Resource Characterization

Forest Resources of the Nisqually Watershed

(review draft – last updated November 8, 2011)

General Overview

The Nisqually Watershed encompasses all lands which drain to the Nisqually River in Pierce, Lewis, and Thurston counties and includes the communities of Ashford, Elbe, Mineral, Eatonville, McKenna, Roy, Yelm, Fort Lewis, and portions of Graham, Lacey, DuPont, and Rainier. Flowing 78 miles from its source at the Nisqually Glacier on Mount Rainier to its delta at the Nisqually National Wildlife Refuge, the Nisqually is a direct link between the summit snows of Mount Rainier and the marine waters of Puget Sound.

Climate

The climate of the area can be characterized as a marine climate dominated by cool, moist winds coming off the Pacific Ocean. Winters are wet and relatively mild and summers are dry and warm. Rain usually begins in earnest in mid-October and continues with few interruptions through the spring months. This pattern is caused by maritime low pressure disturbances originating in the Pacific Ocean and carried inland on winds ranging from the southeast to the southwest. Warmer and drier weather, associated with gradually lengthening high pressure systems, begins in June and continues through September. Winter temperatures are typically 40-50° in the day and 30-40° at night. Summer temperatures average 70-80° with nighttime lows of 50-65°.

Geology

Mount Rainier is a volcano built up above the surrounding Cascade mountain range by repeated eruptions and successive flows of lava. In geologic terms it is a relatively young volcano, only about one million years old. By contrast the mountains of the Cascade Range are at least 12 million years old and were created by the folding, buckling, and uplifting of the Earth's surface. The underlying geology of this area is made up of 25-40 million year old layers, including thick layers of lake deposits. Erosive forces of the Nisqually River and its tributaries, rushing down the steep slopes of Mount Rainier and the Cascade mountains, cut and shaped the hills and valleys of the upper Nisqually Basin (generally east of the Eatonville area).

The natural landscape of the lower Nisqually River Valley (generally from the confluence with Ohop Creek and west to Puget Sound) began to form at the end of the last ice age 13,000 years ago. As the Vashon ice sheet retreated toward Canada it left deep stream channels and glacial outwash plains behind, including the Ohop Valley. The terminal moraine of the Vashon glacier ended just south of the Nisqually River and formed the Bald Hills in Thurston County. As the river moves downstream, the topography flattens out. As it nears Puget Sound, the river loses energy and begins to meander as it deposits silt, thus forming the Nisqually River delta.

Forests

Forest types in the watershed differ depending on geography. The higher elevation ridgelines and hilltops tend towards a conifer dominated forest consisting of Douglas fir and Hemlock. Drainages tend to produce larger, more pronounced timber due to the availability of water. Hardwoods including maple, alder and cottonwood are found in lowland valleys and river bottoms. Western red cedar grows primarily in wetter lowland areas.

The upper Nisqually watershed encompasses approximately 460,000 acres and is where large tracts of actively managed forestlands are still intact. The lower regions of the watershed are more developed and much of the land base has been converted to non-forest uses. Actively managed forestlands in the upper watershed fall under three primary ownership types: public, including state and federal; private industrial; and private non-industrial. Public forestlands are managed for a wide range of uses including wilderness, recreation, wildlife habitat and timber production. These forests are typically composed of a mix of species and age classes of timber. Private industrial timber companies own large tracts of land and utilize even-age plantation-based management strategies primarily for the production of timber products. Industrial timberlands also provide a broad range of public benefits including hunting, recreation, non-timber forest products and wildlife habitat. Non-industrial forestlands occur at lower elevations and are owned by a wide mix of owner types including families, tribes, small businesses and land trusts. Depending on the owner, these lands are managed under a combination of even-aged and uneven-aged management strategies. These forests tend to host a wider range of species and age classes of timber and provide important diversity for wildlife habitat. All private forestland management throughout the watershed must adhere to the Washington State Forest Practices Act, which requires protection of water quality, salmon and wildlife habitat.

Water

The rivers and streams flowing off Mount Rainier are a significant feature linking Mount Rainer glaciers with the Puget Sound region. The Nisqually River is the major tributary to southern Puget Sound, providing fifty percent of the discharge flowing into the Sound below the Tacoma Narrows. Most tributaries to the Upper Nisqually River are typical mountain streams producing falls, cascades, and rapids with large rock or boulder stream bottoms. Most tributaries are surrounded with dense cover, usually deciduous trees and underbrush with some conifers.

Streams in the upper reaches of the watershed tend to be lower order tributaries (i.e., non-fish bearing and seasonal). These streams are important for setting the 'temperature signature' of downstream fish bearing streams. Functioning lower order tributaries provide cool water and help mitigate sediment delivery (water quality) to fish bearing streams further downstream. The primary salmon bearing streams in the Nisqually watershed are the main-stem Nisqually, Mashel River, and Ohop Creek.

In the lower watershed the land flattens out and water velocity slows. The tributary streams tend to meander across the glacial outwash plains and sometimes lose flow to the underlying aquifer. Lower valley bottomlands are good areas for flood storage and filtering.

Water Quality

The Nisqually River is relatively cool and well oxygenated. The river is clear much of the time except late summer and fall when glacial melt, laden with finely-ground rock flour, can cause high suspended solids and turbidity. This results in a milky green color.

The Washington State Department of Ecology classifies the Nisqually River upstream of Alder Lake as having extraordinary water quality. There is no evidence of toxic substances in Alder

Lake sediments. Some water quality data is available on the larger tributary streams and little to no water quality data is available on most smaller tributary streams. Tributary stream water quality is good and generally assumed to be excellent because they flow into the main stem Nisqually which has extraordinary water quality.

Habitat

A rich diversity and abundance of wildlife is present throughout the Nisqually watershed. This is attributable to a healthy surrounding of public and private forests and the availability of multiple and diverse types of habitat capable of supporting a variety of wildlife including large and small mammals, birds, reptiles, amphibians, and invertebrates. Wildlife use different habitats for different activities related to nesting, feeding, foraging, migrating, and cover. Numerous habitat types are found in the Nisqually watershed such as old-growth and mature forests, wetlands and seeps, snags, rocky slopes, open meadows and clear-cuts, cedar groves, caves, cliffs, and riparian areas.

Wildlife

Elk, black bear, bobcat, mountain lion, red fox, and coyote are common mammals that live in the watershed. Beavers, otters, and muskrats make their homes along streams and rivers. Many other animals such as frogs, snakes, rabbits, black tail deer, shrews, voles, and ground squirrels live in and around wooded areas, meadows, pastures, wetlands, and riparian areas.

Large numbers of resident and migrating birds can also be found at various times of the year throughout the watershed. These include raptors such as bald eagles, hawks, owls, osprey and falcons; waterfowl such as geese, ducks, loons, and herons; songbirds such as warblers, finches, bluebirds, blackbirds, robins, thrushes, wrens, nuthatches and chickadees; and others such as jays, flickers, hummingbirds, ruffed grouse, swallows, and woodpeckers.

Rare, Threatened, and Endangered Wildlife

Some species are declining in numbers across the Pacific Northwest and receive special protection through Federal or State laws. Federally listed 'Threatened and Endangered' species that range within areas of the Nisqually Watershed are the marbled murrelet, peregrine falcon, spotted owl, gray wolf, and grizzly bear. At the state level, the Washington State Department of Fish and Wildlife (WDFW) manages a 'Priority Habitats and Species' (PHS) program that lists: 1) *priority species* that require protective measures for their survival due to their population status, sensitivity to habitat alteration, and/or recreational, commercial, or tribal importance; and 2) *priority habitats* that are habitat types or elements with unique or significant value to a diverse assemblage of species. The WDFW also designates threatened and endangered species in Washington State pursuant to state law. Examples of state listed species found in the watershed include bald eagle, fisher, cascade fox, western gray squirrel, golden eagle, northern goshawk, pileated woodpecker, and bull trout.

Scenery

The Nisqually Watershed is a place of majesty and grandeur. The Upper Nisqually valley floor is dwarfed with magnificent views of the Cascade Mountains and Mount Rainier. Some areas are tightly contained within dense forest and views are restricted; other areas open up to beautiful pastoral views of open meadows, agricultural operations, forested mountainsides, and Puget Sound vistas. At a number of locations along highways within the watershed, there are magnificent views to Mt. Rainier. Wildlife is abundant and climate conditions keep vegetation green all year long.

Cultural Resources

Native Americans
A variety of Native American groups inhabited and utilized regional areas around Mount Rainier for thousands of years. Within the Puget Sound region, their territories were often associated with river drainages and watersheds, some of which originated on the flanks of Mount Rainier which was and continues to be the spiritual center for many of these tribes.

The Nisqually people were the primary group that occupied the Nisqually watershed and had several permanent villages along the river. The Nisqually's tended horses and relied on naturally open meadows for grazing, food gathering, and hunting. Salmon and elk were primary sources of food. Other tribes, from both the east and west sides of the Cascades, also used the region for hunting and trading.

Early immigrant settlers began arriving in the Puget Sound region in the mid-1800's and were generally welcomed into Indian communities. These early settlers were dependent on Indians for food, transportation, and labor, which contributed to cross-cultural cooperation and integration. A significant feature of this 'bridge' culture was the emergence of the Chinook Jargon, a limited trade language that facilitated expanded communication between Indians, settlers, and among Indians of different groups.

Nothing changed the lives of Pacific Northwest Native American Indians as significantly as immigration. By 1855 three treaties had been negotiated covering lands surrounding Puget Sound guaranteeing tribes reservation lands and assurance they could hunt and fish in their usual and accustomed places. Most Indians, however, did not move to reservations until the 1880's when immigration increased exponentially. Until then settlers were few, government was weak, reservations held few attractions, and settlers needed Indian skills and friendship.

European Settlement
In the latter half of the 1890's through the early 20th century, the Klondike gold rush in Alaska created a boom in the Seattle area as a center for outfitting and supplying prospectors on their way to the mines. Coal deposits were discovered in several areas around Mount Rainier and mines were developed in the Ashford and Mineral areas of the Upper Nisqually Valley. Coal mining declined in the 1920's when hydropower generated electricity and oil replaced coal as an energy resource.

German immigrants and homesteaders settled at the Elbe town site in the late 1800's and a plat for the town of Elbe was filed in 1903. In the early days Elbe functioned as a market center where loggers, Native Americans, and farmers came to exchange goods and produce. Elbe was also a stopover for visitors traveling to the newly created Mount Rainier National Park. The first logging and milling operation in Elbe started in the early 1900's and the Tacoma Eastern Railroad reached Elbe from the Port of Tacoma in the summer of 1904.

Ashford was platted in 1904. Tourism and coal mining prospects initially attracted settlers to Ashford, but logging and milling soon became the economic focus. The Tacoma Eastern Railroad extended its line from Elbe to Ashford in late 1904 and the town became an important log shipping center until the early 1940's. The logging industry has been in decline since the late 1970's and the town's economy has become increasingly dependent upon recreation and tourism.

The town of National was established in 1905 about one mile west of Ashford by the Pacific National Lumber Company. National was a company owned town that rented housing to its employees and operated its own general store. At its peak National was once one of the largest timber mill operations in the country west of the Mississippi, yet there is little left today to indicate a town was once there. Sawmill operations were ceased in 1944. The company holdings were sold and eventually bought by the Weyerhaeuser Company in the 1950's. Homes were gradually bought and moved off site. Today the Washington State Department of Natural Resources owns the land that was once the town of National.

Alder Dam was completed in 1944 to supply electric power to the City of Tacoma, aluminum plants from World War II, Boeing aircraft production, and ship yards. The resulting Alder Lake reservoir covered more than 200 acres of farm land including the original town of Alder which was relocated to its present location.

Today, state highway 7/706 is the primary gateway corridor to Mount Rainier National Park where approximately one million visitors a year enter and/or exit the park via the Nisqually Entrance. The Nisqually Land Trust has been working to acquire and manage critical lands to permanently protect the water, wildlife, natural areas, and scenic vistas along this corridor for current and future generations. Called the 'Mount Rainier Gateway Initiative' the land trust to date has conserved and restored over 3,400 acres in this corridor. The Initiative has enjoyed widespread support from local stakeholders, private timberland owners, and county, state, tribal, and federal partners, who together have helped raise $10.6 million for habitat acquisition over the past five years.