans coming to their lands in the southern part of the Middle Snake River watershed, the Northern Paiute people became increasingly concerned about access to their traditional hunting and gathering grounds. By the 1860s, no treaties had been made with them regarding their lands although they had heard about the loss of territory of the Plateau tribes as a result of the 1855 treaties. When the mining stampedes to eastern Oregon and Idaho through their lands continued in the early 1860s, these native peoples' concerns turned to action as they began attacking travelers on the Applegate Trail. Soon an American military presence was felt in the southern part of the Middle Snake River watershed with the establishment of Ft. Harney four miles south of the Malheur National Forest near Route 196, and finally, the construction of Ft. Klamath in 1863 under the supervision of Capt. Charles S. Drew of the U.S. Army (Mosgrove 1980, 51; Minor 1979, 145-148). Within ten years the Northern Paiute would also be removed to reserved lands.

Modern Era Settlement Activity (1865 to 1940)

As in the cases of the other lands in the Columbia River Basin, the removal of native peoples to reservations encouraged the settlement and development of the Middle Snake River watershed. Because of pressure from miners in the 1860s, by 1863 the Nez Perces who resided in northeastern Oregon in the Wallowa Valley agreed to give up 90 percent of the lands given to them in the 1855 treaty. Even though this treaty was not ratified by Congress until 1867, local white settlers acted as though it had and began moving in with little government support for the Nez Perces in the face of this trespass (Meinig 1968, 210). By the early 1870s, settlers were again insisting on access to the Nez Perces lands.

Unhappy about the encroachment of even more people on their lands, the Nez Perces began protesting the coming of farmers and stockmen into their valley starting in 1872. Refusing to go either to the Umatilla Reservation or to one offered to them in northern Idaho, a presidential order that year decreed that they could continue to stay on reserved lands in the Wallowa and Imnaha valleys. This promise of reserved lands for the Nez Perces, of course, did not last. By 1875 there was once again pressure from settlers to remove the Nez Perces. In May

1877, General O.O. Howard, then in command of the Department of the Columbia, called the Nez Perces leaders to council at Ft. Lapwaito to talk of removal. This meeting precipitated the Nez Perces War. Most of the conflict took place in the Salmon district in Idaho and not in the Middle Snake River watershed. However, the sad outcome for Chief Joseph and his followers who finally surrendered in Montana later that year meant the opening of the lands in the Wallowa and Imnaha valleys to permanent white settlement (ibid., 248-49; Bartlett 1984, 5, 22; Glassley 1972, 207).

Further south in the watershed in the 1860s were the Northern Paiute who also were unhappy about the whites' invasion of their lands near the three forks of the Malheur River. The miners' stampedes were followed by the stockmen who came to support the mining camps in eastern Oregon as well as those in Idaho. As it was, the Northern Paiute had been raiding the Warm Springs Reservation for horses for a number of years and in 1864 the U.S. Army decided it was time to move against them. Establishing camps Maury and Gibbs in the Crooked River region, the military hoped their presence would end the hostilities by the Northern Paiute. When attacks on both natives and the incoming whites continued, the Army set up Camp Warner in Warner Valley in 1867. With a military presence now not only in the Crooked River region and in Warner Valley but also at Ft. Klamath to the west, the Northern Paiute met with Alfred Meacham, the Oregon superintendent of Indian affairs, in 1868 and decided to settle on the Klamath Reservation. President Ulysses S. Grant reserved 2 million acres for the Northern Paiute at the three forks of the Malheur River.

The Malheur Reservation consisted of 2 million acres, 12,000 of which had the potential for farming if irrigated. None of the promised financial government aid for the reservation ever came. Lacking this support, along with pressure from settlers for these lands and the outbreak of the Bannock War in 1878, most of the Northern Paiute fled the reservation. Some spent a few years on the Yakima Reservation in Washington state. Desirous to return to their lands in southern Oregon in 1884, they found that the reservation had been returned to the public domain in 1882 (Minor 1979, 170-75; Mosgrove 1980, 54-57). The only lands left for them were near present-day Burns, Oregon.

The settlement of most of the other native peoples on reserved lands in eastern Oregon state and Washington territory by 1860 encouraged the first stockmen to come east of the Cascades. In response to the gold strikes in the Rocky Mountains of Idaho and Montana and eastern Oregon in that period, cattlemen came to the Middle Snake River watershed from the Willamette Valley and from California with their stock to supply the mining camps. Those who

chose to drive their stock to the northern part of the watershed in what today are Baker, Union, and Wallowa counties, selected areas such as the sage-covered hills over- looking Baker Valley along the Burnt River. Others chose Grande Ronde Valley with its shoulder-high grass. But by 1870, the wild hay in this valley was nearly gone, forcing the stockmen to move further east into the Wallowa Valley during the 1870s (Bailey 1982, 20, 25, 27).

A boom in the cattle business lasted through the 1860s and crashed temporarily in the 1870s because of a nationwide depression. However, unlike the stockmen in the northern part of the Middle Snake River watershed, those who lived in the Owyhee and Malheur river valleys recovered quickly because of their proximity to the Central Pacific railhead at Winnemucca in the Nevada territory. Their Oregon-grown beef continued to supply the meat needs of the California market while other stockmen across eastern Oregon had to wait several years to recover (Oliphant 1946, 22; Simpson 1987, 19).

What helped the growth of the cattle business in the 1870s in all parts of the Middle Snake River watershed was the demand for stock for Wyoming and Montana and for meat from the growing urban centers east of the Rocky Mountains. Companies such as Lang and Ryan of Kansas City, Missouri, developed ranches in Montana and Wyoming, and purchased thousands of head of cattle from eastern Oregon and Washington in the late 1870s. In 1880, these enterprises purchased 58,300 head from Oregon alone. How many of these animals were grazing on lands within the watershed is difficult to determine. The state government did not draw the modern-day county lines for most of the area until the 1890s. It could be surmised, however, that the Middle Snake River country participated in this boom until the devastating winter of 1880-1881 when much of the cattle in the state east of the Cascades froze to death. In some counties in eastern Oregon as many as 90 to 95 percent of all the stock died (Simpsom 1987, 25-30; Illust Hist/CenOr, 561).

A restocking of cattle for the range in the watershed took place after this disaster. According to Census records from 1900 to 1940, in Baker, Union, and Wallowa counties, the number of head of cattle ranged from a high of 106,205 in 1930 to a low of 67,000 in 1900. During these years, most of the cattle seemed to be located in Baker County, the area in the northern part of the watershed with the most range land (Department of Commerce 1902, 470, 472; 1932, 504-505). By the 1930s, the beef cattle industry had become increasingly important to the region's economy (Bailey 1982, 35).

In the southern part of the Middle Snake River watershed or those lands south of the Burnt River, the numbers of head of cattle are considerably larger, but then so are the areas that

comprise Malheur and Harney counties. (The geographical area in these counties that lies within the watershed for this study is as far to the southwest as the three forks of the Malheur River and also includes Lake Owyhee.) Even if the total numbers are halved to exclude those lands that are in the Northern Great Basin watershed, there are still many cattle considering the arid nature of the land. What is interesting is that the number of head of cattle increases each decade in the twentieth century from 76,232 according to the well over 100,000 by the 1930s (Department of Commerce 1902, 470; 1932, 504-505). But the cattlemen were not the only stockmen using the range lands within the watershed in these years. Competition between them and the sheepmen increased in the late nineteenth century -- competition that led to range wars between the 1890s and the establishment of the federal forest reserves from public domain lands in 1906. Tens of thousands of cattle went up against hundreds of thousands of sheep for access and use of the range.

As the number of Oregon Trail emigrants grew throughout the 1840s and 1850s, the desire for farm land in the Willamette Valley pressured the stockmen to move east of the Cascades. In the eastern part of the state was a land with drier climate and range covered with abundant natural grasses. So vast was the area in the east that the method of sheepherding developed differently than that in the west. Rather than the small flocks of 75 to 100 sheep that were typical of the Willamette Valley, in the east an experienced Scottish or Australian shepherd with his dog could oversee flocks of mainly Merino sheep that often numbered in the thousands. The terrible winter of 1861-1862 killed off not only most of the stock in eastern Oregon, but also enthusiasm for this enterprise over the next few years (Parsons 1902, 162; Kenny 1963, 102).

Henry Villard's promotion of the Pacific Northwest in the 1870s and 1880s did a great deal to encourage sheepmen to come to this watershed. The valleys of the Wallowa, Powder, Burnt, and Owyhee rivers were touted by the Northern Pacific as excellent places to graze stock (Smalley 1883, 364). By the 1880s rail shipment was possible both east and west. The completion of the Oregon Washington Railway and Navigation (OWR&N) Company's line through the Columbia Gorge to Walla Walla in 1875 encouraged people to come to the northern part of the Middle Snake River watershed as did the Central Pacific through Winnemucca a few years before (Simpson 1987, 18). In addition to this was the extension of the OWR&N to Huntington that then connected with the Oregon Short Line out of Ontario. By 1885 and for the next twenty years, Ontario became the leading center for shipping stock in the northwest from Malheur, Harney, and Grant counties to eastern markets (Gregg 1950, 216).

To say how many of and where these sheep grazed in the Middle Snake River watershed

in the 1860s and 1870s is difficult since the government did not determine modern-day county lines until the 1890s. There certainly was a growing interest in this profitable business. In the 1880s, in five counties in eastern Oregon, the amount of wool clipped more than doubled that clipped from the previous decade to over 1 million pounds per county. In the early 1890s, more than 10 million pounds of wool were shipped from Pendleton and The Dalles, about 5 million from each site. Following the Panic of 1893 that brought with it a collapse in wool and mutton prices, the sheep industry made a comeback. By 1900 Pendleton was the primary wool market in the United States (Mitchell 1895, 277; Kenny 1963, 102; Johansen 1967, 319; McGregor , 87).

So great was the influx of sheep into eastern Oregon at the end of the nineteenth century that citizens began writing their government expressing concern about the overgrazing. Among others, E.B. Gambee wrote to the government in 1891 that even though the mountain slopes in the eastern part of Umatilla County were not suited for farming, people from outside the county were overgrazing their sheep on these lands. He argued further that these people should be required either to rent or purchase the lands. It was common knowledge that everyone was trying to get as much free range from the public domain as possible. When farmers expressed concern about lack of water, the sheepmen moved to other areas (Minto 1892, 982-984; Mosgrove 1980, 81). (It should be noted that one of the original purposes for the creation of the forest reserves was to protect the watersheds that were being ruined due to overgrazing.)

By 1893 the Pendleton Wool-Scouring Company began operating. Within the year the mill was processing some 75,000 pounds of wool every 24 hours for a total of 2 million pounds for the year. In 1896 the pens at Umatilla had expanded to accommodate the shearing of 20,000 sheep a year. So lucrative was the stock business in Oregon that in 1900 it was the leading money maker in the state's economy (Lomax 1948, 212-220; Swift 1909, 37).

Even into the twentieth century, the sheep industry continued to thrive in Oregon. But at what expense to the range lands within the Middle Snake River watershed? In the northern part of the watershed across Union, Wallowa, and Baker counties, the number of sheep was always high. Even in 1900 there 338,669 sheep in Baker, Union and Wallowa counties. This number rose to a high of 398,323 in 1910. By 1920 there were nearly 100,000 fewer sheep at 211,617; but by 1930 there was an increase again to 368,846 (Department of Commerce, 1902, 470,473; 1913, 410, 413; 1922, 322, 325; 1932, 504-505). With the passage of the Taylor Grazing Act in 1934, the number of sheep in the region was halved (Bailey 1912, 35).

The wool operations at Pendleton had more than willing suppliers just east of the

mountains, but these numbers pale when compared to the southern part of the watershed. Overgrazing must have indeed taken place, considering the scarcity of water in the midst of the vast rangelands. The number of sheep in Malheur and Harney counties in 1910 was 277,854. There seems to have been a slight decline over the next decade to 258,574, but then an increase occurred to 273,138 in the 1920s (Department of Commerce 1913, 411-412; 1922, 323-324; 1932, 504-505). By 1937 the Oregon State Planning Board was reporting that large areas of rangeland in Malheur County had a desert-like look to them because of overgrazing (Oregon State 1937, 5). Should it surprise anyone that there was a range war between 1896 and 1906, the year when forest reserves were established?

Outraged by the influx of sheep on their lands within the watershed, cattlemen formed "sheep shooters" organizations in the 1890s. The Crook County Sheep Shooting Association formed in eastern Crook County to get rid of the sheep. As many as 8,000 sheep died in the county alone due to the organized extermination of the animals by local groups of cattlemen. In 1904 the Oregon Wool Growers Association offered rewards for the arrests and conviction of any sheep shooters (Mosgrove 1980, 82-85; Paul 1976, 48).

Within this watershed in the early twentieth century, several national forests were created from public domain lands in an effort to curb damage to the range. The first forest reserves in Oregon were the Maury Mountain and the Baker City reserves that became part of the Blue Mountain Forest Reserve when it was created in 1906. Two years later when the Blue Mountain was abolished, the 2,675,620 acres of its lands were divided up among the Whitman, Malheur, Umatilla, and Deschutes national forests at their creation. Other federal forest reserves in this watershed designated in these years include the Imnaha (1,750,240 acres) and Minima (448,330 acres) that became part of the Wallowa, and the Heppner and Wenaha that became part of the Umatilla. It was hoped that such federal control would lessen the harm to the rangelands and end the range wars (Davis 1983, 746 ff.).

Even with the establishment of forest reserves on public lands, the number of stock increased in the watershed between 1906 and 1922 for several reasons. Namely, more homesteaders moved to the watershed during these years; special subsidies were granted to wool producers during World War I for the forces' uniforms; and finally, people misjudged the carrying capacity of the range during the emergency war period. By the 1920s, fewer animals were grazing on the forest reserves because of range damage (Mosgrove 1980, 92-94).

Permanent settlement by homesteaders in the Middle Snake River watershed did not happen until the late nineteenth century. Despite the railroad construction binge that began in

the Pacific Northwest after the Civil War, the dispute over land titles between the Northern Pacific Railway Company and the Eastern Oregon Land Company prevented thousands of arable acres in eastern Oregon from being open to settlement. In response the Union Pacific and Northern Pacific decided to focus their construction of track in eastern Washington and along the Columbia River where land had clear title and awaited settlers.

Along with land owning disputes, there were also the many and often contradictory federal land laws. Nineteenth century peremption provisions, homestead acts, desert land entries, and stockraising homestead laws outlined access to the public domain for future settlers. Added to these were the mineral laws, reclamation projects, and the timber rulings of the twentieth century, all of which affected the settlement and development of the Middle Snake River watershed (Smalley 1883, 364; Mosgrove 1980, 42).

Indian unrest east of the Cascades in the late 1860s also inhibited people from settling the lands in the Middle Snake River watershed until the 1880s. A treaty in 1868 promised the Bannock people the use in perpetuity of their prime camas ground, the Big Camas Prairie, in southern Idaho. White settlers entered these lands and were not reprimanded by the government for their trespass. In 1878 the Bannock, along with the Northern Paiute, began to raid, attack, and kill the few residents, mainly ranchers, who lived across in the Middle Snake River watershed. General O.O. Howard quickly ended these hostilities by defeating the Indians just south of Pendleton at Pilot Rock in July 1878. With the departure of most of the Bannock people for the Yakima Reservation in eastern Washington that fall, significant conflicts between the native peoples of eastern Oregon and the Euro-Americans essentially ended (Meinig 1968, 248-249; Mosgrove 1980, 57ff).

Within the watershed in northeastern Oregon there are three main valleys, the Baker, Grande Ronde, and Wallowa. Baker and La Grande valleys saw rapid settlement from 1860 to 1880 while Wallowa, being more isolated, was settled fifteen years later. The main crop in this area over the years was wheat. The number of farms increased in northeastern Oregon until 1920 when many consolidations occurred that resulted in larger farms owned by fewer people.

By 1862 there were settlers in Grande Ronde Valley who were raising hay to support the mining communities to the south. Some of the miners actually built homes in this valley for their families while they themselves worked for several months at the mining sites. By 1870 the more elevated eastern and western sides of this valley were the most densely settled because of the swampy and alkaline conditions in the valleys' central and southern portions. In the valleys of the Blue Mountains to the west of Grande Ronde Valley, unsuccessful miners began to settle

in the 1880s. Railroad construction and logging operations in the 1880s brought more people, but not permanent stability to settlement in most areas. By the beginning of the twentieth century, the La Grande area had the most stable population made up largely of people from the Northeast and Midwest, former miners from California and Nevada, and even some Mormons who started a sugar-beet enterprise at Nibley near Cove in the 1890s (Bailey 1912, 24-27).

Being the driest county northeastern Oregon, Baker Valley was settled more slowly. Farmers and their families moved here to support the mining activities, but the dry eastern parts of valley belonged more to the stockmen on the sagebrush hills along the Burnt River than to the farmers for several years. By the 1880s, homesteaders came to the smaller, drier valleys and began to use irrigation ditches with success. Eagle Valley continued to develop during this period. To the east, the higher, cooler, and wetter Pine Valley saw increased growth as well. To the south along the Burnt River, people moved to the Durkee and Hereford areas. The use of irrigation along with the continued discovery and extraction of minerals from the mountains around them encouraged growth in Baker Valley in the latter decades of the twentieth century. By the end of the nineteenth century, Baker County's population was 19,000, but as the mining played out after 1910 so did the county's growth (ibid., 20-23).

Wallowa Valley never knew the population or growth experienced by the other two large valleys in this part of the watershed. Some stockmen came east from the Grande Ronde Valley in the 1870s, and only gradually did people learn of the soil's fertility. Farming proved to be the chief means of support for most people over the years, with logging a close second (ibid., 28).

Because of the arid nature of the southern part of the Middle Snake River watershed, farming needed the efforts of major irrigation projects. Private individuals had put 111,090 acres in Harney County and 49,283 acres in Malheur County under irrigation by 1900 (Department of Commerce 1902, 855). But it would take major commitments by state and federal government agencies to meet the irrigation needs of the lands in this part of watershed. In 1916 the Bureau of Reclamation proposed an irrigation project for 39,150 acres in the Malheur Valley and another for 18,100 on both sides of the Owyhee River in the Mitchell Butte area, but by 1924 there were no large tracts of land in irrigation. Two irrigation projects did finally get under way in Malheur County by 1935. The operations of the Owyhee and Vale projects began at the same time and resulted in increased land values (Whistler 1916, 14, 19; Gregg 1950, 417). Other projects also must have taken place; the 1940 Census reports that there were 711,423 irrigated acres in Harney County and 666,098 in Malheur County (Department of Commerce 1942, 503-

504). Some of this acreage, however, was located in the Northern Great Basin watershed.

The Middle Snake River watershed continued to be part of the eastern Oregon minerals production center in the modern period. Placer mining began in the 1860s and continued for a number of years. An important gold discovery occurred in the northern part of Malheur County in 1865 on Upper Willow Creek. It became known as the Shasta district. Dotting the mountainsides between Willow Creek and Burnt River were rich placer strikes. Mining camps on the Willow Creek side of the ridge included Mormon Basin, Eldorado, Malheur City, and Ameila. The Shasta district became known for its "Big Ditch," or the Eldorado Canal, that ran for nearly 100 miles from the Burnt River to provide water for the mines. By 1869 miners had extended the ditch another thirty-six miles so that it ran from the Burnt River through Shasta Gap to Willow Creek (Gregg 1950, 84-87).

In the northern part of the Middle Snake River watershed, mining operations begun in the Blue Mountains in the early 1860s continued well into the twentieth century and encouraged settlement by many. These operations never approached the major industrial and environmentally damaging enterprises that the mines of Idaho and Montana were in these same years.

The placer strikes in the Baker County area during the early 1860s continued for several decades. The Elkhorn Mountains, a local range of the Blue Mountains, was the site of much of this activity. Miners worked either in the foothills of the Elkhorns or to the southeast along the valley of the Burnt River in what became known as the Bridgeport district. When these placer deposits had been worked out by the 1880s, some miners dispersed while others moved further east in the Sparta district near the town of Sparta on the south side of the Wallowa Mountains. They also worked to the southeast in what became known as the Connor Creek district along the Snake River. New placer deposits were also discovered further upstream in the Elkhorns in the Cracker Creek district (Bailey 1912, 20).

Of even greater importance to the environment in this part of the watershed were the lode mines that were worked in the modern period. The Virtue mine, discovered in 1862, was one of the first lode finds in eastern Oregon, located eight miles east of Baker. George W. Grayson of San Francisco opened production there in 1874 that lasted until 1907 and produced ore valued at $2,200,000. Some have suggested that the most important lode operations in eastern Oregon were those that formed a semi-circle north, northwest, west, and southwest around the town of Sumpter. Mines such as the Bonanza, located about 13 miles west-southwest of Sumpter, produced $1,750,000 from unusually rich ore between the years of 1877 and 1904. The mother

lode mines of eastern Oregon included those within the Cracker Creek district, six to nine miles north of Sumpter. A series of seven mines is said to have produced as much as $8,000,000 between 1894 and 1908. The high quality of the ore from the North Pole mine received great praise. Under the ownership of the Baring Brothers of London, a thirty-stamp mill was erected here in 1895 and operated continuously until 1908. This mine produced gold valued at nearly $2,500,00. The history of lode mining in Oregon between 1908 and 1915 centered in the Mormon Basin district in Malheur County. From 1908 to 1913, one of the mines there produced one-third of the lode gold produced in the state of Oregon and one-half the production total for the state for twelve years after that (Burch 1941, 110-117).

Like so many of the mineral producing areas, the era of World War I was a boom for the mines in the Blue Mountains that lasted for some into the 1920s. The Iron Dyke Mill near Homestead on the Snake River shipped several tons of copper a month to Tacoma during the war years and continued to do so until
1922 when the mine closed. A depression set in for the minerals industry in the 1920s but a comeback occurred in the 1930s with the increase in the price of gold (ibid., 119; Forest Survey 1:1936-1937, 3).

Some historians have suggested that the completion of the Sumpter Valley Railroad in 1896 contributed to the mining boom in the Blue Mountains. As early as 1886, the Union Pacific Railroad had come to Baker, and a short line also was built in the northern part of the watershed to serve the mines. These railroads not only delivered the stone, but also went to the forests throughout the Blue Mountains in Baker, Union, and Wallowa to transport timber to mines and markets when the timber industry got under way in the late nineteenth century.

The timber industry was second to farming in economic importance in Union and Wallowa counties in the first decades of the twentieth century. The mills that processed mainly ponderosa pine were located in La Grande, Elgin, and Perry. In 1890 the Smith Stanley Lumber Company built a large mill at Perry to process timber acquired from the Upper Grande Ronde River watershed. Some 20 million board feet of logs were cut from the hills around Starkey and along the tributary streams. The logs were first floated to Perry for milling. A railroad was built into Starkey by 1906 for hauling the logs. By the 1930s, the timber industry located its major logging operations along Catherine Creek near the Umatilla National Forest in the southeast part of Union County. In Wallowa County between 1914 and 1928, the Eastern Oregon Lumber Company operated a mill at Enterprise that processed 120,000 board feet during an eight-hour shift. The Bowman Hicks Company's mill at Wallowa used timber taken north of Enterprise

near Elk Mountain. Between 1925 and 1935 lumber production declined from 40 million board feet a year to less than 5 million (ibid., 7,8; Hug 1961, 133ff.).

The chief landscape alteration that occurred in this watershed in the agricultural area during the 1930s was the increase in the number of acres under irrigation in the southern part of the Middle Snake River watershed. As a whole, the Snake River's district irrigation of lands in Oregon in this decade increased from 288,928 acres in 1929 to 362,501 acres by 1939, with the largest increases from the Malheur and Owyhee rivers. A good start on the proposals that John Whistler of the BOR had made for the Malheur and Owyhee projects had been made by 1940. In that year, a total of 74,000 acres were being irrigated by the Malheur River, up from 32,122 ten years earlier. Another significant growth also occurred on the Owyhee River, from 18,165 acres in 1929 to 67,273 acres by 1939 (Department of Coommerce 1942, 85; Whistler, passim.).

By 1940 the presence of Euro-Americans in this watershed had been felt for nearly 150 years. Trapping, ranching, mining, farming, and logging had all taken place in various degrees of intensity throughout the years, leaving behind signs of alteration throughout various parts of the watershed.

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UMATILLA RIVER WATERSHED

As the Umatilla River rises in the Blue Mountains in eastern Oregon, it flows on a westwardly course into the Columbia River, passing through a dry, prairie-like country initially rich with bunch grass, barren of timber, and carved with few streams. The range characteristics of the watershed destined it to be the stockmen's center that it eventually became as the country developed.

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

Archaeological evidence indicates that people were living in the Umatilla River watershed as early as 9,000 BP. Researchers have found signs of human occupation near the Stockhoff quarry northeast of La Grande. From the mouth of the Umatilla River and for several miles upriver, people occupied the land as early as 7000 BP (Aikens 1984, 54).

Weather was a major factor in where and how people lived. Although there is disagreement about the details of climate change that took place over time on the Columbia Plateau, there is general agreement that 13,000 to 8,000 BP was a cool, moist period; 8,000 to 4,000 BP was a warm, dry period; and from 4,000 BP to the present, a stabilization in climate occurred that has remained to modern times (Schalk 1982, 11-12). The way of life of Plateau inhabitants stabilized from 4,000 BP onward. Hunting and gathering, not agriculture, sustained these people over the millennia (Chatters 1982, 140-142).

Protohistoric Settlement Activity
(1500 to 1800)

Tradition holds that some of the Sahaptian-speaking people who occupied the Umatilla River watershed lived along the shores of the lower part of the river and along both banks of the Columbia River from present-day Arlington, Oregon, east to the mouth of the Walla Walla River in southeastern Washington. Permanent winter quarters were located along the Columbia River

The federal government tried to deal with land issues and potential disputes between natives and settlers in the Oregon Territory. Just five days after the hangings of the Cayuse accused of the Whitmans' deaths, Congress passed the Oregon Indian Act. It said that the government could purchase natives' lands in the Willamette Valley in exchange for territory east of the Cascades. The Yamhill, Molalla, and Luckiamute peoples of the Willamette Valley refused to recognize treaties or to leave the valley. They argued that they could not live in the desert area east of the mountains where hunting rather than gathering was the way of life. They also did not wish to leave the graves of their ancestors. In a compromise, the government gave these peoples marginal lands on the edge of the Willamette Valley for farming (ibid., 137).

By 1850 other acts of Congress had complicated land issues even more. While the 1848 Territorial Act had assured the Native Americans possession and ownership of their lands, the Donation Land Law of 1850 promised essentially the same lands to the new settlers who came to the Oregon Territory. With such contradictory measures, it should have surprised no one that distrust among the native peoples would have been great (ibid., 175).

When the federal government formed the Washington Territory in 1853, Isaac Stevens was appointed its first governor as well as the superintendent of Indian Affairs. In the two years following, he conducted a survey of the lands, especially for railroad construction. The extraordinarily detailed map showed, for the first time, the geography of the region and the lay of the land. Seeing the potential for settlement and development, he realized that the native peoples of the Columbia Plain would hinder the growth in the region that so many were hoping for as the emigrants proceeded over the Oregon Trail (Miller 1985, 340ff).

Trying to anticipate the inevitable loss of their lands, leaders from Yakima, Klickitat, Cayuse, Walla Walla, Nez Perces, and Umatilla peoples met in Grande Ronde Valley in the summer of 1854. They devised a strategy for countering the Euro-Americans' proposals, but it did not work for them (ibid.,326ff)

The details of the meeting of the Sahaptian-speaking Plateau tribes with Stevens and Palmer at Walla Walla in 1855 have been outlined by others. Of note is that the formation of the Confederated Tribes of the Umatilla Indian Reservation stem from some Cayuse, Umatilla, and Walla Walla peoples and their agreements with Stevens and Palmer. These bands agreed to relocate on the Umatilla Reservation in northeastern Oregon. They ceded to Stevens and the Washington Territory 1,861,120 acres of land and to Palmer and the state of Oregon 2,151,680 acres. Their own reservation lands amounted to 245,699 acres. With many acres of grasslands within their reservation lands, these people were able to continue to raise horses relatively

undisturbed for the next several decades (Ruby and Brown, 1981, 52). How well they lived is another matter. During the thirty-sixth Congress in 1859, it was reported that the native peoples who had moved to reserved lands designated by Stevens and Palmer were not doing well -- many were ill, starving, or dying. The Nez Perces had fared much better than the other plateau tribes in these negotiations (Meinig 1968, 207).

Following the 1855 treaties, the Yakima War broke out and lasted for about three years. Although settlement was discouraged east of the Cascades because of this unrest, miners heard of strikes in the Upper Columbia and Fraser river areas began stampedes to camps in that direction. By the early 1860s, placer mining was starting in central and northeastern Oregon as well. None of these mining activities actually took place within the Umatilla River watershed, but people from the Willamette Valley saw the economic potential of supplying the Powder and John Day river mining camps and came to the area to settle. By 1864, people were cultivating lands and raising stock along the Umatilla River and Butter Creek (Parsons 1902, 159). The town of Umatilla became a rival with Wallula as a supply center for mining camps in the Blue Mountains as well as those in the Powder and Owyhee districts. By 1865, Wallula had won out, leaving the Umatilla "a dreary, windy and sand-choked hamlet" (Meinig 1968, 215).

Modern Settlement Era Activity (1866 to 1940)

Livestock grew in importance during the beginning of this period. Both the Whitmans at their mission in Waiilaptu and Henry Spaulding at the Lapwah mission near current-day Lewiston, Idaho, began raising sheep and cattle in the 1830s. In 1838 when five sheep from Hawaii arrived at Waiilaptu, sheep raising east of Cascades began. The Whitmans reported in 1845 that they had 80 sheep and the spring lambs that year would increase the flock to more than 100. Cattle provided meat and the sheep were producing wool, which the missionaries taught the natives to spin into flannel for clothing (Lomax, 1941, 43ff.).

The settlement of most of the native peoples in eastern Oregon state and Washington Territory on reserved lands by 1860 coincided with the gold strikes in Rocky Mountains and eastern Oregon. Cattlemen came to the Umatilla River watershed from west of the Cascades to supply the mining camps with stock from California. A boom in the cattle business lasted

from Alderdale, Washington, to the Umatilla River. For summer and fall subsistence hunting and gathering, these people traveled to the Blue Mountains, the Wallowa and Grande Ronde valleys, and along the John Day River. Others, the Cayuse, lived throughout the region of the Blue Mountains, gathering and hunting in the valleys there and on the slopes draining the Walla Walla, Umatilla, and Upper Grande Ronde rivers. They fished for salmon on the Lower Snake River and its tributaries along with the Umatilla people. The Cayuse lived on both sides of the Umatilla River to below the mouth of Butter Creek, and foraged for roots and berries in the valleys of the Blue Mountains as well (Ruby and Brown 1981, 124, 133ff, 250).

The native peoples living on the eastern side of the Plateau were among the first in the region to acquire the horse. The flat plain that lay between the mouth of the Umatilla River and the Blue Mountains within this watershed, covered with lush grasslands, provided excellent grazing for their herds. From the early eighteenth century, their new means of transport enabled them to hunt the bison on the Plains and to trade with other people. The horses also acquired a reputation for high quality. Native peoples across the plateau often raided each other for the animals. Euro-Americans who arrived in the nineteenth century in need of fresh stock sought the animals as well.

The native peoples of the Umatilla River watershed also experienced the population decimation that smallpox brought in the late eighteenth and early nineteenth centuries. The size of the units of people needed to trade, gather, forage, fish, and hunt for survival changed dramatically at the beginning of the nineteenth century, an alteration that proved irreversible as more Euro-Americans began to arrive (Ray 1937, 107; Webber 1989, 150ff.; Boas and Teit 1985, 167, 175; 211ff.; Grabert 1973, 112).

Preindustrial Settlement Activity (1775 to 1865)

The Lewis and Clark Expedition met people living in the Umatilla River watershed when these explorers stopped on the north bank of the Columbia River just opposite the mouth of the Umatilla River in October 1805. The expedition, however, did not enter the Umatilla territory. At the time of the arrival of Lewis and Clark, most of the Umatilla people were living on the north side of the Columbia River just below the present site of McNary Dam. Not many native

peoples were living on the south side of the Columbia River because of the constant attacks of the war-like Pauite peoples from the Northern Great Basin (Journals of Lewis and Clark, vol. 5 1988, 301; Ruby and Brown 1981, 124). David Thompson of the North West Company (NWC) also passed the mouth of the river twice on his voyage to Astoria and subsequent return to Canada in 1811. He, too, did not leave the river to explore the lands to the south and east. But in that same year, Wilson Price Hunt led a group of traders employed by John Jacob Astor's Pacific Fur Company through the watershed to check the potential for the fur trade in the Blue Mountains. In 1812 on a trip east, another Astorian, Robert Stuart, traveled through the watershed when he explored the Grand Ronde Valley in search of possible trading post sites (Meinig 1968, 41-42).

Fur traders traversed the Umatilla River watershed on a regular basis in the first decades of the nineteenth century. The NWC sent people there as early as 1812 until it was merged with the Hudson's Bay Company (HBC) in 1821. NWC trappers worked throughout the Umatilla River watershed, especially the streams of the Blue Mountains and the Grande Ronde Valley. The native peoples of this watershed, like others on the Plateau, did not prove to be true trading partners. Donald MacKenzie of the North West Company brought Iroquois to the Northwest to participate in the trade. More experienced in the entrepreneurial ways of the Euro-Americans, these Native Americans proved to be more active and useful assets for the fur trade than those who were native to the Columbia Plateau (Nicks 1980, 90-92) and quite likely, the Umatilla River watershed was no exception.

While this watershed contained some fur-bearing mammals, it was never the focus of major trapping as was the Snake River country. However, many of the NWC expeditions that began to the Snake country in 1818, and that the HBC continued until the 1830s, traversed the Umatilla River watershed.

The HBC's policy for trade under George Simpson's leadership was the enforcement of "fur desert." Knowing that in 1828 a treaty would be renegotiated between Great Britain and the United States regarding the ownership and occupation of the Oregon country, the HBC's goal was to trap out most of the beaver and other fur-bearing animals in the area so that fewer potential profits were left for the Americans. Officially the government encouraged a conservation policy toward the beaver, but there was little effort to enforce it (Merk 1968, xxiiff.).

John Work, Peter Skene Ogden, and others led groups to the Snake River country that passed through the Umatilla River watershed. Their journals noted a scarcity of animals, and

most of the few beaver trapped were for the party's consumption.

Of a more permanent nature in settlement in the southeastern area of the Plateau were the missionaries who came to convert the natives. In 1836 Marcus and Narcissa Whitman opened a mission, Waiilatpu, in the Walla Walla Valley. Although the Whitmans worked outside the Umatilla River watershed, their work among the Indians and their deaths had an effect on the native peoples and the lands of the Umatilla River region. In an effort to "civilize" the Indians in a Christian way, these missionaries encouraged the natives to farm, to settle in, and to give up their nomadic ways. By the time the emigrants on the Oregon Trail began crossing the Umatilla region in the 1840s, the Cayuse people were cultivating crops along the banks of the Umatilla River and trading wheat, corn, potatoes, peas, pumpkins, and fish to the hungry travelers for cloth and other articles of clothing (Palmer 1983, 49-50).

The Oblates, a Roman Catholic order, actually established a mission, St. Anne, in 1847 near current-day Pendleton in 1847. However, a year later it was abandoned following the massacre of the Whitmans by some Cayuse (Ruby and Brown 1981, 250; Bishoff 1945, 207).

Before the Whitman massacre in 1847, most travelers on the Oregon Trail stopped at the mission to obtain food, supplies, and good companionship after six months of hard travel. Some in a group that arrived in 1847 had measles that infected many of the Cayuse, decimating their numbers. Dr. Whitman tried to help these dying natives with medicine, but to no avail. Fearing that the white doctor was plotting to eliminate their entire people, the Cayuse attacked the mission in November of 1847, killing the Whitmans and 12 other people. They also took hostages who were released when the volunteer army from the western part of the Oregon country came east the following year to avenge the deaths. As a result of this crisis, the government discouraged settlement east of Cascades in the Oregon country for a number of years.

Prior to the massacre, most of the wagon trains on the Oregon Trail bypassed the Umatilla River watershed when they went north to the Whitmans. However, following the disaster, nearly all the Oregon-bound travelers used the more southern route -- "the Umatilla cutoff" -- that took them through the watershed to the Columbia River.

But even though this route became a major thoroughfare, few people settled there. The Oregon Trail travelers followed the Umatilla River in September when the naturally arid area looked particularly parched and desolate when compared to the fertile, lush Willamette Valley that awaited them to the west of the Cascade Mountains. Henry Spaulding, the missionary at the Lapwah mission in Idaho, had described the Umatilla Valley as "habitable" with enough arable

lands for 150 families to settle along the river. Only the Grande Ronde Valley of northeast Oregon was seen as having potential for successful farming and settlement. The unappealing landscape, along with the native unrest east of the Cascades that lasted until the late 1850s, discouraged interest in the Umatilla River watershed until the late 1850s (Palmer 1983, 48; Meinig 1968, 183; 201-03).

Isaac Stevens's survey saw the farming potential of the lands south of the Columbia River: "[with settlement] there will be a chain of agricultural settlements all the way from the Walla-Walla to the Dalles, south of the Columbia, along the streams." Settlement, however, did not happen here for a number of years. It took another decade for those emigrants, essentially from the Midwest and the upper South, to realize the truly rich nature of the volcanic soil that supported the bunchgrass-covered lands (ibid., 195-96).

The Cayuse uprising in 1847 that resulted in the massacre of the Whitmans also was partly caused by their move toward agriculture. The Whitmans at Waiilatpu had encouraged the Walla Walla and Cayuse natives who lived near the mission to cultivate the soil and to raise livestock. The Cayuse had ceased to gather and dry stores of roots and berries that would feed them, especially at the end of winter, before the spring root-gathering time. They had become more reliant on the harvest of crops for food sources. As early as 1831 they had been raising cattle and often slaughtered some of these animals for food (ibid., 87). By keeping the livestock near the farms, these animals were not protected in the sheltered valleys during the severe winter of 1846-1847 and most of the stock died. Nearly half of the tribe was suffering from malnutrition when the Oregon emigrants arrived at the mission with the measles in the fall of 1847 (Miller 1985, 324). Fearing the intentional decimation of their numbers by the Whitmans and others, members of the Cayuse tribe massacred the Whitmans and twelve other people in November 1847.

Following this atrocity, settlers in Willamette Valley raised a volunteer army in the spring to retaliate. Led by Peter Skene Ogden and Joel Palmer, this offensive brought the rescue of the remaining missionaries and some settlers who were hostages. At first unsuccessful in identifying the killers, the volunteer troops finally tracked them down and hanged them. In addition to this loss of life, the Cayuse were expelled from their lands as a reparation for the missionaries' deaths. This was the first expulsion of the natives of the Columbia Plateau by the Euro-Americans. Thus began a distrust of Euro-Americans by the Native Americans of the Columbia Plateau, a distrust that was fully realized when some of the Plateau tribes negotiated treaties with Isaac Stevens and Joel Palmer in 1855 (Miller 1985, 334; O'Donnell 1991, 113).

through the 1860s but crashed in the 1870s because of a nationwide depression. What helped the resurgence of the cattle business in the 1870s in the Umatilla River area was the demand for meat from the growing urban centers east of the Rocky Mountains. Companies such as Lang and Ryan of Kansas City, Missouri, developed ranches in Montana and Wyoming, and purchased thousands of head of cattle from eastern Oregon and Washington in the late 1870s. In 1880, these enterprises purchased 58,300 head from Oregon alone. The Umatilla country participated in this boom until the devastating winter of 1880-1881 when 55 percent of the cattle in the county froze to death (Oliphant, 1946, 25-30).

The purchase of cattle raised in the Umatilla River watershed recommenced in the 1890s. In 1897 depleting some 20,000 head had been shipped east for slaughter, depleting the county's herds. By 1901, only 17,000 head of cattle were reported in Umatilla County out of the 600,000 that were in the state. About half of the entire land mass of the county -- 1,500 square miles -- provided range for the cattle. "This territory extended along the base of the Blue Mountains from Meacham to the middle fork, a strip of twenty miles wide, and through Butter Creek country, including Camas Prairie and between Dry and Long Creeks, at the head of the Umatilla river" (Parsons 1902, 163-164). Over the next thirty years, or until the 1930s, the Umatilla River watershed -- consisting mainly of Umatilla County -- never had more than 35,000 cattle grazing in the area (Department of Commerce 1902, 472; 1913, 412-413; 1922, 54; 1932, 503).

This was not the case, however, with sheep. As the number of Oregon Trail emigrants grew throughout the 1840s and 1850s, the desire for farmland in the Willamette Valley pressured the stockmen to move east of the Cascades where they found a drier climate and range covered with abundant natural grasses. So vast was the area in the east that sheepherding developed differently from that in the west. Small flocks of 75 to 100 sheep were typical of the Willamette Valley. In the east, an experienced Scottish or Australian shepherd with his dog could oversee flocks of mainly Merino sheep that often numbered in the thousands. The terrible winter of 1861-1862 killed off not only most of the stock in eastern Oregon, but also enthusiasm for the this enterprise over the next few years. But by 1867, Jerry Barnhart began raising sheep on a large scale near the site of Pendleton, having a flock of between 5,000 and 10,000 (Parsons 1902, 162).

To say how many of these sheep grazed in the Umatilla River watershed in the 1860s and 1870s is difficult since the government did not determine modern-day county lines until the 1890s. The area also served as a thoroughfare for migration. S.M. Wait used the watershed as a migration route to herd 5,000 sheep to eastern Washington in 1869 through the Umatilla Country

(Paul 1976, 49ff.). In the 1880s, the amount of wool clipped in Umatilla County and four other counties in eastern Oregon more than doubled that clipped from the previous decade to over 1 million pounds per county. In the early 1890s, more than 10 million pounds of wool were shipped from Pendleton and The Dalles -- about five million from each site. Following the Panic of 1893 that brought with it a collapse in wool and mutton prices, the sheep industry made a comeback. By 1900 Pendleton was the primary wool market in the United States (Mitchell 1895, 277; Kenny 1963, 102; Johansen 1967, 319; McGregor , 87).

So great was the influx of sheep into Umatilla County at the end of the nineteenth century that private citizens began writing their government expressing concern about overgrazing. Among others, E.B. Gambee wrote to the government in 1891 that even though the mountain slopes in the eastern part of Umatilla county were not suited for farming, sheep that belonged to people from outside the county were overgrazing these lands. He argued that these people should be required either to rent or purchase the lands. It was common knowledge that everyone was trying to get as much free range from the public domain as possible. When farmers expressed concern about lack of water, the sheepmen moved to other areas (Minto, 982-984). (It should be noted that one of the original purposes for the creation of the forest reserves was to protect the watersheds that were being ruined due to overgrazing.)

By 1893 the Pendleton Wool-Scouring Company began operating. Within the year the mill was processing some 75,000 pounds of wool every 24 hours, for a total of 2 million pounds for the year. In 1896 the pens at Umatilla had expanded to accommodate the shearing of 20,000 sheep a year. So lucrative was the stock business in Oregon that in 1900 is was the leading money maker in the state's economy (Lomax 1948, 212-220; Swift 1909, 80).

As the number of sheep grew within the Umatilla watershed so did the competition between the sheepmen and the cattlemen for
an increasingly smaller range. In 1889, by federal government order, stockmen had to remove 10,000 head of cattle and 40,000 sheep from the Umatilla Indian Reservation lands. Between 1896 and 1906 -- before the creation of the federal forest reserves in northeastern Oregon -- major range wars erupted in eastern Oregon, including Umatilla County where thousands of sheep were slaughtered (Paul, 48-49). Between 1900 and 1930, more than 150,000 sheep were within the borders of Umatilla County, the main drainage of the watershed (Department of Commerce 1903, 473; 1913, 413; 1922, 325; 1932, 505). With numbers such as these, significant range and riparian area damage must have occured across the watershed.

Pressure to obtain more lands for grazing and settlement in the later nineteenth century

also had a great effect on the Umatilla Indian Reservation. Reluctantly, the Umatilla, Cayuse, and Walla Walla peoples began moving to their reserved lands in northeastern Oregon in 1860. Initially, they had gardens along the Umatilla River and raised their horses on the lush grasslands that lay within their territory. In 1882 the tribe sold 640 acres to the city of Pendleton. But as the grain producing potential of the watershed area grew, white settlers began to pressure for entrance to reservation lands. The same year that Umatilla County was formed, 1885, Congress passed the Slater Act that reduced the size of the reservation and began the designation of allotments for the Indians. Congress also passed the Dawes Act in 1887. Its purpose was to "assimilate" native peoples by allotting them plots of land to farm, but it took away even more lands from them. Three years later, the tribe's lands had been reduced to 157,982 acres, or about 100,000 less than the original 254,000 acres that had been reserved for the Umatilla, Cayuse, and Walla Walla peoples in 1855. By 1889, most of the southern portion of the reservation also had been opened for settlement to whites. The tribe's members had only 82,742 acres in the eastern part of the reservation allotted to them. Leasing of nonalloted lands led to a checkerboard pattern of ownership within the borders of the reservation. The tribe recovered some of its lands during the 1930s, but by 1969 it only had 93,273 acres of the originally reserved lands (Ruby and Brown 1981, 52-53; Zucker 1983, 101; Stowell 1987, 135-136).

Congress helped the development of eastern Oregon in these years in other ways. It granted public lands to railroads desirous of building routes across the northwest. In 1879, the Oregon Railway and Navigation (OR&N) Company opened a line between Umatilla and Wallula. Two years later it began construction of a line between Umatilla and Huntington that opened as far as Pendleton in 1882 and La Grande by 1884. The line was not completed to Huntington until 1889 when the Union Pacific bought half of OR&N's stock. By the end of the century, short lines within the Umatilla River watershed enabled sheepherders to ship wool to Pendleton, and miners to transport minerals to smelters in western Oregon (Asay 1991, 25, 32, 59; Lomax, 1948, 47). With the reservation lands opened and a means to market, farmers began moving into the Umatilla River watershed in large numbers in the 1880s.

Despite the arid conditions of the watershed, the fertility of its soil had been known since the 1870s (Mitchell 1895, 226). Following the Civil War many people from Missouri came to settle in Umatilla County. In contrast to the early emigrants who used crude single-share plows to turn the soil on small prairie plots and in narrow valleys, these people brought the experience of large-scale, efficient planning that farmers from the Midwest had practiced for years. By the late 1880s, farmers in the Umatilla were using the steam combine on the gentle slopes within the

valley (Parsons 1902, 159; Johansen 1967, 318). The completion of the OR&N line to Pendleton from Umatilla in 1882 brought an economic boom to this part of the valley. Despite their loss in status because the railroad was to the west, the fruit orchards near the naturally well-watered Milton area and the wheat fields around Weston and Athena continued to yield high profits throughout the 1880s. In 1890, Umatilla County alone produced 5 million bushels of wheat out of the 13 million bushels grown in the entire state. At the turn of the century, farmers in Umatilla County were planting wheat on a large scale with anywhere from 2,000 to 5,000 acres under cultivation. Yielding about 20 bushels on each naturally fertilized acre, these farmers used steam plows, harrows, and combined steam harvesters -- the most modern equipment of the day (Swift 1901, 61; Parsons 1902, 159-160).

In 1900, one could follow the Umatilla River from Pendleton to Echo -- a distance of about 20 miles -- and see fertile bottom lands covered with purple-flowered alfalfa or blue Lucerne, fruit orchards, and cornfields. Between the Umatilla River north to the Columbia River were seemingly endless wheat fields in farming districts such as Vansycle, Juniper, Fulton, and Stage Gulch. Echo itself in those years was producing some wheat with the help of irrigation, but was truly known for its stock, especially its fine thoroughbred horses (ibid., 159, 170).

To reap as much from the soil, the farmers in the Umatilla River watershed tried the dry farming method as well as summer fallowing methods to compensate for the lack of water. Irrigation was a spotty undertaking throughout the watershed by the turn of the century. The newly established Bureau of Reclamation (BOR) included the Umatilla Project for one of its initial undertakings in Oregon. The BOR planned to irrigate some 25,000 acres, 17,000 of which would be watered by 1911. A mere 3,500 acres were ready by that date with only 1,500 more two years later (Rasmussen 1991, 35-37). By the 1930s, wheat still remained the number one crop with Umatilla County leading the state in most production of wheat per acre. Nearly 40,000 acres of land were being irrigated from three reservoirs with accompanying canals on the Umatilla River and its tributaries. In the Milton and Freewater areas, farmers obtained water either from wells or from the Walla Walla River and its tributaries. These irrigated acres produced mainly hay, vegetables, apples, cherries, and prunes. Camas Creek Valley, with Ukiah as its center, produced hay in connection with the stock raising taking place on local ranches (Forest Survey 1:1936-1937, 6-7).

After wheat was the livestock industry in Umatilla County as a money-producing source in the watershed. In 1934 Umatilla County produced 1.5 million pounds of wool with the woolen mills of Pendelton continuing to be a major center for wool in the United States. (ibid.)

Most of the timber that was cut in this watershed during the Great Depression years was ponderosa pine that was growing in the Ukiah area. Mills located in LaGrande processed the wood from these timber harvests into lumber. Major timber harvests would not take place until later years. (ibid.)

The initial significant use of the land by the Euro-American in this watershed had been for livestock raising and continued to be so into the twentieth century. To be sure the Cayuse had raised their horses here for nearly a hundred years before the arrival of Lewis and Clark, but their herds of animals had been just one part of their use of the land. Unlike the Native American before him who had a more balanced, multiple use of the land through hunting, gathering, and fishing, the Euro-American mainly raised stock and farmed, nearly always with a profit in mind. Efforts at major irrigation to take fuller advantage of the potential for even more productive wheat farming would have to wail until after World War II.

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JOHN DAY RIVER WATERSHED

The John Day River rises in the Blue Mountains in eastern Oregon and flows north and west into the Columbia River. Typical of rivers on this part of the Columbia Plain, the main river and its forks cut deeply through the lava-formed land creating steep canyons in some parts of its course. Settlement came late in this watershed because of a climate that often features severe winters and dry summers. By the twentieth century, mining, ranching, farming, and logging were all taking place within the watershed.

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

People lived throughout the John Day River watershed in prehistoric times. Archaeologists have found habitation as early as 9,000 BP on the Columbia River just east of the mouth of the John Day. More intensive settlement occurred around 7,000 BP further up river into the John Day River Canyon and in the Pine and Muddy creek areas. Inhabitants intensely fished the river and its tributary streams for salmon, mussels, and other shellfish and they used the Blue Mountains on a seasonal basis, foraging for roots and hunting game found there (A Cultural Resource Overview 1990, 55, 62, 71). These native peoples participated actively in the trade network between the Chinook peoples to the west and the eastern tribes with Plains connections. They also battled with the war-like groups to the south who resided in the Northern Great Basin and were driven from the Plateau in these early years (Mosgrove 1980, 19ff.).

Protohistoric Settlement Activity
(1500 to 1800)

The native peoples whom the Euro-Americans first met from the John Day River watershed were Sahaptian-speaking. The Dockspuses, Wasco, and Tenino bands fished, hunted, and foraged along the Lower John Day River and its tributaries. Some Northern Paiute could be found fishing the waters of the South Fork of the John Day River, and the Umatilla people

occupied the John Day River Valley (ibid., 19). Like others on the Plateau, the watershed inhabitants acquired the horse and the rifle in the eighteenth century but they did not use either one of them as extensively as the native peoples to the east. They, too, had their population decimated by the smallpox epidemic that hit the Columbia Plain in the late eighteenth century prior to the arrival of the Lewis and Clark Expedition.

Preindustrial Settlement Activity (1775 to 1865)

In 1805 the Lewis and Clark expedition met people from the John Day River watershed who were drying fish when the explorers stopped on the north bank of the Columbia River just opposite the mouth of the John Day River in October 1805. The Lewis and Clark Expedition, however, did not enter the watershed. At the time of the arrival of Lewis and Clark, most of the native peoples were living on the Columbia River or its north side because of the constant attacks of the war-like Pauite peoples from the Northern Great Basin (Journals of Lewis and Clark, vol. 5 1988, 319-321; Ruby and Brown 1981, 124). David Thompson of the North West Company (NWC) also passed the mouth of the river twice on his voyage to Astoria and subsequent return to Canada in 1811. He, too, did not leave the river to explore the lands to the south and east. But in that same year, Wilson Price Hunt led a group of traders employed by John Jacob Astor's Pacific Fur Company through the watershed to check the potential for the fur trade in the Blue Mountains. In 1812 on a trip east, another group of Astorians accompanied Robert Stuart and traveled through the watershed as they made their way across northern Oregon in search of possible trading post sites (Meinig 1968, 41-42). And finally, John C. Fremont traveled through part of the watershed during his exploration of the interior of eastern Oregon in 1843 (Illust Hist/CenOr 1905, 699).

Fur traders traversed this watershed on a regular basis during the first decades of the nineteenth century. The NWC sent people there as early as 1812 until it was merged with the Hudson's Bay Company (HBC) in 1821. Trappers for the North West Company crossed and worked the John Day River watershed.

The native peoples of this watershed, like others on the Plateau, did not prove to be true trading partners. NWC's Donald Mackenzie brought Iroquois to the Oregon country to

participate in the trade. More experienced in the entrepreneurial ways of the Euro-Americans, these Native Americans proved to be more active and useful assets for the fur trade than those who were native to the Columbia Plateau (Nicks 1980, 90-92).

While the John Day River watershed contained some fur-bearing mammals, it was never the focus of major trapping that the Snake River country became. However, many of the expeditions that the NWC began to the Snake Country in 1818, and that the HBC continued until the 1830s, traversed the John Day River watershed. The HBC's policy for trade under George Simpson's leadership was the enforcement of "fur desert." Knowing that in 1828 a treaty would be renegotiated between Great Britain and the United States regarding the ownership and occupation of the Oregon country, the HBC's goal was to trap out as many of the beaver and other fur-bearing animals in the area as possible in order to leave fewer potential profits for the Americans. Officially the government encouraged a conservation policy toward the beaver, but little effort was made to enforce it (Merk 1968, xxiiff.).

John Work, Peter Skene Ogden, and others led groups to the Snake River country that passed through the John Day River watershed. Their journals reveal, however, a scarcity of animals, and most of the few beaver trapped there were for the party's consumption. How extensive was the decimation by the Euro-Americans of the fur-bearing mammals of this watershed is not known at this time. However, there were reports that these animals had been trapped out of the Deschutes River watershed by the HBC by the early 1830s (Wyeth 1969, 95-96).

The watershed lands along the Lower John Day River and its tributary streams became a thoroughfare for the emigrants on the Oregon Trail. Most of the thousands of emigrants who came to Oregon between 1841 and 1860 took a trail from Umatilla along the south shore of the Columbia River and crossed the John Day River at its mouth. Crossing the John Day River appeared to be one of the final challenges of the trip. Joel Palmer reported in September 1845 that the stream came "tumbling through canyons and rolling over rocks at a violent rate. It is very difficult to cross, on account of the stone forming the bed of the creek; its width, however does not exceed ten yards" He also adds "the grazing is indifferent, the grass being completely dried" (Palmer 1983, 54). Since the travelers passed through this watershed in late summer and early fall, their views of dry, burned-out landscape only confirmed prior reports of "interior desert" east of the Cascade Mountains.

Not everyone was content to make the final leg of the trip to the Willamette Valley by water from The Dalles. The delay and costs of river travel led Samuel K. Barlow to find a trail

used by native peoples that cut south of Mt. Hood across the mountains. Setting out from The Dalles in the fall of 1845, Barlow's group headed south and west on the trail. Due to heavy snows in the mountains, they cached many of their supplies for the winter and proceeded on to the Willamette Valley. Obtaining a charter from the territorial legislature to open a road, Barlow and a crew of 40 men completed the road in the spring of 1846. The route provided a major means of transportation between the Willamette Valley and eastern Oregon for many years (Bailey, 1912, 288-295).

Isaac Stevens included the John Day River watershed in the survey he made of the lands east of the Cascades in 1853. Despite his optimism that these lands had great agriculture potential, only a few people settled in the watershed by 1860 and no one permanently settled in the area until after the Civil War (Meinig 1968, 155-156, 173; Illust Hist/CenOr 1905, 428).

When the federal government formed the Washington Territory in 1853, Isaac Stevens was appointed its first governor as well as the superintendent of Indian affairs. In the two years following, he conducted a survey of the lands, especially for railroad construction. His extraordinarily detailed map showed, for the first time, the geography of the region and the lay of the land. Seeing the potential for settlement and development, Stevens realized that the native peoples of the Columbia Plains would hinder growth in the region that so many were hoping for as the emigrants proceeded over the Oregon Trail (Miller, 340ff).

The details of the meeting of the Sahaptian-speaking Plateau tribes with Stevens and Joel Palmer, the Oregon superintendent of Indian affairs, at Walla Walla in 1855 have been outlined by others (ibid.). Of note was the formation of the Confederated Tribes of the Warm Springs Reservation from the agreement some Tenino, Tygh, Wasco, Wishram, and the Dockspus peoples made with Palmer at Wascopaum Springs in June 1855. These bands agreed to relocate to the Warm Springs Reservation in north central Oregon by 1859. Their original lands encompassed an area whose northern boundary was the Columbia River and Willow Creek, the southern border the 44th parallel, the western area the slopes of the Cascades north from Mt. Jefferson, and to the east, the summit of the Blue Mountains (Shane "Early Explorations", 1950, 11).

In 1855, they surrendered more than 10 million acres of their territory, retaining only 464,000 acres. The original treaty granted them the right to keep their traditional fishing sites and to forage in the mountain valleys as they had done for many years (Shane 1950, 287ff.; Ruby and Brown 1981, 56). This right was not honored when pressure from white settlers for lands east of the Cascades was brought to bear. During the thirty-sixth Congress in 1859, it was

reported that the native peoples who had moved to reserved lands designated by Stevens and Palmer were not doing well -- many were ill, starving, or dying (Meinig 1968, 207).

Following the 1855 treaties, the Yakima War broke out and lasted for about three years. Although the natives in the John Day River watershed did not participate in the war, the Lower John Day region experienced many of the U.S. Army's forays made from The Dalles across northern Oregon between 1855 and 1858 (ibid., 158).

Settlement east of the Cascades was discouraged because of this Indian unrest. But miners heard of strikes in Idaho, and the Upper Columbia and Fraser river areas, and began stampedes to camps in that direction. By the early 1860s, placer mining was starting in northeastern Oregon as well. People from the Willamette Valley saw the economic potential of supplying camps on the Clearwater, Lower Salmon rivers, and Boise Basin, as well as those in eastern Oregon on the Powder and John Day rivers. They headed east to take advantage of the business opportunities that the mining strikes offered. The Dalles and Umatilla served as entrepots to supply the mines to the east. In 1858 the steamship, Colonel Wright, was launched just east of the mouth of the Deschutes River to transport even more people and supplies to the camps. A portage railroad overtook the teamster method of crossing the difficult 12-mile portage between The Dalles and Celilo Falls by 1863, which meant even more people could be transported to the mining areas (ibid., 212-213).

In 1862 gold was discovered in many of the gulches in the John Day Valley, and 5,000 miners were panning the streams by the end of the year. Many of them were Chinese. The focus of this placer mining activity in the early years occurred on the main stream of the river near the current-day cities of John Day and Canyon City. But there was also much activity near Canyon, Dixie Creek, Granite, and Susanville in Grant County. By the end of the decade, the hydraulic nozzles used to dislodge placer gold from the hills above the river would be in place (Mosgrove 1980, 35; Edson 1974, 16).

This watershed also provided a thoroughfare for the mining stampedes to the strikes on the Powder and Burnt rivers as well as those in Baker County. Not only did these miners have river travel at their disposal, many of them also used the Oregon Trail as a point of departure into the mineral-bearing hills of eastern
and central Oregon (Meinig 1968, 205).

It would not be until the end of the 1860s that the beginnings of any significant ecological alteration at the mining sites would take place. However, a permanent Euro-American presence had an effect on the timber, water, and wildlife of the watershed. Moreover,

the establishment of permanent urban centers, such as Canyon City in 1862, also affected the land.

The removal of native peoples to reservations prompted the federal and state governments to encourage settlement east of the Cascades. The stockmen, who trailed the miners into the John Day River watershed, were determined to find a profit by supplying the camps east of the Cascades in Montana, Idaho, and central and eastern Oregon. By using the Barlow Road before 1865, they were able to gain a foothold and claim to the bunchgrass-rich range across the watershed. Modern-day Morrow, Wheeler, Sherman, and parts of Umatilla and Grant counties were the initial areas they focused on (Illust Hist/CenOr 1905, 639; French 1958, 45).

Modern Era Settlement Activity (1865 to 1940)

The settlement of most of the native peoples in eastern Oregon state and Washington Territory on reserved lands by 1860 encouraged the first stockmen to come east of the Cascades. In response to the gold strikes in Rocky Mountains and eastern Oregon, cattlemen came to the John Day River watershed from west of the Cascades with stock from California to supply the mining camps. A boom in the cattle business lasted through the 1860s, but crashed in the 1870s because of the nationwide depression in those years.

What helped the resurgence of the cattle business in the 1870s in the John Day River area was the demand for meat from the growing urban centers east of the Rocky Mountains. Companies such as Lang and Ryan of Kansas City, Missouri, developed ranches in Montana and Wyoming, and purchased thousands of head of cattle from eastern Oregon and Washington in the late 1870s. In 1880, these enterprises purchased 58,300 head from Oregon alone. How many of these animals were grazing on lands within the watershed is difficult to determine. The state government did not draw the modern-day county lines for most of the area until the 1890s.

It could be surmised, however, that the John Day River country participated in this boom until the devastating winter of 1880-1881 when much of the cattle in the county froze to death. In what is today Gilliam County on the Lower John Day River, for example, some 90 to 95 percent of the stock died (Oliphant 1946, 25-30; Illust Hist/CenOr 1905, 561). A restocking of

cattle for the range in the watershed took place after this disaster. Over the next thirty years, or until the 1930s, the number of cattle in the counties of Gilliam, Grant, Morrow, Sherman, and Wheeler ranged from a high of 95,770 in 1920 to a low of 68,348 in 1910. During these years, most of the cattle seemed to be located in Grant County (Department of Commerce 1913, 411; 1922, 54; 1932; 1943). Cattlemen were not the only stockmen using the rangelands within the watershed in these years. Competition with sheepmen increased in the late nineteenth century, leading to range wars between the 1890s and the establishment of the federal forest reserves from public domain lands in 1907. Tens of thousands of cattle went up against hundreds of thousands of sheep for access and use of the range.

As the number of Oregon Trail emigrants grew throughout the 1840s and 1850s, the desire for farmland in the Willamette Valley pressured the stockmen to move east of the Cascades where they found a drier climate and range covered with abundant natural grasses. So vast was the area that the method of sheepherding developed differently than that used in the west. Small flocks of 75 to 100 sheep were typical of the Willamette Valley. In the east an experienced Scottish or Australian shepherd with his dog could oversee flocks of mainly Merino sheep that often numbered in the thousands. The terrible winter of 1861-1862 killed off not only most of the stock in eastern Oregon, but also enthusiasm for the this enterprise over the next few years (Parsons 1902, 162; Kenny 1963, 102). Men such as Zach Keyes, originally of Tennessee, came west after the Civil War and brought a band of 600 Cotswalds over the Cascades in the early 1870s to the Wheeler County area. The waist-high bunchgrass enabled the animals to survive their first winter when the operation moved three miles east of Mitchell. For the next 30 years, Keyes would take his band of sheep each spring to the Ochoco Mountains to graze for the summer. When the federal government established the Forest Reserve in 1917, Keyes received an allotment that permitted him to graze 1,200 sheep each year on the reserve between July 1 and October 1 (ibid., 105ff).

The first Irish sheepmen appeared in the watershed in the Morrow County area in the 1870s. William Hughes, a native of Donegal, was among the first to come. Proving to be successful, he sponsored other fellow countrymen to immigrate to Oregon and become sheepmen. Beginning in the 1890s, these Irish along with their flocks dominated much of the life of Morrow County for the next few decades. They ran their flocks from Sand Hollow, where many of them wintered, south to the Blue Mountains down the North Fork of the John Day River, munching all the way on the public domain's free grass (French 1971, 45-46). To say how many of and where these sheep grazed in the John Day River watershed in the 1860s and 1870s

is difficult since the government did not determine modern-day county lines until the 1890s. Interest in this profitable business grew. In the 1880s, in five counties in eastern Oregon, the amount of wool clipped more than doubled that clipped from the previous decade to over one million pounds per county. In the early 1890s, more than 10 million pounds of wool were shipped from Pendleton and The Dalles, about 5 million from each site. Following the Panic of 1893 that brought with it a collapse in wool and mutton prices, the sheep industry made a comeback. By 1900 Pendleton was the primary wool market in the United States (Mitchell 1895, 277; Kenny 1963, 102; Johansen 1967, 319; McGregor , 87).

So great was the influx of sheep into eastern Oregon at the end of the nineteenth century that citizens began writing their government expressing concern about overgrazing. Among others, E.B. Gambee wrote to the government in 1891 that even though the mountain slopes in the eastern part of Umatilla County were not suited for farming, sheep that belonged to people from outside the county were overgrazing these lands. He argued further that these people should be required either to rent or purchase the lands. It was common knowledge that everyone was trying to get as much free range from the public domain as possible. When farmers expressed concern about lack of water, the sheepmen moved to other areas (Minto 1892, 982-984; Mosgrove 1980, 81). One of the original purposes for the creation of the forest reserves was to protect the watersheds that were being ruined due to overgrazing.

By 1893 the Pendleton Wool-Scouring Company began operating. Within the year the mill was processing some 75,000 pounds of wool every 24 hours for a total for the year of 2 million pounds. In 1896 the pens at Umatilla had expanded to accommodate the shearing of 20,000 sheep a year. So lucrative was the stock business in Oregon that in 1900 it was the leading money maker in the state's economy (Lomax, 1948, 212-220; Swift 1909, 37).

Even into the twentieth century, the sheep industry continued to thrive in Oregon. But at what expense to the range lands within the John Day River watershed? Between 1900 and 1940, over a half million sheep were raised on farms and ranches in Gilliam, Grant, Morrow, Sherman, Crook, and Wheeler
counties. In 1910, there were more than ten times the number of sheep (756,074) in these five counties than head of cattle (68,348) (Department of Commerce 1902, 472-473; 1913, 411-412; 1922, 323, 325; 1932, 505). Should it surprise anyone that a range war erupted between 1896 and 1906, the year before the establishment of the forest reserves?

Cattlemen were so outraged by the influx of sheep on their lands within the watershed that in the 1890s they formed "sheep shooters" organizations. Groups such as the Crook County

Sheep Shooting Association formed in eastern Crook County. As many as 8,000 sheep died in Crook County alone due the organized extermination of the animals by local groups of cattlemen. In 1904 the Oregon Wool Growers Association offered rewards for the arrests and conviction of any sheep shooters (Mosgrove 1980, 82-85; Paul 1976, 48).

Even with the establishment of forest reserves on public lands, the number of stock increased in the watershed between 1906 and 1922 for several reasons. More homesteaders moved to the watershed during these years, and special subsidies were granted to wool producers during World War I for the forces' uniforms. However, the carrying capacity of the range was misjudged during the emergency war period. By the 1920s, fewer animals were grazing on the forest reserves because of the damage to the range (Mosgrove 1980, 92-94).

Permanent settlement by homesteaders in the John Day River watershed did not happen until the late nineteenth century. Despite the railroad construction binge that began in the Pacific Northwest after the Civil War, the dispute over land titles between the Northern Pacific Railway Company and the Eastern Oregon Land Company prevented thousands of acres in north central Oregon from being opened to settlement. In response, the Union Pacific and Northern Pacific decided to focus their construction of track in eastern Washington and along the Columbia River where land had clear title and awaited settlers. Along with the land owning disputes, there were also many and often contradictory federal land laws. Nineteenth century preemption land entry provisions, homestead acts, desert land entries, and stockraising homestead laws outlined access to the public domain for future settlers. Adding to these were the mineral laws, reclamation projects, and timber rulings of the twentieth century, all of which affected the settlement and development of north central Oregon (Smalley 1883, 364; Mosgrove 1980, 42).

Indian unrest east of the Cascades in the late 1860s also inhibited people from settling the lands in the John Day River watershed until the 1880s. In a treaty in 1868 the Bannock people had been promised in perpetuity the use of their prime camas ground, the Big Camas Prairie, in southern Idaho. White settlers entered these lands and were not reprimanded by the government for their trespass. In 1878 the Bannock along with the Northern Paiute began to raid, attack, and kill the few residents, mainly ranchers, who lived across north central Oregon in the John Day River watershed. General O.O. Howard quickly ended these hostilities by defeating the Indians just south of Pendleton at Pilot Rock in July 1878. With the departure of most of the Bannock people for the Yakima Reservation in eastern Washington that fall, significant conflicts between the native peoples of eastern Oregon and the Euro-Americans essentially ended (Meinig 1968, 248-249; Mosgrove 1980, 57ff).

With the removal of the last of the native peoples and the construction of the Oregon Railway and Navigation (OR&N) along the Columbia River across the northern boundaries of Wasco and Sherman counties, people began to come to the John Day River watershed to settle permanently in the 1880s. Competition between the farmers and the stockmen was especially keen at first. However, many of these new settlers were arriving from the Palouse and other parts of the Washington Territory and were aware of the potential for prosperous wheat farms on lands that had supported bunchgrass range for stock. By 1885, farms in Sherman County had produced wheat that sold for $1.5 million. By the end of the century, most of those farming cultivated at least 320 acres (Illust Hist/CenOr 1905, 175, 431, 455). Further up the John Day Valley, near Mayville Flats, within a twelve-square mile area, there were farms of 160 acres producing grain and fruit by the 1890s.

Most of the land in what is modern-day Wheeler County was in the hands of the stockmen and other large landowners. For example, the Eastern Oregon Land Company held more than 60,000 acres. Some land was available for cultivation. In Pine Creek Valley, located in the center of the county and running northwest to the John Day River, alfalfa grew as well as orchards of pears, peaches, apricots, and apples. Along the river itself were fruit bearing trees. The Mountain Creek country was known for its timothy grown on lands irrigated by the creek (ibid., 657-658).

The John Day River watershed continued to be part of the eastern Oregon minerals production center in the modern period. The placer mining of gold in the 1860s continued for a number of years along the major stream of the John Day River and its middle fork. By the mid-1860s, 5,000 people, many of them Chinese, were living in the Canyon City area. Most of them were involved in the production of gold, which on a weekly basis, was valued up to $22,000.

In modern-day Grant County, the most productive areas for placer mining efforts were at Canyon City on the John Day River, Dixie Creek between the John Day and its middle fork, Granite near the source of the North Fork of the John Day, and Susanville on the river's middle fork. In the Elk district, near Susanville and situated about 30 miles north of Canyon City, miners in the late 1860s stripped off the surface, fluming and ground-sluicing. The Pioneer Company began a ditch in 1866 in this district, completed two years later, to bring water to the claims on Deep Creek where hydraulic mining was conducted (Raymond 1870, 870; Mosgrove 1980, 173; Brooks 1968, 43-44, 47).

As early as 1865, the watershed also experienced quartz mining for gold in the Susanville and Elk districts. But even with the construction of a quartz-mill of the left bank of

the Middle Fork of the John Day River, just opposite Elk Creek, the returns from gold produced did not pay for the costs expended (Raymond 1870, 223). While many of the quartz lodes in the watershed had not been explored fully in these early years, most of the richest placer strikes in Grant County had played out by 1870. Patient Chinese continued to work abandoned sites along the rivers and streams for the next decade with some of these people even realizing profits. However, most white individuals pursing quick profits left the area in the 1870s when the easier placer strikes had played out (Mosgrove 1980, 35).

Mining companies still worked the watershed from the end of the nineteenth century and into the twentieth, and they continued to use Chinese labor. Hydraulic claims were worked in the Canyon City and Prairie City areas near Marysville and in Town Gulch. The Humboldt Mining Company was particularly active in using the hydraulic mining technique near Canyon City throughout the 1870s and 1880s. Constructing penstocks far up river to carry water to the elevated mining areas, miners then directed pressurized water to the hillsides that caused the release of huge quantities of gold-bearing earth. Such operations occurred only three or four months a year because of the water shortage that would result. But even with the more advanced techniques, the yields were only $21,500 a month (Raymond 1873, 209; Mosgrove 1980, 173; Edson 1974, 16-17).

The opening of a railroad to Sumpter in 1907 encouraged further exploitation of minerals from this potentially even richer area. Bucketline dredging began in a major way in the John Day River watershed by 1913. This means of extraction was used along Canyon Creek, on the John Day River near the city of John Day, along the Middle Fork of the John Day below Bates, and at Susanville. Even with a better means of transport to market, the amount of gold yielded from this method in the John Day River watershed between 1916 and 1949 was a little more than $5 million. Reports in the 1930s reveal that these dredging operations near Prairie and Salem resulted in the destruction of fertile cropland that had produced hay for winter feed (Brooks 1968, 45; Forest Survey 1:1936-1937, 7).

Supplying the efforts of mining and railroad construction were the forests of the Blue Mountains. They provided a major source of fuel and timber for the mines and the railroads. The completion of the Sumpter Valley railroad to Austin in 1910 meant major timber exploitation along the route.

By 1917 the Oregon Lumber Company was undertaking serious logging operations at Bates near Austin on the Middle Fork of the John Day River. In the 1930s, this company moved some of its logging operations to the main John Day River drainage at the headwaters of Dixie

and Davis creeks. By 1934, 67,000 acres had been logged from this area. In the 1920s, the Edward Hines Lumber Company began logging near Seneca, processing logs at a mill at Hines near Burns, Oregon (ibid., 8-9).

Before the nineteenth century, the people who lived in this watershed fished, hunted, and gathered those grasses and roots that were necessary for their subsistence. On a seasonal basis, they burned the prairie to encourage wildlife habitat, an activity that would have ceased after the native peoples of the John Day watershed had been removed to reserved lands. The Euro-Americans trapped out many of the fur-bearing mammals that lived in the Blue Mountains, including the beaver. The miners, ranchers, loggers, railroad men who followed the fur traders began to use the land in new ways, in extractive ways that could well have altered the landscape.

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DESCHUTES RIVER WATERSHED

The Deschutes River enters the Columbia River just to the east of Celilo Falls. It rises in the Cascades and flows north toward the Columbia River through steep canyon country. A north to south look at the lands in its watershed reveals an entry to the high lava plains that stretch southward to the Northern Great Basin and away from the Columbia Plain. The timberlands that cover the Cascades are further to the west on the Deschutes River. On either side of the river throughout the watershed, the sagebrush, bitterbrush, bunchgrass, prairie clover, and sunflowers typify the vegetation that grows in this dry country. Once again, the Cascades cast a rain shadow, preventing much moisture from entering the watershed.

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

Evidence indicates that people were living near the mouth of the Deschutes River on the Columbia River as early as 10,000 BP. Scholars suggest that during the dry period from 7,000 to 4,500 BP, people left the Great Basin to the south and migrated north from the "Dust Bowl" to the moister climate of the Columbia Plain (Cressman 1962, 22-23). Further upriver, investigators have found artifacts in the upper Deschutes drainage at the Three Sheep Rockshelter that date as early as 7,000 BP. Along the Crooked River, a tributary of the Deschutes River, there are also indications of human occupation around 8000 BP (Pettigrew 1982, 61; Cultural Resources 1990, 56,64).

Protohistoric Settlement Activity
(1500 to 1800)

The native peoples who occupied this watershed in protohistoric times gathered roots and berries from the mountains to the west as well as from the plains to the east. This Sahaptian-speaking people also relied heavily on the salmon caught on the Columbia River at Celilo Falls and at the rapids on the Deschutes River itself.

The Tenino, Tygh, Wishram, and Wasco peoples comprised the groups that occupied this watershed and who would one day live on the Warm Springs Reservation. The Tygh, or Upper Deschutes, spent their summers on the Deschutes River near the Sherar's Bridge and wintered in what today is Tygh Valley. Further downriver were the Tenino who lived in villages on the Oregon shore of the Columbia River at Ten Mile Rapids, Celilo Falls, and the Deschutes and John Day rivers. The Wishram and the Wasco lived on both sides of the Columbia River from The Dalles to Ten Mile Rapids. Wasco fishing sites were east of Hood River; their subsistence areas included lands along the Columbia Valley itself as well as the northern slopes of Mt. Hood. Moving southward, they shared gathering grounds with Tenino as far as DuFur on Fifteen Mile Creek. Situated so close to The Dalles and Celilo Falls, main trading centers on the Columbia, these people were active traders with groups to the east as well as the Chinook people to the west (Anastasio 1956, 30-31).

Another group of native people that should be mentioned is the Paiute. Although the Northern Paiute did not occupy lands in any permanent way within this watershed, they did roam the drainage area of the Crooked River. Included among the Paiute people were the Snake and Shoshone, bands who lived a meager existence on the fringe of the Columbia Plain. Their raids over the centuries on those who lived within the Deschutes River watershed provided a constant source of danger and annoyance over the centuries (Suphan 1974, 39ff).

The Wishram, Wasco, and the Tenino occupied lands that contained some of the most productive fishing sites on the Columbia Plain. It may be said generally that they were traders and fishermen, having a more sedentary lifestyle than native peoples who lived to the east. Relying more on the harvest of salmon and other fish from the Columbia and Deschutes rivers than on the meat secured from the hunt east of Rocky Mountains, these people did not use the rifle and used the horse very little (Anastasio 1956, 30-31). But by the arrival of the Lewis and Clark Expedition in 1805, their population had also been decimated by the smallpox epidemic that hit the Columbia Plain in the late eighteenth century.

Preindustrial Settlement Activity
(1775 to 1865)

The Lewis and Clark Expedition passed the mouth of the Deschutes River as it enters the

Columbia River in 1805 and in 1806 as they descended the river and on the return. These explorers met people from the Deschutes River watershed who were drying fish on the north bank of the Columbia River just opposite the mouth of the Deschutes River in the October 1805; however, they did not enter their territory. Actually at the time of the arrival of Lewis and Clark, most of the native peoples were living on the Columbia River or its north side. Not many lived in any permanent way on the south side of the Columbia River because of the constant attacks of the war-like Paiute peoples from the Northern Great Basin (Journals of Lewis and Clark, vol. 5 1988, 319-21; Ruby and Brown 1981, 124).

David Thompson of the North West Company (NWC) also passed the mouth of the river twice on his voyage to Astoria and subsequent return to Canada in 1811. He, too, did not leave the river to explore the lands to the south and east. But in that same year, Wilson Price Hunt led a group of traders employed by John Jacob Astor's Pacific Fur Company through the watershed to check the potential for the fur trade in the Blue Mountains. In 1812, on a trip east, the Astorian, Robert Stuart, traveled through the watershed as he made his way across northern Oregon in search of possible trading post sites (Meinig 1968, 41-42). And finally, John C. Fremont traveled down Deschutes River in 1843 and across the Crooked River into modern-day Crook County (Illust Hist/CenOr 1905, 699).

Fur traders traversed this watershed on a regular basis in the first decades of the nineteenth century. The NWC sent people there as early as 1812. From then until it was merged with the Hudson's Bay Company (HBC) in 1821, trappers for the North West Company crossed and worked the Deschutes River watershed.

The native peoples of this watershed, like others on the Plateau, did not prove to be true trading partners. Donald Mackenzie of the NWC brought Iroquois to the Oregon country to participate in the trade. More experienced in the entrepreneurial ways of the Euro-Americans, these Native Americans proved to be more active and useful assets for the fur trade than those who were native to the Columbia Plateau (Nicks 1980, 90-92).

While this watershed contained some fur-bearing mammals, it was never the focus of major trapping that the Snake River country became. However, many of the expeditions that the NWC began to the Snake country in 1818 and that the HBC continued until the 1830s traversed the Deschutes River watershed. The HBC's policy for trade under George Simpson's leadership was the enforcement of "fur desert." Knowing that in 1828 a treaty would be renegotiated between Great Britain and the United States regarding the ownership and occupation of the Oregon country, the HBC's goal was to trap out as many of the beaver and other fur-bearing

animals in the area as possible in order to leave fewer potential profits for the Americans. Officially the government encouraged a conservation policy toward the beaver, but there was little effort to enforce it (Merk 1968, xxiiff.).

John Work, Peter Skene Ogden, and others led groups to the Snake River country that passed through the Deschutes River watershed. Their journals reveal, however, few animals, which these Euro-Americans trapped out. Having little trapping luck, Nathaniel Wyeth encountered some of the native peoples while traveling along the Deschutes River in 1835. They reported to him that many beaver had been along the streams in the area, but the HBC had trapped out all of them (Wyeth 1969, 95-96; Davies 1961, 109).

The watershed lands along the Lower Deschutes River became a thoroughfare for the emigrants on the Oregon Trail. The river's mouth was only 15 miles from The Dalles, the Columbia River point for embarkation further west to the Willamette Valley by water. Most emigrants took this route between 1841 and 1860. Crossing the Deschutes River appeared to be one of the final challenges of the trip. Joel Palmer reported in 1845 "the river is about 100 yards wide, and the current very rapid; the stream is enclosed by lofty cliffs of basaltic rock. Four hundred yards from the Columbia is a rapid or cascade. . . . The current of this stream was so rapid and violent. . . as to require us to ferry it" (Palmer 1983, 50). Since the travelers would have passed through this watershed in late summer and early fall, their views of dry, burned out landscape only confirmed earlier reports of "interior desert" east of the Cascade Mountains.

Not everyone was content to make the final leg of the trip to the Willamette Valley by water. The delay and costs of river travel led Samuel K. Barlow to find a trail used by native peoples that cut south of Mt. Hood across the mountains. Setting out from The Dalles in the fall of 1845, Barlow's group crossed a Deschutes tributary and proceeded rather rapidly for the first 40 miles, the eastern slopes of the Cascades being not too heavily timbered. Due to heavy snows, they cached many of their supplies for the winter and proceeded on to the Willamette Valley. Obtaining a charter from the territorial legislature to open a road, Barlow and a crew of 40 men completed the road in the spring of 1846. The road proved a major means of transportation for many years between the Willamette and eastern Oregon (Bailey 1912, 288-295).

Isaac Stevens included the Deschutes River watershed in the survey he made of the lands east of the Cascades in 1853. But despite his optimism that the lands here had great agricultural potential, only a few people settled in the watershed by 1860 and really no one settled in the area in a permanent way until after the Civil War (Meinig 1968, 155-156, 173; Illust Hist/CenOr

1905, 428).

When the federal government formed the Washington Territory in 1853, Isaac Stevens was appointed its first governor as well as the superintendent of Indian Affairs. In the two years following, he conducted a survey of the lands, especially for railroad construction, that resulted in an extraordinarily detailed map. It showed, for the first time, the geography of the region and the lay of the land. Seeing the potential for settlement and development, Stevens realized that the native peoples of the Columbia Plain would hinder the region's growth that so many were hoping for as the emigrants proceeded over the Oregon Trail (Miller 1985, 340ff.).

The details of the meeting of the Sahaptian-speaking plateau tribes with Stevens and Joel Palmer, the Oregon Superintendent of Indian Affairs, at Walla Walla in 1855 have been outlined by others (Shane, 1950, 281-82). However, the results are of interest. Those bands that became known as the Confederated Tribes of the Warm Springs Reservation stem from the agreement some of the Tenino, Tygh, Wasco, Wishram native peoples, as well as the Dockpus people of the John Day River, made at Wascopaum Springs in 1855 with Palmer.

These bands agreed to move to the Warm Springs Reservation, located in north central Oregon, by 1859. Their original lands encompassed an area whose northern boundary was the Columbia River and Willow Creek, the southern border the 44th parallel, the western area the slopes of the Cascades north from Mt. Jefferson, and to the east, the summit of the Blue Mountains (Shane, "Early Explorations" 1950, 11). In 1855, they surrendered more than 10 million acres of their territory, retaining only 464,000 acres. The original treaty granted them the right to keep their traditional fishing sites and to forage in the mountains valleys as they had done for many years (Shane 1950, 287ff.; Ruby and Brown 1981, 56). This last provision was not honored when the pressure from white settlers for lands east of the Cascades was brought to bear. During the thirty-sixth Congress in 1859, it was reported that the native peoples who had moved to reserved lands designated by Stevens and Palmer were not doing well -- many were ill, starving, or dying (Meinig 1968, 207).

Following the 1855 treaties, the Yakima War broke out and lasted for about three years. Although the natives in the Deschutes River watershed did not participate in the war, the Lower Deschutes region became a staging area for the U.S. Army between 1855 and 1858. The military made numerous forays across the watershed from Ft. Dalles, established in 1859.

During the war years, settlement east of the Cascade Mountains was discouraged. But miners heard of strikes in Idaho, the Upper Columbia, and Fraser River areas and began stampedes to camps in that direction. By the early 1860s, placer mining was starting in

northeastern Oregon as well. None of these mining activities actually took place within the Deschutes River watershed. People from the Willamette Valley, however, saw the potential to supply camps on the Clearwater and Lower Salmon rivers and Boise Basin, as well as those in eastern Oregon on the Powder and John Day rivers. They came to The Dalles region by the thousands. Serving as a major entrepot to supply the mines to the east was The Dalles, which developed into a bustling river city during the early 1860s. In 1858 the steamship, Colonel Wright, was launched just east of the mouth of the Deschutes River to transport even more people and supplies to the camps to the east. A portage railroad overtook the teamster method of crossing the difficult twelve mile portage between The Dalles and Celilo Falls by 1863. Between 1861 and 1864, more than 93,000 people traveled up the Columbia River between The Dalles and Lewiston, Idaho. While most of the activity and growth took place in and around The Dalles and Celilo Falls, the Dechutes River watershed saw some of the action of these booming years. With the Oregon Trail emigrants, and now miners coming from California, Nevada, and the Willamette Valley, more people were learning about the lands in this drainage (ibid., 212-13).

Modern Era Settlement Activity
(1865 to 1940)

Natural barriers limited access to the lands in the Deschutes River watershed in the years after the Civil War. The arid nature of the area with an annual rainfall of only 15 inches, the steep canyon walls on either side of the unnavigable Deschutes River, and finally, continued raids of the Paiute people throughout the 1860s inhibited permanent settlement in the watershed until the end of the nineteenth century. There were a few roads in the watershed. One, built in 1864 for stagecoaches, went from The Dalles to Walla Walla crossing current-day Sherman County as it made its way west. Another was a military road that had been built across the area during the Civil War from The Dalles to Ft. Harney in the southeastern part of the state (Illust Hist/CenOr 1905, 429, 700-02).

When railroad construction began in earnest in the Pacific Northwest after the Civil War, only the lower part of the Deschutes River watershed was touched by this important means of transport to market. The Oregon Railway and Navigation (ORN) Company laid track along the Columbia River, crossing current-day Wasco and Sherman counties. But the railroad

construction binge that began in the Pacific Northwest in the 1870s and 1880s left the Deschutes River watershed in further isolation for several reasons. The dispute over land titles between the Northern Pacific Railway Company and the Eastern Oregon Land Company prevented thousands of acres from being open to settlement. Because of the unavailability of so much arable land in eastern Oregon, the Union Pacific and Northern Pacific decided to focus their construction of track in eastern Washington and along the Columbia River where land had clear title and awaited settlers. Efforts to build railroads upriver in the Deschutes River watershed did not happen until early in the twentieth century (Meinig 1968, 267ff).

During the last decades of the twentieth century, sheepmen and cattlemen dominated land use within the watershed. Gold strikes in eastern Oregon along the John Day River, in Idaho, and in Montana brought stockmen to the Deschutes country as early as 1857. Most of these people initially migrated to the rangelands in northern Wasco and Sherman counties and also to the upper Deschutes River area around the modern-day city of Prineville in current-day Crook County. When raids by the Northern Paiute ceased in 1868, more cattlemen came to the Ochoco Valley while sheepmen grazed their flocks on the natural pastures of northern Wasco County from Antelope north and east. Stock could occupy the range there all year round. Felix and Marion Scott drove 900 head over Mackenzie Pass in 1862 and spent their first winter on Hay Creek near Madras. Throughout the 1860s, stockmen came to the Trout Creek, Hat Creek, Ochoco Creek, Mill Creek, Squaw Creek, and Willow Creek areas. In the late 1860s, others chose the southern and southeastern sections of the watershed on Camp Creek, with newcomers in the 1870s running the first cows on Bear Creek. In 1873 these latter people moved their herds to the south fork of Crooked River to position themselves for cattle drives to the railhead at Winnemucca in the Nevada Territory (Illust Hist/CenOr 1905, 118, 449, 736; Vaughn 1981, 19-25).

Cattlemen came to the Deschutes river watershed from west of the Cascades, from the Willamette Valley and even California, with stock to supply the mining camps. A boom in the cattle business lasted through the 1860s but crashed in the 1870s because of a nationwide depression. What helped the resurgence of the cattle business in the 1870s in the Deschutes River area was the demand for meat from the urban centers east of the Rocky Mountains whose populations were growing. Companies, such as Lang and Ryan of Kansas City, Missouri, were developing ranches in Montana and Wyoming, and purchased thousands of head of cattle from eastern Oregon and Washington in the late 1870s. In 1880, these enterprises purchased 58,300 head from Oregon alone. Some of these cattlemen also provided meat for the markets of

California by means of the Southern Pacific Railroad that passed through Winnemucca. The Crook County cattlemen participated in this boom until the devastating winter of 1880-1881 when much of the cattle in the county froze to death (Oliphant 1946, 25-30; Illust Hist/CenOr 1905, 430). According to Census records, over the next forty years, or until 1930, the Deschutes River watershed -- consisting mainly of Wasco, Sherman, and Crook counties -- never had more than 70,000 head of cattle grazing in the area (Department of Commerce 1902, 470, 472; 1913, 411, 413; 1922, 323, 325; 1932, 505).

This was not the case with sheep, however. As the number of Oregon Trail emigrants grew throughout the 1840s and 1850s, the desire for farmland in the Willamette Valley pressured the stockmen to move east of the Cascades. In the eastern part of the state was a land with drier climate and range covered with abundant natural grasses. So vast was the area in the east that the method of sheepherding developed differently than that in the west. Rather than the small flocks of 75 to 100 sheep that were typical of the Willamette Valley, in the east an experienced Scottish or Australian shepherd with his dog could oversee flocks of mainly Merino sheep that often numbered in the thousands. The terrible winter of 1861-1862 killed off not only most of the stock in eastern Oregon, but also enthusiasm for this enterprise over the next few years.

But by the 1870s, sheepmen began to once again expand their flocks within this watershed. The Wasco Woolen Manufacturing Corporation, which began processing wool in 1864, was still in business. In 1873 Dr. David Baldwin of California established the Baldwin Sheep and Land Company on Hay Creek. This enterprise grew to become the number one Merion sheep breeding station in the world by the end of the century with an annual market of 250 tons of wool (Meinig 1968, 223; Vaughn 1981, 26). Within the modern-day borders of Wasco County, sheepherders moved into Fifteen Mile Valley in the 1870s, near DuFur, but soon gave way to farmers. There were also large numbers of sheep near Antelope. Sheepmen dominated the economic life in Sherman County in these years as well, especially in Grass Valley. And finally, profits from stock and wool sales in Crook County topped $1 million dollars in 1899. Sheep grazing areas in this part of the watershed were on Summit Prairie, forty miles east of Prineville, and on Little Trout Creek and Twelve Mile Creek, a tributary of the south fork of the Crooked River (Illust Hist/CenOr 1905, 164, 166, 449, 709, 737).

It is difficult to determine how many sheep were within the Deschutes River watershed before 1890, when most of the modern-day boundaries for Oregon counties were drawn. According to the 1890 Census data, there were more than 430,000 sheep across Crook, Wasco, and Sherman counties, with most of the animals occupying lands in Crook County. By 1897

there was so much stock in Crook County that the range was in serious trouble. As many as 320,000 sheep, 40,000 cows, and 10,500 horses were all grazing on this county's lands. The bunchgrass disappeared and in its place sagebrush appeared. Juniper seedlings sprouted from the exposed soil. Torrential rains and cloudbursts poured tons of water and soil into stream beds. Camp and Bear creeks deepened during the 1890s, while the Crooked River, once as clear as the North Fork at Summit Prairie, turned the color of heavily creamed coffee. There were more than 250,000 sheep in this county until 1910 when the number declined to 142,608, never to be higher than 200,000 again (Vaughn 1981, 26-31; Department of Commerce 1896, 263; 1913, 411).

There were several reasons for this decline. So great was the influx of sheep into the lands of eastern Oregon at the end of the nineteenth century that private citizens began writing their government expressing concern about the overgrazing. It was common knowledge that everyone was trying to get as much free range from the public domain as possible (Minto 1892, 982-84). (One of the original purposes for the creation of the forest reserves was to protect the watersheds that were being ruined due to overgrazing.) Farmers also expressed a growing interest to settle within the watershed with the promise of irrigation projects that the 1892 Carey Act could provide (Illust Hist/CenOr 1905, 717).

Between 1896 and 1906, before the creation of the federal forest reserves in eastern Oregon, there were major range wars in this part of the state. Local cattlemen formed "sheep shooter" associations. Those who lived in the country east of Paulina formed the "Izee Sheep Shooters." Disputes between sheep and cattlemen in Crook County led to the slaughter of thousands of sheep, the greatest being that which took place in 1903 on the High Desert between Camp Creek and Silver Lake when only 300 of the 2,700 wethers survived a shootout (ibid., 719; Paul 1976, 48-49; Vaughn 1981, 32).

Crook County in the 1890s did not have modern-day geographical county boundaries. Wheeler County was created from Crook County in 1899, and Jefferson and Deschutes counties were formed in 1814 and 1916, respectively. Needless to say, up until the establishment of the forest reserves and the reclamation of lands for farmers in the early twentieth century, there must have been some range and riparian area damage across the watershed. Even in the 1930s, when Crook County had its final boundaries, it was on the list of those areas with extensive range damage (Due 1961, 177; Oregon State 1937, 6).

The members of the Confederated Tribes of the Warm Springs Reservation also turned to stockraising for their main source of living in the years after they moved to the reserved lands. Even though white sheepmen trespassed the northern boundaries of the reservation on a regular

basis, probably stealing stock as well, the tribe's main source of revenues up to 1940 were from stockraising (Shane "Early Explorations" 1950, 30ff.; Hartmann 1985, 103).

Other misunderstandings also occurred over the years. Believing that they still had access to their traditional fishing sites along the Columbia and Deschutes rivers as well as to their foraging grounds on the eastern slopes of Cascades, these native peoples battled with federal and state governments over the years to retain the areas promised in the 1855 treaty. Unlike most of the other tribes of eastern Oregon, the Warm Springs peoples had only about one-fifth of their land allotted and most of it was not taken out of trust status with the U.S. Government (Ruby and Brown 1981, 56; Stowell 1987, 136).

The beginnings of a semblance of a timber industry for the tribe began in the 1920s. All of the timber on the reservation south of Shitike Creek, or 526 million board feet, was offered for sale in 1923. The sole bidder was the River Logging and Lumber Company of Seattle. Because of the crash in 1929, the company did not complete the contract.

The Civilian Conservation Corps (CCC) was quite active on reservation lands in the 1930s and early 1940s. Participants in this New Deal program were responsible for building roads, corrals, and water troughs. They also strung telephone wire and constructed two fire towers (Hartmann 1985, 92ff).

Since the tribe's lands were not really suited for agriculture, there was little, if any, pressure to open them to white settlement. In the early 1860s, the first farmers of Wasco and Sherman counties planted cereal crops in the valleys next to the streams. However, in 1864, when someone successfully grew wheat on a bunchgrass hill overlooking Fifteen Mile Creek, incoming farmers began to realize the fertility of the soil. Sherman County remained mainly a stockman's country until the 1890s. In 1897, nearly 4 million bushels of wheat, oats barley, and rye were produced from farms across the county, especially those located in Grass Valley (Illust Hist/CenOr 1905, 118, 428, 437). Fertile, volcanic soil on lands well watered by streams and rivers made the lower part of the Deschutes River watershed an extremely successful farming area for years to come.

To make the lands upriver in the Deschutes River watershed into productive acres, irrigation projects sponsored by the Carey Act of 1892, the Bureau of Reclamation (BOR), and the state lands agency had to be undertaken. Progress on these projects was made over the years. In 1902, only 21,108 acres in the Deschutes River drainage were being irrigated. This number had increased to 111,916 acres of the million under irrigation by 1920. Over the next 20 years, with the help of the Bureau of Indian Affairs and New Deal programs, over 300,000 more acres

in Jefferson County, the location of the Warm Springs Indian Reservation, were irrigated as well. The Ochoco Reservoir that was constructed near Prineville in 1920 for irrigation purposes covered a drainage area of 189,000 acres. Ochoco, Mill, and Marks creeks provided the water for this project of which 83,000 acres were administered privately and the balance by the government (Department of Commerce 1922, 269; 1942, 503; Berndt 1970, 4).

New railroad construction did not occur in the Deschutes River watershed until the first decade of the twentieth century. The ORN had built along the Columbia River in the 1880s through Sherman and Wasco counties. When the second wave of railroad competition broke out between Edward Harriman's Union Pacific and James Hill's Northern Pacific, the modern outside world finally enter this watershed. The development of Bend as a major lumber center as well as the untapped agricultural potential of central Oregon encouraged these two giants to head south down the Deschutes River in 1909. Two armies of laborers from Spokane and Portland worked with dynamite and hand tools down the canyon country on both sides of the river. The Northern Pacific people worked the west bank of the river; Union Pacific, the east bank.

The following describes some of this construction activity: "The Swede powder monkeys drilled holes in the rockcliffs at the right-of-way level and back the width of the roadbed. These holes loaded with powder were called 'coyote' holes. Then the charge was exploded, often blowing the whole cliff into the water and making a roadbed at one stroke. On each bank there also were huge entering canyons to bridge across."

And what about the river? "The swift river (Deschutes) itself was changed completely by tons of rock blown into it, riffles appeared where there had been none and the banks were bordered by new rock fills. Whistles echoed from towering rimrock where the loudest sound had been the howl of a lonesome coyote or the bawl of an unhappy cow." This simultaneous, costly undertaking ceased when both lines got as far as Metolius and a truce was called in the spring of 1910. From there into Bend, a distance of 53 miles, both sides agreed to share a single line (Schwantes 1993, 147-48; French 1958, 165 ff.; Stevens 1935, 62; Due 1961, 170).

Even before this railroad construction battle, there was a timber land rush into the Deschutes Country that began in the 1890 and continued into the early years of the new century. Private individuals, often acting on behalf of timber companies, claimed forested lands on the public domain through the Timber Culture and Timber and Stone acts. Lumber interests that obtained large land holdings in the Bend area included the Deschutes Lumber Company with 60,000 acres and F.W. Gilchrist of Michigan who owned 85,000 acres and eventually opened a mill and town south of Bend. There were mills opened on Willow Creek and Trout Creek.

But it was the arrival of the Shevlon-Hixon and Brooks-Scanlon companies in Bend in 1915 that a boom in the timber industry and great population growth occurred in the Deschutes country. Even from its beginning, the Scanlon mill could produce 150,000 board feet per day for sash windows, box material, or finished lumber. When these two mills were operating at their peak, these companies were cutting over 500 million board feet a year with a work force at each mill of 1,000 people. By 1934 there were 13 sawmills operating in Dechutes County, cutting mainly ponderosa pine at such a rate that a government report in the 1930s expressed concern that there would be no more timber left in 15 to 25 years if the average cut of 235 million board feet a year continued as it had in the preceding decade (Vaughn 1981, 238-58; Forest Survey 1:1936-1937, 6).

So great was the demand for timber from this watershed that in 1922 the Malheur National Forest actually offered its first timber sale of 890 million board feet consisting of western yellow pine, Douglas fir, western larch, white fir, and lodgepole pine -- the largest sale offering made so far in the northwest. The forests began to be under siege not only from the chain saw in these years but also from pine beetle infestation that occurred in the early 1930s, bringing terrible devastation to the forests across Crook and Deschutes counties. Fire was not a problem in most of the watershed. Although major commercial harvests of timber from public and private lands did not begin until 1938, the stage had been set for significant cutting of the forests in this watershed. Legal problems delayed the sale on the Malheur National Forest and the Great Depression brought the mills to a slowdown. It would not be until the 1940s that the timber industry would come into its own (Mosgrove 1980, 183ff.; Forest Survey 1:1936-1937, 6; Berndt 1970, 6-9).

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MIDDLE COLUMBIA RIVER WATERSHED

At Priest Rapids , the Columbia River cuts sharply east and then south to Pasco, Washington. It passes through arid lands on either side of its banks. To its west is the Yakima River watershed, to its east is the Lower Snake River watershed. Just south of Pasco, the river begins its westerly course toward The Dalles and the Pacific Ocean. This part of the river, between the mouth of the Snake River and The Dalles, as well as the lands on either side served as major thoroughfares for Native Americans and Euro-Americans, who arrived in the nineteenth century. Just before The Dalles is Celilo Falls -- the site of bountiful salmon runs that provided the source of life for Native Americans for ten millennia before the arrival of Euro-Americans. And finally, there is The Dalles -- a major trading center for the Plateau peoples for centuries before the arrival of the Euro-American, who would also use it as a river entrepot.

Prehistoric Settlement Activity
(12,000 BP to 1500 A.D.)

Artifacts discovered in the Vantage area on the west side of the Columbia River point to the presence of humans as early as 4,600 BP (Glauert 1972, 2). Archaeologists have determined that people were living further south, near Priest Rapids, around 6,000 BP (Greengo 1986). Earlier signs of human life have been found on the Middle Columbia River near the confluence of the Snake, Yakima, and Columbia rivers, indicating habitation during the Windust Phase, or between 11,000 and 8,000 BP (Thoms 1983, 19). Where the Columbia River heads west, at the mouth of the Umatilla River and for several miles up river, there is evidence that people occupied the land as early as 7,000 BP (Aikens 1984, 54). Archaeological excavation revealed the habitation of lands as early as 9,000 BP on the Columbia River just east of the mouth of the John Day. And finally, people were living near the mouth of the Deschutes River and at The Dalles on the Columbia River as early as 10,000 BP (Cultural Resources Overview 1990, 55; Cressman 1962, 22-23).

Protohistoric Settlement Activity
(1500 to 1800)

On the lands from the Vantage area and south on the Columbia River lived both Salishan- and Sahaptian-speaking peoples. On the northern part of this stretch of river lived the Wanapam and Columbia peoples. The former lived on the west side of the Columbia River from Saddle Mountains to Priest Rapids. The latter -- the Columbia, the southern most of the Salishan speakers -- occupied the east side of the river between the mountains and rapids (Schalk 1982, 80ff). Further south, the Yakima lived in their valley on the western side of this middle part of the Columbia River. Across the river and further south, the Walla Walla occupied and used resources along their river and throughout its valley as well as those found in the mountains of eastern Oregon (Suphan 1974, 135). Tradition holds that some of the Sahaptian-speaking people who occupied the Umatilla River watershed lived along the shores of the lower part of the river and along both banks of the Columbia River -- from present-day Arlington, Oregon, east to the mouth of the Walla Walla River in southeastern Washington. Permanent winter quarters were located along the Columbia River from Alderdale, Washington to the Umatilla River. For summer and fall subsistence hunting and gathering, these people went to the Blue Mountains, the Wallowa and Grande Ronde valleys, as well as along the John Day River (Ruby and Brown 1981, 124, 133ff.). The Dockspuses, Wasco, and Tenino bands occupied the Lower John Day River, fishing, hunting, and foraging along the river and its tributaries. Quite likely these people fished at the great salmon fishing sites at Celilo Falls. Further downriver the Tenino lived in villages on the Oregon shore of the Columbia River at Ten Mile Rapids, Celilo Falls and the Deschutes and John Day rivers.

The Wishram and the Wasco lived on both sides of the Columbia River from The Dalles to Ten Mile Rapids. Wasco fishing sites were east of Hood River; their subsistence areas included lands along the Columbia Valley itself as well as the northern slopes of Mt. Hood. Moving southward, they shared gathering grounds with Tenino as far as DuFur on Fifteen Mile Creek. Situated so close to The Dalles and Celilo Falls -- main trading centers on the Columbia -- these people were active traders with groups to the east as well as the Chinook people to the west (Anastasio 1956, 30-31).

Those who lived on the Middle Columbia River developed a cyclical pattern of life as did most of the Plateau people around 3,000 to 2,000 BP. During the winter months, these people

lived in pithouse villages in sheltered locations along the river, surviving on stored fish, roots, and berries as well as some meat from hunting efforts in the hills and canyons. By April, the villages would break into small bands to trek to the rocky, arid uplands or to the more forested areas in the Cascade and Blue mountains in the modern-day states of Washington and Oregon. The mountains held berries and root foods. Those who foraged to the east found mainly roots in the rocky soils to process for the upcoming winter (Chatters 1982, 140-142). By early summer, when the first salmon runs began, most of the men returned to the Columbia River to fish at The Dalles, Celilo or Deschutes Falls, and at the mouth of the Snake River (Hunn, 1990, 19ff) throughout the summer months. The major Chinook runs occurred in the fall, the final harvest before the long winter ahead.

Into this harmonious, generally peaceful cycle of life on the Columbia Plateau in the late eighteenth century entered the horse, the rifle, and disease- --- three of the most destablizing elements that could have been be introduced into this world. The need for horses led to raids among the Plateau peoples in the eighteenth century, conflicts that lessened by the nineteenth century when the animals became more plentiful. The introduction of the horse had its advantages. It enhanced trade internal to the Plateau. When the salmon failed to run well at various times throughout the eighteenth century, the horse provided a means of transportation to the Plains where the bison roamed.

But the horse also brought greater contact with the ways of life to the east of the Rocky Mountains, including the warring ways of the Plains' inhabitants -- the Blackfeet and the Shoshone. Their possession of the rifle and need for horses led to the capture and enslavement of many of the Plateau's native peoples. An even greater attack on the social fabric and way of life for the Plateau peoples, however, was disease brought to the New World by the Euro-Americans. A smallpox epidemic in the 1780s halved the population of the native peoples on the Columbia Plateau (ibid., 1990, 134). The units of people needed to gather, forage, fish, and hunt for survival was altered greatly by the beginning of the nineteenth century -- a change that proved irreversible as more Euro-Americans began to arrive.

Preindustrial Settlement Activity

(1775 to 1865)

The Lewis and Clark Expedition traveled down that part of the Middle Columbia River from the mouth of the Snake River to The Dalles in 1805 and on their return home in 1806. In both passages, they stopped to meet and to trade with the peoples who lived along this part of the river (Journals of Lewis and Clark, vols. 5 1988; 7 1991; 8 1993). Of all the native groups who lived on the Columbia Plain, the people and the lands they occupied between The Dalles and the mouth of the Snake River would be the most exposed to disease, trespass, and general disruption brought by Euro-Americans to the Plateau.

The fur traders of the North West Company (NWC) led by David Thompson in 1811- --- the Astorians led by Robert Stuart the next year -- were among the first of the Euro-Americans to use this part of the Middle Columbia River as a corridor for travel (Meinig 1968, 41-42). Fur traders traveled this part of the Middle Columbia River on a regular basis in the first decades of the nineteenth century. Very few continued north on the Columbia passed the Snake River because of the winding route of the river, thus leaving the section of the Plateau between the Snake and Vantage in isolation until the 1850s. In 1810, when the English opened Spokane House, most traders took the route from the Columbia, up the Snake River, and north, south, or east overland to trap beaver and other fur-bearing mammals. The Snake country expeditions also took this route.

Because of the steep banks of the Columbia River, many of the nineteenth century trappers and explorers could not see the lands on either side. But some, such as Benjamin Lewis Bonneville, Nathaniel Wyeth, Charles Wilkes, and John Fremont who traveled on this part of the Columbia and Lower Snake rivers commented on the farming potential of the Walla Walla Valley (Irving 1911, 453-454; Bailey 1982, 6; Meinig 1968, 110-111, 178).

The first white people who settled permanently in the Walla Walla Valley were the missionaries who came to convert the natives. In the fall of 1836, Marcus and Narcissa Whitman opened a mission, Waiilatpu. Further up the Lower Snake River, Henry Spaulding, also a member of the Whitmans' missionary effort, selected the site for a second mission on Lapwai Creek, a few miles up the Clearwater River. While just at the edge of the Lower Snake River watershed, these missions had a profound effect on the native peoples and the lands in the Lower Snake River and Middle Columbia River regions. In an effort to "civilize" the Indians in a Christian way, these missionaries encouraged the natives to farm, to settle in, and to give up their nomadic ways (ibid., 117-18). While the Palouse refused to accept these new ways, other native peoples accepted it, cultivating fields on land near the missions. This continued at least until 1845 when the emigrants on the Oregon Trail began traveling through the Middle Columbia

River region and found that the Nez Perces, Cayuse, and Walla Walla peoples were cultivating crops near the missions. By 1847, the farming effort among the Indians seemed to have failed (Trafzer 1991, 60ff.; Meinig 1968, 140-141).

The same farming program proposed for the Indians who lived near the mission at The Dalles was also a failure by 1841. Irrigated acres that produced potatoes and wheat at The Dalles mission, Wacopam -- started by some Methodists from the Willamette Valley in 1838 -- provided well for the missionaries and their families. But efforts to interest the Indians in cultivating crops failed because of the wealth of the yearly salmon runs (Meinig 1968, 128, 135).

The lands along the southern bank, or current-day Oregon side, of the Columbia River became a thoroughfare for the emigrants on the Oregon Trail. After stopping at Waiilaptu, the travelers would continue down river to The Dalles to await boat passage to the Willamette Valley. Most emigrants took this route between 1841 and 1860. Crossing the Deschutes River, just fifteen miles from The Dalles, was one of the final challenges of the trip. Joel Palmer reported in 1845 "the river is about 100 yards wide, and the current very rapid; the stream is enclosed by lofty cliffs of basaltic rock. Four hundred yards from the Columbia is a rapid or cascade. . . . The current of this stream was so rapid and violent.. . . as to require us to ferry it" (Palmer 1983, 50). The travelers passed through the lands of the Middle Columbia in late summer and early fall, their views of dry, burned-out landscape would only confirm earlier reports of "interior desert" east of the Cascade Mountains. Not everyone was content to make the final leg of the trip to the Willamette Valley by water. The delay and costs of river travel led Samuel K. Barlow to find a trail used by native peoples that cut south of Mt. Hood across the mountains. Setting out from The Dalles in the fall of 1845, Barlow's group crossed one of the Deschutes's tributaries and proceeded rapidly, the first 40 miles were crossed easily since the eastern slopes of the Cascades were not too heavily timbered. Due to heavy snows, they cached many of their supplies for the winter and proceeded on to the Willamette Valley. Obtaining a charter from the territorial legislature to open a road, Barlow and a crew of 40 men completed the road in the spring of 1846. It proved a major means of transportation between the Willamette and eastern Oregon for many years (Bailey 1912, 288-295).

Before the Whitman massacre in 1847, most travelers on the Oregon Trail stopped at the Waiilatpu mission to obtain food, supplies, and good companionship after six months of hard travel. Some in a group that arrived in 1847 had measles that infected many of the Cayuse, decimating their numbers. Dr. Whitman tried to help these dying natives with medicine, but to no avail. Fearing that the white doctor was plotting to eliminate their entire people, the Cayuse

attacked the mission in November 1847, killing the Whitmans and twelve other people. They also took hostages. The Palouse became involved in the conflict as well when they supported the Cayuse against the whites. As a result of this crisis, the government discouraged settlement east of Cascades in the Oregon country for a number of years (Trafzer 1991, 61ff).

Following the massacre, settlers from the Willamette Valley raised a volunteer army to retaliate, erected a stockade at The Dalles (Fort Dalles) in the spring, and chose Peter Skene Ogden and Joel Palmer to lead them. This offensive brought the rescue of the remaining missionaries and some settlers who were hostages. At first unsuccessful in identifying the killers, the volunteer troops finally tracked them down and hanged them. In addition to their loss of life, the Cayuse were expelled from their lands as a reparation for the missionaries' deaths. This was the first time that any of the natives of the Columbia Plain had been expelled from their lands by the Euro-Americans. Thus, began a distrust of Euro-Americans by the Native Americans of the Columbia Plateau. This distrust was fully realized with the treaties that some of the Plateau tribes negotiated with Isaac Stevens and Joel Palmer in 1855 (Miller 1985, 334; O'Donnell, 113).

The federal government tried to address land issues and potential disputes between natives and settlers in the Oregon Territory. Just five days after the hangings of the Cayuse accused of the Whitmans' deaths, Congress passed the Oregon Indian Act. The government could purchase the natives' lands in the Willamette Valley in exchange for territory east of the Cascades. The Yamhill, Molalla, and Luckiamute peoples of the Willamette Valley refused to recognize the treaties or to leave the valley. They argued that they could not live in the desert area east of the mountains where hunting rather than gathering was the way of life. They also did not wish to leave the graves of their ancestors. In a compromise, the government gave these peoples marginal lands on the edge of the Willamette Valley for farms (O'Donnell 1991, 137).

By 1850 other acts of Congress had complicated land issues even more. While the 1848 Territorial Act had assured the Native Americans possession and ownership of their lands, the Donation Land Law of 1850 promised essentially the same lands to the new settlers who came to the Oregon Territory. With such contradictory measures, it should have surprised no one that distrust of the Americans among the native peoples was great (ibid., 175).

When the federal government formed the Washington Territory in 1853, Isaac Stevens was appointed its first governor as well as the superintendent of Indian affairs. In the two years following, he conducted a survey of the lands, especially for railroad construction. His extraordinarily detailed map showed, for the first time, the geography of the region and the lay of

the land. Seeing the potential for settlement and development, Stevens realized that the native peoples of the Columbia Plain would hinder the region's growth which was expected as emigrants proceeded over the Oregon Trail (Miller 1985, 340ff).

Trying to anticipate the inevitable loss of their lands, leaders from Yakima, Klickitat, Cayuse, Walla Walla, Nez Perces, and Umatilla peoples met in Grande Ronde Valley in the summer of 1854. They devised a strategy for countering the Euro-Americans' proposals, but it did not work for them (ibid.)

The details of the meeting of the Sahaptian-speaking Plateau tribes with Stevens and Palmer at Walla Walla in 1855 have been outlined by others (ibid.). Of note is the fact that the formation of the Confederated Tribes of the Umatilla Indian Reservation stemmed from some Cayuse, Umatilla, and Walla Walla peoples and their agreements with Stevens and Palmer. These bands agreed to relocate to the Umatilla Reservation in northeastern Oregon. They ceded to Stevens and the Washington Territory 1,861,120 acres of land and to Palmer and the state of Oregon 2,151,680 acres. Their own reservation lands amounted to 245,699 acres. With many acres of grasslands within their reservation lands, these people were able to continue to raise horses relatively undisturbed for the next several decades (Ruby and Brown 1981, 52).

The results of the Walla Walla treaty council also affected the lives of Native Americans who lived on the Middle Columbia River between the mouth of the Snake and The Dalles. Bands that became known as the Confederated Tribes of the Warm Springs Reservation stem from the agreement some Tenino, Tygh, Wasco, Wishram, and Dockspus peoples of the John Day River made at Wascopaum Springs in 1855 with Joel Palmer, the Oregon superintendent of Indian affairs. These bands agreed to move to the Warm Springs Reservation, to be located in north central Oregon, by 1859. Their original lands encompassed an area whose northern boundary was the Columbia River and Willow Creek, southern border was the 44th parallel, western area being the slopes of the Cascades north from Mt. Jefferson, and to the east, the summit of the Blue Mountains (Shane, "Early Explorations" 1950, 11). In 1855, they surrendered more than 10 million acres of their territory, retaining only 464,000 acres. But the original treaty granted them the right to keep their traditional fishing sites and to forage in the mountains valleys as they had done for many years (Shane 1950, 287ff.; Ruby and Brown 1981, 56). This last provision was not honored when white settlers extended pressure for lands east of the Cascades.

Both of the Confederated Tribes did not acclimate well to their new lands. In 1859 during the thirty-sixth Congress, it was reported that the native peoples who had moved to

reserved lands designated by Stevens and Palmer were not doing well -- many were ill, starving, or dying (Meinig 1968, 207).

Following the 1855 treaties, the Yakima War broke out and lasted for about three years. Although the natives along the Middle Columbia River did not participate in the war, the region became a staging area for the U.S. Army between 1855 and 1858. The military made numerous forays across both sides of the Columbia River into Yakima territory from Ft. Dalles.

During the war years, settlement east of the Cascade Mountains was discouraged. But miners heard of strikes in Idaho and the Upper Columbia and Fraser river areas and began stampedes to camps in that direction. By the early 1860s, placer mining was starting in northeastern Oregon as well. Although none of these mining activities took place on the Middle Columbia River, people from the Willamette Valley saw the economic potential of supplying camps, and came to The Dalles region in large numbers. These camps would be found on the Clearwater and Lower Salmon rivers and Boise Basin as well as in eastern Oregon on the Powder and John Day rivers.

The Dalles served as a major entrepot to supply the mines to the east and it developed into a bustling river city during the early 1860s. In 1858 the steamship, Colonel Wright, was launched just east of the mouth of the Deschutes River to transport even more people and supplies to the camps. By 1863, portage railroad overtook the teamster method of crossing the difficult 12 mile portage between The Dalles and Celilo Falls. Between 1861 and 1864, 93,000 people headed east along the Columbia River to the mining camps (ibid., 212-213).

While most of the activity and growth on the Middle Columbia River took place in and around The Dalles and Celilo Falls in these years, The Colonel Wright deposited the first passengers and supplies in the Priest Rapids area in 1858. It was the first trip of a steamboat north of Celilo Falls. Thirty miles south of Priest Rapids at White Bluffs, the ferry and supply center helped transport people and goods east and north to the mines (Schalk 1982, 118).

Stockmen and a few setters also began coming to the Walla Walla Valley in the late 1850s and early 1860s, largely in reaction to the mining stampedes. Resting at the juncture of the Oregon Trail with the Colville Road, the Walla Walla Valley became a choice spot for people from the Willamette Valley or for soldiers who had fought in the Yakima War who decided to settle. Initial settlement took place in the valley along the Walla Walla River and its tributaries as well as on Dry Creek. Moving across the steep rolling hills, stockmen found bunchgrass-rich lands along the Touchet and Tucannon rivers and Coppei and Patit creeks. By 1862, most of these bottomlands in the valley had been settled. Cattle grazed on the range year

round in herds of about 2000. The winter of 1860-1861 brought stock losses to the Middle Columbia River watershed. Less than 1,000 of 10,000 head of cattle survived the catastrophic cold. The Walla Walla Valley also became the wintering ground for sheep. By 1866 over 200,000 sheep were on the winter pasture there (Meinig 1953, 118-125).

Modern Era Settlement Activity
(1866 to 1940)

Typical of most areas in the interior Columbia River Basin, the stockmen preceded the homesteaders by a decade or so. The Middle Columbia River was no exception. Attempting to capitalize on the mining stampedes to the Upper Columbia River, Idaho, Montana, and eastern Oregon, stockmen moved with their sheep and cattle to the bunchgrass-covered lands in modern-day Klickitat County just across the Columbia River at The Dalles and in the Walla Walla Valley south of the Snake River. The stock venture proved to be profitable even for the earliest arrivals. Free shelter and fodder from the vast lands on the public domain added to their herds of horses, cattle, and sheep, some of which were purchased by new settlers. The mines played out in the 1860s, but the growth of the cattle business in Wyoming and Montana during the 1870s was fueled by the urban centers east of the Rocky Mountains and their demand for meat. Companies such as Lang and Ryan of Kansas City, Missouri, developed ranches in Montana and Wyoming, and purchased thousands of head of cattle from eastern Oregon and Washington in the late 1870s. In 1880, these enterprises purchased 62,000 head from Washington alone.

How many of these animals were grazing on lands along the Middle Columbia River is difficult to determine. The state government did not draw the modern-day county lines for most of the area until the 1890s. It could be surmised, however, that the stockmen of the Middle Columbia River region participated in this boom until the devastating winter of 1880-1881 when much of the cattle and sheep in the state east of the Cascades froze to death. In some counties in eastern Washington, such as Klickitat, as much as 78 percent of all the stock died, which also meant an exodus of many of the people. But stockmen continued to drive cattle and sheep east into this region via the Yakima Valley as well as north from Oregon (Oliphant 1946, 25-30; Illust Hist/CenOr 1905, 561; Illust Hist/SE 1906, 662; Paul 1976, 49ff.; Yoder 1942, 141-143). One of the last major drives from eastern Washington occurred in 1882 when Lang and Ryan

drove out 12,000 cattle and 30,000 sheep. Some historians have suggested that large drives took place in the 1880s because the range was wearing out and the farmers were coming. In 1888, the governor of the Washington Territory wrote the Secretary of the Interior that "bunchgrass is giving place to fields of wheat and other cereals" (Oliphant 1946, 40).

Permanent settlement by homesteaders on the Middle Columbia River, including the Walla Walla Valley, took off after the Civil War mainly because of settlement of native peoples on reserved lands and the arrival of the railroads. A fierce construction competition among railroad companies began in the post-war years that resulted in the settlement of the Walla Walla Valley by farmers largely from the Willamette Valley or from the Midwest. A dispute over land titles between the Northern Pacific Railway Company and the Eastern Oregon Land Company locked up thousands of acres in north central Oregon. Because of the unavailability of the arable land, the Union Pacific and Northern Pacific decided to focus their construction of track in eastern Washington and along the Columbia River where land had clear title and awaited settlers (Mosgrove 1980, 42).

Preceding the larger competitors in railroad building was Dr. Dorsey Baker's effort to build a railroad from Walla Walla to the Columbia River. This a project was completed in 1875 and stimulated a great expansion of farming (Meinig 1968, 242). Railroad magnates had larger projects in mind. Henry Villard, the president of Northern Pacific Railroad in the 1870s, found Isaac Stevens' maps and reports of the 1850s about the potential for railroad development across the Columbia Plain to be quite useful.

As president of both the Oregon Railway and Navigation and Northern Pacific companies, Villard proved to be one of the Pacific Northwest's greatest boosters for immigration to and settlement of the area. At his suggestion, the Northern Pacific opened offices in Boston, Topeka, Omaha, and Portland to promote the immigration of "the better sort" of people, namely those of Anglo-Saxon descent or from Northern Europe in general. By 1883 the Northern Pacific was sending more than 900 agents to Great Britain, Sweden, Norway, Denmark, Switzerland, and Northern Germany in an effort to advertise the opportunities that the Pacific Northwest offered. Transportation was provided by the Northern Pacific Railway with reduced fares. The Oregon Improvement Company, set up by Villard as a land company separate from the Northern Pacific, offered loans and supplies, and even sold its lands, to the new settlers as added incentives for coming (Hedges 1928, 183-203; Wirsing 1977, 40; Riddle 1974, 98). But because of the distance and isolation of Washington and Oregon, most emigrants came from east of the Rockies, and not directly from overseas between 1885 and 1910 (Meinig 1968, 506-507).

Even before they began major construction in the 1880s, the railroad companies had heard about the extraordinary yields of wheat from the lands in this watershed. Nearly three decades before, Isaac Stevens had observed that the bunchgrass bearing lands in eastern Washington Territory bore a great resemblance to the wheat producing steppes of Russia. His predictions bore fruit even with the first farmers in the Walla Walla Valley. In 1866 farmers had produced over 200,000 bushels of wheat in this valley. Most of the bottomland was chosen first because of its proximity to the streams. A few venturesome settlers even moved to the benchlands that were as high as 50 to 300 feet above the stream areas, but the emigrants from the Midwest remained mostly in the bottomlands in the early years.

In 1864 one farmer produced as many as thirty-three bushels per acre of winter wheat from a fifty-acre upland field. It would take another decade of experimentation for more farmers to realize the richness of the soil in this valley. By 1870 the land rush to the Walla Walla Valley was well under way. Bench lands to the east and to the north toward North Creek were being brought under cultivation, with farms also seen on the margins of the surrounding hills.

The early 1870s saw the settlement of the entire Walla Walla Valley. This block of 150 square miles proved to be the core of agricultural pioneering in eastern Oregon and Washington. The opening of a federal land office in Walla Walla in 1871 encouraged settlers. Public land was available to these people through the Homestead Act, passed during the Civil War. By end of the decade, entry was also possible by means of the Timber Culture and Desert Land Acts. The Northern Pacific Railroad owned a great deal of the land in Walla Walla Valley and was only too happy to sell it for $2.50 to $5.00 an acre. By 1877 the settlers' confidence in the land had grown for in that year 22,000 tons of wheat, flour, oats, and barley had been shipped down the Columbia River from Walla Walla. By 1880 the valley was producing a surplus in garden and dairy produce, and orchards were beginning (Illust Hist/SE 1906, 104; Meinig 1968, 232; Meinig 1953, 125, 147, 158).

Heading west from the Walla Walla Valley on both sides of the Columbia River to The Dalles, wheat farmers followed the stockmen into the lands across modern-day Umatilla, Morrow, Sherman, Gilliam, and Wasco counties in Oregon and Benton and Klickitat counties in Washington. Farmers gradually filled in the lands in southern Washington and northern Oregon in the years following the Civil War. Some came earlier than others. German stockmen and farmers were settling into the western part of Klickitat County by the late 1870s. By the 1880s, more Germans, some Danes, and Swiss began raising wheat in the county's rich soil to the east. All land suitable for farming in Klickitat County had been occupied

by 1890. Lands near Bickleton as high as 3,000 feet above the Columbia River were covered with acres of grain. Between Woods Gulch and the hills of Rock Creek, huge agriculture concerns were involved in both growing wheat and raising cattle. Stockmen dominated the bunchgrass and sagebrush section of the county east from the breaks of Alder Creek (Ballou 1938, 457, 467-470).

South of the Columbia River across the northern counties came emigrants from the Midwest, the Palouse, and Europe. Umatilla County emigrants brought the experience of large-scale, efficient planning that farmers from the Midwest had practiced for years. By the late 1880s, farmers were using the steam combine on the gentle slopes within the Umatilla River valley (Parsons 1902, 159; Johansen 1967, 318).

With the removal of the last of the native peoples and the construction of the Oregon Railway and Navigation (OR&N) along the Columbia River across the northern boundaries of Wasco and Sherman counties, people began to settle permanently in the John Day River watershed during the 1880s. To be sure, competition between the farmers and the stockmen was especially keen at first. However, many of these new settlers were arriving from the Palouse and other parts of the Washington Territory and were aware of the potential for prosperous wheat farms on lands that had supported bunchgrass range for stock. By 1885, it was reported that farms in Sherman County had produced wheat that sold for $1.5 million, and 10 years later they produced nearly 4 million bushels of wheat from 160,000 acres. By the end of the century, most farmers cultivated at least 320 acres (Illust Hist/CenOr 1905, 175, 431, 437, 455).

Because of the fierce competition among the railroad companies during the 1880s, ranchers and farmers who lived on the Middle Columbia River corridor had good access to markets. Track had been laid throughout the Walla Walla Valley on either side of the Columbia River from Pasco to The Dalles during the 1880s. The OR&N, once owned by the Northern Pacific (NP), once again became a separate entity in 1884 with the collapse of Henry Villard's empire. The OR&N challenged the hegemony of the NP in the Palouse and Walla Walla countries. For both the railroads and the people of the Middle Columbia Region, 1887 proved to be a momentous year of change. In that year, the Union Pacific (UP) Railroad acquired the OR&N and made an agreement with the NP concerning the future construction of railroads. All of the land north of the Snake would belong to the NP while land to the south would be for the OR&N. This meant that the orientation of markets for the Palouse farmers would now be toward Puget Sound and not down the Columbia River; those in the Middle Columbia River region would now look only to Portland. Invasion by the NP of the Walla Walla had been avoided. But

now without the competition among rail- roads for hauling their freight and the absence of government regulation through the Interstate Commerce Commission, farmers and stockmen from both the Palouse and Walla Walla areas suffered from unreasonably high rates (Schwantes 1993, 62-65; Meinig 1968, 268-270).

The environmental and ecological effects of railroad building in the Middle Columbia River region are difficult to determine. First and foremost, however, was the fact that thousands of people now had access to come to this part of the Inland Empire where less than a century before 12,000 Native Americans had lived. The wood needed for this construction denuded many hillsides. For construction in the Walla Walla region, wood was cut from the forests of the Yakima Valley as well as the Blue Mountains. The OR&N stripped the lands of trees as they built along the Columbia River on either side (Forest Survey 1936-1937, 9; Meinig 1968, 274). If clearcuts did occur, and quite likely they did, then the resultant landslides, soil erosion, and stream damage could have occurred, affecting wildlife habitat and salmon spawning streams.

Over the decades, the Middle Columbia River served as an important artery for transportation and communications among the people who came to live on the Columbia Plateau. From the earliest times of canoes to the steamboats to the construction of railroads along its banks, most landscape alteration in this part of the Columbia Basin occurred in large part because of human beings' desires to connect with one another for trade, exploration, and finally settlement.

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NORTHERN GREAT BASIN

People have been living in the Northern Great Basin watershed since 13000. Not always as dry as it is today, those who lived there in the earliest times had a difficult time finding a means of subsistence in these arid lands, roaming for many hundreds of miles just to find food. The land beneath the arc that is formed from the three forks of the Malheur River to the Nevada border is part of the Northern Great Basin watershed.

Not all of the people who lived in this eastern part of Oregon had such difficult lives. Going further west into southwestern Oregon and the southern Cascade Mountains is the Kalmath Basin watershed which is far better watered and forested than the lands to the east. Unlike those people who lived to the east, the early inhabitants of this watershed did not have to travel far to find food.

It was not until after the Civil War that many Euro-Americans came to live in this part of the country. Travelers to the Willamette Valley, 49ers to California, and miners to the camps in northern Oregon, Idaho, and Montana passed through bringing their diseases and some of their stock. But after the Civil War, cattlemen from California moved into the Harney County valleys beginning the reign of cattle barons that would last for many decades.

When land disputes between the state of Oregon and private holding companies were settled in the late twentieth century, hopeful homesteaders came to the Kalmath Basin to settle. Promises of irrigation for this dry land brought many. But by the end of World War I with the lack of water and the fall in farm prices, many who had come by 1910 abandoned their homesteads by the 1920s.

Those who pursued logging from the forests in the western part of the Klamath Basin watershed did better, especially with coming of the railroad and the improvement technology in the timber industry at the beginning of the twentieth century.

For a lasting affect on the landscape by the Euro-American, the degradation of the range due to overgrazing in the Northern Great Basin watershed and the logging of thousands of board feet in the Klamath Basin would have meant ecological change.

KLAMATH BASIN WATERSHED

At the edge of the Columbia River Basin drainage is the Klamath Basin watershed. In stark contrast to its neighboring watershed, the Northern Great Basin, much of the land here is covered with forests and laced with streams. Isolated from the rest of the state because of lack of transportation routes, this region did not experience significant settlement and development until the last decade of the nineteenth century and the first years of the twentieth century.

Prehistory Settlement Activity
(12,000 BP to 1500 A.D.)

Archaeological research and excavation reveal that people were living in the river canyon country of the Upper Klamath Lake region as long ago as 7,000 BP. The area's first inhabitants occupied the upper terraces and exploited the resources that the canyon and river had to offer. Plants, fish, and mammals had equal importance in their diet. About 900 A.D., they settled permanently in the Klamath River Canyon, which became an avenue for cultural exchange between themselves and those who lived to the south in modern-day California (Mack 1991, 35-36; Minor 1979, 42, 65).

Protohistoric Settlement Activity
(1500 to 1800)

The territory of the Klamath-Modoc people who occupied this watershed during the arrival of the Euro-Americans in the nineteenth century centered around Upper Klamath Lake, Klamath Marsh, along Williamson River and its tributaries, and into the desert to the east. The Cascade Mountains formed the natural boundary for these people to the west and the Klamath Valley to the south. In the spring they fished the rivers. During the summer months, they traveled to Sycan River and Marsh, Yamsay Mountain, Chewaucan Marsh, and the lands between Summer and Abert lakes to gather roots. Because they had greater food resources within their territory than the Northern Paiute, the Klamath occupied lands smaller in size and

for longer periods of time. Indeed, the Upper Klamath River Canyon became the corridor for cultural exchange between the Klamath-Modoc who lived up river and the Shasta-Takelma who lived downriver to the south.

It should be pointed out that those who occupied the Klamath Basin watershed in Protohistoric times did not obtain the horse or the rifle until the nineteenth century, putting them at a disadvantage with those who lived on the Columbia Plateau and on the Great Plains. The acquisition of this animal and weapon by these people, like all the natives in the Pacific Northwest, resulted in an emphasis on warfare and wealth, elements that had been absent from the cultures in previous times. But new diseases were an even greater attack on the social fabric and way of life for the Klamath River Basin peoples. It has been estimated that a smallpox epidemic in the 1780s halved the population of the native peoples in the Pacific Northwest (Campbell, 1990, 22). The units of people needed to gather, forage, and hunt for survival had altered greatly by the beginning of the nineteenth century, an alteration that proved irreversible in the face of the coming of the Euro-American.

Preindustrial Settlement Activity (1775 to 1865)

None of the initial Euro-American explorers and trappers came to the Klamath Basin watershed in the early nineteenth century. Quite likely, the Plateau peoples who met Lewis and Clark, David Thompson, and other explorers told them about the desert peoples to the south. It is indeed possible that the Astorian, Wilson Price Hunt, and some of the early trappers wandered this far south, but no organized expedition scouted or trapped this area until the 1820s. John C. Fremont traversed the western part of the watershed as he traveled south from the Deschutes River headwaters in 1843. Heading east through Sycan Marsh to Summer Lake, he then proceeded on a southeasterly course to Lake Abert, Warner Valley, and then on to California (Minor 1979, 143).

Because of a treaty made in 1818 between Great Britain and the United States, the area that today includes the states of Washington and Oregon became a neutral zone for each country to exploit or to settle for a period of 10 years. One of the most obvious avenues for profitable exploitation in this era was the fur trade. Some historians have suggested that the Lewis and

Clark Expedition had been organized for the chief purpose of determining the potential for the fur trade in the trans-Missouri west. Indeed, Thomas Jefferson had encouraged John Jacob Astor to form the Pacific Fur Company as a way for the Americans to compete with the British for trade in the Pacific Northwest (Wishert 1992, 18, 116).

In reality, the British dominated the fur trade on the Columbia Plateau and in the Pacific Northwest almost entirely.

George Simpson, who directed the operations of the Hudson's Bay Company (HBC) beginning in the 1820s, began the enforcement of the company's policy of "fur desert." Knowing that in 1828 the treaty would be renegotiated between Great Britain and the United States regarding the ownership and occupation of the Oregon country, the HBC's goal was to trap out as many of the beaver and other fur-bearing animals in the area as possible in order to leave fewer potential profits in the fur trade for the Americans. While officially the government encouraged a conservation policy toward the beaver, there was little effort to enforce it (Merk 1968, xxiiff.).

With this policy in mind, Finian McDonald and Thomas McKay explored the Klamath Basin watershed in 1825 for the HBC. Between December 1826 and May 1827, Peter Skene Ogden and his men trapped and explored the watersheds of the Klamath and Rogue rivers but found few beaver. Ogden returned to central and southern Oregon in 1828 and 1829 as he came and went on the Snake Country expeditions in those years. John Work actually traveled through the watershed on his expeditions to California for the HBC in the early 1830s (Minor 1979, 140-141; Pettigrew 1982, 13). But within the watershed itself, very little trapping in a major commercial way took place given the nature of this desert country. Not the major center for trapping that the Snake River country was, it did become a thoroughfare for emigrants to Oregon and miners to California, eastern Oregon, Idaho, and Montana.

Until 1845, travelers on the Oregon Trail proceeded to the Willamette Valley after crossing the Snake River by cutting north and following the Columbia River west. In that year, however, others chose a more southerly route to the west in an effort to avoid the mountains of northeastern Oregon. The first was Stephen Meeks who led some wagons that left the main trail at Vale, Oregon, and headed up the Malheur River. Getting lost in the Malheur Mountains, this group never made it. However, it did suggest to others that a more southerly route to the Willamette Valley might be possible. Called the Applegate Trail by 1847, Oregon Trail emigrants as well as those on their way to the gold fields in California traveled through the Klamath Basin watershed (Mosgrove 1980, 31-32; Minor 1979, 145). After leaving the Snake River, the route continued across the headwaters of the Owyhee River to the South Fork of the

Malheur River. From there this trail passed through Harney Valley to the Cascades and then into the Umpqua Valley. The botanist, Joseph Burke, traveled the Applegate Trail in 1846 and collected plant specimens from the southern end of Goose Lake and in the Klamath Lake area. Some 500 Oregon Trail emigrants took this route in 1846. Several years later, as many as 2,000 wagons crossed the eastern portion of the watershed, many en route to the gold fields in California (Mosgrove 1980, 34; Minor 1979, 145). Although none of these travelers settled in the watershed, the diseases they brought decimated the population of the Klamath-Modoc peoples throughout the 1840s.

By the early 1860s, Euro-Americans and Chinese were traveling eastward through this watershed on their way to the mining strikes in northeastern Oregon. They included miners as well as others from the Willamette Valley, Nevada, and California who saw the business potential in supplying the camps along the Klamath, Shasta, and Trinity rivers in California, in the Rogue River Valley, in the Rocky Mountains, and in eastern Oregon.

To support the miners, stockmen -- some from west of the Cascades, others from California and Nevada -- trailed the miners into the eastern country through the Klamath River Basin watershed. As early as 1852, Wallace Baldwin brought 50 horses from the Rogue River Valley to graze in the meadows between Keno and Klamath Falls. Two years later, he had 2,000 head of cattle in the same area with intentions to supply the camps on the Klamath and Rogue rivers. The camps first purchased meat in 1857 and by 1860, more people were moving east from the Rogue River Valley to settle in the Klamath Lakes area. With the establishment of Ft. Klamath in 1863, people such as Wenolen Nus came with cattle in 1866 to begin supplying the meat for the fort. Some, like Nus, stayed in the watershed, but most settled further east in the Northern Great Basin watershed in Warner Valley (Oliphant 1946, 19; Minor 1979, 176-177).

Determined to make a profit by supplying the camps east of the Cascades in Montana, Idaho, eastern and southwestern Oregon, and northern California, these ranchers came from the south and the west. By using the Barlow Road over the Cascades before 1865, or the routes from California, they entered eastern Oregon where the vastly grass-rich rangelands awaited them. After 1865, several more roads were built to open routes to the mines. By the mid-1860s, the Oregon Central Military Road went south through Klamath Basin and east down Sprague River, Drews Valley, and into Harney Basin. The Yreka-Canyon City Road connected mines in northern California with those in the Blue Mountains of eastern Oregon. Other roads included the Applegate Trail, Huntington Wagon Road, and Lakeview-Prineville Road (Minor 1979, 156).

With the growing number of Americans coming through their lands, the Klamath-Modoc people became increasingly concerned about access to their traditional hunting and gathering grounds. Joel Palmer, the Indian superintendent for the state of Oregon, had met with some of the Klamath Basin peoples in 1854. But when the stockmen moved into the watershed in the 1850s, they turned their animals out to browse on the choicest lands that contained camas, berries, and other life-sustaining plants that Klamath-Modoc peoples had used for centuries. Tensions between Euro-Americans and Native Americans in the Klamath River Basin watershed led to the Rogue River Indian wars of the 1850s. Finally, in 1864, the U.S. government made a treaty with the Klamath-Modoc people reserving for them the lands in the Williamson River watershed, along part of the Sprague River system, and lands bordering the lake near Klamath Agency. Never happy with these arrangements, the Modoc people revolted and unsuccessfully fought the Euro-American settlers from 1872 to 1873 (ibid., 117, 169).

These were the same years that the Northern Paiute were attacking easternward bound travelers who trespassed across their lands. As a result, an American military presence was felt across the Klamath River and Northern Great Basin watersheds with the establishment of Camp Harney on Hart Mountain in 1866 as well as Ft. Harney, and finally the construction of Ft. Klamath in 1863 under the supervision of Capt. Charles S. Drew of the U.S. Army (Mosgrove 1980, 119; Minor 1979, 145-48). In the process of establishing these camps, the military explored and mapped more of the lands of this watershed. Removal of native peoples to reserved lands and a strong military presence encouraged the first farmers to move to the Klamath River Basin watershed from the Rogue River Valley in the late 1860s.

Modern Era Settlement Activity
(1865 to 1940)

The settlement of most of the native peoples in eastern Oregon state and Washington territory on reserved lands by 1865 encouraged the first stockmen to come east of the Cascades. In response to the gold strikes in the Rocky Mountains of Idaho and Montana and eastern Oregon, cattlemen came to the Klamath River Basin watershed from the Rogue River and Willamette valleys as well as from California with their stock to supply the mining camps. The native grasses and wild hay of the watershed provided an abundant source of fodder for the first

stockmen. A boom in the cattle business for the ranchers in the interior Columbia River Basin lasted through the 1860s and crashed temporarily in the 1870s because of the nationwide depression in those years. However, unlike the stockmen of the rest of the state of Oregon, those who lived in the Klamath River Basin watershed, including the Native Americans who lived on the Klamath Indian Reservation, recovered quickly for several reasons. The presence of Ft. Klamath as well as their proximity to the Central Pacific railhead at Winnemucca in the Nevada Territory offered additional markets for their meat. Their Oregon-grown beef continued to supply the meat needs of the California market while the others across eastern Oregon had to wait several years to recover (Oliphant 1946, 22; Simpson 1987, 19; Dicken and Dicken 1985, 3ff.). The destruction of rangelands within the watershed from cattle over the years was probably quite minimal since most of the cattle in Lake County grazed in the Northern Great Basin watershed, just to the east of the Klamath River Basin. To be sure there was always a supply of cattle for the needs of Ft. Klamath over the years. As it was and is today, there was little rangeland in this generally forested watershed.

Permanent settlement by homesteaders in the Klamath River Basin watershed did not happen in any major way until the late nineteenth and early twentieth centuries for several reasons. Despite the railroad construction binge that began in the Pacific Northwest after the Civil War, the dispute over land titles between the Northern Pacific Railway Company and the Eastern Oregon Land Company prevented thousands of acres in eastern Oregon from being open to settlement. Because of this unavailability of so much land in eastern Oregon, the Union Pacific and Northern Pacific decided to focus their construction of track in eastern Washington and along the Columbia River where land had clear title and awaited settlers. There were also many and often contradictory federal land laws. Nineteenth century preemption provisions, homestead acts, desert land entries, swamp lands laws, and stockraising homestead laws outlined access to the public domain for future settlers. But added to these were the minerals laws, reclamation projects, and the timber rulings of the twentieth century, all of which affected the settlement and development of the Klamath River Basin watershed (Mosgrove, 42). Apart from the legal complexities were the tough, arid nature of the land in this part of eastern Oregon and its continued isolation.

Many people who initially settled in the Klamath Basin watershed obtained their lands from the public domain through the Homestead Act of 1963 and the Swamp Lands Act of 1850. Thousands of acres also became available from Oregon land companies that had received land grants to build roads. In 1864 the state of Oregon gave a huge grant of land to such a company

for the construction of the Central Military Road that would reach across a large part of Oregon from Eugene, over the Willamette Pass, up the Little Deschutes River over a low divide to Klamath Marsh, through the Klamath Indian Reservation, and from there to Sprague River and beyond. The Pacific Land Company bought the land-grant rights for this military road and, in turn, sold parcels to new settlers who were ignorant that much of the area was unsuitable for farming (ibid., 4-9).

Despite the challenging climatical and geographical conditions in the Klamath Basin watershed, farmers grew a few crops successfully, namely hay and potatoes, between 1880 and 1900. Hay grew wild naturally and was successfully cultivated; by 1890, 18,000 acres of hay were growing in Klamath County. Potatoes planted on the lower slopes of the hills were not as susceptible to the summer frosts that could occur in this watershed. Even though the population of Klamath County did not increase greatly between 1890 and 1900, the number of farms (ranches) increased from 453 to 3,323 with four times the acreage in wheat, three times that in rye, and twice the acreage in potatoes as in the 1880s. Known to everyone, however, was the fact that the scarcity of water would inhibit agricultural production unless something was done to change the situation (ibid., 20ff.).

The tough, arid nature of the climate and geography of the Klamath Basin watershed had been recognized from the beginning by many of its first settlers. As early as 1871, Jesse Applegate of the Applegate Trail, an engineer by training, along with James Carr had made plans and designs for a large irrigation ditch that would run from Lost River near "The Gap" (Olene) to the Klamath River, a project that could irrigate 350,000 acres. The ditch would be wide enough to support steamer traffic and provide enough water power for nearby factories. Although this project was never built, the U.S. Bureau of Reclamation (BOR) would use these plans four decades later (ibid., 24-26).

Prior to the twentieth century, efforts had been made to irrigate in the watershed. These projects were set along slightly entrenched streams that flowed through adjacent gently sloping lands. Some of these sites, well suited for small-scale irrigation by means of small diversion ditches or water wheels, were along the Upper Lost River in Langall Valley and Wood River Valley near Ft. Klamath. More ambitious settlers such as Charles and Rufus Moore built a larger-scale irrigation system by means of a ditch on the west side of Link River that eventually led to the southwest corner of Lower Klamath Lake. By 1888, the Klamath Falls Irrigation Company had an eight-mile canal that was irrigating 4,000 acres of land south and on the west side of Lost River near Merrill. By 1904, a twenty-two-mile canal system n place that reached

around the north side of Tule Lake. Irrigation had come to the Upper Klamath Valley, Lost River Valley, Langell Valley, and Poe Valley. At the turn of the century, however, most farmers still cultivated their fields through the dry farming method (Minor 1979, 185-86; Dicken and Dicken 1985, 3-27).

In 1903, John Whistler of the BOR arrived in Klamath County to propose projects for the Klamath Basin. One major project, when completed, would irrigate nearly 250,000 acres in the Klamath Basin. Part of the area within this study included Langell Valley, the upper part of the Poe and Yonna valleys, and the lower part of the Klamath Valley, an area of 48,000 acres. By 1908, the "Keno Reef," that rocky part of the Klamath River below Keno, had been removed, thus lowering the level of the river and that of Lower Klamath Lake (ibid., 4-9).

Promises of irrigation both by the land companies and the BOR brought a land rush. The Oregon Valley Land Company began selling tracts of land in Lake County in 1908. Between September 10 and 17, 14,000 tracts of land were sold with promises of irrigation dams which did not materialize quickly. Typical of those who came was a group of Czechs who lived in Nebraska and decided to head to southern Klamath County to take advantage of the planned BOR reclamation project. Potatoes and horseradish proved to be their specialty crops. The government began draining Tule Lake and advertising 80-acre homesteads in 1917. Some people actually obtained tracts of land as large as 1,000 to 10,000 acres (Settling, n.d, n.p.). Although the Czechs did well, it was not until 1917 that the Drews Creek Dam was built and 1922 that the Cottonwood Dam was built to provide needed water for farms. Many of the homesteads were abandoned by the 1920s when crops failed to grow because of the lack of water (Minor 1979, 184).

Those settlers who persisted and stayed for the completion of the irrigation projects reaped the rewards of abundant harvests. Irrigated acres in this watershed produced twice the yield in wheat and oats than those areas where dry farming continued to be practiced. The food supply demands that World War I brought also meant good times for the farmers in this watershed, but they turned to bad times when a nine-year drought hit the area in 1928. During the first four years, many lost their farms. Wetter weather returned by the late 1930s with better harvests for the farmers in the watershed (Dicken and Dicken 1985, 4:17-19).

Although settlement, development, and exploitation of the natural resources in the Klamath Basin watershed came later than most other watersheds in eastern Oregon, as of 1933, over 365,000 acres of timber had been logged from the forests of Klamath County. Sawmills, box factories, and door plants became part of the backdrop of Klamath Falls (Forests Survey,

1936-37, 1:5-7). The economic potential from the forests had been recognized since the nineteenth century, but the timber industry did not flourish until the twentieth century when the more permanent and consistent presence of the railroads was felt in this part of southeastern Oregon.

In the nineteenth centruy, the timberlands in this watershed were estimated to have acres with as much as 50,000 board feet, mainly ponderosa pine. The first sawmill was constructed in the watershed near Ft. Klamath in 1863 to provide for the needs of this army post. By 1870, the circular water-powered mill at the Klamath Agency on the Klamath Reservation had been completed and was processing 3,000 board feet a day. Members of the Klamath tribe, dressed in clothes of the white settlers, hauled in over 500,000 board feet of wood that year. William S. Moore built a mill on the west side of Link River about half way between Linkville and Upper Klamath Lake in 1877. This turbine run mill, powered by water from the lake, produced as much as 8000 to 10,000 board feet of timber a day with a crew of ten to twelve men. By the end of the century, there were sawmills throughout the basin at sites such as Bly Mountain north of Bonanza; three miles west of Keno, Bryant Mountain; and ten miles northeast of Malin. Most of the mills prior to 1900 were not located in Klamath Falls but rather near a timber supply and close to water
transportation. Between 1860 and 1900, 90 million board feet of timber were cut in the Klamath River Basin watershed (Dicken and Dicken, 3:20-23).

The arrival of the railroads increased logging and lumber production in this watershed in the twentieth century. In 1903, the Southern Pacific completed a branch line into the southeastern corner to Pokegama. This company completed another branch from Weed, California, to Klamath Falls in 1909. The isolation from the markets of the outside world was coming to an end for the Klamath River Basin watershed.

Between 1900 and 1930, timbermen determined that the best stands of timber in the basin were located on the reservation and in the vicinity of Yainax Butte and Stukel Mountain. Encouraged by the presence of the railroads, thirty-nine sawmills and eight boxmills were built, with 1923 being the peak year of production. Sites for some of these mills in the first three decades of the twentieth century included Stukel Mountain, Modoc Point, Pokegama, Lake Ewauna, Algoma, Pelican Bay, Chiloquin, Upper Klamath Lake, and Sprague River, showing a wide distribution across the watershed. The capacity of these mills, along with the few in northern California, was 545 million board feet. In 1930 the cut was down to 337 million board feet with 4,300 people employed. Two years into the Great Depression, only 1,908 people were

employed by the timber industry in the Klamath Basin watershed when only 191 million board feet were harvested.

The timber harvest gradually began to increase. By 1934 there were 11 active mills in Lakeview. Production was curtailed, however, by a pine beetle epidemic that hit the watershed during the mid-1930s. In the northern part of Lake County, more than 50 percent of the timber was lost. In spite of this infestation, by 1942 the industry was harvesting 856 million board feet (Dicken and Dicken, 4:20-21, 5:18; Forests Survey, 1:5-7).

As in other regions, the railroads had encouraged the timber business. Prior to 1926, Lake County had only one branch line of the Southern Pacific from California. In that year the Southern Pacific made a cutoff over the Cascade Mountains part of its main line. Soon thereafter the Great Northern extended its track from Bend to Chemult. The Alturas cutoff in 1929, built also by the Southern Pacific, finally gave Klamath Falls and Lakeview direct connection with an east-west line to Reno.

The forests on the western boundary provided much of the economic livelihood for the people in the Klamath River Basin watershed. Stream life, soil erosion, and wildlife habitat all could have been affected by the activities of both the Native American and the American.

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NORTHERN GREAT BASIN WATERSHED

For the purposes of this report, the Northern Great Basin watershed covers an area in southeastern and south central Oregon. The territory encompasses lands southwest from Lake Owyhee and from the three forks of the Malheur River as far as the Nevada state line. A sweep to the northwest through Warner and Harney valleys with Silver Lake as the western border to just south of the Crooked River completes the geographical area under discussion for this watershed. In modern times, these lands are essentially in southern Malheur and Harney counties and the eastern half of Lake County. High desert country describes generally the landscape dotted with lakes and independent mountains. While this arid land was of little interest to Euro-Americans for any sort of permanent occupation until the late nineteenth century, some of the first people to occupy this part of the Columbia River drainage lived here for thousands of years before the arrival of white settlers.

Prehistory Settlement Activity
(12,000 BP to 1500 A.D.)

Archaeological investigation over the years has revealed that people were living prehistorically in as many as nine different places across the Northern Great Basin watershed. Excavation in Rock Fort Basin, which encompasses Fort Rock Valley, Christmas Valley, Silver Lake, and Paulina Marsh, has revealed human activity there as long ago as 13,000 BP. Other very old sites that date from 13,000 BP and 12,000 BP were discovered in Glass Buttes and Alvord Basin south of Malheur Lake, respectively. In addition to these are the following places: Guano Valley (11,000-8,000 BP) in the southeast corner of Lake County, the Owyhee Plateau (9,500 BP), Warner Valley (8,000 BP) east of Warner Valley and west of Hart Mountain, Summer Lake Basin (6,500 BP) south of Fort Rock Basin, and finally the Harney-Malheur Basin (6,000 BP) northwest of Malheur Lake (Minor 1979, 38ff).

Weather was a major factor in where and how people lived. Although there is disagreement about the details of climate change that took place over time in the Northern Great Basin, there is general agreement that 11,000-9,000 BP was a period of change from the glacial era to the warmer conditions of the postglacial age; from 7,000 to 4,000 BP was a warm, dry

period, which was the beginning of the arid conditions that define the Northern Great Basin watershed today; and from 4,000 BP to the present a stabilization in climate occurred that has remained to modern times (Aikens 1984, 9-10).

During the Paleo period, nomadic foragers hunted herds of large fauna in the Northern Great Basin area. From 11,000 to 7,000 BP, collectors from the then-wet bottomlands spent little time in the upland areas. During the dry period from 7,000 to 4,000 BP, they moved to the uplands for a subsistence life of hunting and gathering. From 4,000 until contact with the Euro-American, in the climate of today, native peoples depended on roots and seeds and some hunting (Pettigrew 1982, 10). A demanding land, the area provided the plants and animals that its inhabitants needed for their survival. Late spring and early summer meant the best time to gather roots for consumption and for drying. Small game provided nourishment as well as clothing. Similar to other prehistoric peoples of the Pacific Northwest, the Northern Great Basin peoples lived with the seasons in a cyclical way -- gathering, hunting, and preserving for the winter months when extremely cold temperatures were in sharp contrast to the extreme heat of summer. Some have suggested that these people were the first "invaders" of the Columbia Plateau in prehistoric times, but that they were absorbed easily by those already living there (Miller 1985, 21-22). This would not be so for their descendants.

Prothistoric Settlement Activity (1500 to 1800)

Regarded as enemies to those who lived on the Columbia Plateau were those people who occupied the high desert country of central and southern Oregon south of the Columbia Plateau. Thought of as outsiders by both the Salishan- and Sahaptian-speaking groups who lived on the plateau, these Utaztekan speakers from the south became known as the Shoshone and Paiute over time. By protohistoric times, the Northern Paiute occupied the central and southeastern regions of modern-day Oregon, or one-third of the state. People related to them lived to their east and south while to their north were the Tenino, Umatilla, Cayuse, and Nez Perces peoples. To the west were the Molala, Klamath, Modoc, and Achuma. Until the eighteenth century, their territory was as far north as the current-day Warm Springs Reservation. In that era, however, the Tenino and others drove them back and off the Plateau for good. From then on, the Northern

Paiute lands were recognized to be as far north as Prineville. The Northern Paiute roamed the Crooked River area and the South and Middle Forks of the John Day for hunting and foraging, remaining a "fringe" group in the eyes of the Sahaptian and Salishan-speaking Plateau peoples. This tension remained over the years. The Northern Paiute refused to let the Sahaptian people hunt in their territory with the latter retaliating by refusing the desert people access to salmon on the rivers to the north (Minor 1979, 88-89, 101; Suphan 1974, 70, 80; Miller 1985, 24, 32-33; Mosgrove 1980, 19).

It should also be pointed out that those who occupied the Northern Great Basin watershed in protohistoric times did not obtain the horse until the nineteenth century, putting them at a disadvantage with those who lived on the plateau and on the plains in these years. A greater attack on the social fabric and way of life for the Northern Great Basin peoples, however, was disease that Euro-Americans would either bring personally or through others to the Columbia River Basin. It has been estimated that a smallpox epidemic in the 1780s halved the population of the native peoples in the Pacific Northwest. (Campbell 1990, 22). Such population decimation suggests that the number of people needed to gather, forage, and hunt for survival had altered greatly by the beginning of the nineteenth century -- an alteration that proved irreversible as more Euro-Americans began to arrive.

Preindustrial Settlement Activity (1775 to 1865)

None of the initial Euro-American explorers and trappers came to the Northern Great Basin watershed in the early nineteenth century. Quite likely, the Plateau peoples who met Lewis and Clark, David Thompson, and other explorers told them about these desert peoples to the south. It is indeed possible that the Astorians Wilson Price Hunt and Robert Stuart and some of the early trappers wandered this far south, but there was no organized expedition to scout or to trap this area until the 1820s. John C. Fremont traversed part of the western part of the watershed as he traveled south from the Deschutes River headwaters in 1843. Heading east through Sycan Marsh to Summer Lake, he then proceeded on a southeasterly course to Lake Abert, Warner Valley, and then California (Minor 1979, 143).

Because of a treaty made in 1818 between Great Britain and the United States, the area

that today includes the states of Washington and Oregon became a neutral zone for each country to exploit or to settle for a period of 10 years. One of the most obvious avenues for profitable exploitation in this era was the fur trade. Some historians have suggested that the Lewis and Clark Expedition had been organized for the chief purpose of determining the potential for the fur trade in the trans-Missouri west. Indeed, Thomas Jefferson himself had encouraged John Jacob Astor to form the Pacific Fur Company as a way for the Americans to compete with the British for trade in the Pacific Northwest (Wishert 1992, 18, 116).

In reality, the British dominated the fur trade on the Columbia Plateau and in the Pacific Northwest. George Simpson, who directed the operations of the Hudson's Bay Company (HBC) beginning in the 1820s, began the enforcement of the company's policy of "fur desert." Knowing that in 1828 the treaty would be renegotiated between Great Britain and the United States regarding the ownership and occupation of the Oregon country, the HBC's goal was to trap out as many of the beaver and other fur-bearing animals in the area as possible in order to leave fewer potential profits in the fur trade for the Americans. While officially the government encouraged a conservation policy toward the beaver, there was little effort to enforce it (Merk 1968, xxiiff.).

With this policy in mind, Finian McDonald and Thomas McKay explored the western part of the Northern Great Basin watershed in 1825 for the HBC. Peter Skene Ogden crossed the northern part of the area as he came and went on the Snake Country expeditions between 1825 and 1829. John Work skirted the western part of the watershed on his expeditions to California for the HBC in the early 1830s (Minor 1979, 140-41; Pettigrew 1982, 13). Alexander Ross wrote years later that the peoples of the Northern Great Basin found little or no value in beaver or any other kind of fur-bearing mammal. What attracted them to be partners initially, however, was the potential to trade pelts for axes, knives, ammunition, and buttons (Ross 1956, 172). But within the watershed itself, no trapping in a major commercial way took place given the desert nature of the country. However, the area did become a thoroughfare for emigrants and miners.

Until 1845, travelers on the Oregon Trail proceeded to the Willamette Valley after crossing the Snake River by cutting north and following the Columbia River west. In that year, however, others chose a more southerly route to the west in an effort to avoid the mountains of northeastern Oregon. The first was Stephen Meeks who led some wagons that left the main trail at Vale, Oregon, and headed up the Malheur River. Getting lost in the Malheur Mountains, this group never made it. However, it did suggest to others that a more southerly route to the Willamette Valley might be possible. Called the Applegate Trail by 1847, Oregon Trail

emigrants and those on their way to the gold fields in California traveled through the Northern Great Basin watershed (Mosgrove 1980, 31-32; Minor 1979, 145). The route continued across the headwaters of the Owyhee River to the South Fork of the Malheur River. From there it passed through Harney Valley to the Cascades and then into the Umpqua Valley. Some 500 Oregon Trail emigrants took this route in 1846, and as many as 2,000 wagons crossed the eastern portion of the watershed en route to the gold fields in California (Mosgrove 1980, 34; Minor 1979, 145). Although none of these travelers settled in the watershed, the diseases that they brought them decimated the population of the Northern Paiute throughout the 1840s (ibid., 166).

By the early 1860s, Euro-Americans and Chinese were traveling eastward through this watershed on their way to mining strikes in northeastern Oregon. Some were miners, but others were people from the Willamette Valley who saw the business potential in supplying the camps in the Rocky Mountains as well as those in eastern Oregon on the Owyhee, Malheur, Burnt, Powder, and John Day rivers.

Stockmen, mainly from the Willamette Valley, trailed the miners into the Northern Great Basin watershed, determined to find a profit by supplying the camps east of the Cascades in Montana, Idaho, central and eastern Oregon. By using the Barlow Road before 1865, they were able to gain a foothold and claim to the range rich with bunchgrass across the watershed. These stockmen took advantage of the nutritious grasses that grew there naturally in what today are Lake, Harney, and Malheur counties of eastern Oregon (Oliphant 1946, 19). Jordan Valley in the southern part of Malheur County provided the backdrop for the first two large stock ranches in the watershed. In 1863 "Doc" Inskip started Ruby Ranch on 3,000 acres in the upper part of Jordan Valley to provide cattle and horses for the mines. Shortly thereafter, the McWilliams' 100 acre sheep ranch was located in the middle part of the valley (Gregg 1950, 84).

With the growing number of Americans coming to their lands in the southern part of the Middle Snake River watershed, the Northern Paiute people became increasingly concerned about access to their traditional hunting and gathering grounds. By the 1860s, no treaties had been made with them regarding their lands, although they had heard about the loss of territory of the Plateau tribes as a result of the 1855 treaties. When the mining stampedes to eastern Oregon and Idaho continued through their lands in the early 1860s, these native peoples' concern turned to action as they began attacking travelers on the Applegate Trail. Soon an American military presence was felt across the Northern Great Basin watershed with the establishment of Ft. Henry and Ft. Harney, and finally the construction of Ft. Klamath in 1863 under the supervision of Capt. Charles S. Drew of the U.S. Army (Minor 1979, 145-170ff.). In the process of establishing

these camps, the military explored and mapped more of the lands of this watershed. Within ten years the Northern Paiute would also be removed to reserved lands.

Modern Era Settlement Activity
(1865 to 1940)

As in the cases of the other lands in the Columbia River Basin, the removal of native peoples to reservations encouraged the settlement and development of the Northern Great Basin watershed. By the 1860s, the Northern Paiute were not at all happy about the whites' invasion of their lands near the three forks of the Malheur River. The miners' stampedes were followed by the stockmen who came to support the mining camps in eastern Oregon as well as those in Idaho. As it was, the Northern Paiute had been raiding the Warm Springs Reservation for horses for several years and in 1864 the U.S. Army decided it was time to move against them. Establishing camps Maury and Gibbs in the Crooked River region, the military hoped their presence would end the hostilities by the Northern Paiute. When attacks on both native and the incoming whites continued, the Army set up Camp Warner in Warner Valley in 1867. With a military presence now in the Crooked River region and in Warner Valley as well as at Ft. Klamath to the west, the Northern Paiute met with Alfred Meacham, the Oregon superintendent of Indian affairs, in 1868 and decided to settle on the Klamath Reservation. During his administration, President Ulysses S. Grant reserved 2 million acres for the Northern Paiute at the three forks of the Malheur River.

The Malheur Reservation consisted of 2 million acres, 12,000 of which had the potential for farming if irrigated. None of the promised financial government aid for the reservation ever came. Lacking this support, along with pressure from settlers for these lands and the outbreak of the Bannock War in 1878, most of the Northern Paiute fled the reservation. Some spent a few years on the Yakima Reservation in Washington state. Desirous to return to their lands in southern Oregon in 1884, they found that the reservation had been returned to the public domain in 1882. The beginning of terrible years of suffering had begun (Minor 1979, 170-175; Mosgrove 1980, 54-57).

The settlement of most of the other native peoples on reserved lands in eastern Oregon state and Washington territory by 1860 encouraged the first stockmen to come east of the Cascades. In response to the gold strikes in the Rocky Mountains of Idaho and Montana and

eastern Oregon in that period, cattlemen came to the Northern Great Basin watershed from the Willamette Valley and from California with their stock to supply the mining camps. A boom in the cattle business lasted through the 1860s and crashed temporarily in the 1870s because of the nationwide depression in those years. However, unlike the stockmen in the northeastern part of Oregon, those who lived in the Northern Great Basin in the Warner and Harney valleys as well as in Owyhee and Malheur river valleys recovered quickly because of their proximity to the Central Pacific railhead at Winnemucca in the Nevada territory. Their Oregon-grown beef continued to supply the meat needs of the California market while others across eastern Oregon had to wait several years to recover (Oliphant 1946, 22; Simpson 1987, 19).

The growth of the cattle business in the 1870s in all parts of the Northern Great Basin watershed was helped by the demand for stock for Wyoming and Montana and for meat from the growing urban centers east of the Rocky Mountains. Companies such as Lang and Ryan of Kansas City, Missouri, developed ranches in Montana and Wyoming, and purchased thousands of head of cattle from eastern Oregon and Washington in the late 1870s. In 1880 these enterprises purchased 58,300 head from Oregon alone. The number of animals grazing on lands within the watershed is difficult to determine. The state government did not draw the modern-day county lines for most of the area until the 1890s. It could be surmised, however, that the Northern Great Basin country participated in this boom until the devastating winter of 1880-1881, when much of the cattle in the state east of the Cascades froze to death. In some counties in eastern Oregon as many as 90 to 95 percent of all the stock died (ibid., 25-30; Illust Hist/CenOr 1905, 561).

Stockmen who came to southeastern Oregon in the late 1860s and 1870s drove their herds of cattle from California and Nevada. Forced out of California because of state laws sympathetic to the wheat farmers, these ranchers lost out to the larger outfits in California and had to find new lands (Simpson 1987, 18). It has been argued that when David Shirk drove a herd of Texas longhorns into the Trout Creek country southeast of the Steen Mountains in 1868, his method of land exploitation provided a model that others followed. Claiming a homestead on Trout Creek, he gained control of one of the two major streams flowing north out of the Troup Creek Mountains. Within seven years, his herd of 800 grew to 4,000. John Devine, arriving a year later, laid out the buildings and corrals for Whitehorse Ranch in the southern part of Harney County. Within three years, he had a herd of between 15,000 and 30,000 head. By 1880 the Abbott and Whiteside ranching concern had located on the site of Camp Alvord in the shadow of the Steens Mountains. At about the same time, John Catlow arrived with several thousand head,

choosing rangelands on Trout Creek south of the fork with Cottonwood Creek.

And finally, Peter French, one of the more famous "cattle kings" in southeastern Oregon, came in the early 1870s. In 1872, French drove 1,200 head of cattle from the Sacramento Valley into Harney County. In the southern drainage of the Harney Basin he found the Blitzen River Valley, a stockman's paradise. With 80 percent of the valley's moisture accumulating annually in the Steen Mountains, there would be water year round that drained an area of 500 square miles. French found a valley with rich soil and an abundance of natural hay. In French's era, fescue grass carpeted the western slopes of the Steen Mountains -- slopes that today have been replaced with sagebrush due to overgrazing. Some have estimated that at one point French had fenced as many as 30,000 acres of public domain land to provide for the 20,000 head of cattle he had by 1879 (ibid., 8, 20-21, 59; French 1964, 41, 91).

After the disastrous winter of 1880-1881, the cattle ranchers changed the way they did business in southeastern Oregon over the next twenty years. They invested in land that would produce forage crops of hay and alfalfa, and greater efficiency in ranching operations was sought. There was also a concern that rising prices, improved transportation, and easy credit had led to overproduction. Bad weather in the mid-1880s forced changes as well. However, from 1888 through World War I, the cattlemen in this part of Oregon knew prosperity (ibid., 33) A cattle depression hit the area in the 1920s with prices falling from $13.27 a head to $7.28 a head in less than three years. Many cattlemen turned to sheep raising. By 1928, the Steens Mountains area provided the scene for a booming stock industry of wild horse, cattle, and sheep that led to overgrazing, drought, depression, and range regulation. In 1934 the Taylor Grazing Act confirmed the ascendancy of the cattlemen over the farmer. Preference in issuing grazing permits on public lands to those engaged in the livestock business (ibid., 153).

Competition between cattlemen and the sheepmen increased in the late nineteenth century. Range wars erupted between the 1890s and 1906, when federal forest reserves were established from public domain lands. Tens of thousands of cattle went up against hundreds of thousands of sheep for access and use of the range.

As the number of Oregon Trail emigrants grew throughout the 1840s and 1850s, the desire for farm land in the Willamette Valley pressured the stockmen to move east of the Cascades. The eastern part of the state had a drier climate and range covered with abundant natural grasses. So vast was the area in the east that the method of sheepherding developed differently than that in the west. Rather than the small flocks of 75 to 100 sheep that were typical of the Willamette Valley, in the east an experienced Scottish or Australian shepherd with

his dog could oversee flocks of mainly Merino sheep that often numbered in the thousands. The terrible winter of 1861-1862 killed off not only most of the stock in eastern Oregon, but also enthusiasm for the this enterprise over the next few years (Parsons 1902, 162; Kenny 1963, 102).

Henry Villard's promotion of the Pacific Northwest in the 1870s and 1880s did a great deal to encourage sheepmen to come to this watershed. The valleys Owyhee River and those adjacent to the Deschutes River were touted by the Northern Pacific as excellent places to graze stock (Smalley 1883, 364). By the 1880s rail shipment was possible both east and west. Indeed, the completion of the Oregon Washington Railway and Navigation (OWR&N) Company's line through the Columbia Gorge to Walla Walla in 1875 encouraged people to come to the Northern Great Basin River watershed as did the Central Pacific through Winnemucca a few years before (Simpson 1987, 18). In addition to this was the extension of the OWR&N to Huntington that then connected with the Oregon Short Line out of Ontario. By 1885 and for the next twenty years, Ontario became the leading center for shipping stock in the northwest from Malheur, Harney, and Grant counties to eastern markets (Gregg 1950, 216).

To say how many of and where these sheep grazed in the Northern Great Basin River watershed in the 1860s and 1870s is difficult since the government did not determine modern-day county lines until the 1890s. There was a growing interest in this profitable business. In the 1880s, in five counties in eastern Oregon, the amount of wool clipped more than doubled that clipped from the previous decade to over 1 million pounds per county. In the early 1890s, more than 10 million pounds of wool were shipped from Pendleton and The Dalles, about 5 million from each site. Following the Panic of 1893 that brought with it a collapse in wool and mutton prices, the sheep industry made a comeback. By 1900 Pendleton was the primary wool market in the United States (Mitchell 1895, 277; Kenny 1963, 102; Johansen 1967, 319; McGregor 1986, 87).

So great was the influx of sheep into eastern Oregon at the end of the nineteenth century that citizens began writing their government expressing concern about overgrazing. Among others, E.B. Gambee wrote to the government in 1891 that even though the mountain slopes in the eastern part of Umatilla County were not suited for farming, people from outside the county were overgrazing their sheep on these lands. He argued further that these people should be required either to rent or purchase the lands. It was common knowledge that everyone was trying to get as much free range from the public domain as possible. When farmers expressed concern about lack of water, the sheepmen moved to other areas (Minto 1892, 982-984;

Mosgrove 1980, 81). (It should be noted here that one of the original purposes for the creation of the forest reserves was to protect the watersheds that were being ruined due to overgrazing.)

By 1893 the Pendleton Wool-Scouring Company began operating. Within the year the mill was processing some 75,000 pounds of wool every 24 hours for a total for the year of 2 million pounds. In 1896 the pens at Umatilla had expanded to accommodate the shearing of 20,000 sheep a year. So lucrative was the stock business in Oregon that in 1900 is was the leading money maker in the state's economy (Lomax 1948, 212-220; Swift, 37).

There is no question that in the latter part of the nineteenth century, sheep ranching grew throughout the state of Oregon. Considering the scarcity of water in the midst of the vast rangelands in southeastern Oregon, it is indeed possible that overgrazing occurred. Across the vast areas of Malheur, Harney, and Lake counties, more than 600,000 sheep were munching on grass largely within the public domain. The number of sheep in Malheur and Harney counties in 1910 was 277,854. There seems to have been a slight decline over the next decade to 258,574 but then an increase occurred to 273,138 in the 1920s (Department of Commerce 1913, 411-412; 1922, 323-324; 1932, 504-505). By 1937 the Oregon State Planning Board was reporting that large areas of rangeland in Lake and Malheur counties had a desert-like look to them because of overgrazing (Oregon State 1937, 5). Should it surprise anyone that there was a range war between 1896 and 1906, the year when forest reserves were established?

Outraged by the influx of sheep on their lands within the watershed, cattlemen formed "sheep shooters" organizations in the 1890s. The Crook County Sheep Shooting Association formed in eastern Crook County to get rid of the sheep. As many as 8,000 sheep died in Crook County alone due the organized extermination of the animals by local groups of cattlemen. In 1904 the Oregon Wool Growers Association offered rewards for the arrests and conviction of any sheep shooters (Mosgrove 1980, 82-85; Paul 1976, 48).

Permanent settlement by homesteaders in the Northern Great Basin watershed did not happen until the late nineteenth century for several reasons. Despite the railroad construction binge that began in the Pacific Northwest after the Civil War, the dispute over land titles between the Northern Pacific Railway Company and the Eastern Oregon Land Company prevented thousands of arable acres in eastern Oregon from being open to settlement. In response, the Union Pacific and Northern Pacific decided to focus their construction of track in eastern Washington and along the Columbia River where land had clear title and awaited settlers. Along with the land owning disputes, there were also many and often contradictory federal land laws. Nineteenth century preemption provisions, homestead acts, desert land

entries, and stockraising homestead laws outlined access to the public domain for future settlers. Added to these were the mineral laws, reclamation projects, and the timber rulings of the twentieth century, all of which affected the settlement and development of the Northern Great Basin watershed (Smalley, 364; Mosgrove, 42). On top of all of the legal complexities was the tough, arid nature of the desert lands in this part of eastern Oregon.

The initial settlers at the north end of Harney Valley in the Northern Great Basin became farmers. While ranchers from California, mainly single men, settled in the south with access to the railhead at Winnemucca, farming families with origins in the Midwest came to the watershed from the Willamette Valley in the 1870s. These settlers looked for areas where there was water and wood, taking river-bottom land. Many subsistence farmers homesteading on public land, would not stay because improving the land was just too difficult. Finding that there were no interior markets at the north end of Harney Valley, and blocked from further settlement to the south by the cattle barons, these settlers preempted some of the Malheur Reservation lands and by 1878 were petitioning the federal government to open the reservation east of the Silvies River. The abandoned lands of the Northern Paiute were returned to the public domain in 1883, but all of the best lands had already been claimed and settled the year before (Simpson 1987, 19-20, 29).

Although the homesteaders who came to the watershed in the early 1880s arrived directly from the Midwest with more money in their pockets than their predecessors, water and property rights as well as access to the land inhibited settlement. Ranchers like Peter French fenced over 30,000 acres of public domain land. Companies such as the Willamette Valley and Cascade Mountain Wagon Road had been granted nearly 1.4 million acres in eastern Oregon in 1866, having promised to construct a route into southeastern Oregon from the valley. By 1900 the road had not been built and none of this land was in the hands of settlers. The Warner Valley Stock Company also tied up nearly 5,000 acres of land in litigation for over twenty years in a dispute over whether these lands should be categorized as swamp. By 1900 valleys across the watershed in Lake County were producing huge crops of alfalfa and cereal grains as well as vegetables. These areas included the valleys of North and South Warner, Chewaucan, Summer, and Silver Lake. Some population growth occurred after 1900 with the land sales by the Oregon valley and Land Company. Its promises to irrigate the high desert country of Fort Rock and Christmas valleys, however, were not kept. The farmer ultimately lost out to the rancher in this watershed. The passage of the Taylor Grazing Act in 1934 resulted in a victory of cattlemen over wheat grower as the granting of grazing permits on public domain lands to the stockmen

gave them the ownership of water and water rights, key to survival in this high desert country (Simpson 1987, 43, 57-58; Illust Hist/CenOr 1905, 830, 859).

Irrigation projects gained some ground in this watershed during the 1930s but not as much as was hoped for. In 1932, the Oregon State Reclamation Commission reported that no irrigation had taken place for the proposed 16,300 acres in the Silver Creek Irrigation District in Harney County. By 1940 only 8000 acres were receiving water. Across the Northern Great Basin watershed, other areas suffered decline in irrigated acres as in the case of the Donner and Blitzen River where there had been 79,000 acres irrigated in 1929 with only 14,209 still irrigated by the end of the 1930s. On the other hand, through 1930s water projects, the acreage around Malheur Lake more than doubled between 1929 and 1939, from 31, 709 to 79,902 acres. Given the arid nature of this desert country, the future for farming here lay with the era after World War II if at all (Third Biennial Report, 1933; Department of Commerce 1942).

The main land use activities in this watershed over time ranged from the millenia of gathering and hunting in the tough desert country to the cattle barons of the nineteenth and twentieth centuries. Many settlers tried to farm by acquiring land from the public domain. Howwever,the rigors of the dry climate which meant a scarcity of water so necessary for successful agriculture meant a failure for many hopeful settlers.

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EXHIBIT A

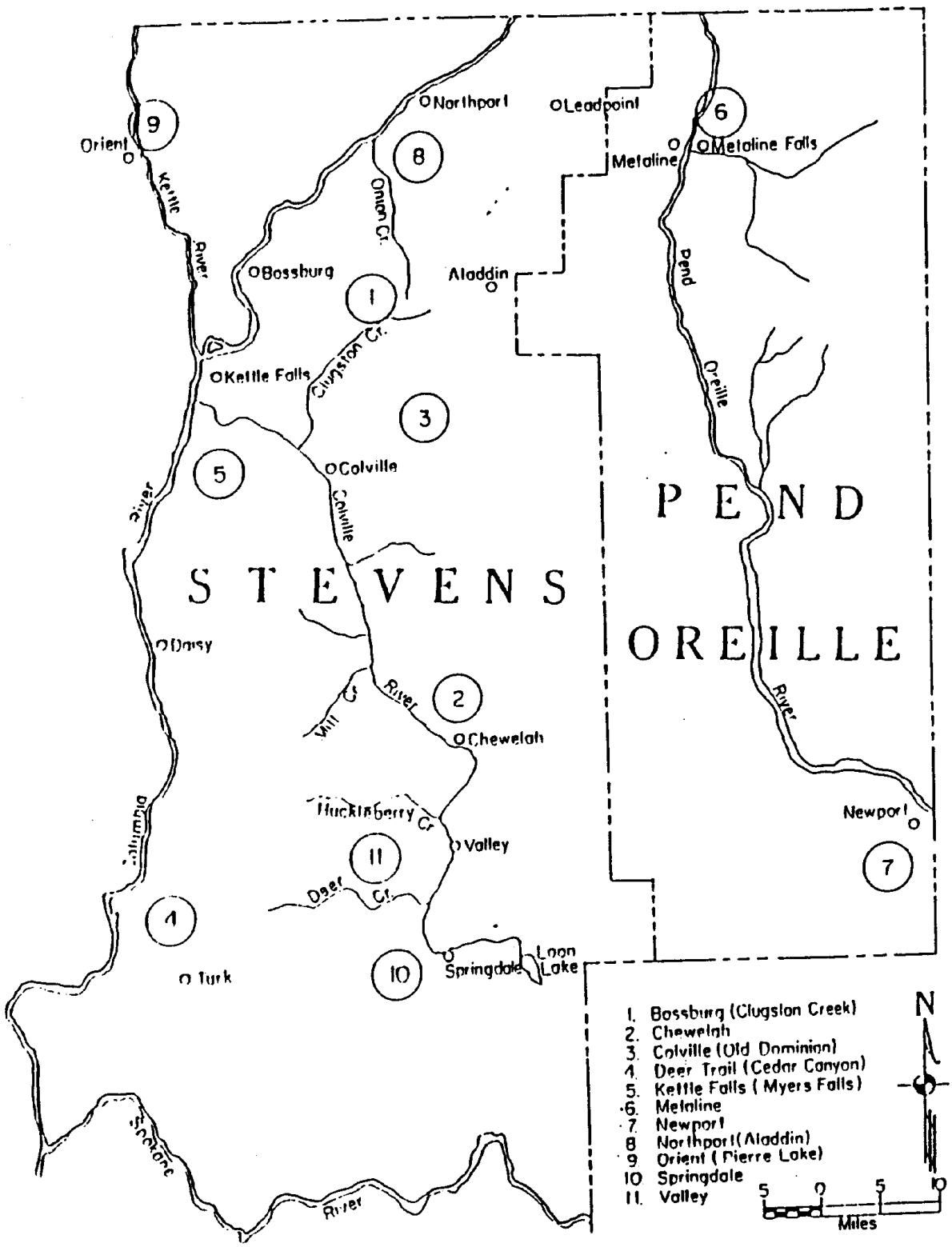


FIGURE 1. - Mining Districts of Pend Oreille and Stevens Counties, Wash., in Relation to Towns, Rivers, and Creeks.

EXHIBIT B

TABLE 1. - Mine production of gold, silver, copper, lead, and zinc in Pend Oreille and Stevens Counties, Wash., 1902-56, by counties and districts, in terms of recoverable metals

PEND OREILLE COUNTY

Year	Ore (tons)	Gold (fine oz.)	Silver (fine oz.)	Copper (lb.)	Lead (lb.)	Zinc (lb.)
1906	26		45		34,100	
1911	51	9	1,602	411	11,982	20,590
1915	3,111					244,906
1916	15,145		85		37,695	861,322
1917	15,096	8	1,552	490	130,324	1,176,715
1918	273		394	149	193,878	38,873
1919	15	5	288	399		
1922	13		220	62	7,372	
1923	884	2	509	10,191	53,730	
1924	966		1,291		868,920	
1925	914	2	1,043		757,652	
1926	813	4	1,818	117	326,931	65,485
1927	35,348	11	2,913	1,075	290,861	936,576
1928	700	1	721	11,047	55,085	
1929	50,920	8	2,250	4,762	655,958	2,061,574
1930	7,232	9	1,219	625	549,354	703,782
1931	80,968	16	4,595	2,670	2,514,977	9,947,495
1932	33,443	28	2,606	3,396	1,364,066	4,489,334
1933	48,479	19	3,263	5,062	1,443,783	6,738,169
1934	28,322		1,151	2,575	473,649	3,852,419
1936	76,060		3,317	6,011	1,540,847	8,777,220
1937	106,038		12,587	58	5,292,339	8,190,600
1938	249,184		14,584		8,018,500	22,804,000
1939	259,320		11,603		7,018,404	20,260,558
1940	273,233		8,609		4,989,500	23,120,000
1941	361,041		10,807		7,637,900	28,402,000
1942	397,630		9,630		9,106,000	27,240,000
1943	311,245		7,335		9,161,000	18,584,000
1944	305,516		15,580		10,555,000	18,471,000
1945	253,884		11,191		7,011,000	15,588,000
1946	247,648		7,375	13,000	4,448,000	15,370,500
1947	295,015		10,674	4,400	6,900,000	19,508,800
1948	223,602		9,521		8,593,000	11,969,000
1949	243,962		11,396	16,500	8,059,200	12,992,200
1950	417,228		20,432	15,500	14,889,000	22,064,000
1951	510,207	30	22,896	36,900	10,467,800	25,505,400
1952	603,022	22	29,910	55,000	18,148,000	28,815,010
1953	734,967	50	34,574	64,000	17,388,000	34,370,000
1954	595,629	20	22,616	20,000	17,312,000	17,726,000
1955	699,107	9	26,329	52,000	16,196,000	23,316,000
1956	799,457	2	29,373	52,000	18,880,000	25,048,000
Total	8,285,714	255	357,904	378,400	221,381,807	459,259,528

TABLE 1. - Mine production of gold, silver, copper, lead, and zinc in Pend Oreille and Stevens Counties, Wash., 1902-56, by counties and districts, in terms of recoverable metals (Con.)

METALINE DISTRICT

Year	Ore (tons)	Gold (fine oz.)	Silver (fine oz.)	Copper (lb.)	Lead (lb.)	Zinc (lb.)
1906	26		45		34,100	
1911	51	9	1,602	411	11,982	20,590
1915	3,111					244,906
1916	15,145		85		37,695	861,322
1917	15,093	8	1,504	490	129,639	1,176,715
1918	245		264		184,734	38,873
1923	34		46		31,233	
1924	966		1,291		868,920	
1925	914	2	1,043		757,652	
1926	813	4	1,818	117	326,931	65,485
1927	35,348	11	2,913	1,075	290,861	936,576
1929	50,920	8	2,250	4,762	655,958	2,061,574
1930	7,200	9	1,023	315	534,370	703,782
1931	80,968	16	4,595	2,670	2,514,977	9,947,495
1932	33,443	28	2,606	3,396	1,364,066	4,489,334
1933	48,479	19	3,263	5,062	1,443,783	6,738,169
1934	28,322		1,151	2,575	473,649	3,852,419
1936	76,060		3,317	6,011	1,540,847	8,777,220
1937	106,028		12,525		5,287,797	8,190,600
1938	249,184		14,584		8,018,500	22,804,000
1939	259,320		11,603		7,018,404	20,260,558
1940	273,233		8,609		4,989,500	23,120,000
1941	361,041		10,807		7,637,900	28,402,000
1942	397,630		9,630		9,106,000	27,240,000
1943	311,245		7,335		9,161,000	18,584,000
1944	305,516		15,580		10,555,000	18,471,000
1945	253,884		11,191		7,011,000	15,588,000
1946	247,648		7,375	13,000	4,448,000	15,370,500
1947	295,015		10,674	4,400	6,900,000	19,508,800
1948	223,602		9,521		8,593,000	11,969,000
1949	243,962		11,396	16,500	8,059,200	12,992,200
1950	417,228		20,432	15,500	14,889,000	22,064,000
1951	510,207	30	22,896	36,900	10,467,800	25,505,400
1952	603,022	22	29,910	55,000	18,148,000	28,815,010
1953	734,967	50	34,574	64,000	17,388,000	34,370,000
1954	595,629	20	22,616	20,000	17,312,000	17,726,000
1955	699,107	9	26,329	52,000	16,196,000	23,316,000
1956	799,447	2	29,360	52,000	18,879,000	25,048,000
Total	8,284,053	247	355,763	356,184	221,266,498	459,259,528

NEWPORT DISTRICT

1917	3	-	48	-	685	-
1918	28	-	130	149	9,144	-
1919	15	5	288	399	-	-
1922	13	-	220	62	7,372	-
1923	850	2	463	10,191	22,497	-
1928	700	1	721	11,047	55,085	-
1930	32	-	196	310	14,984	-
1937	10	-	62	58	4,542	-
1956	10	-	13	-	1,000	-
Total	1,661	8	2,141	22,216	115,309	-

Mine production of gold, silver, copper, lead, and zinc in Pend Oreille and Stevens Counties, Wash., 1902-56, by counties and districts, in terms of recoverable metals (Con.)

STEVENS COUNTY

Ore (tons)	Gold (fine oz.)	Silver (fine oz.)	Copper (lb.)	Lead (lb.)	Zinc (lb.)	Value
1,762	9	248,750	540	106,768	-	$127,474
933	121	101,567	19,038	389,512	-	75,393
4,596	561	70,226	194,320	1,760,309	-	147,369
12,016	8,024	26,196	15,449	604,843	-	212,532
12,244	3,764	6,327	72,313	892,000	-	146,876
23,122	7,236	17,100	65,044	820,035	-	217,345
31,863	8,895	53,296	248,432	1,146,929	-	293,104
23,034	5,863	21,569	220,146	288,677	-	173,457
18,473	1,460	13,281	85,063	1,321,871	-	106,319
26,146	1,310	40,664	153,112	836,602	-	105,412
37,080	1,152	233,535	1,007,076	127,387	-	339,347
46,150	1,135	148,167	897,467	200,848	-	260,918
24,536	575	91,480	602,996	36,196	-	144,092
35,020	168	109,744	617,659	271,915	-	179,993
68,815	434	174,612	1,478,357	5,356,229	832,412	968,666
82,043	182	161,013	1,647,490	9,655,513	18,852	1,418,494
74,232	397	168,669	1,170,488	5,077,152	-	826,456
59,319	69	156,562	1,109,371	2,086,743	-	493,724
46,890	97	134,037	847,858	5,753,409	426,496	798,929
2,552	27	75,189	246,017	118,251	449,360	135,275
11,097	49	103,108	308,996	1,347,328	1,228,229	289,953
13,427	66	87,560	208,575	2,827,799	3,024,535	507,447
11,534	130	132,931	125,033	3,059,247	910,890	412,087
14,819	76	108,206	69,744	4,867,919	1,200,838	601,354
10,558	118	90,693	2,337	4,198,417	978,869	468,646
3,267	8	19,952	69,875	662,788	343,134	84,340
2,145	39	22,398	73,865	1,028,327	85,318	89,396
3,796	41	22,598	86,103	351,815	55,770	53,885
2,107	7	19,454	48,645	602,961	-	44,104
386	71	9,303	23,975	255,573	-	15,888
762	178	656	-	475,667	-	18,133
263	15	1,043	217	235,513	-	9,399
7,170	1,683	17,724	2,450	102,189	-	74,264
5,788	1,198	17,920	3,325	197,700	2,159	63,075
589	112	7,982	1,750	136,696	28,780	18,004
5,810	767	14,221	3,628	359,949	41,400	62,212
14,180	1,781	31,561	14,000	498,413	-	107,037
3,190	132	35,786	18,279	364,192	1,442	48,004
6,565	848	22,372	69,200	101,700	-	58,494
17,397	1,409	22,147	218,300	163,000	238,000	117,964
18,398	712	17,460	40,000	595,400	1,556,000	226,776
21,983	267	15,830	43,600	567,000	1,856,000	269,243
33,236	382	16,830	30,000	568,000	3,022,000	419,336
31,708	5	6,667	1,400	373,000	2,862,200	366,336
46,913	24	21,516	7,000	1,201,000	3,711,000	603,010
65,226	110	58,253	14,000	3,470,000	6,017,400	1,251,190
69,497	28	44,992	7,300	5,665,200	6,696,000	1,947,923

TABLE 1. - Mine production of gold, silver, copper, lead, and zinc in Pend Oreille and Stevens Counties, Wash., 1902-56, by counties and districts, in terms of recoverable metals (Con.)

STEVENS COUNTY (Con.)

Year	Ore (tons)	Gold (fine oz.)	Silver (fine oz.)	Copper (lb.)	Lead (lb.)	Zinc (lb.)
1949	68,133	21	48,604	3,800	4,709,000	3,004,500
1950	83,082	15	47,973	2,100	5,757,000	2,669,600
1951	122,368	3	44,166	2,700	5,421,600	7,098,500
1952	152,239	9	40,319	6,600	5,320,000	9,412,810
1953	412,046	77	29,702	50,000	4,698,000	30,000,000
1954	399,754	56	15,682	136,000	2,554,000	26,594,000
1955	490,295	96	43,865	358,000	4,424,000	35,334,000
1956	460,103	133	22,303	430,000	4,170,000	25,450,000
Total	3,240,657	52,145	3,313,761	13,179,033	108,181,582	175,150,494

BOSSBURG DISTRICT

1903	90	-	9,259	-	249,000	-
1905	150	-	3,311	-	21,176	-
1907	27	10	265	-	-	-
1908	671	-	3,996	-	295,786	-
1910	720	-	3,497	-	314,579	-
1911	1,397	-	5,861	-	552,548	-
1912	171	-	1,278	-	67,579	-
1913	577	-	2,563	-	184,250	-
1914	82	-	423	-	32,304	-
1915	569	-	2,414	-	214,665	-
1916	783	-	3,193	-	234,260	-
1917	579	-	2,183	-	179,731	18,852
1918	302	-	4,419	-	19,348	-
1919	42	-	67	-	6,495	-
1920	160	-	711	-	66,871	-
1922	25	1	1,561	-	13,607	-
1923	251	6	6,875	-	85,535	-
1924	213	1	1,196	-	33,817	-
1925	9	-	372	-	1,979	-
1928	17	1	1,233	-	10,539	-
1929	3,000	-	1,896	321	184,827	-
1930	1,351	-	988	141	93,621	-
1931	-	4	-	-	-	-
1935	23	-	135	84	6,450	-
1936	5	-	541	-	5,500	-
1938	18	-	362	-	4,826	-
1939	6	-	134	19	639	-
1941	155	-	696	400	4,300	14,000
1942	100	-	585	-	52,600	-
1943	232	-	1,059	-	98,600	-
1944	24	-	90	-	9,900	-
1945	2,180	5	6,030	1,400	316,500	25,800
1946	4,109	8	13,568	2,500	856,000	80,000
1947	8,661	13	28,379	5,800	2,020,000	209,200
1948	14,401	17	36,462	4,800	2,787,800	140,500
1949	17,322	7	45,298	3,300	4,021,800	176,600
1950	20,229	-	46,024	2,100	5,280,000	60,500

1. - Mine production of gold, silver, copper, lead, and zinc in Pend Oreille and Stevens Counties, Wash., 1902-56, by counties and districts, in terms of recoverable metals (Con.)

BOSSBURG DISTRICT (Con.)

Ore (tons)	Gold (fine oz.)	Silver (fine oz.)	Copper (lb.)	Lead (lb.)	Zinc (lb.)
14,932	1	35,803	1,300	3,536,300	90,500
16,850	2	29,220	3,700	2,585,300	99,562
3,819	-	4,106	500	335,000	56,000
2,709	26	1,235	119,400	1,300	-
116,961	102	307,288	145,765	24,785,332	971,514

CHEWELAH DISTRICT

46	-	165	540	19,360	-
133	-	991	-	43,850	-
1,025	49	4,298	50,000	5,000	-
3,325	2,149	12,980	10,641	21,175	-
1,500	14	667	40,691	-	-
346	37	489	12,000	-	-
3,200	50	16,992	172,803	-	-
2,000	-	12,000	116,000	-	-
780	5	7,423	38,982	-	-
1,322	23	32,762	113,122	77,016	-
13,443	100	228,747	941,833	51,454	-
16,339	113	140,043	779,632	-	-
18,527	107	89,583	573,575	1,109	-
34,150	83	93,013	617,394	-	-
45,850	95	164,716	1,231,011	42,000	-
62,436	74	150,137	1,212,608	-	-
64,001	336	142,335	994,560	-	-
50,698	59	139,340	928,692	-	-
37,493	78	131,038	840,345	-	-
1,332	25	65,716	246,017	-	-
5,957	36	68,174	307,329	-	-
2,139	23	50,962	207,279	2,523	-
1,616	17	35,527	124,059	-	-
355	7	23,399	69,539	-	-
11	-	216	194	10,432	-
218	5	18,298	47,891	-	-
123	3	11,897	34,328	-	-
164	4	14,249	41,578	890	-
156	4	17,213	47,985	-	-
60	4	8,964	23,776	-	-
4	-	85	48	2,575	-
26	-	115	1,777	1,390	-
27	3	956	4,102	-	-
136	9	5,149	13,375	1,851	-
924	41	15,082	66,400	-	-
1,587	49	17,962	110,900	-	-
7	2	126	-	3,000	1,400
7	2	106	-	2,800	1,100
7,522	72	24,583	277,000	-	-
7,550	120	153	410,000	-	-
386,535	3,798	1,746,651	10,708,006	286,425	2,500

TABLE 1. - Mine production of gold, silver, copper, lead, and zinc in Pend Oreille and Stevens Counties, Wash., 1902-56, by counties and districts, in terms of recoverable metals (Con.)

COLVILLE DISTRICT

Year	Ore (tons)	Gold (fine oz.)	Silver (fine) oz.)	Copper (lb.)	Lead (lb.)	Zinc (lb.)
1902	40	-	8,000	-	12,000	-
1903	96	-	13,935	-	57,600	-
1904	20	-	1,102	390	2,575	-
1908	69	-	28	-	18,296	-
1909	41	-	12	-	12,677	-
1912	21	-	1,150	-	5,953	-
1913	7	-	6	-	5,574	-
1915	188	21	13,518	-	17,968	-
1916	33	-	366	-	9,544	-
1917	44	33	43	-	767	-
1921	60	2	4,638	-	16,349	-
1922	39	5	18,671	970	8,087	-
1923	209	21	14,384	422	32,588	-
1924	713	101	81,582	102	156,553	-
1925	957	55	72,046	-	192,669	37,264
1926	928	79	87,074	2,077	219,664	51,304
1927	9	-	208	-	5,735	-
1928	4	-	6	-	3,276	-
1929	59	1	3,014	10	11,881	22,058
1934	90	10	7,057	187	14,271	-
1935	84	8	3,833	374	9,900	2,159
1936	109	-	5,756	-	12,413	28,780
1937	107	-	3,563	-	11,661	33,400
1938	46	4	1,321	143	4,413	-
1939	43	16	1,186	96	4,447	1,442
1940	64	5	2,766	-	5,900	-
1941	96	-	31	-	9,600	18,000
1944	659	3	1,665	-	18,900	97,000
1945	45	-	31	-	200	15,800
1948	27	-	21	-	6,700	800
1949	19	-	10	-	400	2,000
1951	223	2	3,810	-	12,200	15,700
1952	650	1	4,345	-	29,000	22,512
1953	903	3	6,574	600	27,600	55,600
1954	50	-	715	-	3,400	1,600
Total	6,752	370	362,467	5,371	960,761	405,419

DEER TRAIL DISTRICT

1903	406	-	67,915	-	39,062	-
1904	10	-	500	-	-	-
1905	64	-	7,119	1,603	4,492	-
1906	20	-	2,000	-	2,000	-
1907	1,706	-	12,417	-	467,372	-
1908	350	21	26,693	705	6,785	-
1909	600	-	3,000	-	264,000	-
1911	27	-	854	-	6,761	-
1912	30	1	1,770	-	2,401	-
1913	27	-	2,183	-	1,596	-

Mine production of gold, silver, copper, lead, and zinc in Pend Oreille and Stevens Counties, Wash., 1902-56, by counties and districts, in terms of recoverable metals (Con.)

DEER TRAIL DISTRICT (Con.)

Ore (tons)	Gold (fine oz.)	Silver (fine oz.)	Copper (lb.)	Lead (lb.)	Zinc (lb.)
8	-	123	-	2,783	-
4	-	519	-	614	-
913	16	5,098	121,372	-	-
219	1	3,240	1,000	2,000	-
21	3	734	-	6,300	-
1,859	7	8,145	1,700	167,300	186,000
1,708	4	5,175	-	106,400	28,000
1,000	2	3,015	800	73,200	49,000
3,170	10	7,240	500	267,000	51,000
5,405	23	26,831	4,000	434,500	232,000
335	1	3,718	500	19,000	12,600
1	-	73	-	200	200
1,300	-	103	45,400	-	-
19,183	89	188,465	177,580	1,873,766	558,800

KETTLE FALLS DISTRICT

38	-	208	170	-	-
69	19	36	3,930	-	-
3,567	402	417	3,205	-	-
30	48	200	-	-	-
82	152	382	-	-	-
42	32	125	2,945	-	-
49	95	298	-	-	-
111	135	155	-	-	-
19	70	264	-	-	-
56	148	814	2,337	-	-
21	48	151	-	-	-
126	3	2,878	288	246	-
17	11	87	-	-	-
38	3	647	-	2,642	-
1	3	9	-	-	-
7	15	134	-	18	-
61	1	1,151	872	3,713	-
38	42	146	-	-	-
62	42	245	-	-	-
3	3	509	-	-	-
640	16	5,437	1,913	9,216	-
705	7	5,472	2,265	13,450	-
207	5	1,326	500	1,348	-
225	-	5,479	1,694	2,712	-
1,725	18	22,275	8,755	18,826	-
448	79	2,634	1,327	2,064	-
68	16	668	600	400	-
1	-	76	-	-	-
3	-	436	200	700	-
130	58	221	-	-	-
841	-	716	500	600	200
150	13	53	-	-	-
1,094	5	464	35,000	5,400	-
10,674	1,489	54,115	66,501	61,335	200

TABLE 1. - Mine production of gold, silver, copper, lead, and zinc in Pend and Stevens Counties, Wash., 1902-56, by counties and distri in terms of recoverable metals (Con.)

NORTHPORT DISTRICT

Year	Ore (tons)	Gold (fine oz.)	Silver (fine oz.)	Copper (lb.)	Lead (lb.)	Zinc (lb.)
1902	35	-	4,322	-	1,600	-
1904	1,696	-	12,714	-	1,638,540	-
1905	560	-	-	-	558,000	-
1906	890	-	534	-	890,000	-
1907	463	-	-	-	352,663	-
1908	748	-	-	-	822,800	-
1909	250	-	217	-	12,000	-
1910	810	-	214	-	1,007,292	-
1911	159	-	-	-	200,277	-
1913	7	-	780	-	1,174	-
1915	64	-	593	265	39,282	-
1916	10,223	-	952	-	5,065,700	832,412
1917	15,789	3	3,248	535	9,465,046	-
1918	7,564	-	2,408	642	5,020,838	-
1919	2,857	-	1,123	-	2,053,697	-
1920	9,119	-	1,811	-	5,685,681	426,496
1921	1,075	-	405	-	99,048	449,360
1922	2,489	-	2,418	81	1,067,668	1,228,229
1923	6,298	-	1,676	91	2,123,262	3,024,535
1924	5,913	-	1,551	-	2,464,301	910,890
1925	10,834	5	3,537	205	4,435,427	1,163,574
1926	9,569	1	3,370	66	3,968,321	927,565
1927	2,810	-	991	270	650,224	343,134
1928	1,284	-	3,068	583	1,006,732	85,318
1929	204	-	169	94	151,725	33,712
1930	589	-	352	424	507,855	-
1931	241	2	165	199	255,573	-
1932	333	3	241	-	475,667	-
1933	227	-	511	77	235,513	-
1934	64	-	1,284	175	77,243	-
1935	160	-	530	145	160,150	-
1936	148	22	297	1,250	114,348	-
1937	454	-	1,713	149	323,576	-
1938	483	-	2,076	857	467,261	-
1939	391	-	775	77	317,914	-
1940	92	-	128	-	93,300	-
1941	1,983	10	1,274	1,000	142,800	206,000
1942	12,264	110	7,875	11,100	374,800	1,370,000
1943	19,646	263	9,512	17,900	362,000	1,828,000
1944	31,553	377	12,060	29,200	466,000	2,876,000
1945	29,483	-	606	-	56,300	2,820,000
1946	39,634	6	708	4,000	78,000	3,580,000
1947	51,030	16	2,822	4,200	1,015,500	5,576,200
1948	54,734	10	4,791	2,000	2,851,700	6,542,100
1949	49,944	12	2,454	-	683,200	2,824,300
1950	62,695	-	1,717	-	474,000	2,607,800
1951	107,208	-	4,551	1,200	1,873,100	6,992,300
1952	134,670	6	6,754	900	2,705,700	9,290,736
1953	406,230	69	18,558	13,900	4,330,000	29,888,400

1. - Mine production of gold, silver, copper, lead, and zinc in Pend Oreille and Stevens Counties, Wash., 1902-56, by counties and districts, in terms of recoverable metals (Con.)

NORTHPORT DISTRICT (Con.)

Ore (tons)	Gold (fine oz.)	Silver (fine oz.)	Copper (lb.)	Lead (lb.)	Zinc (lb.)	Value
396,995	30	13,732	.16,600	2,549,300	26,592,400	3,239,608
481,473	24	19,179	35,600	4,424,000	35,334,000	5,036,735
452,553	13	22,150	20,000	4,170,000	25,450,000	4,170,342
2,426,987	982	182,916	163,785	78,366,098	173,204,061	29,150,762

ORIENT DISTRICT

510	493	518	-	-	-	$10,495
4,350	5,473	2,369	-	-	-	114,567
9,774	3,702	2,026	31,622	-	-	84,005
20,580	7,189	3,929	53,044	-	-	161,810
26,794	8,824	4,336	71,106	-	-	194,079
19,963	5,691	5,933	60,329	-	-	128,576
16,121	1,423	2,022	43,136	-	-	36,007
23,192	1,192	889	39,990	-	-	30,118
23,304	916	435	65,243	-	-	29,968
29,159	952	2,259	114,658	8,254	-	39,180
5,843	320	472	23,907	-	-	10,056
28	16	55	-	-	-	359
10,895	327	582	50,021	-	-	19,449
486	34	55	2,007	9,969	-	2,160
21	38	19	-	-	-	804
11	4	46	-	839	-	199
50	37	33	-	-	-	793
132	32	28	-	-	-	680
74	34	44	169	-	-	752
1	2	2	-	-	-	42
47	24	28	-	-	-	504
367	136	170	-	-	-	2,854
33	12	23	140	-	-	267
5,173	1,657	1,672	75	270	-	59,005
2,556	1,180	903	60	575	-	41,991
120	85	62	-	3,087	-	3,151
4,688	767	490	-	-	-	27,224
11,718	1,755	1,007	-	-	-	62,076
3	17	3	29	21	-	601
5,192	785	485	-	100	-	27,825
12,028	1,345	796	-	-	-	47,641
3,780	595	329	-	-	-	21,059
236,993	45,057	32,020	555,536	23,115	-	1,158,297

TABLE 1. - Mine production of gold, silver, copper, lead, and zinc in Pend Oreille and Stevens Counties, Wash., 1902-56, by counties and districts, in terms of recoverable metals (Con.)

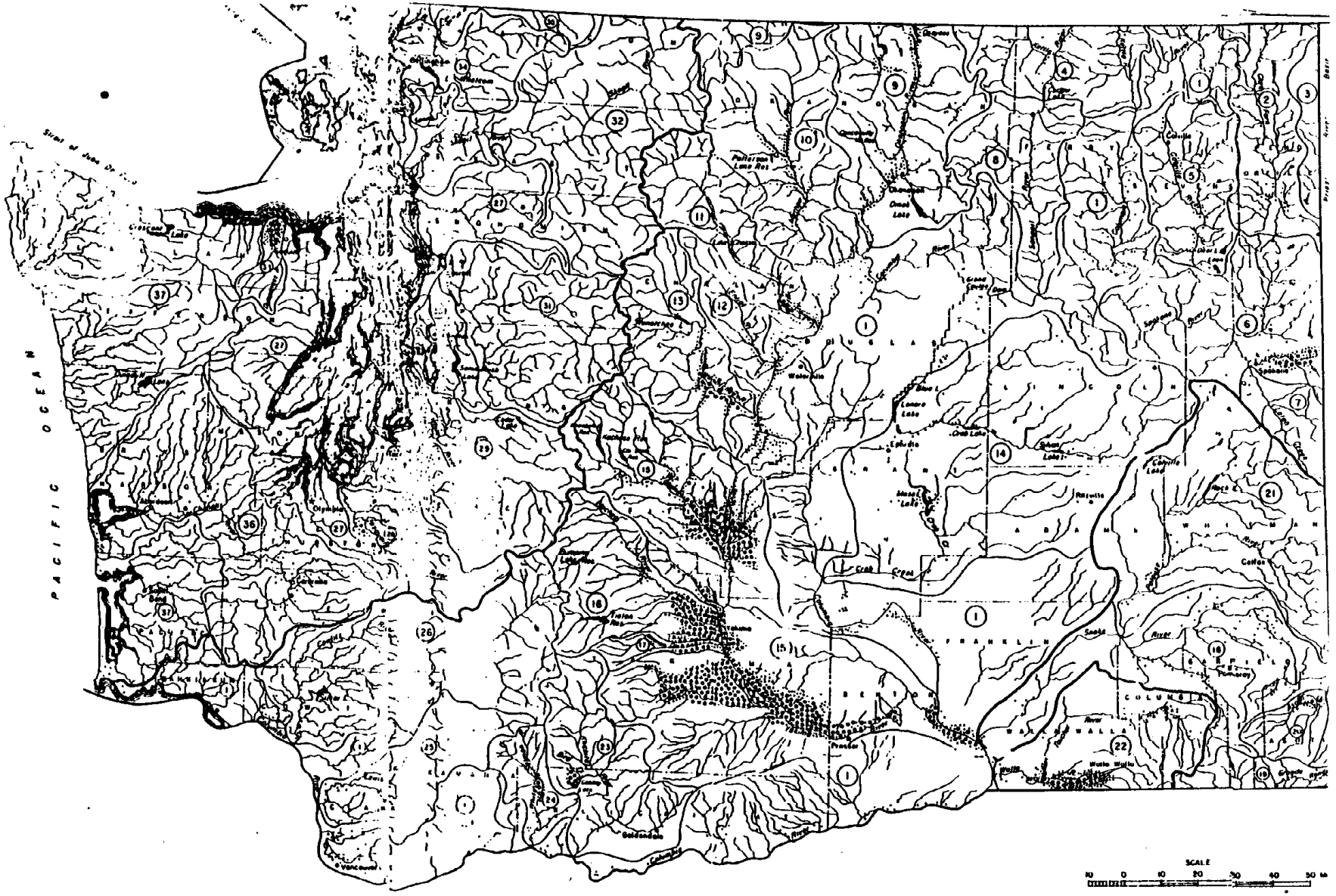
SPRINGDALE DISTRICT

Year	Ore (tons)	Gold (fine oz.)	Silver (fine oz.)	Copper (lb.)	Lead (lb.)	Zinc (lb.)
1902	1,641	9	236,263	-	73,808	-
1903	170	121	9,259	18,868	-	-
1904	1,255	-	49,883	140,000	114,194	-
1906	30	-	900	-	-	-
1909	78	-	-	39,780	-	-
1913	15	-	69	3,177	-	-
1914	20	-	65	3,177	-	-
1916	833	9	124	190,157	-	-
1917	1,710	10	151	304,026	-	-
1918	2,290	20	18,841	173,878	34,324	-
1919	5,721	7	16,023	180,679	26,551	-
1920	100	-	297	7,513	-	-
1921	85	-	4,430	-	2,854	-
1922	2,587	7	12,284	616	257,966	-
1923	4,530	16	13,663	783	583,891	-
1924	3,018	11	11,922	-	400,863	-
1925	2,664	10	8,852	-	237,844	-
1927	230	2	455	21,714	6,829	-
1928	585	2	6,166	38,954	7,780	-
1929	295	1	3,226	43,931	2,492	-
1930	10	-	899	95	1,485	-
1934	1,203	-	2,274	100	1,189	-
1935	2,256	1	6,962	349	4,600	-
1937	310	-	2,861	8	20,610	8,000
1938	163	1	3,564	143	3,087	-
1939	2,163	11	25,905	3,356	37,256	-
1940	6	-	3	1,200	-	-
1941	1,526	2	578	106,000	-	-
1942	392	-	90	27,000	-	-
1943	397	-	84	25,700	-	-
1951	5	-	2	200	-	-
1952	69	-	-	2,000	-	-
Total	36,357	240	436,095	1,333,404	1,817,623	8,000

VALLEY DISTRICT

1904	11	-	1,175	-	-	-
1908	31	-	1,251	3,818	3,262	-
1909	20	20	25	4,037	-	-
1916	68	-	1,282	6,880	3,865	-
1917	69	1	11	6,942	-	-
1918	16	-	-	1,408	-	-
Total	215	21	3,744	23,085	7,127	-

EXHIBIT C



CENSUS OF IRRIGATION—1940

WASHINGTON

Irrigation Basin	Reference number	Acreage irrigated, 1939
State total		851,463
Columbia River (total)		488,599
Columbia River direct		24,133
Crab Creek		1,400
Priest River		
Kettle River		
Colville River		
Spokane River (total)		
Spokane River direct		
Little Spokane		
Hangman Creek		
Okanogan River		
Methow River		
Lake Chelan		
Entiat River		
Wenatchee River		
Yakima River (total)		
Yakima River direct		
Ahtanum Creek		
Naches River (total)		
Naches River direct		
Ahtanum Creek		
Cowiche Creek		
Wide Hollow Creek		
Yakima River direct		
Toppenish Creek		
Satus Creek		
Palouse River		
Walla Walla River		
Similkameen River		
White Salmon River		
Little Spokane River		
Lewis River		
Willamette River (total)		
Pioneer Canal (total)		
Pioneer Canal direct		
Willamette Slough		
Willamette River direct		
Willamette Tributaries		
Puget Sound (total)		
Puget Sound direct		
Skagit and Samish Rivers		
Nooksack River		
Chehalis River		
Other Pacific Slope streams		

Irrigation census enumerated on this map are those reported in the 1940 census bulletin, "Irrigation of Agricultural Lands," for sale by the Superintendent of Documents, Washington, D. C.