

WILDERNESS EVALUATION

Entiat-Chelan - 617041

162,051 acres

OVERVIEW

The original Chelan inventoried roadless area (IRA) consisted of portions lying both north and south of Lake Chelan. The original Forest Plan further divided the area north and south of Holden Village (in the Railroad Creek drainage) and described the different areas in Appendix C of the FEIS of the Wenatchee National Forest Land and Resource Management Plan. The area north of Lake Chelan is contiguous with the Sawtooth IRA and has now been added to that IRA for wilderness evaluation purposes. There are also three other IRAs (Entiat, Myrtle, and Rock Creek) that are all contiguous with each other and the original South Lake Chelan portion of the IRA. For wilderness evaluation purposes, contiguous IRAs should be evaluated together as potential wilderness areas (PWA). The South Lake part of Chelan IRA and Entiat IRA, Myrtle IRA and Rock Creek IRA have been combined into what is now called the Entiat-Chelan PWA.

The evaluation will continue to distinguish between the original inventoried roadless areas with subtitles of: Chelan Portion (south of the Lake Chelan portion of original IRA), Entiat Portion, Myrtle Portion, and Rock Creek Portion. However, the summary statements for availability, capability, and need will consider all four portions together.

History

Chelan Portion

This area was originally suggested for scenic area consideration in 1915 as the Chelan-Sawtooth. As a result of the Washington State Wilderness Evaluation and subsequent Act in 1984, area F6031 and adjacent lands extending to Lake Chelan became part of the Glacier Peak Wilderness. An additional (northern) area became part of the Lake Chelan Sawtooth Wilderness. In all, 62,386 acres of the original area became wilderness. The remaining area was identified as an inventoried roadless area in the 1990 Wenatchee National Forest Land and Resource Management Plan.

The 2006 inventory removed approximately 599 acres from previous inventory due to nonconforming uses such as road construction and logging. About 1,465 acres were added to the previous inventory as they met the criteria for a potential wilderness area as described in Forest Service Handbook (FSH) 1909.12, Chapter 70.

The following chart depicts the 1990 Wenatchee National Forest Land and Resource Management Forest Plan direction for the 2007 potential wilderness area.

Table 1--Management area percentages (rounded) - Chelan

EW1	GF	RE2A	RE3	RE4	ST1	ST2	W
1%	5%	2%	77%	8%	5%	2%	1%

Entiat Portion

Portions of this area were allocated to dispersed roadless recreation through the Multiple Use Plan and Unit Plans. These were the North Fork Entiat and Mad Lake portions of the IRA.

The 2006 inventory removed approximately 7,163 acres from previous inventory due to nonconforming uses such as road construction and logging. About 6,885 acres were added to the previous inventory as they meet the criteria for a potential wilderness area as described in FSH 1909.12, Chapter 70.

The following chart depicts the 1990 Land and Resource Management Plan direction for the 2007 potential wilderness area.

Table 2--Management area percentages (rounded) - Entiat

GF	OG1	RE2A	RE3	ST1	ST2	WS1
12%	1%	39%	15%	7%	27%	1%

Myrtle Portion

Originally allocated to unroaded dispersed recreation under the Forest multiple use plan and Chelan Unit Plan. The area was studied for wilderness under RARE II as part of Glacier Peak Area No. E6031 and not recommended for wilderness. Over 12,000 acres of the RARE II inventoried roadless area was added to wilderness in 1984.

No acres have been added or removed from this PWA since the completion of the 1990 Wenatchee National Forest Land and Resource Management Plan.

The following chart depicts the 1990 Land and Resource Management Plan direction for the 2007 potential wilderness area.

Table 3--Management area percentages (rounded) - Myrtle

RE2A	RE3
15%	85%

Rock Creek Portion

The entire area was studied under RARE II and was not recommended for wilderness at that time. The area has a history of both unroaded motorized and non-motorized recreation. When reassessed as part of the Washington State Wilderness Act of 1984, a total of 6,487 acres of the area became part of the Glacier Peak Wilderness.

The 2006 inventory removed approximately 1,500 acres from previous inventory due to nonconforming uses such as road construction and logging; 1,935 acres were added to the

previous inventory as they meet the criteria for a potential wilderness area as described in FSH 1909.12, Chapter 70. The Rock Creek portion is allocated as late-successional reserve (LSR) in its entirety in the Northwest Forest Plan.

The following chart depicts the 1990 Wenatchee National Forest Land and Resource Management Plan direction for the 2007 potential wilderness area.

Table 4--Management Area Acreages (rounded) – Rock Creek

GF	RE2A	RE3	ST1	ST2	WS2
19%	23%	45%	1%	10%	2%

Location and Access

Chelan Portion

The area is adjacent to the Glacier Peak Wildernesses (north and south of Holden) in Chelan County on the Chelan Ranger District. The south Holden portion is accessed by boat on Lake Chelan in addition to the Domke Lake, Pyramid Mountain Trails, and the Shady Pass Road. The section north of Holden is accessed via Lake Chelan and the Railroad Creek Road and Ten Mile Trail.

Entiat Portion

The area is bordered by all three other portions of the Entiat-Chelan PWA in Chelan County on the Entiat Ranger District. It is accessed by the Entiat Valley, North Fork Entiat, Tye Ridge, and Entiat Summit Ridge Roads, and the Entiat, North Fork Entiat, Pyramid Mountain, and Mad River Trails.

Myrtle Portion

The area lies adjacent to the Glacier Peak Wilderness in Chelan County on the Entiat Ranger District. Main access is gained by the Entiat River Road, from the town of Entiat, Washington, and the Entiat River trail from the end of the road.

Rock Creek Portion

The area lies between the Entiat Mountains to the east and the Chiwawa River on the west in Chelan County on the Lake Wenatchee portion of the Wenatchee River Ranger District and on the Entiat Ranger District. Road access is provided by the Chikamin Road and the Chiwawa Road. Trail access is provided via the Rock Creek, Basalt Ridge, Estes Butte, Carne Mountain, Minnow Creek, and Old Gib Trails, and by the Chikamin Creek, Alder Ridge, Minnow Ridge, Chikamin Tie, and the Mad River ORV Trails.

Geography and Topography

Chelan Portion

This area is dominated by glacially carved Lake Chelan. The area ranges from Twenty-five Mile Creek to the Glacier Peak Wilderness boundary on the south shore of Lake Chelan; and finally to the Chelan Mountains. Glacial deposit, glacially rounded bedrock, and some hanging valleys characterize the topography on the lower slopes. Very rough, broken, and craggy rock features dominate the non-glaciated upper segments. Elevations range from about 1100 to 8400 feet.

Entiat Portion

This is a very large area, most of which is plateau with rolling gentle slopes. The part of this area that lies along the southwestern side of the Entiat River are distinct because it has cliffs of large angular granitic rock, below which are extensive talus slopes. There are some large meadows on the top of the plateau. Elevations range from 1700 to 8200 feet.

Myrtle Portion

This area is characterized by very wide and deep “U” shaped glacial valleys, with rough broken angular rocky ridges surrounding them. The valley bottoms are covered with conifer stands that have been dissected in many places by avalanche chutes. There are also many wet meadows occurring in the riparian zones. Elevations range from about 3300 to 7800 feet.

Rock Creek Portion

The Rock Creek portion lies along the northeastern edge of the Chiwawa River and portions of the Mad River. This area is characterized by wide and deep “U” shaped glacial Chiwawa valley, a “V” shaped side drainages such as the Chikamin. Rough broken, angular, rocky ridges delineate ridgelines. The valley bottoms are covered with conifer stands that have been dissected in many places by avalanche chutes. Two small lakes are within this portion. Elevations range from 2500 to 7500 feet.

Current Uses

Chelan Portion

The current use is for dispersed recreation. The most popular activities are listed in descending order: boat-in camping, hiking, hunting and fishing. The Domke Lake Trail is open to trail bike use, though few people go to the trouble to barge trail bikes up lake. Domke Lake is accessible by both float plane and trail, and offers several small developed campsites. The Domke Lake Resort offers rustic overnight accommodations and both motorized and row boats. The resort permittee maintains recreational stock (horses) at Domke Lake, and some stock-oriented outfitter guide use occurs in Emerald Park. Three small recreation residences are located at the edge of the PWA on the south shore of Lake Chelan. Other than the high trail use areas around Domke Lake and Holden Village, most of the PWA is without trails. There are currently no active mining claims or grazing permits, though both activities were common in the past.

Entiat Portion

The majority of the Entiat portion is managed as open to motorized trail use. The Mad Lakes area is a very popular ORV area and receives heavy trail bike and mountain bike use. The Entiat Valley and Duncan Hill trails are managed for multiple-use up to their boundary with non-motorized allocations, (junction with Myrtle Lake Trail and Anthem Creek Trail respectively). Both of these routes provide multiple use opportunities as well as wilderness gateway corridors.

The northwest and northeast parts of the Entiat portion area are managed as unroaded, semi-primitive, non-motorized which prohibits motorcycle use. These sections provide continuity with adjacent non-motorized allocations and provide for a non-motorized recreation setting outside of designated wilderness. The North Fork Entiat also provides an important equestrian based recreation area without the party size limitations that are in effect for the adjacent Glacier Peak Wilderness.

Two outfitter guide special use permits conduct trips in the North Fork Entiat area. One primary outfitter conducts trips in the Mad Lakes area.

Myrtle Portion

Myrtle Lake is a key destination for both overnight and day use recreation. The lake provides easy fishing access for day trips from nearby developed campgrounds in the Entiat valley. The trail and lake are open to motorcycles, mountain bikes, horse and hiker use. In addition, the area is traversed by the main wilderness gateway trail to the Glacier Peak Wilderness.

Rock Creek Portion

The Rock Creek portion is distinctly divided into two areas roughly bisected northwest and southeast by the Chikamin Road. The area to the northwest is non-motorized. The main drainage is lower Rock Creek, which is flanked by Estes Butte and Basalt Ridge. The trails are used primarily by stock users due to the proximity of the Chiwawa Horse Camp, a large developed campground for stock users. Stock groups can be in excess of the 12-person group size limit up to the wilderness boundary. This provides a couple opportunities for day rides with larger groups. The Carne Basin, Basalt Ridge, Estes Butte, and Rock Creek Trails all access the adjoining Glacier Peak Wilderness. The Minnow Ridge and Basalt Pass Trails are non-motorized, but interconnect with the off-highway vehicle (OHV) system. This northwest area also receives use from hikers and a very small amount of mountain bike use.

South and east of the Chikamin Road is the Lower Chiwawa motorized trail system, which is used primarily to access trails on the adjoining Entiat Ranger District. This larger system is one of the most significant OHV systems in the state. A large developed campground at Goose Creek was constructed to facilitate OHV use. These trails are also popular with mountain bikers, especially the Chikamin Creek Trail, which affords an exciting downhill ride. This area also receives a lesser degree of use from hikers and equestrians. Mad River provides an excellent backpacking destination for groups that are not wilderness compliant, such as groups larger than twelve. Winter snowmobile use is significant in this

area, particularly in the Mad Lake area. The area is used by outfitter guides, and recreation special events such as dual sport rides and adventure races.

Appearance and Surroundings

Chelan Portion

This area has a high visual variety of landform, vegetation, and rock forms, and moderate to high water forms (lakes, streams, and waterfalls). The area is a glaciated valley with a variety of textural patterns. Steep slopes climb up out of the valley to a ridgeline dominated by snowy peaks. The ridge top is rugged and open with sparse vegetation. The slopes are steep with avalanche paths along the glaciated valleys of Lake Chelan and Railroad Creek. This is a part of Lake Chelan that is often referred to as the “American Alps”.

Numerous streams dissect the landform. A portion of the area is secluded in the Domke Lake basin. This area has high visual variety, though south of Bearcat Ridge much of the area was burned in 2004.

The area is primarily viewed as foreground and middle ground from scenic Lake Chelan and the ridge-top trail of the Chelan Mountains and the Domke Lake and Domke Mountain Trails.

The Chelan portion of the PWA is bordered by Lake Chelan and the Glacier Peak Wilderness, though a small portion is also bordered by the Railroad Creek Road and/or Railroad Creek.

Entiat Portion

The Entiat area is surrounded by the Entiat Mountains, the Entiat River valley, and the Chelan Mountains. The area has high visual variety of landform and moderate to high variety in vegetation, rock forms, and water forms (streams). The Entiat portion can be divided into three distinct areas: North Fork Entiat, main Entiat River, and the Mad River. There are several small lakes within each area.

The area is essentially a steep and dissected glaciated valley with evenly textured north and northeast side slopes. It has dense vegetation along stream bottoms and open, steep, rugged ridge tops. Some of the area has south-facing basins with creeks in the bottom and a variety of evenly textured vegetation. The area is primarily viewed as foreground from internal trails; as foreground and middle-ground from the Entiat Valley Road; and both foreground and middle-ground from the Chelan and Entiat Mountain ridge top trails.

The Upper Mad River portion is a broad rolling plateau dominated by lodgepole pine and subalpine fir stands with several lakes and prominent peaks.

The Lower Mad River lies in a deep rocky canyon bordered on both sides by highly roaded areas.

North Fork Entiat River is physically isolated from most past vegetation management and road development activities.

The main Entiat River is predominately north slopes which face across the valley towards the heavily roaded and developed south slopes of the Entiat valley.

Myrtle Portion

The area has high visual variety of landform, vegetation, water forms (lakes and streams), and rock forms. The northeast half is within a basin surrounded by ridge tops and peaks. The basin has four tributary creeks and a variety of vegetation including fall color. Myrtle and Fern Lakes add to the diversity of water forms in the area.

The area is primarily viewed as foreground and middle-ground from trails of the area. The Myrtle Lake area is bounded by the Glacier Peak Wilderness to the north and the Entiat portion on the south. The southwest half of the area is within the glaciated valley with steep side slopes and a variety of vegetative patterns. The ridge tops are open and rugged.

Rock Creek Portion

The area has a moderate to high visual variety of landforms, vegetation, rock forms, and lakes and streams. The area is primarily on a south-facing slope in a glaciated valley with rugged ridges, avalanche paths, and a variety of vegetative patterns. A strong ridge top along the Entiat Mountains has a variety of rock forms and vegetation. Mad Lake and Lost Lake are located in the area. The area is primarily viewed as middle ground from the Chiwawa River Road, and both foreground and middle-ground when viewed from Entiat Ridge.

This area is surrounded by the Glacier Peak Wilderness and the Chiwawa River valley bottom. Roads and timber harvest areas can be seen from a number of vantage points but they do not dominate the views.

Key Attractions

Chelan Portion

High-country deer hunting and historical mines and trails are popular. Holden Village has become a non-denominational spiritual retreat, with an estimated 15,000 visitors annually and, while not in the PWA, it attracts and houses people who then utilize the hiking trails of the nearby wilderness and potential wilderness area.

There are scenic views from both upper and lower elevations (throughout the PWA). Boat-in camping at Refrigerator Harbor, Domke Falls, Graham Harbor Creek, Graham Harbor, Corral Creek, and Big Creek attract and provide access to this area. Domke Lake campgrounds and resort are also a key attraction.

Entiat Portion

The Mad River area features a rolling plateau with numerous meadows such as Cougar, Blue, and Marble, as well as lakes including Ann, and Louise Lakes. Other attractions are the upper Entiat River, which is a main portal route into the Glacier Peak Wilderness, and the scenic Lower Mad River corridor.

The upper North Fork Entiat drainage features scenic peaks such as Pyramid Mountain and Graham Mountain with spectacular views of the Cascades, Sawtooth Mountains and Lake Chelan.

Duncan Ridge and Duncan Hill on the ridge between the main Entiat and North Fork drainage offer similar panoramic views.

A key attraction in the Mad Lake plateau is that ability for a wide range of user groups including motorized and mountain bikers to have access to high mountain lake ecosystems.

Myrtle Portion

Some major attractive features are the North Fork of the Entiat River, Myrtle and Fern Lakes, Pyramid Mountain, Devil's Smokestack, and the headwall of the North Fork of the Entiat River. The ridge on the northeast which forms the divide between the Entiat River Basin and Lake Chelan Basin has prominent peaks including Cardinal, Emerald and Saska. These high vantage points offer spectacular views of the Cascades and Lake Chelan Sawtooth mountains and Lake Chelan.

Myrtle Lake is a key attraction due to its easy access on a multiple-use trail system.

Rock Creek Portion

Some of the major attractions within the area are Mad and Lost Lakes, Estes Butte, Marble Meadow, the Entiat Mountains, and Carne Basin. Panoramic scenic views can be had from along McDonald Ridge in the southern tip of this potential wilderness area. The Chiwawa OHV trail system provides an important regional venue for both motorbikes and mountain bikes. The Carne Basin, Phelps Creek, and Rock Creek Trails provide key access into the adjoining Glacier Peak Wilderness.

The extensive OHV trail network that extends north into the remainder of this PWA is a major key attraction. This is one of the most significant OHV trail systems in the state, and affords motorcyclists and mountain bikers the opportunity to access higher elevations and a subalpine setting which are in limited supply elsewhere.

CAPABILITY FOR WILDERNESS

Level of Natural and Undeveloped Environment

For All Portions

Water quality data is not available for most of the PWA: however, due to the relatively low level of disturbance water quality is assumed to be high. Portions of Marble Creek, Cougar Creek, Mad Lake, and Mad River are classified by the Washington State Department of Ecology as Category 1, which means the segment met tested standards. A portion of Domke Lake is classified by the Washington State Department of Ecology as Category 4c, which means impaired water quality is not due to a pollutant, and, in this context, is likely due to low water flow. A portion of Rock Creek is classified by the Washington State

Department of Ecology as Category 5, which means the area is in need of a water cleanup plan due to polluted waters.

Noxious weed species that have been introduced into the PWA include diffuse knapweed and bull thistle.

Chelan Portion

The majority of the land within the area is so rugged and remote that humans have had very little influence on natural conditions. The Railroad Creek Road corridor is excluded from the PWA boundary. Visitors along the Holden Village Corridor of the unit would hear a very light volume of traffic, primarily serving Holden Village needs. The road is well screened with heavy vegetation. Holden Village, a small (150-500) year-round community with numerous structures, is visible from some vantage points within the area. A user-built trail of approximately two miles in length is located up Ten Mile Creek. An old trail located on Lightning Ridge and Lucerne Mountain was abandoned many years ago. A small quarry is located near Lightning Ridge and while the road is fairly overgrown, use of the quarry is being considered for remediation of the Holden Mine. Although the quarry is located outside the PWA, it would result in the sight and sound of human operations within the PWA. A small tract of private land exists at the mouth of Lightning Creek, with a cabin and dock.

The Domke Lake portion has a considerable number of existing human influences including a resort with four cabins, rental motorboats, horse grazing, trails, abandoned power line corridor, developed campsites with docks, tables, fire rings, pit toilets, an old abandoned lookout site, special use summer home, fences, and float plane use. The Domke Lake area is accessed by a national recreation trail which permits motorized use. Aircraft, both private and commercial, regularly use Domke Lake as a destination area for fishermen and resort users. All of these activities are within the PWA boundary. Domke Lake is stocked with non-indigenous trout.

The large southern portion of the area has no human influence throughout the majority of the area except along the shoreline of Lake Chelan. Lake Chelan, while being a natural lake, is raised by a dam. Water levels fluctuate dramatically between summer and winter as impounded water is drained. Some of the developments found along the shoreline edge of the PWA include three summer homes, five docks and campgrounds, and navigation markers. Lake Chelan has a heavy amount of powerboat and floatplane use that influences the user by sight and sound. This influence is confined primarily to the lake corridor adjacent to the PWA.

A portion of the upper Bear Creek drainage is truly outside the motorized influences of the lake and offers some of the most remote, untrailed opportunities in the Lake Chelan basin.

The Chelan portion of the PWA is partially impaired by light pollution from the Chelan area. There are areas where one could look directly down onto Holden Village, Lucerne, or Stehekin and see some direct lights. The majority of the PWA rates a Class 2 on the Bortle Scale. The southeastern tip rates as a Class 3. A Class 2 Typical Truly Dark Sky represents the darkest skies viewed in the continental United States. The summer Milky Way is highly structured to the unaided eye. Any clouds in the sky are visible only as dark holes or voids in the starry background. No light domes from population centers are visible. A

Class 3 Rural Sky has some indication of light pollution on the horizon. Clouds may appear faintly illuminated in the brightest parts of the sky near the horizon, but are dark overhead. The Milky Way still appears complex. Light domes from population centers may appear on the horizon (10-15 degrees above horizon). Visual observing is still relatively unimpaired. Time lapse photography could be impaired by light pollution.

Few weeds are present in the PWA with the exception of some areas in Railroad Creek that were selectively logged in the 1960s and in the campgrounds. The one major exception is Domke Lake, which is infested with Eurasian milfoil, introduced by floatplanes. Horse grazing has introduced a small number of weeds in the Domke Lake area, and changed some vegetative conditions. Past grazing activities have altered plant communities and conditions along the ridge separating Chelan and Entiat, and in the Lightning Ridge area.

Entiat Portion

The impact of past human activity in this area is quite evident in the form of an extensive, existing trail system throughout the area and two cabins, one shelter, and four old lookout sites with foundations remaining. Seventy-five percent of the trails are currently open to, and have a long history of, motorcycle use. One of the cabins is a Forest Service guard station. It is a log structure on concrete footings with a 30-foot radio antenna outside the cabin.

The Entiat portion is large enough, and the topography and vegetation are such, that persons visiting the area have the opportunity to seek out drainages and areas that appear natural and away from ordinary human activity and development. It is, however, possible to observe distant roads, timber harvest activities, fire lookouts, farms and houses from the main ridges of the Entiat and Chelan Mountains as well as Tyee and Duncan Ridges.

There are three principal drainages with the longest being the Mad River. The other two consist of a small segment of the main Entiat River and the middle portion of the North Fork Entiat River. There are also several deeply dissected side drainages that are untrailed and offer opportunity for solitude.

The Entiat portion of the PWA is partially impaired by light pollution from the Chelan and Wenatchee area. The northern portion of the PWA rates a Class 2 on the Bortle Scale. The south portion rates as a Class 3. A Class 2 Typical Truly Dark Sky represents the darkest skies viewed in the continental United States. The summer Milky Way is highly structured to the unaided eye. Any clouds in the sky are visible only as dark holes or voids in the starry background. No light domes from population centers are visible. A Class 3 Rural Sky has some indication of light pollution on the horizon. Clouds may appear faintly illuminated in the brightest parts of the sky near the horizon, but are dark overhead. The Milky Way still appears complex. Light domes from population centers may appear on the horizon (10-15 degrees above horizon). Visual observing is still relatively unimpaired. Time lapse photography could be impaired by light pollution.

Myrtle Portion

The impact of past human activity in this area is evident in the form of single track trails and a steel girder trail bridge across the Entiat River. There are approximately 20.5 miles of trails in this area. All trails in the North Fork Entiat are closed to motorized use. Eight

miles in the main Entiat valley portion are open to motorized use. Also, there is an old fire lookout foundation on top of Duncan Hill and a Forest Service radio repeater site consisting of an antenna and a small power source box. Although there are some evidences of human activity, the basic ecological processes have not been greatly altered.

The Myrtle Lake portion takes in segments of two major drainages, the main Entiat and the North Fork of the Entiat River. The deep, incised drainages, with heavy forest vegetation, conceal the evidence of human activity except when the improvements are in the foreground viewing zone. From the ridges and high points it is possible to see distant roads and timber harvest activities several miles down valley. These human alterations are most evident from Duncan Ridge but still remain in the back ground visually.

The Myrtle portion of the PWA is minimally impaired by light pollution from the. The entire PWA rates as Class 2 on the Bortle scale. A Class 2 Typical Truly Dark Sky represents the darkest skies viewed in the continental United States. The summer Milky Way is highly structured to the unaided eye. Any clouds in the sky are visible only as dark holes or voids in the starry background. No light domes from population centers are visible.

Myrtle Lake has three established campsites with fire rings and tables as well as a single backcountry toilet.

Rock Creek Portion

The Rock Creek portion is primarily natural and undeveloped in character. The non-motorized northwest area has natural-appearing vistas with some influence from the Chiwawa Road and campgrounds. In particular, the upper Chiwawa and Buck Creek afford some of the most dramatic middle-ground views on the district. There is an old fire lookout site on Estes Butte. Trinity, a private inholding, can be seen from portions of this area. The motorized portion of this area is in closer proximity to roads. Vistas here are more altered, with timber harvest units in the lower Chiwawa, Meadow Creek, and Loop Hill areas being readily apparent from ridge-top views.

The Buck Creek, Goose Creek, and Lower Chiwawa trailhead at Deep Creek are infested with noxious weeds. The Rock Creek portion of the potential wilderness area has not been surveyed for noxious weeds. Noxious weeds on the roads and trailheads leading to this area are treated on an infrequent basis. Mad Lake and Lost Lake are located in this area and both have non-indigenous fish populations.

The Rock Creek portion of the PWA is partially impaired by light pollution from the Leavenworth and Wenatchee areas. The southwestern portion of the PWA has some aspects with views down the Wenatchee River Valley where lights from developments can be seen. Lights may also be seen from the ridge tops in the lower Chiwawa. The northern portion of the PWA rates a Class 2 on the Bortle Scale. The south portion rates as a Class 3. A Class 2 Typical Truly Dark Sky represents the darkest skies viewed in the continental United States. The summer Milky Way is highly structured to the unaided eye. Any clouds in the sky are visible only as dark holes or voids in the starry background. No light domes from population centers are visible. A Class 3 Rural Sky has some indication of light pollution on the horizon. Clouds may appear faintly illuminated in the brightest parts of the sky near the horizon, but are dark overhead. The Milky Way still appears complex. Light

domes from population centers may appear on the horizon (10-15 degrees above horizon). Visual observing is still relatively unimpaired. Time lapse photography could be impaired by light pollution.

Level of outstanding opportunities for solitude or primitive and unconfined recreation

Chelan Portion

The portions of the PWA north of Railroad Creek Road and the Bear Creek to Corral Creek Drainages can offer a high level of challenging experiences due to the rough topography, difficult access and extreme elevation gain over a short distance. A traverse across the area from any direction will test a person’s self-reliance, judgment, and ability. The area offers opportunities for solitude for individuals willing to seek out isolated areas away from established trails and travel routes.

The area offers a moderately high opportunity for primitive recreation experience such as backpacking, camping, fishing, hunting, and mountain climbing, canoeing and photography. Despite the fact the area lies adjacent to the motorized use on Lake Chelan, Holden Village, and Railroad Creek Road, most users would experience the primitiveness of the area once they went beyond its boundaries.

Motorized recreation affects the lower elevations along the lake corridor, and occasionally at Domke Lake when the float plane comes in. Outboard motor use at Domke does little to disturb the serene atmosphere, though occasionally other motorized use occurs such as chainsaw and motorbike. Vehicle use on the Railroad Creek road is relatively light and has little influence outside the road corridor. On occasion, Holden Village operations likely affect opportunities for solitude in those portions of the PWA adjacent to the village.

Table 5--Miles of recreation trails - Chelan

Motorized Trails	Non-motorized Trails	Snowmobile Trails
3	40	0

Entiat Portion

The area is heavily dissected by trails but there are several peaks and rock bluffs or cliffs that offer challenge to rock climbers. Recreation opportunities in a primitive setting available to the visitor include horseback riding, hiking, motor bike and mountain bike riding, hunting, fishing, and viewing outstanding scenery. Rock peaks and bluffs offer climbing challenges and trailless areas offer challenges to cross-country enthusiasts. Several areas including, North Fork Entiat, Ice Creek, Mad Lake area, and the Upper Entiat Mountain Peaks have winter mountaineering, winter survival, backcountry ski touring opportunities.

Opportunities exist for solitude in areas away from the primary travel corridors. Unlike the wilderness, the North Fork Entiat area has no party size limitations; therefore, large groups can be encountered particularly during hunting season. The lack of party size limitation

also serves as an important feature which reduces user pressure in the main Entiat Valley in the Glacier Peak Wilderness.

Table 6--Miles of recreation trails - Entiat

Motorized Trails	Non-motorized Trails	Snowmobile Trails
97	25	0

Myrtle Portion

Although the area is small, as compared with adjacent areas, there are opportunities for solitude in several cirque basins that drain into the main Entiat and the North Fork.

There are peaks and rock bluffs that offer challenge to rock scramblers and mountain climbers willing to explore off trail areas on foot.

Although there are several tables and fire rings at different locations near Myrtle Lake, there are several opportunities for primitive recreation experiences such as hunting, fishing, hiking, horseback riding, rock climbing, and viewing outstanding scenery. The trails that traverse the area provide access to the adjacent Glacier Peak Wilderness area. Opportunities exist for solitude in areas away from the primary travel corridors, especially in the upper basins of the North Fork Entiat. Unlike the wilderness, this area has no party size limitations therefore; large groups can be encountered particularly during hunting season.

Table 7--Miles of recreation trails - Myrtle

Motorized Trails	Non-motorized Trails	Snowmobile Trails
6	14	0

Rock Creek Portion

The non-motorized part of this area ranges from offering high use trails such as Phelps Creek and Carne Basin to trails that have very low use, such as Basalt Ridge, where solitude is readily obtainable. Some of the trails afford challenge, such as the Old Gib Trail, which has received very little maintenance and has no water, but offers a high traverse. Solitude would be possible in winter throughout this area.

The motorized part of this area provides a well-developed trail system offers a variety of challenging experiences to motorcyclists and mountain bikers. Mad Lake is a high use destination, but would receive less use if the area is designated as wilderness due to its popularity with motorcyclists and mountain bikers. Challenges for hikers and backpackers are not great, but a trip of a few days in length would be possible especially if the trip is tied into the adjoining Entiat portion or into the adjoining Glacier Peak Wilderness. Off-trail challenges are also available. The Mad Lake part of this area receives heavy winter snowmobile use.

This area is currently popular for use by larger groups than are permitted in wilderness and recreation special events, such as an annual dual sport ride.

Table 8--Miles of recreation trails – Rock Creek

Motorized Trails	Non-motorized Trails	Snowmobile Trails
21	39	0

Special Features

Chelan Portion

The south shore portion of the PWA includes the part of the lake corridor that is the deepest gorge in North America, reaching from Pyramid Peak at 8245 feet above sea level to the bottom of Lake Chelan three miles away at 386 feet below sea level (lower than the floor of Death Valley). The steep slopes provide unique cliff habitats for species such as peregrine falcons and mountain goats. Peregrine falcons and mountain goats have also been reported in the Lightning Ridge portion of the PWA. Mountain goats in the PWA were heavily hunted until the 1970s.

Domke Lake is also a relatively unique habitat as lakes of this size are rare within the Chelan Basin at this elevation. Locally rare species such as river otters and loons are known to inhabit the area. Domke Lake supports one of only three potential bald eagle recovery territories on the Chelan Ranger District. Though nesting is not known, an adult and a juvenile were observed in the area during the spring and early summer in 2006. At least one northern spotted owl resides in the area. Western gray squirrels are also present in the Domke Mountain area. Lynx were present historically in the upper elevations, though no observations have been made in many years. Gray wolves, northern spotted owls, and wolverines have been reported in the vicinity of the PWA around Holden Village.

One relatively rare plant is known to exist in the Domke Lake area, *Orobancha pinorum*, though others are likely due to the unique hydrologic regime around the lake. Amphibians (various frogs, toads, and salamanders) are also more common within the PWA than most other portions of the Chelan Ranger District. Rare plants (*Pellaea breweri* and *Cryptogramma stelleri*) are known in the Ten-Mile Basin portion of the PWA. Other rare plants are likely within unique wet forest areas in Lightning Creek, but the area is very remote and has not been surveyed.

Historical themes represented in the area include use of the area by Chelan Indians, including a pictograph site, relics of mining history, relics of fire lookouts, evidence of trapping and sheep grazing, and the historic Domke Lake Resort. Domke Lake Resort has been in existence in one form or another since the early 1920s. Though the cabins have been extensively altered over time, visitors have a unique opportunity to experience what life up lake might have been like in the early part of the century.

Entiat Portion

The area contains habitat for federally listed Canada lynx, gray wolf, grizzly bear, and northern spotted owl.

Historical themes represented include sheep grazing, fire detection, and evidence of trapping.

Myrtle Portion

The area contains habitat for federally listed Canada lynx, gray wolf, grizzly bear, and northern spotted owl.

The surrounding country between the North Fork of the Entiat River and the summit of the Chelan Mountains was part of the fur trapping territory of Gordon Stuart, whose permanent residence was at Domke Lake, near Lake Chelan. It is likely that some of his trap lines may still be seen within the unit.

Rock Creek Portion

The area contains habitat for federally listed Canada lynx, gray wolf, grizzly bear, and northern spotted owl.

The ridgeline separating Rock Creek from Phelps Creek has stands of immense subalpine larch, including a tree that was the largest subalpine larch in the state until it fell over. A rare plant population has been documented within this portion of the PWA.

The area includes a reported Indian trail running from Grouse Creek to Mad Lake. The area borders an ethnographically reported Wenatchee summer village site at Rock Creek, as well as an important rendezvous point on Chikamin Flats.

Historical-era sites dating from the 1920s include a trapper's cabin site along Rock Creek built and used by W.O. Burgess, and the former Estes Butte fire lookout. The area also experienced use for sheep grazing and for mineral prospecting and may include remnants of those past uses.

Manageability of Boundaries

Chelan Portion

A portion of this area lies north of the existing Railroad Creek Road #8301. The area abuts Glacier Peak Wilderness on the north and west and Lake Chelan to the east. Boundaries are not easy to define or locate on the ground north of the Railroad Creek Road #8301, which has numerous past and current firewood driven harvest. The area is located primarily within the Railroad Creek drainage with views of the Railroad Creek Road, Holden Village, and the mine tailing piles near Holden, which are outside of the PWA and wilderness boundary line to the south. The remainder overlooks the upper portion of the Lake Chelan basin. Even though the area has some off-site visual intrusions, the surrounding areas have such outstanding scenic qualities that the intrusions are minimized.

A small part of the PWA is located south of the Lower Railroad Creek trail and between Copper and Wilson Creeks near Holden. Other than the north boundary along the trail, boundaries are difficult to locate on the ground, though physical intrusions into the area are unlikely and the need to specifically locate the boundaries is low. Visual intrusions from Holden Village are somewhat limited by heavy forest cover at the present time, though any openings would give a view dominated by the mine tailings. Village activities are located about a half mile from the area limiting sound intrusions, though such intrusions are likely during a three to four year period when mine remediation occurs.

Part of the area surrounds Domke Lake and another lies on the south side of Lake Chelan from Bear Creek to Box Canyon. The large unit is bounded by the Chelan Mountains, Lake Chelan, and the Glacier Peak Wilderness. The Domke Lake unit borders Lake Chelan and the Glacier Peak Wilderness. Boundaries of these two portions are easy to define and locate. The Domke Lake unit is affected by visual and noise intrusions from motorized use on Domke Lake, Lake Chelan, and the Domke Lake National Recreation Trail #1280. The larger Lake Chelan unit is influenced by the motorized use along Lake Chelan, and the roaded area across Lake Chelan, visible from the southern portion of the area. All boundaries would be easily managed to maintain the primitive character except the shoreline along Lake Chelan. The shoreline is susceptible to random landings of motorized watercraft which would be difficult to administer.

Entiat Portion

The north and west boundary are now described by the respective Chelan and Rock Creek areas now combined with the Entiat. Most of these external lines, including the Myrtle Lake boundary with the current Glacier Peak Wilderness, are readily discernable. In contrast the interior east and southeast boundary is a convoluted route that follows various and numerous road set backs, and crosses the Mad River in several locations.

Myrtle Portion

The Myrtle Portion is bounded on the northwest by the Glacier Peak Wilderness. To the southeast it is now merged with the Entiat PWA.

Rock Creek Portion

The non-motorized parts of this area northwest of the Chikamin Road primarily have easily identifiable and manageable boundaries, which generally follow roads or abut the existing Glacier Peak Wilderness boundary and the Myrtle portion of the PWA. If designated as wilderness, the most significant management challenges would be keeping oversize stock groups out of wilderness in the vicinity of Rock Creek, and keeping snowmobiles out of wilderness in Phelps Creek. The proposed boundaries would be conducive to the management of wildland fire use.

The motorized parts of this area southeast of the Chikamin Road have mid-slope boundaries that generally skirt roads and harvest units. Boundaries in these locations would be more difficult to locate and manage. If this area is designated as wilderness, most trails in this area would begin outside wilderness which creates additional enforcement challenges. The mid-slope boundaries are not conducive to wildland fire use. Snowmobile incursions would be problematic in this area

WILDERNESS AVAILABILITY

Recreation

Chelan Portion

The area has value for unroaded types of recreation activities, both motorized and non-motorized. Some motorized opportunities could be lost affecting historic motorized uses on a small but unique area around Domke Lake.

The town of Chelan and the Lake Chelan area is a tourism-based community. Web-based information strongly promotes the natural beauty of the area, the vast amount of protected lands, and the remote uplake communities. While most visitors remain downlake, a significant amount of use occurs uplake as well. The marketing of outdoor recreation primarily features cross-country skiing, downhill skiing, boating, and snowmobiling. While 2008 promotional materials do not directly mention the Entiat-Chelan PWA, certain portions of the area contribute to a tourism-based economy. Non-local visitors frequent Domke Lake, Lucerne, and Holden Village. If the area is designated as wilderness, resort-based tourism and motorized use at Domke Lake would cease. This would affect the livelihood of the resort owner and other tourism-based local businesses such as Chelan Airways. Upon being designated as wilderness, the area would likely receive some media promotion resulting in an increase in hiking use. Most visitors to Holden Village hike into the adjacent Glacier Peak Wilderness and portions of the PWA. This use level is not likely to change with or without wilderness designation since Holden Village is the primary draw.

In general, the addition of the Chelan portion of the PWA to the Glacier Peak Wilderness would provide a recreation benefit. However, the Domke Lake Resort and the Monkey Bear Interpretive Trail should be excluded in order to preserve the non-wilderness recreation opportunities at these sites.

Entiat Portion

The area primarily has potential for unroaded typed of recreation activities both motorized and non-motorized. There are several opportunities for primitive recreation experiences such as hunting, fishing, hiking, horseback riding, and rock climbing, and viewing outstanding scenery

The Mad River area is the center of an extensive multiple use trail system that included the North Fork Entiat prior to the 1990 Wenatchee National Forest Land and Resource Management Plan. The latter was allocated to non-motorized trail use in the Plan. This action left the Mad River system and the connecting trails in lower Rock Creek as the primary hub of multiple use trail activity. Wilderness designation would eliminate an important and well-established motorized trail system between the Entiat and Chiwawa River valleys. While this area is not as crowded as the Manastash, it is one of the most significant motorized trail systems on the forest and provides an important alternative to help alleviate crowding on the Manastash due to it still being relatively accessible to the Puget Sound population.

This trail system is accessed from multiple points, but most users access the area near Lake Wenatchee. The wide variety of available outdoor activities has long provided a strong tourism draw and areas of concentrated car camping at Lake Wenatchee. In recent years the Leavenworth Chamber of Commerce has promoted the proximity to high quality outdoor recreation experiences as a reason to visit Leavenworth and the Lake Wenatchee areas. Tourism brochures and the chamber of commerce website promote the Mad River Trail for mountain bike use.

The Goose Creek Campground was built specifically to accommodate OHV users. Visitors to this area travel past small businesses in the Lake Wenatchee area and likely stop to purchase food and gas. Current use of this PWA by motorcyclists and mountain bikers is likely a small but noticeable percentage of total tourism-based use in the area.

Visitors approaching from the Entiat Valley are also likely to stop in the town of Entiat or at a small store in the Entiat Valley that is dependent on tourism.

From a recreation perspective, continuing to manage the Entiat portion of the PWA as a backcountry motorized area is important for meeting the demand for motorized recreation opportunities on the forest.

Myrtle Portion

The area has value for unroaded types of recreation activities. There are opportunities for primitive recreation experiences such as hunting, fishing, hiking, horseback riding, rock climbing, and viewing outstanding scenery.

Myrtle Lake is a popular destination easily reached from the Entiat River Trailhead. The trail access to Myrtle Lake allows motorcycles, hikers, mountain bikes and horses. There are several tables and steel fire rings at different locations within this unit. The upper North Fork Entiat is a major attraction for equestrians, backpackers and mountain bikers offering access to the high ridge route between the Chelan and Entiat watersheds. The North Fork area is closed to motorized use. Wilderness designation would displace mountain bike users in the North Fork and require adherence to wilderness party size limits. Motorized and bicycle access would be lost to Myrtle Lake. The very easy, river grade trail is locally very important as a family-oriented day trip from residences or campers in FS developed campgrounds. It is the only trail-oriented lake fishing opportunity in a mountain setting that is easily accessible by a multitude of users within the Entiat valley.

Use of this area is associated with the Entiat Valley and the town of Entiat. The town of Entiat does not actively promote trail opportunities, nor specifically feature this PWA. Visitors are likely to stop in the town of Entiat or at a small store in the Entiat Valley that depends on tourism.

If the area is designated as wilderness, the Myrtle Lake trail would not be available for OHV and mountain bike use. Opportunities for mountain biking in the North Fork Entiat area would not be available. However, wilderness designation would preserve the continuity of experience for those users accessing the Glacier Peak Wilderness via these areas.

Rock Creek Portion

As discussed previously, the non-motorized portion of this area could be assimilated into the existing Glacier Peak Wilderness with relatively low impact to the recreating public. Stock users would have to adhere to group size limits. Mountain bikers would be displaced, but mountain bike use in this area is so low that this is not likely to engender controversy.

If the motorized portion of this PWA, as a whole (including those portions of Entiat), is added to wilderness it would eliminate one of the most significant OHV trail systems in the state and may not be in the best interests of managing for a mix of recreation opportunities on the forest. However, hikers and equestrians would be more likely to make use of this area sans bicycles and motorcycles.

Most users access the area near Lake Wenatchee. The wide variety of available outdoor activities has long provided a strong tourism draw and areas of concentrated car camping at Lake Wenatchee. In recent years the Leavenworth Chamber of Commerce has promoted the proximity to high quality outdoor recreation experiences as a reason to visit Leavenworth and the Lake Wenatchee areas. Tourism brochures and the chamber of commerce website promote the Lower Chiwawa and Chikamin Ridge trails for mountain biking

Visitors to this area travel past small businesses in the Lake Wenatchee area and likely stop to purchase food and gas. Use of this PWA by motorcyclists and mountain bikers is a small but noticeable percentage of total tourism-based use in the area. Some hiker, backpacker, and stock use would move in to take its place, but is not likely to occur at the same use levels since hikers. Stock users have many other local options.

Wildlife

Wildlife Background

The Canada lynx, gray wolf, and grizzly bear use a variety of successional stages across the landscape as their habitat, while the spotted owl primarily uses late-successional forests. Portions of the PWA are inside designated critical habitat for the northern spotted owl, as well as late-successional reserves allocated by the Northwest Forest Plan (NWFP). The overlap between critical habitat units (CHU) and LSR is approximately 70 percent on the Okanogan-Wenatchee National Forest. Providing connectivity among spotted owl populations may be the most important ongoing function of critical habitat, especially in areas where the risk of habitat loss from wildland fire is high. To maintain old-growth/late-successional habitat structure, recommendations from the LSR assessments include suppressing wildfire at minimum acreage, while wilderness goals would be to mimic natural processes and allow wildfire to burn.

Each PWA provides varying levels of habitat for focal wildlife species. To help evaluate the habitat that this area provides, the following information was provided: the focal species emphasized in the area, the amount of habitat for each focal species, the priority ranking for the habitat (based on conservation assessments and recovery plans), and the proportion of the total habitat available on the Forest that is within the PWA.

Table 9--Availability of habitat for federally listed Threatened and Endangered wildlife species and R6 Focal Species

Wildlife Species	Acres Habitat	Habitat Priority Ranking (1=high, 2=mod, 3=low)	%Total Forest Habitat In Evaluation Area
Grizzly Bear	115,000 (potential to increase core area by about 47,000 ac)	2	10
Canada Lynx	16,532	2	20
Wolverine	110,210	2	9
American marten	42,854	2	10

A key issue relative to the sustainability of wildlife habitats is the identification of the amount of dry forest that is in a late-successional habitat area (LSHA). LSHAs that occur in dry forests can be at high risk of high severity wildfire, insects and disease that reduce the sustainability of the late-successional habitats. Active management such as prescribed fire and thinning may be needed to restore these habitats and enhance their sustainability.

Table 10--Acres of dry forest habitats that are present within the evaluation area and also within a Late Successional Habitat Area

Late Successional Habitat Area	Acres of Dry Forest
Shady Pass	17,400
Lucerne	6,400

Chelan Portion

Habitats within the Chelan portion of the PWA are extremely varied and range from shrub steppe at the southern end of the lakeshore section, to glaciated mountain peaks in the Railroad Creek Valley. Grizzly bears, gray wolves, bald eagles, Canada lynx, and northern spotted owls are all potentially present within the PWA. Western gray squirrels, a Washington state threatened species and a Forest Service sensitive species, is known to occur here. The western gray squirrel is limited to three isolated populations statewide, with an estimated total of 468 to 1,405 individuals.

Unique habitats such as cliffs are common in the PWA and support cliff dwellers such as peregrine falcons and mountain goats. The mountain goat population has been augmented with transplants from the Olympic Peninsula. With the exception of the Larch Mountain salamander and probably the northern bog lemming, all Okanogan-Wenatchee focal species and their associated habitats are potentially present.

The portion of the PWA along Lake Chelan south of Bearcat Ridge burned in the 2004 Deep Harbor Fire. Over 10,000 acres of the area burned in the Domke Lake Fire in 2007. Portions of the Railroad Creek Valley and Lightning Creek have not burned for 70-110 years. This is the only portion of the Chelan Ranger District outside of wilderness that has not experienced stand replacement fire recently. The area also includes the only late-successional reserve (LSR) on the District that has not been burned in extensive stand replacement fires. It currently provides important refugia for species dependent on late-successional habitat, particularly in dry forest areas which are currently very limited within

the basin. Heavy accumulations of fuels, increasing beetle kill, and a growing spruce budworm infestation have left the area at increased risk of stand replacement fire.

With the exception of very limited impacts around Domke Lake, unique habitats are adequately protected under roadless management allocations. Designation of the area as wilderness would preclude mechanical vegetation treatments that could improve habitat.

Entiat Portion

The area provides habitat for classified threatened and endangered species including gray wolves, grizzly bears, northern spotted owls, and lynx. The presence of spotted owls and lynx has been confirmed in this portion. Critical habitat has been designated within the area for spotted owls. This habitat is considered necessary for recovery of the spotted owl. The area is also in the North Cascades Grizzly Bear Recovery Area.

Habitat for sensitive species, including great gray owls, wolverine and Chelan mountain snails, is also present. Chelan mountain snails have been documented in the southern part of the area.

The area serves as summer habitat for a large mule deer herd and provides habitat for a variety of game and non-game species of birds and animals including black bear, American marten, and grouse. There are several mountain goat herds that use the ridge area between Big Hill and Pyramid Peak

Myrtle Portion

The area provides habitat for threatened and endangered species including gray wolves, grizzly bears, northern spotted owls, and lynx. The presence of spotted owls and lynx has been confirmed in the area. Critical habitat has been designated within the potential wilderness area for spotted owls. This habitat is considered necessary for recovery of the spotted owl. The area is also in the North Cascades Grizzly Bear recovery area.

The area serves as summer habitat for a large mule deer herd and provides habitat for a variety of game and non-game species of birds and animals including black bear, American marten, and grouse. There are several mountain goat herds that use the ridge area between Big Hill and Pyramid Peak.

Rock Creek Portion

There are elk, deer, and black bear found on the area as well as grouse and their associated habitat. The area is summer range for a portion of the Entiat deer herd and for a small elk herd.

The area contains habitat for federally listed Canada lynx, gray wolf, grizzly bear, and northern spotted owl. It is also inside the Chiwawa critical habitat unit (designated) for the northern spotted owl.

Water and Fish

For All Portions

The Chelan-Entiat PWA has three water source protection areas that provide water to community water systems: the Chelan County Public Utility District, 14,100 acres; the Cashmere Water Department, 9,301 acres; and Holden Village, 4 acres.

Chelan Portion

Lightning Creek, a Lake Chelan tributary, hosts a mixed trout population (rainbow and cutthroat) and Tenmile Creek, a Railroad Creek tributary, hosts a sparse population of pure westslope cutthroat trout.

This area contains numerous small Lake Chelan tributary streams. The most important of these include Little Big, Big, Deep Harbor, Graham Harbor, Pyramid, and Bear Creeks. The short (50-300 meters) fish-accessible segments of these streams provide habitat for native cutthroat and introduced rainbow trout. Fishing is closed in Lake Chelan within 400 feet of tributary stream mouths to protect the concentrations of spawning and rearing fish found there.

Domke Lake (270 acres, 120 feet deep) is located in this area. It is stocked frequently with cutthroat and rainbow trout to support a popular remote recreational fishery.

Entiat Portion

This portion of the potential wilderness area contains many streams and portions of streams in three significant fish-bearing watersheds (middle North Fork Entiat, middle Entiat, and the Mad River from headwaters to Hornet Creek). These three stream systems will be discussed beginning with the North Fork Entiat in the northern portion of this potential wilderness area.

The North Fork and its principal tributary, South Pyramid Creek, host a mixed population of rainbow trout, cutthroat trout, and hybrids of the two species. Trail #1437 parallels the North Fork and provides good access for recreational anglers.

The main-stem Entiat River provided a popular “put-and-take” fishery for stocked rainbow trout until 1999 when stocking ceased. Recreational fishing remains popular in this portion of the Entiat River because of the close proximity of several campgrounds, relatively easy access, and the angling closure of the river below Entiat Falls since 2000. Sampling of the Entiat River above Entiat Falls during the summer of 2000 yielded mostly introduced rainbow trout followed by introduced eastern brook trout and native cutthroat trout at a ratio of 100:20:1, respectively.

Many small streams feed the Entiat River in the potential wilderness area but only Tommy Creek hosts fish, a population of genetically pure westslope cutthroat trout that is maintained by fish migrating out of Two Little Lakes in the headwaters. This population is well protected from incursions by non-native fish from downstream (barrier falls near mouth) and difficult access for anglers in the middle reaches.

The Mad River fisheries can be sorted into three general zones: (1) The headwaters above Jimmy Creek including Blue Creek, Whistling Pig Creek and Mad Lake where cutthroat

trout dominate this zone; (2) the middle Mad from Jimmy Creek to Young Creek where bull trout dominate, and the cutthroat population is gradually replaced by a rainbow trout population; and (3) the lower reaches from Young Creek to Hornet Creek where rainbow/steelhead trout dominate.

Since 1995, the Mad River has been closed to fishing from its mouth to the Jimmy Creek confluence. The purpose of this closure is to protect three ESA (endangered species act) listed species, spring Chinook salmon, steelhead trout, and bull trout. Above Jimmy Creek, the Mad River continues to provide a popular trail-accessible fishery for cutthroat, especially at Mad Lake. The lower reaches of five Mad River tributaries are known to be fish-bearing: Hornet Creek (rainbow trout, juvenile Chinook); Young Creek (cutthroat trout), Cougar Creek (rainbow trout, cutthroat trout, and bull trout), and Whistling Pig and Blue Creeks (cutthroat trout).

Continuous-recording telemetric stream gages in Mad River (near Camp Nine), Entiat River (below Entiat Falls), and Entiat River (near Dill Creek) began operation in September 2002. Data from these gages show base flow of 20 cubic feet per second (cfs) and a peak flow of 500 cfs in the mid-Mad River; base flow of 40 cfs and a peak flow of 1000 cfs in the Entiat River below Entiat Falls, and base flow of 80 cfs and a peak flow of 1200 cfs in the Entiat River near Dill Creek.

Miscellaneous late-summer stream discharge measurements are taken periodically on the larger fish-bearing tributaries within the Entiat portion. A summary of these measurements shows that base flow in Young Creek has ranged from less than one cubic foot per second (cfs) to 5 cfs; base flow in Cougar Creek has ranged from 4 cfs to 9 cfs; and base flow in Hornet Creek has ranged from 1.5 cfs to 6 cfs.

Myrtle Portion

This portion of the potential wilderness area contains portions of the Entiat River, North Fork Entiat River, and two alpine lakes, Myrtle and Fern. In spite of heavy fishing pressure and a high catch rate, Myrtle Lake is overpopulated with stunted eastern brook trout, which were introduced beginning in the 1930s. Myrtle Lake and its outlet stream are the primary recruitment source of eastern brook trout to the upper Entiat River. Elimination of this brook trout population would help with conservation of the native cutthroat population.

Fern Lake is 7.6 trail miles and 3000 vertical feet beyond the North Fork trailhead. This challenging access results in low fishing pressure and relatively good fishing for healthy cutthroat trout.

This portion of the potential wilderness area provides a proportionally large percentage of the Entiat Basin runoff. Direct measurements of stream flow in this area are seldom performed. A continuous-recording telemeter stream gage six miles downriver from this area (Entiat River at the North Fork Campground) began operation in September 2002. Data from this gage shows base flow of 35 cfs and a peak flow of 1400 cfs.

Rock Creek Portion

The area is located mid-drainage in the Chiwawa River Watershed. The lowest elevation is approximately 2,300 feet with upper elevations over 7,000 feet along Entiat Ridge. Water quality is generally high except during spring runoff or during storm generated peak flows.

The Chiwawa River and two tributaries in this potential wilderness area support significant populations of listed. Spring Chinook salmon (endangered) and bull trout (threatened) utilize the lower six miles of Rock Creek and Chikamin Creek. Rock and Chikamin Creeks contribute to Chiwawa watershed redd counts, which account for 70-80 percent of the Wenatchee sub-basin redd counts. For spring Chinook, the Chiwawa River between Rock and Phelps Creek typically contains 20 percent of the total spring Chinook redd counts in the Wenatchee sub-basin. Both of these stream systems also have resident fish including westslope cutthroat and rainbow trout.

The meandering nature of the Chiwawa River down-slope from this potential wilderness area is highly prone to channel erosion and bank under-cutting and has high levels of woody debris resulting from bank failure and undercutting. This is to be expected for this type of floodplain channel, which provides some the best salmonid habitat remaining in the Wenatchee River watershed.

In general, wilderness designation can be beneficial to aquatic habitat by allowing for wildland fire use or containment suppression strategies. Fire can enhance fish habitat by allowing for the periodic pulse of channel forming materials (wood and sediment) delivered to stream channels. When management objectives exclude fires, as in late-successional reserves, suppression activities can directly affect rivers and riparian areas due to the use of pumps, foam, retardant, and the construction of containment lines. Indirectly, suppression of fire affects watershed function by altering the delivery of large wood and sediment to streams.

Range¹

Chelan Portion

Table 12--Percentage of grazing suitability areas and current allotments - Chelan

Percent Area Suitable for Cattle Grazing	Percent Area Currently in Cattle Allotments	Percent Area Suitable for Sheep Grazing	Percent Area Currently in Sheep Allotments
1	0	9	0

Entiat Portion

Table 13--Percentage of Grazing Suitability Areas and Current Allotments - Entiat

Percent Area Suitable for Cattle Grazing	Percent Area Currently in Cattle Allotments	Percent Area Suitable for Sheep Grazing	Percent Area Currently in Sheep Allotments
6	0	13	0

¹ NOTE: Recreation stock allotments are not depicted in the tables, as they are an annual approval for recreation purposes and do not fall under the commercial cattle and sheep grazing permits.

The area currently contains existing, or portions of existing, recreation stock allotments with varying degrees of potential for livestock grazing. The North Fork Entiat River and Pyramid Creeks are part of the Pyramid Creek Recreation Stock Allotment.

The upper Mad River portion of the area, in the vicinity of Blue Creek, is currently inventoried as the Mad Lake Recreation Stock Allotment. This portion is used through the summer and fall by recreation stock, but no commercial use has occurred here in the past 20 years.

The remainder of the area including the main Entiat River and lower Mad River drainages has little if any potential for stock allotments due to a combination of topography, vegetative types, and access.

Myrtle Portion

The portion of this area within the main Entiat River drainage has no potential for domestic or recreation stock allotments due to topography or an almost complete lack of forage vegetation types. The portion in the North Fork Entiat River is currently part of the Pyramid Recreation Stock Allotment and receives use annually from both commercial outfitters and hunters stock.

Table 14--Percentage of grazing suitability areas and current allotments - Myrtle

Percent Area Suitable for Cattle Grazing	Percent Area Currently in Cattle Allotments	Percent Area Suitable for Sheep Grazing	Percent Area Currently in Sheep Allotments
3	0	10	0

Rock Creek Portion

Although this area lies within the boundaries of two existing recreation allotments and one domestic stock allotment, historic range resource inventory maps show only three small meadows of usable forage in the upper portion of Chikamin and Marble Creeks. All three meadows are located in the Lower Chiwawa Recreation Stock Allotment and are approximately ten acres each. They receive some hunter stock use in the fall but no commercial use. The rest of this roadless portion is covered by varying age classes of dense timber, or has steep topography that limits the potential for any class of livestock grazing without vegetative manipulation.

Table 15--Percentage of grazing suitability areas and current allotments – Rock Creek

Percent Area Suitable for Cattle Grazing	Percent Area Currently in Cattle Allotments	Percent Area Suitable for Sheep Grazing	Percent Area Currently in Sheep Allotments
2	0	5	0

Vegetation and Ecology

Summary for All Portions

Generally, the priority for restoration treatments occurs within the wildland urban interface (WUI) or within the dry and mesic forest groups. Because the dry and mesic forest is 42 percent of the PWA, the prohibition on restorative treatments if designated wilderness is a concern. Almost 15,000 acres of dry and mesic forest is in the WUI in the Chelan portion, and about 4600 acres of dry and mesic forest is in the WUI in the Entiat portion. The Myrtle and Rock Creek portions have very little dry or mesic forest; however, over one third of the Rock Creek portion is classified as WUI.

The Healthy Forest Restoration Act (HFRA) authorizes direction to implement fuel reduction projects in the WUI. The HFRA prohibits authorized projects in wilderness areas.

Timber Harvest Suitability – all portions

The underlying criteria for determining timber harvest suitability are found in the Forest and Rangeland Renewable Resources Planning Act of 1974, 36CFR219.12, and Forest Service Handbook 1909.12, Chapter 60.

For the Colville and Okanogan-Wenatchee National Forests, the general criteria for timber suitability that will be used for timber harvest suitability are:

- Is it forest land (10 percent crown cover minimum, productivity $>20 \text{ ft}^3/\text{ac}/\text{yr}$).
- The area has not been withdrawn from timber harvest or production.
- Soil, slope, or other watershed conditions will not be irreversibly damaged (based on soil attributes for erosion, instability, or compaction potential, slopes >65 percent, and certain land types).
- Reforestation can be assured within five years (lack of shallow soils, low frost heave potential, low surface rock, plant community type, certain land types, and elevation $<5,500$ feet).
- Economic and technologic viability (<0.5 miles from existing transportation system, species value or condition, volume availability, logging systems).

In consideration of all the criteria for determining timber harvest or timber production suitability and not just the fact that harvestable species can grow at a specific location, it appears this PWA does not have conditions that pass all the criteria. The main criterion for failure is that unacceptable resource impacts would likely occur due to road construction activities. This does not preclude helicopter operations that could fly material over sensitive areas to adjacent road systems. However, in most if not all cases helicopter logging and the associated expenses (such as manual slash treatments) would not be an economically viable option.

Noxious Weeds – all portions

Noxious weed species that have been introduced into the PWA include diffuse knapweed and bull thistle. Noxious weeds are established on roads leading to trailheads in this area.

Insects and Disease – all portions

The Wilderness Act of 1964 allows for the control of insects and disease, but taking such actions in wilderness is rare. Forest Service wilderness policy (Forest Service Manual 2324.11) directs the agency “to allow indigenous insect and plant diseases to play, as nearly as possible their natural ecological role”. Policy also directs the agency to “protect the scientific value of observing the effect of insects and disease on ecosystems and identifying genetically resistant plant species”, and finally, “to control insect and plant disease epidemics that threaten adjacent lands or resources.”

Various portions of this PWA is comprised of a parkland forest group and is known to support stands of whitebark pine. Due to a combination of anthropogenic causes (introduced white pine blister rust, global warming, and fire suppression leading to high severity wildfires) coupled with predation from native mountain pine beetles, whitebark pine stands are at risk across their range. These whitebark pine stands are of inherent value as a plant community, for providing important habitat for wildlife including the federally listed grizzly bear, and for their aesthetics in contributing to the social setting. Wilderness designation would limit restoration options for these stands. Manipulations would only be considered in order to protect the composite wilderness resource, and only as a last resort to preserve naturalness at the expense of trammeling.

The Wenatchee Service Center has analyzed data produced by a 2008 aerial survey in order to provide land managers with a summary of forest insect activity in particular areas. Aerial survey information can give a valuable overview of recent tree damage and damaging agents at the time of the flight. Note that trees identified as killed by bark beetles generally were attacked in the summer of 2007 or possibly spring of 2008. It takes several months for the crown of a beetle-killed tree to lose its green color. The speed of the color change depends on the condition of the tree at the time of attack.

All of the Chelan South analysis area is included in the 2001 Entiat-Chelan Inventoried Roadless Area (Forest Plan Appendix C), and 2007 potential wilderness area for Forest plan revision.

The most extensive damaging agent reported in the Chelan South analysis area was mountain pine beetle in lodgepole pine. Over 2,200 acres were mapped, mostly between Crescent Hill and Crow Hill. Aerial survey reported heavy lodgepole pine mortality, estimated at 38 to 39 trees per acre. Nearly 1,000 ponderosa pines were also killed by bark beetles. The extent of mountain pine beetle activity in lodgepole pine has been increasing in the last few years (Graph 3). An estimated 135,700 lodgepole pines have been killed since 2005.

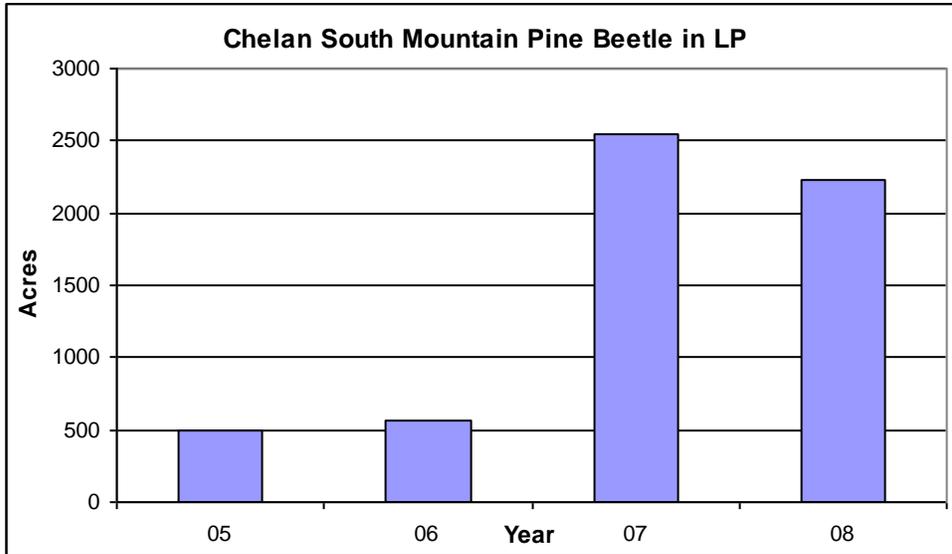


Figure 1—Chelan south – mountain pine beetle in lodgepole pine

One pocket of beetle-killed whitebark pines was mapped in the vicinity of the South Fork of Bear Creek, where damage to whitebark pines was also reported in 2007.

Defoliation by western spruce budworm was mapped on 936 acres. This is a substantial decrease from the acres reported in 2007 (Graph 4). However, visible defoliation is likely to continue for at least one or two more years.

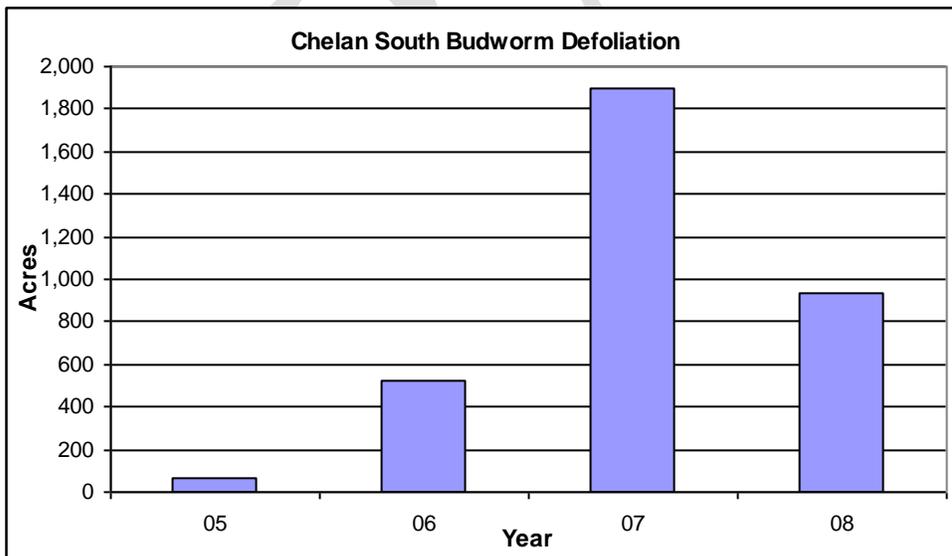


Figure 2—Chelan south budworm defoliation

Long term control of western spruce budworm impacts is best achieved through silviculture. Stands with a large percentage of preferred host species will support an outbreak longer than stands with less host. Multi-storied stands will also sustain outbreaks longer than single-storied stands, since they will provide dispersing larvae with readily available food and shelter from predators. Direct control with pesticides may be appropriate in certain areas where important resources could be lost if host trees are defoliated. Entomologists at the Wenatchee Service Center are available to assist with analyzing and executing direct control projects if needed.

No Douglas-fir beetle activity was reported.

Chelan Portion

A timber sale was planned in Big Creek to harvest high risk lodgepole pine, but was never implemented and not likely to due to the 2004 fire. Adjacent stands in Twenty-five Mile Creek had large areas infected with root rot and dwarf mistletoe but these also burned in the North 25 Fire of 1998 and in the Deep Harbor Fire of 2004.

The principal species present is Douglas-fir. Previous logging primarily along the Railroad Creek drainage and road and Lightning Ridge, removed some of the existing old-growth ponderosa pine leaving pole-sized Douglas-fir.

There are some highly productive small areas such as near Domke Lake where water-loving species such as western red cedar and Engelmann spruce mix with Douglas-fir to form high volume old-growth forests. Understory vegetation varies from the pinegrass, ocean spray type at low elevation to dwarf huckleberry and false azalea at higher elevations.

Table 16--Stand data percentages - Chelan

Suitable for Timber Harvest	Forest Groups		WUI	
	0%	Parkland	11%	Total WUI
Cold Dry		10%	WUI in Dry and Mesic Forest	57%
Cold Moist		28%		
Mesic		5%		
Dry		39%		
Non-forest		7%		

Fire

Fire suppression and exclusion has some influence on ecological and vegetative conditions within the PWA, though some portions of the area have a much longer fire return interval due to elevation and/or aspect. Heavy fuels have accumulated in the Domke Lake and Railroad Creek portions of the PWA.

Annual fire occurrence is moderate and primarily caused by lightning. Fuel accumulations are moderate due to exposed rock at lower elevations and to alpine meadows at higher elevations. Heavy fuel accumulations continue to build in slightly more moist micro-sites such as Lightning Creek and near Domke Lake. Most of the area south of Holden was

burned in the stand replacement Deep Harbor Fire of 2004. The Domke Lake and Bear Creek fires burned over 10,000 acres in 2007.

Insects and Disease

Mistletoe in Douglas-fir is the primary damaging agent in this area. Western spruce budworm infestation, although not as damaging here as in Fish Creek, poses a potential problem due to the high proportion of Douglas-fir host trees. Currently, mountain pine beetle is infecting trees on Lightning Ridge. Blister rust (a non-native pathogen) is affecting western white pine and possibly whitebark pine in the Railroad Creek area.

Threatened, Endangered, and Sensitive Plant Species

The Entiat-Chelan PWA is known to support one rare plant species, peculiar moonwort (*Boytrychium paradoxum*).

Entiat Portion

Vegetation types vary from the southeast to the northwest. In the southeast, ponderosa pine, shrub and grass dominate the lower southern elevations of Tye Ridge. Ponderosa pine, Douglas-fir, grand fir and lodgepole pine dominate the mid-elevations through the middle of the area. Less Douglas-fir but more lodgepole pine, Engelmann spruce, grand-fir, western white pine and subalpine fir are prominent at the higher elevations. Approaching timberline there is less lodgepole pine but more subalpine fir, Engelmann spruce, whitebark pine and subalpine larch. The upper third of the area is colder and wetter. Here, there is a strong influence of the true firs including Pacific silver fir, Engelmann spruce and western hemlock. Mountain hemlock shows up where snowfields last through the summer on the highest and wettest sites. Here, whitebark pine, subalpine fir and subalpine larch also fringe the timberline.

The table below shows the percentage of area suitable for timber harvest and other data.

Table 17--Stand data percentages - Entiat

Suitable for Timber Harvest	Forest Groups		WUI	
	0%	Parkland	17%	Total WUI
Cold Dry		12%	WUI in Dry and Mesic Forest	25%
Cold Moist		55%		
Mesic		7%		
Dry		7%		
Non-forest		2%		

Fire

Some 4,452 acres of this portion is in trees originating after the Hornet Creek fire of 1966 and the Gold Ridge and Tommy Creek fires in 1970. All three of these burns are now stocked or over-stocked with combinations of lodgepole pine, Douglas-fir and ponderosa pine that are from natural seeding, aerial seeding or planting. Several hundred acres of the over-stocked stands have been pre-commercially thinned.

In 1994, the Tyee Creek wildfire burned over 16,000 acres of the Entiat portion. The mixed severity fire burned through most of the lower one quarter of the area.

It created a strong mosaic from very little damage to forest structure to total destruction of forest stands. Over 6,600 acres burned at high intensity. Most of the high intensity burned acres are in mixed conifer stands at the mid to upper elevations where fires typically burn at high intensity. Three general areas of high intensity were involved; upper Hornet Creek and Miner's Creek, between Mott and Tyee Creeks and in the Wilma Creek area. Except upper Hornet Creek and part of Miner's Creek, these acres are rather remote. In all these areas the natural regeneration of lodgepole pine has a strong influence on forest development. By 1998, most of acres had naturally regenerated to lodgepole pine, with some minor amounts of Douglas-fir, ponderosa pine and true firs. Most of the natural regeneration has developed at about two hundred to two thousand trees per acre, much like the natural stands that were destroyed by the fire. About 850 acres that didn't naturally regenerate very well in upper Hornet Creek have been planted to mostly Douglas-fir.

Ridge tops in this area are open grass-forb communities with some wet areas and lakes. Avalanche paths create open corridors through timbered valleys, increasing vegetative diversity and grass-forb-brush species similar to those that regenerate after fire or logging.

Annual fire occurrence is moderate with most of the fires started by lightning. Fuel loadings range from heavy accumulations of down fuels at lower elevations to scattered alpine timber and meadows at higher elevations. Periodic large fires have occurred with the most recent fires being the Tommy Creek Fire and Tyee Fire in 1994 and Tommy Creek Fire in 2001.

Insects and Disease

In the moist forest group, root diseases that spread through root contact are increasing along with increasing stand densities and greater proportions of host species. Bark beetle populations are greater than historical levels. Fire exclusion has increased the severity and incidence of mountain pine beetle attacks. Historically, lodgepole pine stands at all development stages occurred across the landscape. Now many stands are susceptible to beetles, and fire control can prevent their being recycled in the earlier development stages where susceptibility is lessened.

Engraver beetle and Douglas-fir beetle mortality is greater than historically because the insects attack suppressed trees in dense stands and trees that have been weakened by outbreaks of defoliators and pathogens (Hessburg and others 1994). Elevated mortality from native and introduced pathogens and insects increases fuel loads within moist grand fir stands.

In the wet and subalpine forest group, dwarf mistletoe infestations are a major cause of mortality in western larch. White pine blister rust and subsequent mountain pine beetle attacks on infected trees has reduced the presence of western white pine.

In subalpine fir forests, besides mountain pine beetles, the primary insect are Douglas-fir beetle, spruce beetle, and fir engravers. Pathogens in these forests include lodgepole pine and larch mistletoe, annosum root and butt disease, and Indian paint fungus.

As the incidence of root disease increases, there is a concomitant increase in bark beetle mortality.

Threatened, Endangered, and Sensitive Plant Species

The Entiat-Chelan PWA is known to support one rare plant species, peculiar moonwort (*Boytrychium paradoxum*).

Myrtle Portion

Precipitation ranges from 40 to 70 inches with an average of 50 inches. About 70 percent falls as snow which can range from 6 to 15 feet in depth for absorbing early and late season use.

Most of this lies in the valley bottoms up to mid-slope and extending up side drainages. All of the area is classified as wet ecotype with the principal species being small diameter Douglas-fir, lodgepole pine, subalpine fir, and Engelmann spruce. On the most productive sites, Pacific silver fir is a common understory species. Ridge tops in this area are open grass-forbs and whitebark pine communities with some wet areas and lakes. Avalanche paths create open corridors through the timbered valleys, increasing vegetative diversity and grass-forbs-brush species similar to those that regenerate after fire or logging.

Table 18--Stand data percentages - Myrtle

Suitable for Timber Harvest	Forest Groups		WUI	
	0%	Parkland	55%	Total WUI
Cold Dry		3%	WUI in Dry and Mesic Forest	0%
Cold Moist		40%		
Mesic		0%		
Dry		0%		
Non-forest		2%		

Fire

Annual fire occurrence is low with half of the fires started by lightning and half being human-caused. Fuel loadings range from heavy accumulations of down fuels at lower elevations to scattered timber and meadows at higher elevations. Periodic large fires have occurred, but there have been no large fires in the area in the last 50 years.

Insects and Disease²

In the moist forest group root diseases the spread through root contact are increasing with increasing stand densities and greater proportions of host species. Bark beetle populations are greater than historical levels. Fire exclusion has increase the severity and incidence of mountain pine beetle attacks. Historically, lodgepole pine stands at all development stages occurred across the landscape. Now many stands are susceptible to beetles, and fire control

² Note: Insect and disease descriptions adapted where applicable from *Late Successional Reserve and Managed Late Successional Area Assessment – Wenatchee NF, 1996*

can prevent their being recycled to earlier development stages where susceptibility is lessened.

Engraver beetle and Douglas-fir beetle mortality is greater than historically because the insects attack suppressed trees in dense stands and trees that have been weakened by outbreaks of defoliators and pathogens (Hessburg and others 1994). Elevated mortality from native and introduced pathogens and insects increases fuel loads within moist grand fir stands.

In the wet and subalpine group dwarf mistletoe infestations are a major cause of mortality in western larch. White pine blister rust and subsequent mountain pine beetle attacks on infected trees has reduced the presence of western white pine.

In subalpine fir forests, besides mountain pine beetles, the primary insects are Douglas-fir beetle, spruce beetle, and fir engravers. Pathogens in these forests include lodgepole pine and larch mistletoe, annosum root and butt disease, and Indian paint fungus.

As the incidence of root disease increases, there is a concomitant increase in bark beetle mortality.

Threatened, Endangered, and Sensitive Plant Species

The Entiat-Chelan PWA is known to support one rare plant species, peculiar moonwort (*Boytrychium paradoxum*).

Rock Creek Portion

Most of this portion is classified as moist forest types typified by Douglas-fir, Pacific silver fir, grand fir and western hemlock. Western white pine and western red cedar are also present. Common understory species include vine maple, huckleberry, false azalea, and Oregon boxwood.

The table below shows the percentage of area suitable for timber harvest and other data.

Table 19--Stand data percentages – Rock Creek

Suitable for Timber Harvest	Forest Groups		WUI	
	0%	Parkland	12%	Total WUI
Cold Dry		2%	WUI in Dry and Mesic Forest	6%
Cold Moist		81%		
Mesic		2%		
Dry		0%		
Non-forest		3%		

Fire

Annual fire occurrence is light to moderate with most started by lightning. The vegetation type is mostly moist forest types with Douglas-fir, western white pine, grand fir, western hemlock and Pacific silver fir. A portion of the area in the southeastern part of the potential wilderness area is a mixed severity fire regime (35-100 year frequency, non-stand

replacement type) of Condition Classes II and III. The other two predominant fire regimes are of the 35-100+ year frequency, stand replacement type (FR IV) and Fire Regime V of longer fire intervals (+200 years, stand replacement type). In FR IV, Condition Classes II and III are common. Condition Classes I and II predominate in the FR V area. Fuel loadings are moderate to heavy accumulations throughout and grade to scattered accumulations in alpine meadows at higher elevations. Periodic large fires have occurred and are expected in the future given fire regime condition class (FRCC) and localized insect infestation levels.

Insects and Disease

The Rock Creek area was heavily defoliated by spruce budworm in the mid-1970s and aerially sprayed in 1977. Spruce budworm began another defoliation cycle in 2004, which is continuing at present (2006). In recent years, mountain pine beetles have killed many of the western white pine in the area and have killed some lodgepole pine near Minnow Creek.

Threatened, Endangered, and Sensitive Plant Species

The Entiat-Chelan PWA is known to support one rare plant species, peculiar moonwort (*Boytrychium paradoxum*).

Minerals and Soils

Chelan Portion

Bureau of Land Management (BLM) LR2000 mining claim data (12/02/2004) indicate that there are no mining claims currently located within or adjacent to the Chelan portion of the potential wilderness area.

The area north of Holden is underlain by pre-Cretaceous metamorphic rock and Mesozoic granitic rock. Of importance for mineral resources are the contact or shear zones between these two types of rocks, as well as the body of the Riddle Peak pluton, much of it collectively referred to as the Holden Assemblage. The potential wilderness area lies within the Railroad Creek mining district and is adjacent to the historic Holden Mine where substantial amounts of copper, gold, silver, and zinc, were produced from 1938 to 1957. The privately owned volcanogenic massive sulfide (VMS) deposit, or what remains of it after mining, and the entire mine site is surrounded by the PWA and the Glacier Peak Wilderness. The mine site is mostly on national forest system (NFS) lands and has been withdrawn from all forms of mineral entry. It is undergoing restoration under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act.

Significant deposits of a similar nature are not known to occur within the area. However, based upon a U.S. Geological Survey and U.S. Bureau of Mines study of the Glacier Peak Wilderness and adjacent areas, the western portion of the subject area is considered to have a “moderate” potential of additional VMS deposits and a “low” potential for the occurrence of nickel, cobalt, chromium, and platinum group metal resources in mafic layered complexes. Except for the western 10 percent of the area, which is classified “prospectively valuable” for geothermal resources, the area is not considered to have

potential for any leasable commodities. It has no existing mineral leases, nor are there any lease applications pending or expressions of interest.

About 80 percent of the soils have developed from primarily granitic rocks; however, most of them have some volcanic ash mixed into the surface layer. Most of the other soils have formed in glacial till. All soils have at least some influence of volcanic ash in the surface layers. The glacial till soils tend to occur mostly along the slopes that face Lake Chelan, and in Railroad Creek. Both soil types have enough coarse materials in them so that they do not become slippery or sticky when wet, and both have good bearing strength.

The area south of Holden is dominantly underlain by pre-Cretaceous metamorphic rocks, but is also underlain in part by Mesozoic intrusive rocks. The area around Milham Pass, which is underlain by a rhyodacite plug containing disseminated sulfides (Church and Strotelmeyer, 1984), is of most interest as far as mineral potential is concerned. That area has been identified by the U.S. Geological Survey and U.S. Bureau of Mines as having a low potential (as compared to "no" potential) for the occurrence of base- and precious metal resources in hydrothermal veins. The area also has deposits of pumicite, which have not been adequately investigated to determine if they have commercial value. The area has not been classified "prospectively valuable" for any of the leasable commodities. It has no existing mineral leases pending lease applications, or expressions of interest.

About half of the soils have formed in deposits of volcanic ash and pumice (depths vary from as little as six inches to more than 30 feet). Bedrock-derived soils are from a mix of metamorphic and granitic rocks. There is also a small amount of soils that have developed in glacial till. Ash soils are easily displaced once the protective surface vegetation has been removed. Ash soils are very dusty during dry weather. The granitic soils are less dusty and have better bearing strength when unconfined.

Entiat Portion

The northeast and southern parts of the area are underlain by Mesozoic metamorphic rocks, while the remainder is primarily underlain by Mesozoic granitic rocks, many of which have been metamorphosed to gneiss.

About 66 percent of the soils have formed in deposits (depths vary from as little as 6 inches to more than 30 feet) of volcanic ash and pumice, and the rest have formed in granitic materials. Ash soils are easily displaced once the protective surface vegetation has been removed. These soils are also very dusty when dry. The granitic soils, on the other hand, have excellent traffic bearing characteristics; they are not as dusty as the ash soils. Neither soil is sticky or slippery when wet.

The area's mineral resources have not been studied in detail by either the U.S.G.S. or U.S. Bureau of Mines (U.S.B.M.), but the area is reported to have occurrences of gold (both placer and lode), platinum, kyanite, graphite, limestone, mica, pumice, and slate. There is no data that would indicate that any of these occurrences constitute deposits of commercial value. According to the Bureau of Land Management records (12/02/04), there are no mining claims located within or adjacent to the area. The area is not classified "prospectively valuable" for any of the leasable commodities, and it has no existing leases nor any pending lease applications.

Myrtle Portion

This area is underlain by Mesozoic metamorphic rock and granitic rock. Surface deposits of pumicite derived from the eruption of Glacier Peak occur sporadically. There is no data that would indicate that the pumicite deposits have commercial value. The area around Milham Pass (at the very north edge of the potential wilderness area where it abuts the Glacier Peak Wilderness) is underlain by a rhyodacite plug, which contains disseminated sulfide minerals (Church and Stotelmeyer, 1984). Based upon this, the U.S.G.S. and U.S.B.M. have identified the area around Milham Pass as having a “low” potential for the occurrence of base and precious metal resources in hydrothermal veins.

According to Bureau of Land Management records (12/02/04), the area has no mining claims within or adjacent to it. The area is not classified “prospectively valuable” for any of the leasable commodities, and there are no existing leases, nor are there any pending lease applications.

Rock Creek Portion

The area is geologically complex. The northeastern edge of the Chiwaukum graben—the Entiat Fault—marks the boundary between Mesozoic and older metamorphic rocks on the northeast side of the fault and Eocene non-marine sedimentary rocks to the southwest. The Entiat Fault runs in a northwest direction through the middle portion of the potential wilderness area. There are also several other relatively large faults that complicate the geologic structure of the area. Intruding into the older metamorphic rocks are several granitic intrusive bodies. An abundance of glacial drift covers much of the lower lands.

Due to the proximity to Glacier Peak, many of the soils have formed in volcanic ash and pumice.

The combination of geography, land type, and precipitation gives soils in the upper glaciated mountain slopes moderate to high inherent productivity, while the scoured glacial troughs generally have low inherent soil productivity. Productivity for wood fiber is generally low to moderate on the scoured glacial troughs, and moderate to high on the glaciated slopes. Soils within this potential wilderness area have a moderate to high erosion hazard.

This area lies within the Chiwawa Mining District, and is best known for the historic Red Mountain Mine, which lies at the north end of the potential wilderness area. The mineralization at the mine is associated with a breccia pipe at or near the contact of granitic and metamorphic rocks. The mine operated sporadically in the 1930s and had substantial development work, but production was minor. Ore grade was not sufficient to keep it in operation. Except for exploration work, it has not operated since around 1940. According to the U.S.G.S. and U.S.B.M., the northern part of the potential wilderness area near the Red Mountain Mine has a “high” potential for occurrence of base metal resources in breccia pipes or disseminated porphyry deposits. These deposits could also contain silver and gold.

The majority of the area lying south of Willow Creek has not been studied in detail by the U.S.G.S. or the U.S.B.M., but it is reported to have occurrences of silver, arsenic, talc, gold, tungsten, pumice and limestone, most of which have not been investigated adequately to determine if commercial deposits exist. A prospect of recent vintage, the

Gold Ring project in Chikamin Creek (but outside the potential wilderness area) has a reported occurrence of silver. Three active mining claims continue to cover this deposit. Also of interest are gold occurrences reported in the meta sedimentary rocks around Maverick Peak near the southeast end of the area. Traces of placer gold in the drainages located below Maverick Peak tend to confirm at least marginal potential.

Discontinuous veins of copper and gold in the lower Rock Creek area and occurrences of gold in metamorphic rocks on the southeast side of Phelps Creek are also of interest. None of these occurrences have a record of past production, nor have they been explored in other than a superficial way.

Pumice is found throughout the area, but deposits of thickness greater than four feet are generally limited to the north half or the potential wilderness area. Pumice mining has occurred in that past near the end of the Chikamin Road.

Many lode and placer claims have been located within or immediately adjacent to this potential wilderness area. However, all but the three Gold Rink claims have been abandoned. A small part of the area between Rock Creek and Alder Creek has been classified as “prospectively valuable” for coal resources, and the portion of the area lying north of Rock Creek has been classified as “prospectively valuable” for geothermal resources. There has been no industry-level interest in leasable minerals in this part of the forest.

Cultural Resources

Unless a site has been determined to be ineligible for the National Register, it is managed as a significant site until such a determination is made. Cultural sites are protected by law, however a wilderness designation or a roadless designation would afford additional protection to cultural sites from ground disturbing activities.

Chelan Portion

Centuries before the first Euro-American contact, ancestors of the Chelan Indians made their homes along the lower margins of Lake Chelan. From these villages, individual Indians and families regularly traveled uplake, camping along the shores, and making hunting and food plant gathering expeditions into the appropriate backcountry areas. To date, however, archaeological indications of these uses south of the lakeshore have not been located.

One pictograph site and reports of lithics occurrences exist along the south and west shore of the lake, between Lucerne and Twenty-five Mile Creek. However, there are no archeological sites known in the backcountry south of the lake within the PWA, though one site is known just outside the PWA in the Lucerne vicinity. Historic uses would most likely relate to the succession of mining activities that took place at Holden and in the Railroad Creek Valley, and include numerous adits and prospects. The incline railway up to the top of the Railroad Creek Road switchbacks is one relict of the past mining activity, though little if any of the route is within the PWA.

The predominant historic use of this unit was in fire protection. Lookouts were in existence on Junior Point (1931-68), Big Hill (1933-1950s), Pyramid Mountain (1917-1954), Crow Hill (circa 1922) and Domke Mountain (1920-1970). Sheep grazing was generally

confined to the area south and west of the Chelan Mountain divide, but allotment boundaries did spill over into the upper Corral and Big Creek drainages. Sheep also grazed the Lightning Ridge area during the period when the barge was available to bring the animals uplake (circa 1910s). The northern part of the unit was within the trapping territory of A.L. Cool, who preceded Gordon Stuart at Domke Lake. Some remnants of this use may yet exist.

Three recreation residences and the Domke Lake resort are historic structures with variable integrity due to constant maintenance and renovation. Domke Lake Resort has been in existence in one form or another since the early 1920s. Though the cabins have been extensively altered over time, visitors have a unique opportunity to experience what life up lake might have been like in the early part of the century.

Entiat Portion

A portion of the Entiat unit (Tye Mountain and Mad River country) was reportedly used by the Entiat Indians for travel, hunting, and food gathering. No prehistoric sites are known within this unit, but cultural resource survey of the area has been minimal.

Historically, the unit received intensive use by sheep grazing, and sites related to this use are likely. Administration of the area by the Forest Service for fire protection and recreational use is evident in the unit with the old lookout sites on Tye Mountain (1931-1950), Klone Peak (1931-1960), and Cougar Mountain (1921-1969), and the shelter at Blue Creek. Evidence of former trap lines might also be expected in this area.

Myrtle Portion

Historical information about the Myrtle Lake Unit is scanty. Duncan Hill, along the south margin of the unit, was the site of a Forest Service fire lookout between 1923 and 1967. The surrounding country between the North Fork of the Entiat and the summit of the Chelan Mountains was part of the fur trapping territory of Gordon Stuart, whose permanent residence was at Domke Lake, near Lake Chelan. It is likely that some of his trap lines may still be seen within the unit. American Indians are presumed to have used the area but physical evidence or specific sites information is lacking.

Rock Creek Portion

It is likely that portions of this area were once utilized by the Wenatchee Indians in their travels for seasonal food collecting. The area includes a reported Indian trail running from Grouse Creek to Mad Lake. The area borders an ethnographically reported Wenatchee summer village site at Rock Creek, as well as an important rendezvous point on Chikamin Flats.

Historic-era sites dating from the 1920s include a trapper's cabin site along Rock Creek built and used by W.O. Burgess, and the former Estes Butte fire lookout. The area also experienced use for sheep grazing and for mineral prospecting and may include remnants of those past uses.

Land Uses and Special Uses

Chelan Portion

The Domke Lake resort is under a special use permit. The Domke Lake area was specifically excluded by Congress as part of the Washington State Wilderness Act of 1984 Glacier Peak Addition. Local residents have always favored roadless status without wilderness designation due to the long history of the Domke Lake Resort and the floatplane use of Domke Lake. If the area is designated as wilderness, resort-based tourism and motorized use at Domke Lake would likely cease. Three recreation residences along Lake Chelan are also under special use permits. Continued occupancy of these residences would also be incompatible with wilderness designation.

Entiat Portion

Outfitter guide permits and an occasional event permits for organized trail or snowmobile groups are the only special uses in the area.

Myrtle Portion

There are no special land use sites within the area. Outfitter guides under special use permits do utilize the area every year under approved operating plans. This activity is primarily packing with livestock both for camping and hunting.

Rock Creek Portion

Other than the occasional and temporary use of the area by outfitters and guides under permit or the occasional authorization of a recreation group event, there are no special land uses occurring within the area.

The Entiat-Chelan Potential Wilderness Area falls entirely within lands ceded to the U.S. Government under the Yakama Treaty. Indian tribes hold rights reserved under treaty and recognized in statutes, executive orders, and policies. Generally, these included rights to fish at usual and accustomed grounds and stations, the right to hunt and gather on open and unclaimed lands, the right to erect temporary houses to cure fish, and the right to pasture horses and cattle on open and unclaimed lands.

Private Lands

Chelan Portion

There is a small parcel at Lightning Creek that is accessed by boat

Entiat Portion

The west $\frac{1}{2}$, N.W. $\frac{1}{4}$ and the S.W. $\frac{1}{4}$ of Section 36, T. 27 N., and R.18 E. are held by Longview Fibre Company. The remainder of Section 36 is Washington Department of Natural Resources land. Both sections were heavily burned in the 1994 Tyee fire and had roads constructed and salvage logging done following the fire.

Myrtle Portion

There are no private lands within the area.

Rock Creek Portion

There are no private lands within this portion. A private in-holding at Trinity is near but not adjacent to this portion.

NEED FOR WILDERNESS

Location and size of other wildernesses in the general vicinity and distance from proposed area and population centers:

All portions of this PWA border, or indirectly border, the Glacier Peak Wilderness (570,573 acres). Several additional wilderness areas are also nearby including the Henry M. Jackson Wilderness (100,356 acres), the Alpine Lakes Wilderness (362,789 acres), the Lake Chelan-Sawtooth Wilderness (151,435 acres), the Stephen Mather Wilderness (634,614 acres) and the Pasayten Wilderness (529,477 acres). The PWA is generally within two-to-four hours driving time from population centers such as Seattle-Tacoma, Yakima, Tri-Cities, Spokane, and Wenatchee. The Chelan portion of the PWA also involves a boat ride, adding several hours to the journey.

In ranking this PWA for its potential to provide a high quality wilderness recreation setting it ranked as high due to adjoining the Glacier Peak Wilderness. Many trails entering the wilderness pass through this PWA enroute. Much of the area is accessible from the Lake Wenatchee and Chiwawa area, the Entiat Valley, and the upper reaches of Lake Chelan. The PWA provides high quality scenic destinations that would attract wilderness users. In addition, interconnected trail systems would facilitate both day trips and overnight use.

Present visitor pressure on other wildernesses, and trends and changing patterns of use:

The wildernesses listed in the section above and other wildernesses throughout the state serve a growing population from both sides of the Cascade Range. Most of the users are from the greater Puget Sound area. The portions of these wildernesses with easy access to spectacular destinations receive heavy use. However, in general, there is already adequate wilderness on the east slope of the Cascades to absorb current and future recreation demand while maintaining moderate to low levels of use.

The portion of the Glacier Peak Wilderness (GPW) in the upper Entiat River valley receives moderate levels of use with heaviest use experienced during fall hunting season. The Entiat portion of GPW is relatively isolated from the main body to the north and northwest because there is only one connecting trail to the north through the Chelan Ranger District.

Other nearby wilderness destinations that receive moderate to heavy use include Spider Meadows, Lyman Lake, Hart lake, Holden Lake, and Buck Creek Pass.

Extent to which non-wilderness lands provide opportunities for unconfined outdoor recreation experiences:

A number of existing trails in the PWA access wilderness destinations. Inclusion of these portions of the Entiat-Chelan PWA as wilderness would enhance opportunities for unconfined outdoor recreation by preserving the primitive recreation setting

The Okanogan-Wenatchee National Forest provides varied potential wilderness areas that are not designated wilderness. Some portions of these areas allow motorized use, whereas other areas are non-motorized. Other inventoried potential wilderness areas that provide unconfined recreation opportunities include Nason Ridge, Alpine Lakes Adjacent, Devils Gulch, and the Teanaway (to the south) and Stormy Mountain, Sawtooth, Grade Creek, Hungry Ridge, Black Canyon, and Lookout Mountain to the north.

The need to provide a sanctuary for those biotic species that have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific value or phenomena:***Wildlife***

Grizzly bears, gray wolves, Canada lynx and wolverines are wide-ranging carnivores that use a variety of habitat types. Increasing human use has the potential to decrease habitat availability, increase mortality through hunting/poaching, and in general, increase opportunities for negative interactions with humans that could result in loss of individual animals in these classified threatened, endangered and sensitive populations. Undisturbed habitats are important for maintenance of these species, particularly during critical time periods such as reproductive and hibernation periods.

The PWA also has habitat for American marten, northern spotted owl, mountain goats, and western gray squirrel all of which benefit from roadless habitat. Active management such as prescribed fire and thinning, may be needed to restore the sustainability of northern spotted owl habitat in dry forest, and thus would not be compatible with wilderness designation in these locations. The wildlife sustainability index is 142.3 (a high relative ranking, but exclude dry forest LSR) and the habitat connectivity index is 134.9 (also high relative ranking).

Fish

Several native species in the interior Columbia River Basin have demonstrated an inability to survive in less than primitive surroundings, especially the bull trout. In addition to habitat changes on National Forest System lands, other factors off forest such as hydropower generation, hatchery programs, harvest, and changing ocean conditions further challenge the persistence of some far-ranging native species. Broad-scale assessments have demonstrated a positive correlation between unroaded areas and persisting native fish stocks. Often, assessments like these don't differentiate between wilderness and roadless areas; rather they combine the two into an "unroaded" category. These assessments show current strongholds (most secure and robust populations) are dependant on wilderness and

roadless areas. Some of the more resilient native fish populations in the Interior Columbia Basin are located in unroaded areas on National Forest System lands.

For the Okanogan-Wenatchee National Forest PWAs were assigned an aquatic ranking based on federally listed and sensitive fish species that are sensitive to human disturbances. A high ranking was assigned when listed fish species occur in the PWA or when ecological process including high quality water help sustain listed fish species downstream of the PWA. All other PWAs are ranked low. This PWA is assigned a high ranking based on these factors.

Threatened, Endangered, and Sensitive Plant Species

An analysis was completed to prioritize which PWAs would contribute the most to providing refugia for those plant species on the species of interest/species of concern (SOI/SOC) list. The analysis ranked three factors. The first factor, the total number of sites occurring within the PWA, ranked as low for this PWA. The second factor, which ranked as moderate for this PWA, examined the degree of rarity of any SOI/SOC species present, and also recognized the importance of individual PWAs in supporting a high incidence of populations relative to Washington state as a whole.

PWAs are generally unsurveyed for rare plants due to a relative lack of projects occurring in these areas. Thus an additional factor examined the potential for the PWA to support SOI/SOC species. Based on databases, first the SOI/SOC plant species were identified that are present within a five-mile radius of the PWA, but are not known to occur within the PWA. Then the PWA was analyzed to see if the potential habitat for these species occurs within the PWA. Based on this analysis, this PWA ranks as high.

Finally, a composite score was assigned to each PWA based on combining each of the rankings described above. This PWA ranks overall as moderate priority for preserving rare plant refugia with a wilderness designation.

Ability to provide for preservation of identifiable landform types and ecosystems:

This area represents the east Cascades ecoregion using Bailey's Ecoregion Classification System. This ecoregion is well represented in existing wilderness lands in the Cascade Range.

While all the landforms are provided for in the adjoining wilderness, there are some very unique features in this portion, such as the deepest gorge in North America (as measured from the top of Pyramid Mountain to the bottom of Lake Chelan.)

Domke Lake is a unique ecosystem, as a productive mid-elevation glacially carved lake that has a moderate amount of cedar riparian stands associated with it. Lighting Creek is unique for its large mixed zone of conifers and hardwoods. These systems are not well represented in either the Glacier Peak or Lake Chelan-Sawtooth Wilderness.

The old growth subalpine larch on the ridge separating Rock Creek and Phelps Creek is an outstanding feature of the area.

An analysis compared vegetative cover types that are under-represented in wilderness on the National Forest System in Region 6 with those same cover types present in the PWA.

Large-scale cover types were available through existing data layers and represent approximately 18 percent of the vegetative cover of this PWA (approximately 29,000 acres). These types include forb lands, non-alpine meadows, alpine meadows, and ponderosa pine. Taken as a whole, the contribution of underrepresented vegetation types ranks as moderate for the portion of this area with underrepresented cover types, but as high for the number of acres that are represented within this PWA relative to the other PWAs in the planning area. This PWA, in fact, ranks second for the most acres of underrepresented cover types for the entire planning area.

Some under-represented cover types fill microhabitats such as riparian areas or perched water tables. Such finer scale cover types represented in this PWA include abundant amounts of cottonwood and quaking aspen.

Taken as individual cover types, all of the types listed above would make a significant contribution within the eastern Washington planning area.