ATTACHMENT 3

Affected Environment –
Existing Conditions Natural & Built Environment

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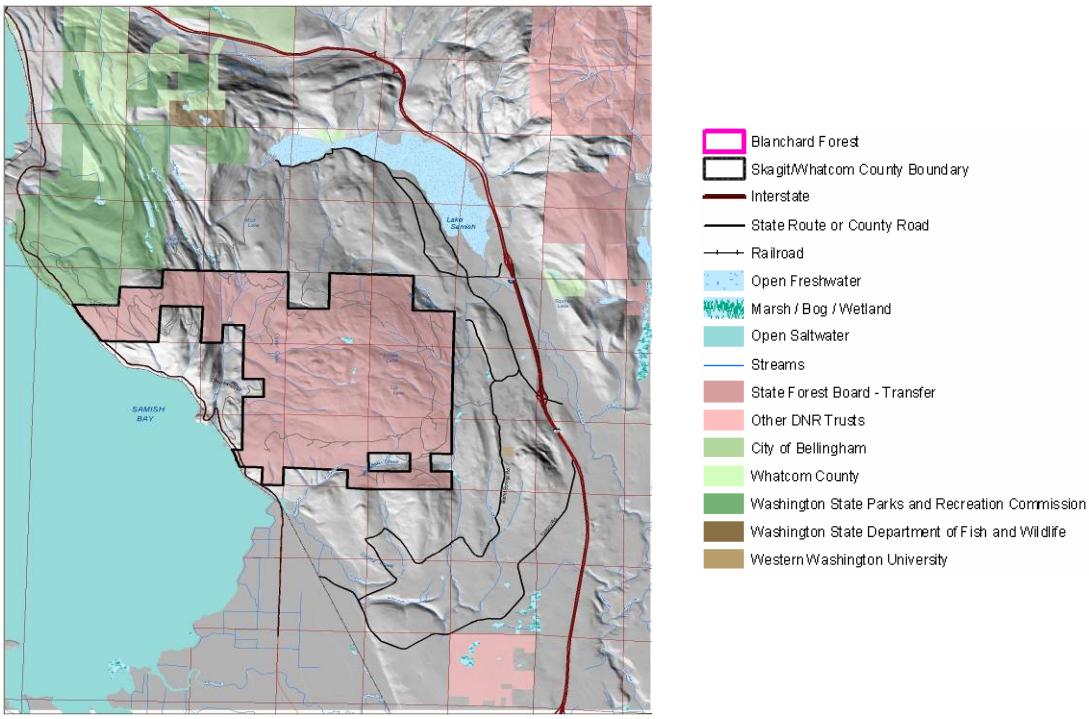
Introduction

Located atop the southern-most peak of the Chuckanut Mountain Range, the Skagit County State Trust Lands managed by the Washington State Department of Natural Resources are located approximately 5 miles south of Bellingham, 10-12 miles northwest of Burlington and Mount Vernon, 1.5 miles from Interstate 5 on its eastern edge, and adjacent to Chuckanut Drive on its western edge. Several names have been used to describe this acreage including Blanchard Mountain (Resources Northwest 1999), Blanchard Hill (USGS, date unknown), Chuckanut Mountain, and the Chuckanuts (Whatcom County Parks & Recreation 1996).

For the purposes of the non-project proposal, this document will refer to two regions. The first region, referred to as "Blanchard Forest" or "State Trustlands", represents the 4,827 acres of Skagit County Forest Board lands managed by the Washington State Department of Natural Resources (DNR). Conceptual management strategies proposed in this document apply solely to this acreage. To provide a broader context for Blanchard Forest and the ecosystems and corridors that extend beyond property lines, this proposal will also describe some aspects of the area lying south of Fairhaven, west of I-5 north of Colony Road, east of Chuckanut Drive, and totaling 23,376 acres. Ownerships surrounding the proposal site, Blanchard Forest, include 2,680 acres in Larrabee State Park, several private commercial forestlands, numerous residential parcels, as well as the lands managed by the Washington State Department of Natural Resources (DNR).

Figure 1. Blanchard Forest surrounding area map.



Data sets in this proposal that describe aspects of Blanchard Forest's natural and built environmental originate from several sources. The proposal uses DNR's Forest Resource Inventory System (FRIS) to identify and quantify dominant species, forest cover, and age classes. The proposal calculates Watershed Analysis Unit (WAU) acreages, stream channel distances, and Rain-on-snow (ROS) classification acreages using existing DNR corporate data. DNR's Northwest Region Roads dataset serves as the source for information on roads while a smaller DNR dataset on the Blanchard Forest provides mileages for hiking trails. Estimates of snag densities come from FRIS 2, a DNR model designed to "grow" DNR inventory data collected before 1996. The proposal obtains information on lands outside the Blanchard Forest but within the Chuckanut Mountain Area primarily through the Skagit County Assessor's Office.

In addition the proposal draws information from three previous assessments that have been conducted on portions of Blanchard Forest and Chuckanut Mountain Area: Chuckanut Mountain Trails Master Plan (1996), Blanchard Mountain Assessment (1999), and Evaluation of Blanchard Mountain Social, Ecological, and Financial Values (2002). The first, a plan for a comprehensive trails system throughout the Chuckanut Mountain Area, provides information on the area surrounding Blanchard Forest. The second, a report developed for the Department of Natural Resources, describes natural resources and land uses that pertain to Natural Area Program (NAP) criteria in and around Blanchard Forest. The third report, which came about through Washington State Legislature appropriated funding which was matched by the Northwest Ecosystem Alliance, evaluates social, ecological, and financial values of Blanchard Forest.

Natural Environment

EARTH

Topography and Relief

Blanchard Forest includes the majority of Blanchard Mountain, the highest peak in the Chuckanut Mountain Range. The Chuckanut Mountain Range, part of the Cascade Mountain Range, represents the only location where the Cascades touch the Puget Sound. The highest point of Blanchard Mountain is 2,300 feet elevation, with the majority of the surrounding lowlands generally under 500 feet in elevation. Blanchard Forest can be described as mountainous. Forested areas in the landscape range in slope from flat (0%) on small benches, over a small percentage of the area, to 90% over a significant percentage of the area, particularly on the western slope of Blanchard Forest. Rock outcrops, which make up a majority of the forested acreage of the landscape has slopes that range from 30-60. There are cliffs with vertical to near vertical slopes. The highest point of Blanchard Forest is 2,300 feet elevation, with the majority of the surrounding lowlands generally under 500 feet in elevation.

The eastern and northeastern sides of Blanchard Forest have slopes that extend down the mountain to Lake Samish and Friday Creek at approximately 500 feet elevation. To the northwest, the Blanchard Forest terrain blends into the Chuckanut Mountain Range at approximately 800-1800 feet elevation. Topography to the southern side of Blanchard Forest drops to the much smaller Colony Mountain (1000 feet elevation). The terrain south of Colony Mountain grades into the Samish River and Skagit River flood plain (Resources Northwest 1999).

Geologic Setting

Blanchard Mountain is a remnant of the Shuksan metamorphic complex and is composed of rocks that are more resistant to the forces of erosion and repeated glaciation that have shaped the general landscape. The Shuksan metamorphic rocks originated as deep-sea sediments and volcanic rocks that became welded to the edge of the continent 100 million years ago when the oceanic plate collided with the North American continent to form a subduction zone. The deep-sea sediments were metamorphosed to form phyllite and greenschist and the volcanic rocks were changed to meta-igneous rocks. Following this, a part of the Shuksan complex was displaced by a large thrust fault and became Blanchard Mountain. Much later, the fluvial Chuckanut Formation was deposited, and then folded by subsequent tectonic compression. The steeply inclined folded bedding of the 50-million-year-old Chuckanut Formation sandstone crops out at numerous locations to the north of Blanchard Mountain. This folding has created a series of parallel ridges, separated by narrow valleys in which bodies of water, such as ponds and

wetlands, have developed. To the south of the Shuksan Complex are Quaternary fluvial sediments and bluffs of Pleistocene glacial outwash (Geotz 1999).

The Oyster Dome, located within Blanchard Forest, consists of meta-igneous rocks in the form of a half dome, with a precipitous cliff on the west and gentler slopes on the east. Large angular slab and block talus lie at the foot of the cliff. The blocks may have fallen as a result of a large seismic event and the cliffs may actually be huge landslide scarps. These blocks comprise the structure of the Bat Caves (Goetz 1999).

The meta-igneous rocks of Blanchard Mountain remain as a prominent topographic feature more than 2000 feet above Puget Sound even after being repeatedly glaciated. It is believed that continental glaciers a mile thick covered this area. The last glacier receded about eleven thousand years ago (Goetz 1999).

Unique Physical Features

Caves are common within the boulder fields at the base of Oyster Dome, and also exist in some of the smaller boulder aggregations in forested areas west of the Oyster Dome. These caves have an intricate network of passages consisting of a series of small chambers linked by crawl-ways known to provide habitat for Townsend's Big Eared Bat (Cedar River Group 2002). The longest passages can be as much as several hundred feet long with rooms at several levels. Some of the chambers contain small streams, ponds or pools of water (Resources Northwest 1999).

A deposit of stilpnomelane sits in a road-cut created in Blanchard Forest in 1988. This mineral also is found in other areas of the North Cascade Mountains such as Mount Shuksan.

Though Blanchard Forest itself includes a limited amount of coastline frontage, its two contact points encompass an approximate three-mile stretch of upper Puget Sound.

Soil Characteristics

Soils: Soils are generally gravelly loams or gravelly silt loams, 1 to 4 feet deep over bedrock or glacial till. Significant acreage of the following soils series (USDA Soil Survey of Skagit County Area 1989) are mapped within Blanchard Forest: Chuckanut, Squires, Montborne, Van Zandt, Rinker, Dystric Xerochrypts, and Andic Xerochrypts. Rock outcrops are common on slopes steeper than about 70 percent. Talus is found at the base of cliffs and in the Oyster Dome Area.

Areas with 65 to 90 percent slopes typically are composed of Dystric Xerochrepts soils with interspersed rock outcrops. Dystric Xerochrepts

soils were formed from colluvium primarily derived from glacial till and sandstone. The rock outcrops in these areas limit the area available for forest harvesting (USDA 1989).

Extended periods of continuous rainfall and/or episodes of heavy rainfall are common to the region's climate and may result in soil saturation. Under saturated soil conditions, portions of Blanchard Forest are susceptible to land and debris slides (Cedar River Group 2002).

Potentially Unstable Slopes

Terrain Characteristics
Slope stability is a function of topographic relief, soil structure, ground moisture content and vegetational cover. (Gravity provides the energy force for the movement of surface material; thus any factor that reduces the ground's resistance to this downward force contributes to the mass movement of surface debris and bedrock. This can occur as a catastrophic event such as a landslide or as the more gradual creep of soil across a hillside.) Many of Blanchard Forest's slopes are steep especially along its western face, however few significant slides have been recorded.

Slope Movement Processes
The only known slide area, which reportedly occurs as the result of natural rainfall conditions every 20-25 years, is upslope of Chuckanut Drive near Chuckanut Manor (Cedar River Group 2002). The last significant slide occurred November 11, 1989 (Resources Northwest 1999) and impacted a business, residential property and the county road. The Department of Transportation periodically clears additional rock slides (slabs of sandstone) from Chuckanut Drive, north of Oyster Creek.

Seismicity
Western Washington is a seismically active area. Low magnitude earthquakes occur nearly every day and at least four earthquakes greater than Richter Magnitude 5.0 have occurred within a 50-mile radius of Blanchard Forest over the last 100 years. Studies by Brian Atwater (1987) conclude that much larger, perhaps greater than magnitude 8.0, subduction-zone earthquakes occur periodically along the Washington coast, the last approximately 300 years ago.

The Uniform Building Code (International Conference of Building Officials, 1997) classifies the Chuckanut Mountain Area as a Zone 3 earthquake hazard. The U.S. Geological Survey Earthquake Hazards Program lists a 10 percent probability of occurrence for a probabilistic ground motion value of 23.3 percent of the acceleration of gravity in rock occurring in a 50-year period for Bellingham area (U.S. Geological Survey, 2001).

AIR

Climate/Air quality

Blanchard Forest is subject to a maritime climate with cool dry summers and mild wet winters. It has diverse precipitation conditions as a result of its location adjacent to Puget Sound and at the base of Cascade Mountain Range. Average annual precipitation at the western base of Blanchard Mountain is approximately 30 inches, whereas the upper portions of the mountain and eastern slopes receive approximately twice that amount. The conditions on the lower elevation western slopes are comparable to the relatively dry conditions found on the San Juan Islands. In contrast, the higher amounts of precipitation at the summit and on the eastern slopes of the mountain are similar to those at the foothills of the Cascade Mountain Range. This wide precipitation variability, combined with the moist airflow off Samish Bay, has created unique microclimates that have led to a diversity of plant and animal life on the mountain (Resources Northwest 1999).

At present the Air Quality Index indicates the Bellingham area is rated as "Good," the healthiest rating. Air quality is regulated by the Federal Clean Air Act, which requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards for pollutants considered harmful to public health and the environment. An "air quality standard" is an established concentration, exposure time and frequency of occurrence of one or more air contaminants in the ambient air (surrounding outside air) that is not to be exceeded. Ambient air quality standards have been set for six principal pollutants: carbon monoxide, nitrogen dioxide, ozone, lead, particulate matter and sulfur dioxide.

In Skagit County, air quality is regulated by the Northwest Air Pollution Control Authority (NWAPA), one of seven regional agencies responsible for enforcing air quality laws in Washington. NWAPA regulates more than 400 sources of air pollution; including outdoor burning permits, and monitors the Air Quality Index. DNR's Smoke Management Plan also provides regulatory direction, operating procedures and advisory information regarding the management of smoke and fuels on the forestlands of Washington State. Its purpose is to coordinate and facilitate the statewide regulation of prescribed outdoor burning on lands protected by DNR and on unimproved, federally-managed forestlands and participating tribal lands. The plan is designed to meet the requirements of the Washington Clean Air Act.

Burning

Wildfire

According to the Department of Natural Resources records of classified fires, twenty-one fires occurred within or near DNR ownership between

1990 and 2003. All of these fires were less than 1 acre, with the exception of a 1.5-acre fire in 2003 and a 27-acre fire in 1993. The DNR categorizes twelve of these fires (including the 1.5 and 27-acre fires) as caused by recreation. The remaining fires were caused by debris, cigarette, or miscellaneous causes.

The potential for damaging wildfires to occur in the proposed area depends principally on two factors: the amount and type of human activities that could cause fires and the accessibility of the area to firefighters to suppress fires while they are small. Large quantities of logging slash created through forest management activities can also increase fire hazard.

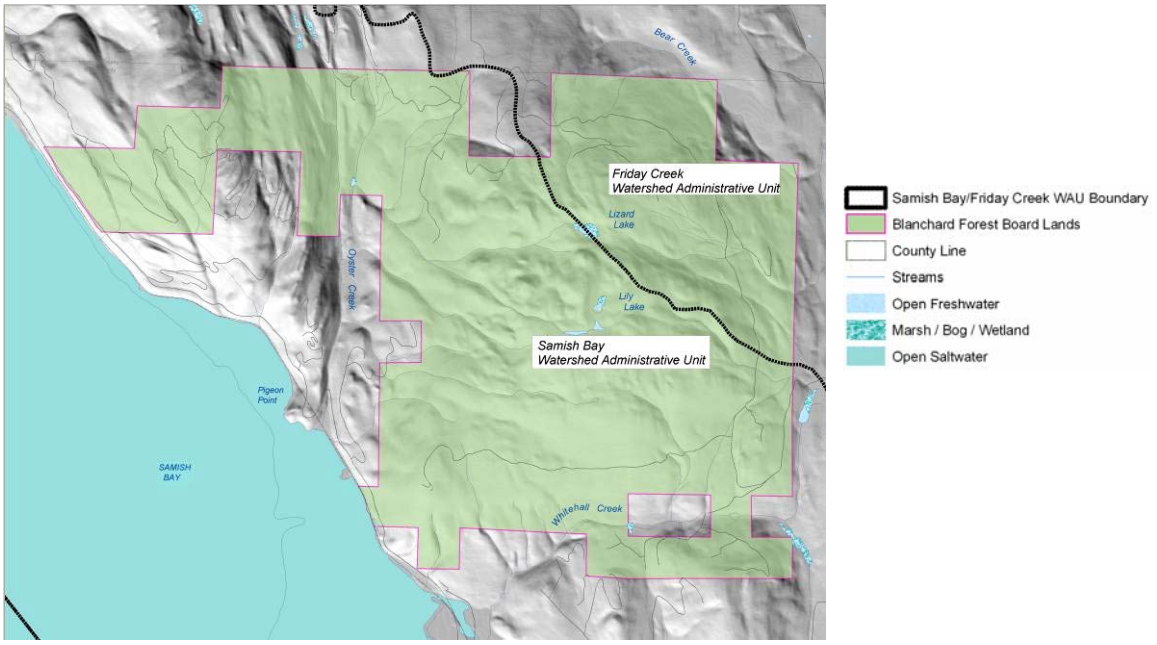
Fires, when they do occur, can affect air quality. Fires produce a variety of pollutants, including particulate matter, carbon monoxide, methane, and nitrogen oxides (EPA, 1996)

Sivlicultural Burning
Any burning conducted on Blanchard Forest is done in compliance with DNR's Smoke Management Plan, and state and federal clean air regulations.

WATER

Surface water movement/quantity/quality
Blanchard Forest lies within the Samish Bay watershed that includes two smaller Watershed Administrative Units (WAUs): Samish Bay and Friday Creek (Figure 2). DNR Corporate GIS data shows twenty-two miles of streams channels (including Types 2 through 5) within the Blanchard Forest.

Figure 2. Watershed Administrative Units in Blanchard Forest



The Samish Bay WAU (27,252 acres) encompasses approximately 78 percent of the ownership block (3,768). Oyster Creek is the largest stream within the WAU, carrying a year-round flow of water from the adjacent Chuckanut Mountain to Pigeon Point through a series of meanders and small cascades. The other streams either flow directly into Samish Bay, Oyster Creek or Whitehall Creek (Resources Northwest 1999).

Other fresh water features include two small lakes (Lily and Lizard), vernal pools, ponds and forested and non-forested wetlands surrounding Lily and Lizard Lakes and along the edges of Oyster Creek. The largest wetlands in Blanchard Forest are associated with Lily and Lizard Lakes, which are about 10 acres total located near the top of Blanchard Mountain. A small amount (estimated to be less than 30 acres) of forested wetlands also are present along the edges of Oyster Creek and at some small sites adjoining other streams in the area (Resources Northwest 1999).

The other 25 percent of Blanchard Forest (1,059 acres) is within the Friday Creek WAU. The largest of these streams extends easterly into Bear Creek, which then flows into Friday Creek that extends to the Samish River (Resources Northwest 1999).

Samish Bay contains approximately 1,100 acres of salt-water mudflats farmed for commercial shellfish production, primarily Pacific oysters and Manila clams. Recreation Shell fish harvest also occurs in portions of the bay (Resources Northwest 1999).

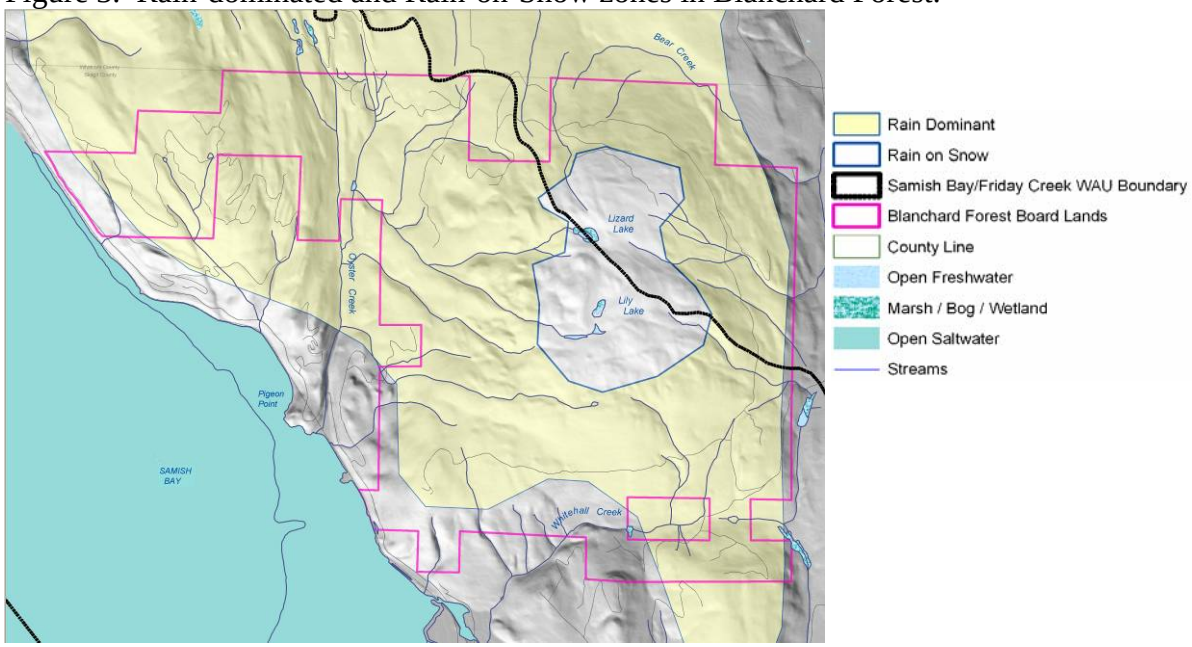
Floods

Flooding potential can increase when several tributaries flow to one large stream. With a significant increase in rainfall, the potential for that one stream to overflow also increases. However, the streams within Blanchard Forest are tributaries of several large streams and Samish Bay located around the base of the mountain. This drainage pattern results in dispersed flows thus reducing the potential of significant downstream flooding.

Potential sources of flooding can also occur in Rain-on-Snow (ROS) zones. Rain-on-snow events result from large amounts of precipitation falling on a snow-pack, creating high stream flows. A small percentage of land within Blanchard Forest lies within the ROS zone (14% or 686 acres), which extends from approximately 1700 to 2300 feet. The majority of the ownership (approximately 75 % or 3600 acres) lies within the rain-dominated zone that extends from approximately 700 to 1700 feet elevation. The remaining acreage, 11% (541 acres), resides in the

lowlands (<700 feet). Because the majority of Blanchard forest is located in the Rain Dominated Zone, the likelihood of peak flooding associated with ROS events is minimal.

Figure 3. Rain-dominated and Rain-on-Snow zones in Blanchard Forest.



Areas with hydrologically mature forests are least likely to generate large peak floods during ROS events. Hydrologically mature stands are those with at least 75 percent coniferous forest and a canopy closure greater than 70 percent or age 25 years or older (HCP 1997). An estimated 85 percent of the ROS zone in Blanchard Forest is currently considered as hydrologically mature (Resources Northwest 1999). This estimate includes the two recent harvests, Pecan shelterwood and Shenandoah thinning. As partial cuts, these areas will return to a mature state within a few years.

PLANTS AND ANIMALS

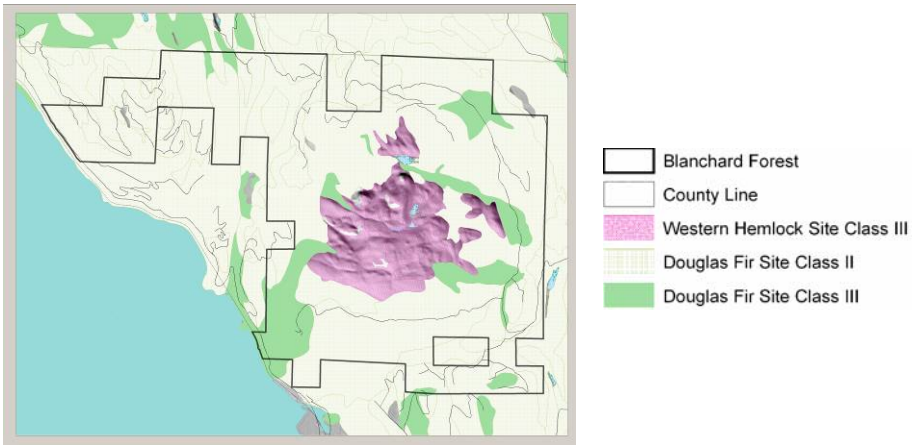
Forest Vegetation: Upland, Riparian, Wetland

Forests

The stands of Blanchard Forest represent a relatively large block of contiguous forest that provides cover, temperature moderation, vertical and horizontal structure, down woody material, nutrient cycling, water cycling and storage, and many other wildlife values, such cover, foraging and hiding. These older second growth forests (i.e., 41-70 years old) offer a habitat type that can also be found to the north in Larrabee State Park. The habitat features of large tracts of mature conifer forests are important for supporting species dependent on forest interior habitat and late successional conditions (Resources Northwest 1999).

Plant Species Composition, Structure and Site Quality
Forest stands can be described in terms of plant species composition, structure and site quality. Species composition refers to the variety or species richness of plants found within a given stand. Structure can be described as the variety of the vertical and horizontal arrangement of trees, shrubs, forbs, grasses, mosses etc. and also snags, dead and down material, and conditions on the forest floor. Site quality refers to a combination of factors (soil composition, depth, and fertility and climatic conditions) that influence plant growth. Site quality in Blanchard Forest (classified as the height of the dominant species at 50 years old) is mostly classified as Douglas Fir site 2 (2,003 acres) and 3 (846 acres), with some acreage in Western Hemlock site class 3 at the top of the Mountain. An overall characterization would be relatively good site productivity. Ninety-nine percent (4,793 acres) of the area is forested. Areas that are not forested (43 acres) are either covered by water (22 acres), rock (10 acres) or surface mine (1 acre).

Figure 4. Site Class Map of Blanchard Forest



Primary Tree Species[1]
Based on DNR's FRIS, Douglas-fir dominated stands represent approximately 68 percent (3,298 acres) of Blanchard Forest. A general breakdown of DNR-managed forestlands by dominant species is shown below:

Table 1. Tree species distribution across Blanchard Forest.

Dominant species:	Percent of Blanchard Forest (approximate)
Douglas-fir	68 percent

[1] FRIS inventory data was assessed in 2004 to determine primary tree species composition within Blanchard Forest, as determined by the highest basal area for tree species present within a given forest inventory unit (FIU).

Young Douglas-fir plantations	27 percent
Red alder	4 percent
Western hemlock	.1 percent

Stand Conditions and Developmental Stages
Stands are very dynamic, changing over time and progressing through different stages as trees become established, grow, and eventually die. In young stands, changes occur relatively rapidly and are readily apparent, but changes are more subtle and difficult to detect in older stands. Criteria used for delineating stand conditions in this document are the same as those used in the 2003 Draft Environmental Impact Statement on Alternatives for Sustainable Forest Management of State Trust Lands in Western Washington and for Determining the Sustainable Harvest Level (PSF, p. B-37). These stand development stages use a combination of structural attributes to classify stands, including tree size (diameter at breast height), percent canopy cover, number of canopy layers, and tree decadence habitat elements. The stand development stages include:

Ecosystem Initiation Stage
Ecosystem initiation can be characterized by two types of forest structure classes. In the first, sites are openings dominated by grasses and forbs. Some shrubs may be present. Tree seedlings are less than 1" diameter at breast height (DBH) and constitute less than 10 percent of the vegetation cover. Some larger trees remaining from the previous stand may be present, but provide less than a 10 percent canopy cover.

Stands can also include sapling trees ranging between 1-9"DBH. At the smaller end of this diameter range, saplins are similar to shrubs in structure; when combined with shrubs, canopy cover is between 10-69 percent. Shrubs contribute less canopy cover as saplings grow to the larger end of the diameter range. Scattered larger trees remaining rom the previous stand may be present, but provide less than 10 percent canopy cover. Grasses and forbs are present, their abundance varying with the amount of canopy cover. There is only one canopy stratum.

Sapling Exclusion Stage
Stand structures are composed for sapling trees that range from 1-9" DBH. They are structurally similar to shrubs at smaller diameters, and begin to resemble poles as they reach the upper end of the diameter class. Canopy cover exceeds 70 percent. Shrubs contribute less canopy cover as saplings grow into poles. Scattered larger trees remaining from the previous stand may be present, but provide less than 10 percent canopy cover. Grasses and forbs are likely scarce to absent. There is only one canopy layer.

Pole Exclusion Stage

Three stand structure types are included in this developmental stage. In the first, canopies are dominated by pole-sized trees (10-19"DBH), with a distinct understory canopy of saplings (1-9"DBH). Two or more canopy layers are present. Scattered large/giant relict trees may be present, but contribute less than 10 percent canopy cover. Although multi-storied, canopy cover from poles exceeds 70 percent, with another 10 percent or more canopy cover from saplings, creating a closed stand. A grass/forb or shrub understory is scarce to absent.

In the second, canopies are dominated by pole-sized trees ranging from 10-19"DBH and averaging greater than 70 percent canopy cover. The stand has a single canopy stratum. Scattered large/giant relict trees may be present, but contribute less than 10 percent of the canopy cover. Smaller trees, if present, provide less than 10 percent canopy cover. Grass/forb or shrub vegetation is scarce to absent.

In the third, canopies are dominated by large trees ranging from 20-29"DBH and averaging greater than 70 percent canopy cover. Some giant trees may also be present within the stand's single canopy stratum. Smaller trees, if present, provide less than 10% canopy cover. If present, grass/forb or shrub vegetation is scarce.

Understory Reinitiation Stage

There are four structural classes in this stage. Trees that define the first stage are between 10-19”DBH. Their canopies dominate the single-storied stand, creating from 10-69% canopy cover. Only one canopy stratum exists. Scattered large/giant relict trees may be present, but contribute less than 10% canopy cover. If present, canopy cover from other tree sizes is less than 10%. Grass, forb and shrub cover exceeds 10%, but abundance varies with the amount and variation in canopy cover.

Multi-layered stands that have canopies dominated by pole-sized trees characterize the second structural class, with a distinct understory canopy of smaller trees. Two or more canopy layers are present. Canopy cover from poles (10-19"DBH) ranges from 10-69 percent; saplings (1-9"DBH) contribute 10 percent or more canopy cover. Scattered large/giant relict trees may be present, but contribute less than 10 percent canopy cover. Grass/forb or shrub vegetation exceeds 10 percent cover, but varies in abundance relative to canopy cover.

The third stage is defined by trees 20-29"DBH, whose canopy dominates the stand. Some giant trees may also be present. Their combined canopy cover ranges from 10-69 percent and forms a single canopy stratum. Trees of other sizes may be present but constitute less than 10 percent canopy cover. Grass/forb or shrub understory cover exceeds 10 percent.

The final stage of understory reinitiation features multi-layered canopies dominated by large (20-29"DBH) trees. Some giant trees (>30"DBH) are usually present, along with one or more distinct canopy layers of smaller trees. Two or more canopy strata are present. Total canopy cover exceeds 70 percent with 30 percent or more cover from large and/or giant trees. Cover from giant trees does not exceed 30 percent. Canopy cover from poles (10-19"DBH) contributes another 10% or more; saplings (1-9"DBH) may also contribute 10percent or more canopy cover. Cover from grasses, forbs and/or shrubs exceed 10 percent, but densities are low, except in canopy gaps.

Developed Understory Stage
These multi-layered stands feature canopies dominated by large (20-29"DBH) trees. Some giant trees (>30"DBH) are usually present, along with one or more distinct canopy layers of smaller trees. Two or more canopy strata are present. Total canopy cover is from 10-69 percent with 10% or more cover from large and/or giant trees. Cover from giant trees does not exceed 30 percent. Canopy cover from poles (10-19"DBH) contributes another 10 percent or more; saplings (1-9"DBH) may also contribute 10 percent or more canopy cover. Grass, forb and/or shrub cover exceeds 10 percent, with higher abundance in canopy gaps.

Botanically Diverse Stage
These stands feature a multi-layered canopy dominated by giant trees (>30"DBH), with one or more distinct canopy layers from smaller trees. Giant trees provide 30 percent or more canopy cover; large trees are usually present but their canopy cover does not exceed 30 percent. Canopy cover from poles (10-19"DBH) contributes another 10% or more; saplings (1-9"DBH) may also contribute 10 percent or more canopy cover. Grass, forb and/or shrub cover exceeds 10 percent, with highest abundance in canopy gaps. Tree decadence elements are present, with 3-12 snags (>25"DBH) per acre and up to 150 linear feet per acre (LFPA) of logs (>20"average diameter).

Niche Diversification Stage
This stage has the same minimum structural criteria as the previous “botanically diverse stage”, with the exception of higher densities of snags and down logs. Snag densities (>25"DBH) increase to 13-24 per acre; up to 1200 linear feet per acre (LFPA) of logs (>20"average diameter) now exists.

Fully Functional Stage
This stage has the same minimum structural criteria as the previous “botanically diverse stage”with the exception of higher densities of snags and down logs. The number of snags (>25"DBH) now exceeds 24 per

acre; coarse wood accumulations exceed 3000 linear feet per acre (LFPA) of logs (>20"average diameter).

Old Natural Forests
The structural description is the same as the previous "botanically diverse stage", but classification criteria differ. The stand must be older than 250 years and must have never been subject to management activities. The age criterion also serves as an indicator of natural origin.

Current Forest Conditions on State Trust Lands[2]
Mid-seral forests in the understory reinitiation stage, pole exclusion and large tree exclusion developmental stages currently dominate state lands within Blanchard Forest with 2,786 acres of stands covering the block. Of these acres, approximately 2,117 acres contain stands between 61-80 years old, which is the typical rotation age on actively managed state lands. An additional 534 acres contain forest older than 70 years old, of which 48 acres is approximately 300 years old. When broken down by stand development stages used in the Alternatives for Sustainable Forest Management of State Trust lands in Western Washington (2003), Blanchard forest is composed of the approximate percentages per stage shown in Table 2.

Table 2. Age Class Distribution by Acreage on Blanchard Forest.

Acreage	Percent	Stand Development Stage
999	21	Ecosystem Initiation & Sapling Exclusion
473	10	Understory Reinitiation & Pole Exclusion
2786	58	Understory Reinitiation, Pole Exclusion, & Large Tree Exclusion
535	10	Botanically diverse, Niche diversification, fully functional, & Old Natural Forests
34	1	Permanently non-forested areas within the forestland of Blanchard Forest (i.e., power rights-of-way, communications sites, etc.) that could be included in the "open" stage

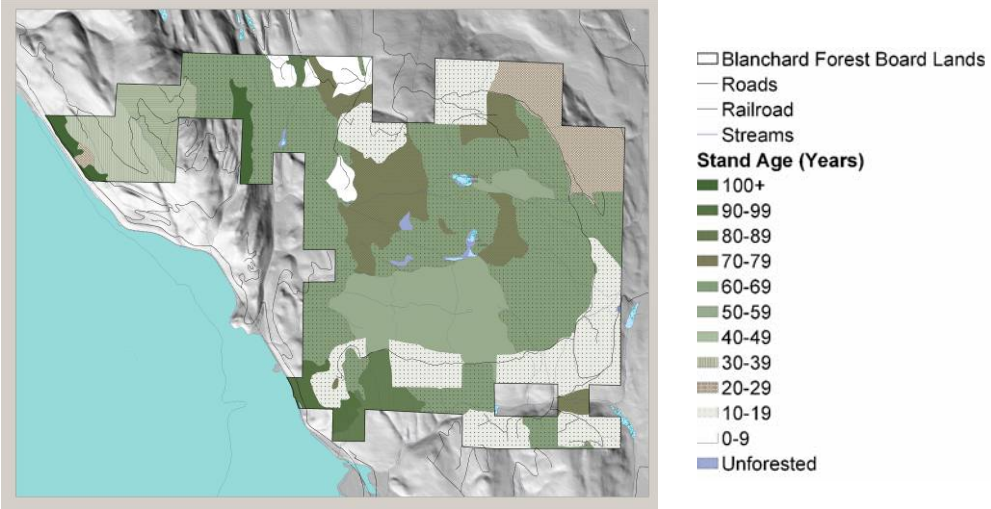
Approximately 68 percent of Blanchard Forest consists of coniferous forest between 21 and 70 years old. Coniferous species include western hemlock (*Tsuga heterophylla),* Douglas fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), Sitka spruce (*Picea sitchensis*), western white pine (*Pinus monticola*) and Grand fir (*Abies grandis*) can also be found. Nine percent of the area contains coniferous forest 71 to 100 years old, and two percent of the area is covered by stands greater than 100 years old.

[2] For this assessment of the affected area, stand conditions were identified and assessed using DNR's Forest Resource Inventory System (FRIS) database.

Deciduous stands cover approximately four percent of Blanchard Forest, and those are primarily limited to early successional stages in clear-cuts, riparian areas, and other sites with a high degree of soil moisture. There are approximately 398 acres of riparian management zones[3] along the 22 miles of streams in Blanchard Forest.

Red alder (*Alnus rubra*) is the primary deciduous tree species, with a fewer big-leaf maple (*Acer macrophyllum*), cherry (*Prunus emarginata*) and other species. Aspen (*Populus tremuloides*) stands (0.25 to 1 acre in size) also have been found in Blanchard Forest on the south and north sides of Blanchard Mountain, as well as Black Cottonwood (*Populus balsamifera*) and Pacific Madrone (*Arbutus menziesii*).

Figure 5. Stand age classes in Blanchard Forest



Biological Diversity and Mature Forests

Biological diversity has several aspects, which include the number (variety) and abundance (evenness) of species present in a stand; the genetic variation among individuals within a species; the variation in species and their abundance among stands and across landscapes; and the variation in presence and structure of canopy layers within and between stands and across landscapes. Different species tend to be associated with different forest stand conditions. In order to provide and maintain habitat for a wide variety of wildlife and plant species, a balanced distribution of forest stand structures and developmental stages needs to be developed and maintained across landscapes.

[3] Stream buffers predicted based on current stream channel types. The buffer lengths vary according to those types, i.e., Type 1 = 200 feet, Types 2 & 3 = 150 feet, Type 4 = 100 feet, and Types 5 and 9 = 0 feet. After field verification, stream types may change and therefore HCP buffer acreage may also change.

Fully functional as mature forest characteristics such as large snags, large fallen trees, canopy gaps, and structural diversity includes the balance of stand structures and developmental stages necessary to support such a broad variety of species. One of today's challenges in managing a commercial forest is to learn how to provide similar support to native plant and animal species in the mosaic of forest patterns that emerge from management activities.

Characteristics of forest stands important to many wildlife species include: the presence of large live trees; a layered canopy structure which is composed of understory trees and shrubs of varying ages and sizes; a variety of plant species; an abundance of large snags and live trees with cavities or other attributes needed for nesting, roosting and foraging; presence of large woody debris on the forest floor; and canopy gaps that allow a diverse, well-developed, but patchy understory (Franklin, 1997). These features of forest structure commonly develop at advanced ages in natural stands; however, their development may be significantly accelerated in younger stands by appropriate silvicultural treatments (Carey 1996). Achieving these forest stand characteristics throughout the landscape is important for maintaining biological diversity.

Wetlands

Wetlands are areas where water saturates or floods the soils for long enough during the growing season to develop anaerobic conditions, excluding plants that are not adapted to life in saturated soils. Wetland habitats include freshwater marshes, swamps, bogs, seeps, wet meadows, and shallow ponds. Wetlands can be forested, or dominated by shrubs, herbs, mosses, grasses or grass-like plants. Riparian areas are those areas associated with streams, including the stream itself, and the surrounding uplands that have a direct influence on the riparian ecosystem. Wetlands are characterized by a high diversity, density, and productivity of both plant and animal species. Wetlands and riparian areas provide some of the most important fish and wildlife habitat in forestlands. Many wetlands have rates of primary productivity that are among the highest in the world (Bigley and Hull, 2000). Wetlands also provide sites for groundwater exchange (recharge at some locations and discharge at others), sediment trapping, water purification, storm water detention and seasonal stream flow augmentation.

Maintaining the hydrologic functions of wetlands, as well as riparian areas, is essential to maintaining the health and function of the entire aquatic ecosystem and contributes to the health of the upland ecosystem as well. The most significant wetlands occur in the vicinity of Lily and Lizard Lakes. There are a several scattered wetlands greater than 0.25 acre in size on state-managed lands, all of which will have HCP defined

buffer protection[4] if these areas are harvested. There are frequent smaller wetlands and wet areas (less than 0.25 acres) located throughout the upland area, primarily associated with folds in the underlying sandstone formations. Wetlands less than 0.25 acres in size are not provided protective buffers under current management practices.

Snags and Down, Dead Trees

Dead trees in the forest in the form of snags and down woody debris provide a wide variety of important habitat and ecosystem functions. Sometimes snags and down logs are legacies from pre-disturbance communities which are inherited by the post disturbance forest, providing an important structural link for populations of invertebrates and fungi to the current community (Hayes, 2001). In other situations, they may be due to mortality from within the current stand. Snags (defined as dead or partially dead trees), and down woody debris (defined as any woody material that is dead and lying on the forest floor) contribute substantial vertical and horizontal diversity to forest structure. Both snags and down logs play vital roles in the maintenance of long-term productivity through nutrient cycling, immobilization and mineralization, soil development, productivity and retention, water retention and nitrogen fixation. Snags and down wood also have a role in the life cycle of mycorrhizal fungi, which are extremely important in nutrient cycling for tree growth. A great many wildlife species depend on snags and down wood, and in turn contribute to the functioning of the forest through transformation of energy and cycling of nutrients in wood, and mycorrhizal fungus spore dispersal (Rose, et. al. 2001).

Snag sizes and densities derived from DNR's growth modeling of the forest inventory data, called FRIS2, were assessed for Blanchard Forest, showing the majority of the acreage to have 1.01 – 3.00 snags (dead trees > 20" dbh) per acre. Some areas, primarily in the northeastern section of the ownership, have snag densities of 3.01 – 5.00 snags per acre. Few areas contain more than 5.00 snags per acre or less than 1 snag per acre.

Rare plant species and communities

Species: A survey for rare plants conducted on May – June 1999 for the Washington Natural Heritage Program (WNHP) on Chuckanut Mountain Area, parts of which include Blanchard Forest, found no rare, sensitive, threatened or endangered native plants (Zika 1999). *Montia diffusa* is the only WNHP rare plant previously identified in Blanchard Forest (in 1989 report by Ralph and Dorothy Naas). Attempts to relocate this population in surveys conducted during May and June of 1999 were unsuccessful,

[4] For wetlands .25 –1.0 acres in size, a 100-foot forested strip, also referred to as a "buffer" will be delineated. For wetlands > 1.0 acres, a "site class buffer"(usually 150 feet or wider) will be delineated.

although a closely related species, *M.sibirica*, was common at the site and in the vicinity (Zika 1999).

Another rare species (*Carex magellanica* spp. *Irrigua*) may have been sighted during Zika's 1999 survey on an island in Lily Lake, however, that observation was made from a distance due to high water levels, and the plant did not appear to be flowering at the time.

The only other systematic botanical survey known to have occurred within Blanchard Forest was one conducted by J. Duemmel (unpubl.) between 11 June and 10 October, 1998 along the Lily Lake trail in which neither *Montia diffusa* nor *Carex magellanica* spp. *Irrigua,* nor any of the species listed above were located (Resources Northwest 1999).

As of June 10, 1999, the WNHP database identified eight significant plant species which may occur within Blanchard Forest or within 10 miles of that area. This is not a complete inventory, but it reflects the current status of the WNHP database (Resources Northwest 1999).

Communities: Rare plant communities found outside Blanchard Forest consist of old-growth coniferous forests in Larrabee State Park and near Cedar Lake. A wetland also is located approximately seven miles northeast of Blanchard Forest in the Lake Louise Natural Resources Conservation Area (Resources Northwest 1999).

Animals

Wildlife Species Native to the Area
Wildlife of the Chuckanut Mountain Area is diverse for northwest Washington and includes unique concentrations of certain vertebrate and invertebrate groups. Species occurrence on Blanchard Forest was determined from Blanchard Mountain Assessment (1999) and includes 227 vertebrate species including: 16 fish; 10 amphibians; 6 reptiles; 150 birds; 45 mammals; and 198 moth and butterfly species (Resources Northwest 1999).

Due to the coastal aspect of the mountain, 22 vertebrate species are primarily marine-associated, while the remaining non-fish species are terrestrial or freshwater associated. At the time of this assessment approximately eight percent (18 species) of the non-fish vertebrates are listed as threatened or endangered species, or as a species of concern at the federal or state level. Although this information suggests a high degree of species diversity and regional species richness, it does not represent all of the wildlife species associated with Blanchard Mountain (Resources Northwest 1999).

Federal and State Species of Concern

Many wildlife species use the Blanchard proposal area. The bald eagle (*Haliaeetus leucocephalus*) which has been likely and is still likely to occur in the Blanchard Forest, is listed as threatened by the U.S. Fish and Wildlife Service (USFWS). At least one known nest territory is located within the proposal area, near Whitehall Creek. A second nest was recorded in 2005 and is just outside the Blanchard Forest area to the north within the Larabee State Park.

Surveys to Pacific Seabird Group (PSG) protocol have been conducted on potentially suitable marbled murrelet (*Brachyramphus marmoratus*) habitat, a federally listed threatened species, within the Blanchard Forest. Within the Blanchard Forest, 209 acres of potential murrelet habitat were identified by the *reclassified* and *reclassified-plus* models. Subsequent field delineation determined that within the potential habitat only 79 acres are actually suitable habitat. All suitable habitat was surveyed for murrelet occupancy (2001 – 2005) using the Pacific Seabird Group Insland Survey Protocol. Occupancy was established at one 12.4 acre site in 2004, and presence noted at a nearby 18 acres site in 2004-05.
All suitable habitat is currently deferred from harvest. It is anticipated that small amounts of additional potential habitat may be identified primarily during reconnaissance for future harvest activities.

Other wildlife species of interest that may occur in the Blanchard Forest include the osprey (*Pandion haliaetus*). Ospreys migrate over the area, and they have been reported to nest near Colony Creek. Pileated woodpeckers (*Dryocopus pileatus*), a state candidate species, are relatively common and are known to frequent the large old growth stumps (Douglas fir), snags and downed logs for carpenter ants and other preferred prey. They also forage in live Douglas Fir trees and dead Western Cedars. The number of pileated woodpecker breeding pairs on Blanchard has not been determined.

Blanchard Mountain provides essential habitat for numerous species of special concern. Most notable in this regard is the Townsend's big-eared bat (*Coryhorhinus townsendii*) that resides and breeds in the caves (Cedar River Group 2002). The Townsend's big-eared bat is a federal species of concern and state candidate species, and it also is the bat species of primary interest on Blanchard because of documented cave hibernacula and probable maternity or nursery sites in caves on the mountain (Senger 1991). The habitat available on Blanchard is a significant factor in the survival and successful reproduction of these bats since they do not migrate much further than 30 miles. One of the caves in Blanchard Forest apparently serves as the only known regional winter hibernation site for the Townsend's big-eared bat.

The population status of some of these species, such as the western toad (*Bufo boreas*) is of concern to biologists due to the loss of breeding habitat and disappearance of the toad from known breeding areas. US Fish and Wildlife website lists *Bufo boreas boreas* listed as a state and federal species of concern.

Other species of interest include Vaux's swift (*Chaetura vauxi*), olive sided flycatcher (*Contopus borealis*) and willow flycatcher (*Empidonax trallii*).

Forest Habitats: Quantity and Quality
Blanchard Forest is currently dominated by mid-seral forest stands in the stem exclusion seral stages. [See "Forest Vegetation" for a description of the forest age distribution, species and structural character.]

Human development surrounds Blanchard Mountain, restricting connectivity between the Forest and the rest of the Cascades. Beyond Blanchard Forest boundaries, to the east is I-5, and residential developments to the south (to Colony Road). To the northwest, however, there is potential for limited connectivity to the Larrabee State Park which also connects to the Interurban trail, part of the Whatcom County Park system. North of this park lies Fairhaven and I-5. This kind of development restricts migration to and from the Forest to wildlife capable of navigating an urban/rural interface.

Habitat for and Numbers or Diversity of Species of Fish
Seven anadromous and six resident fish species have been identified in the Friday Creek and Samish Bay WAUs within the Chuckanut Mountain Range Area. Anadromous fish species in the watersheds as a whole include fall Chinook, coho, chum and sockeye salmon, winter steelhead, sea-run cutthroat trout and smelt. Resident fish species include cutthroat trout, eastern brook trout, kokanee, squaw fish, peamouth chub and sculpin. All anadromous species which are a mix of native and non-native stock, except smelt, are listed as a threatened, candidate or species of concern at the state or federal level.

Within the Friday Creek WAU, Friday Creek, the lower reaches of Bear Creek, and an unnamed tributary to Bear Creek support anadromous fish species. Within the Samish Bay WAU, Whitehall Creek, Oyster Creek and Colony Creek all support anadromous fish to an extent. Whitehall Creek is impassable approximately ½ mile upstream from Samish Bay, due to an old Blanchard community water reservoir. No fish barriers exist in Colony Creek. And the upper reaches of Oyster Creek support only coho and sea run cut throat, the only two species capable of passing over the cascades and falls.

Energy Resources (Coal, Oil, Gas, Hydropower)

There are no known sources of coal, oil, gas, or hydropower within Blanchard Forest. However, approximately 500 feet of a gas line runs through the eastern edge of Blanchard Forest.

Mineral Resources (Sand, Gravel, Rock, Metals)

High quality sand, gravel or rock deposits for use as construction aggregate material are limited within Blanchard Forest.

DNR has extracted rock and gravel from State land for forest road construction and maintenance. This material is from small borrow pits, generally less than one acre in size. New pits of this nature would be constructed in compliance with all HCP and Forest Practices rule requirements.

Metallic Minerals

There are no known or reported metallic mineral deposits or occurrences in or near Blanchard Forest. The geologic setting in the management area is not favorable for the formation of these types of deposits.

Forest Resources (Timber, Special Forest Products)

Timber Resources

Information about existing timber resources comes from the department's Forest Resource Inventory System (FRIS). Inventory was conducted on Blanchard Forest lands in 1995. More than 44% of Blanchard Forest area is of commercial size in the medium and large saw timber size classes.

Current state law requires the department to manage state forestlands to produce a sustainable, even-flow harvest of timber, subject to economic, environmental, and regulatory considerations (Policy for Sustainable Forests). The department implements this policy by setting harvest levels over a 10-year period. The anticipated minimum rotation age for regeneration harvests on westside stands is 60 years; however, to meet specific objectives, the department may cuts stands as young as 45 years old or stands older by several decades.

For commercial harvests the department uses regeneration harvests, intermediate pole harvests, small wood thinnings, and partial cuts. The most common harvest method used in the project area has been regeneration clearcuts, a system that removes all of the volume in an existing commercial timber stand during harvest with the exception of reserve trees and snags left under green tree retention. Intermediate harvests of cedar and Douglas-fir poles are practiced where specific site and stand conditions are met.

The focus of commercial thinnings is maintenance of a high growth rate in stands by manipulation of stocking levels and without reduction of the total value of the stand over the expected rotation. The emphasis of a late thinning or partial cut is the intermediate removal of volume from stands without compromising the commercial characteristics of the residual stands.

Factors significant to successful commercial timber harvests include suitable and reasonable access to sites, sufficient quantities of wood to support economically viable harvest operations, and timber of suitable size and quality. A related and important impact to harvestability is the choice of logging method. Cable and ground based systems are the most commonly used with ground based yarding limited to slopes less than 25 percent. Helicopter yarding is utilized where road access is unavailable. The practicality of using helicopters is primarily a function of flight distance and elevation between the logging unit and log landing area; yarding distances beyond ¾-mile downhill or ¼-mile uphill make use of helicopters unfeasible.

Special Forest Products

Special forest products are forest products other than timber that are harvested for a variety of personal and commercial uses such as edibles, floral products, Christmas greens, and pharmaceutical extracts, e.g., Cascara bark, Pacific yew, St. Johns Wort. Elements critical to the success of management, harvesting and marketing of commercial special forest products are:

- access to remove a commercial volume of a product in an economically feasible manner,
- quantity to support an economically viable harvest operation, and
- quality products to meet commercial standards.

Other related factors include harvest site in relation to slope, product density, distance to market and road conditions, exclusive vs. non-exclusive harvest sites, and disease and insect damage.

Carbon Sequestration

The term forest “carbon sequestration,” also called “carbon offset,” refers to a forest’s ability to store carbon and counterbalance carbon dioxide emissions. Forests draw carbon dioxide out of the atmosphere through the process of photosynthesis. Through the process of carbon sequestration, actively growing forests can offset atmospheric carbon emissions from other sources, sources often associated with human activities. Carbon thus sequestered may have financial value in offsetting these atmospheric missions of carbon through regulatory and other mechanisms, constituting a potential (emerging) revenue source for land management activities. This section assesses prospects in the Blanchard landscape for carbon sequestration, recognizing that:

- The Blanchard Forest landscape is small relative to other forested tracts, thus the carbon sequestration opportunity offered in the Blanchard is likely to be small relative to other forested tracts.
- The original old-growth forest on most of the Blanchard landscape has been replaced by re-growth forest. Carbon sequestration prospects are reported to improve significantly in re-growth forest compared with conversion of old growth forest, even when decomposition processes are taken into account (Harmon et al., 1990; Cohen et al., 1996).
- The department has little ability to influence off-site carbon storage.

In general, forests sequester carbon and reduce carbon emissions in four ways: 1) carbon is stored in the forest (stems, foliage, litter, roots, soil), 2) in products produced from the forest, 3) through biomass conversion to energy uses, displacing the use of fossil fuel and 4) through product substitution for fossil-intensive products (Bowyer et al., 2002). Forest carbon is increased through afforestation from non-forest uses of the land. Forest carbon increases with age as the trees grow until harvest or natural disturbances occur. Natural mortality or disturbance and decomposition limit the amount of carbon that can be stored in the forest. Harvesting for long-lived products on the other hand, increases the carbon stored in products from one rotation to the next if the product life is greater than the rotation length. Wood used in buildings lasts longer than a forest rotation, while other uses may not. Therefore the sum of forest and (long-lived) products carbon is not stable but increases over time as the inventory of product in buildings increases. To the extent that short-lived product enters landfills, the amount of long-term carbon accumulation depends upon the decomposition rate. However, if the shortlived product and processing residuals are burned for their energy values (co-generation), the energy produced can permanently displace fossil fuels much like long-lived products, albeit storing less carbon because of the relatively low boiler efficiency for wet wood. Lastly, any deferral or reduction in harvesting results in the substitution of fossil-fuel intensive products for wood products, increasing net carbon emissions.

As a consequence, long-rotation management or other harvest deferrals result in non-wood substitution corresponding to the period of reduced harvest, thus storing less carbon in total than short-rotation management, even though there will likely be more carbon stored in the forest. In contrast, short-rotation intensive management accelerates the time availability of wood and the amount, decreasing non-wood substitution.

In summary, while afforestation and intensive (sustainable) forest management can increase or maintain the amount of carbon stored in the forest and products, harvest set asides and/or longer rotations can have the

opposite impact. Forests that are left to decompose whether over time or by fire represent lost opportunities to capture the product storage and energy value of wood, resulting in increased use of fossil-fuel intensive products. Intensively managed forests store more carbon in products more quickly than less intensively managed forests, and are thus responsive to an objective of increasing carbon storage as an offset to the consumption of fossil fuels.

Scenic Resources/Viewsheds

The abrupt topographic rise from Puget Sound provides several view-points from the mountain. Two examples are the Samish Overlook and the Oyster Dome, which have the most notable views of Samish Bay, islands, Canadian Cascades and the Skagit County agricultural areas. Several views also occur with isolated outcroppings, in areas where roads, harvesting or amenities create openings in the canopy, and along both DNR and user built trails on the western side of Blanchard. Currently, road access to and across DNR-managed land is gated, and the quality of existing roads does not meet public travel needs. In addition, the points have not been managed to maintain views.

Built Environment

Environmental health

Release of toxics/hazardous materials

Sections of road access to and across state land are gated, reducing the risk of abandoned vehicles, garbage, and oil and other fluid spills.

Risk of Slides, Floods, Debris Flows

Many of Blanchard Mountain's slopes are steep especially along its western face. The only known slide area, which reportedly occurs as the result of natural rainfall conditions every 20-25 years, is upslope of Chuckanut Drive near Chuckanut Manor (Cedar River Group 2002). Large slope movement processes have impacted businesses, residential property, and roads. The last significant slide occurred November 11, 1989 (Resources Northwest 1999). In addition, the Department of Transportation periodically clears rock slides (slabs of sandstone) from Chuckanut Drive, north of Oyster Creek

Risk of Explosion and Fires

The risk of explosion in the Blanchard Forest is very limited, though local concerns were heightened by the June 1998 Olympic Pipeline incident nearby.

Aesthetics

The "visibility" of forestry operations is influenced by factors including the position and distance of the viewpoint from the activity, the topography of the land, the type of operation and the intensity and/or concentration of activities. The observer's personal values and background influences whether the reaction to the visual impact is negative or positive, as does what is revealed or hidden as a result of the activity, and how long the activity is in view.

State trust lands are visible from a number of locations throughout the proposal, including homes, interstate highways, county roads, city roads, pleasure boats, forest roads, and State Ferries. Local residents see these viewsheds most frequently and for the longest intervals. Residences are concentrated to the south and east of Blanchard Forest.

When topography, distance and other land features are considered, general areas of state trust lands can be identified as having "moderate" or "high" visibility from these residential areas.

After local residents, recreational users see viewsheds of Blanchard Forest most frequently. For many of these users, including hikers, horseback riders, mountain bikers, viewsheds tend to be from a closer proximity such as from trails. These users also tend to see outward from various scenic overlooks in Blanchard Forest to Puget Sound, or the flat lands of Skagit County.

Recreation

Current recreational use is a combination of formal and informal use. Two campgrounds are located in Blanchard Forest and are open to overnight use, as are all of the trust lands. There are two DNR maintained-trails that are opened to non-motorized, multiple use traffic (i.e., hikers, equestrians, and mountain bikers). In addition to the two DNR trails, there is an extensive user built trail system including a length of the Pacific Northwest Trail. There are plans to close the Samish Overlook from 1hr past sunset to 1hr before sunrise. Typical activities are hiking, hunting, mountain biking, horseback riding, hang gliding and paragliding, mushroom and berry picking.

Hangliding/Paragliding: Currently there is a hang gliding/paragliding launch from Samish Overlook.

Hiking: The 1,200 mile Pacific Northwest Trail, running from the Continental Divide to the Pacific Ocean, crosses through Blanchard Forest. This trail passes through the Rocky Mountains, Selkirk Mountains, Pasayten Wilderness, North Cascades, Olympics and the wilderness coast. The trail crosses three national parks and seven national forests. A trail

map on an Internet website shows the trail passing through DNR-managed land. Hikers also have access to 12 miles of trail through a series of trails located on the mountain, as well as two campgrounds.

Mountain biking: Mountain biking activity within the Chuckanut Mountain Area has increased dramatically within the past few years and will likely continue to increase. These include increasing popularity of the sport, easy access for a nearby population, exposure in national publications, and restrictions or bans on mountain biking in other areas, such as USDA Forest Service wilderness, DNR-managed Natural Resource Conservation Areas, national and state parks.

Equestrian use: Horseback riding is popular on state lands on Blanchard Mountain. Members of the Backcountry Horse-riders Association actively use and maintain sections of the trail system.

Education: The stilponmelane formations on Blanchard Forest are sought out by mineralogists and local science classes.

Off-road vehicle use: ORV use is limited to existing roads. There are instances of ORV trespass on the trail system as well as on state trust lands. The existing road system is insufficient to support ORV use.

Historic and Cultural Preservation
No locations of historic or cultural significance have been identified.

Agriculture
Significant agricultural use is not anticipated since all of the lands designated for long-term agriculture in the Skagit County Comprehensive Plan lie outside Blanchard Forest.

Silviculture
The department implements a range of silvicultural practices including natural and artificial reforestation, and mechanical site preparation, vegetation control, fertilization, pruning, precommercial and commercial thinnings, partial cuts, and regeneration harvests. Noncommercial activities are those that may alter the biological composition of a stand but will not involve commercial commodity production or removal from the site.

Transportation

Transportation Systems (Forest Roads, Trail Systems)
There are 24 miles of active and orphaned forest roads on Blanchard Forest. Orphaned roads are roads or railroad grades that have not been used for forest practices activities after 1974. Many of these roads are overgrown or closed off, but have not satisfied the abandonment process.

The road density of active roads is 2.5 miles per square mile. These roads are sufficient for conventional harvest of about 25 percent of Blanchard Forest. Road density is provided for comparison in this document only. Other geographic areas will have different ideal road densities, due to different terrain or concentration of environmentally sensitive features.

Forest Road Maintenance and Abandonment Plans

Washington law (WAC 222-24-051) requires that forest landowners assess all active and orphaned roads on their lands by 2005. All active roads must meet current legal standards by 2015. As road systems are assessed, landowners submit a plan for accomplishing the maintenance and abandonment work. This plan is referred to in the Forest Practices rules as Road Maintenance and Abandonment Plan (RMAP).

Locally, DNR completes RMAPs in three stages: initial assessment, prescription, and implementation. Initial assessment includes an aerial photo search for orphaned grades and driving or walking all active and orphaned roads to find problems. The prescription phase develops a specific plan for maintenance work. This occurs shortly before the equipment moves in to perform the implementation phase. The majority of RMAP repair work is done by DNR crews.

Traffic Patterns

Roads on DNR-managed land often continue onto private ownership. Neighboring landowners may also contribute to traffic on DNR-managed roads. Legal easements govern the use of these shared roads.

Traffic generally consists of trucks hauling logs and rock. Roads that access communication sites or other utilities may be frequently used for maintenance of those facilities.

The forest road network joins with public streets at Barrel Springs Road. Trucks that leave DNR lands exit through one road system and either head north on I-5 or south, depending on their destination.

This route passes through one or more school zones. The level of traffic on a particular road varies, depending on where forest management activity is occurring. This traffic is also seasonal in nature, with more truck trips occurring during drier weather.

Water, Rail and Air Traffic

DNR management of its lands within the Blanchard assessment area, will not have a significant impact on water, rail or air traffic. Products will be transported by truck and no railroad lines pass through Blanchard Forest. Helicopter logging will be considered in harvest planning, with minimal effects on air traffic.

Public services and utilities

PUBLIC SERVICES & UTILITIES

Relation to Trust Income

State trust lands in the Blanchard Forest generate revenues for 01 Trust, based on timber harvest and other commercial activities carried out on the Forest lands**.** Of the total revenue generated per year from timber harvests, 22% is allocated to the DNR for land management and the remaining 78% goes to the Forest Board according to the percentages displayed in Table 3.

Table 3. Distribution of Blanchard Forest State Trust Land Board Net Revenue

% of Annual Revenue	Beneficiary
33	Skagit County
23	State School Fund
23	Burlington-Edison Maintenance & Operations
18	Burlington-Edison School Bonds
2	Hospital District #304
1	Port District #2

Action by the Board of Natural Resources (BNR) may change the total amounts distributed to the beneficiaries; the discretionary authority of the BNR is also specified in law.

Fire

Fire protection is provided on improved property by four Skagit County fire districts 5 and 14. These districts also provide emergency medical response. DNR provides fire protection to state and private forestland. In the event of large wildland fires multi-agency teams of local, state and federal partners cooperate in firefighting efforts.

Police

The Skagit County Sheriff is responsible for all areas within Blanchard Forest.

Schools

Burlington Edison School District No. 100 serves students near Blanchard Forest and who live in Skagit County. Bellingham School District 501 serves students near Blanchard Forest who live in Whatcom County. No schools are located within the Forest.

Parks and Recreation Facilities

DNR-managed land in Blanchard Forest offers two campgrounds with 9 sites total, 2 trailheads, and 1 heavily used day-use area. Adjacent to state trust lands there are parks and recreation facilities that serve the surrounding community. These include Larrabee State Park and the Inter Urban Trail System.

Communications
There are no communications sites on Blanchard Mountain.

Water/Storm Water Management
N/A

Sewer/solid waste management
Since most DNR-managed lands in Blanchard Forest are designated for commercial forest use there had been no need for sewer or wastewater planning. Solid waste management has been limited to cleanup of unauthorized garbage dumping because there is no residential use of the lands. There is an estimated 35,000-50,000 user days per year and no permanent sanitation facilities.

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