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Tally Lake Ranger District

September 2005

# Valley Face Analysis Area

## Summary of Findings from the Ecosystem Analysis at the Watershed Scale

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## Summary of Findings from the Ecosystem Analysis at the Watershed Scale (EAWS)

***Flathead National Forest – Tally Lake Ranger District***
***Flathead County, Montana***

**September 2005**


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| **Lead Agency:** | **USDA Forest Service** |
| **Responsible Official:** | **Lisa Krueger**<br>**District Ranger**<br>**(406) 863-5400** |
| **For Further Information, Contact:** | **Bryan Donner**<br>**Project Leader**<br>**1335 Hwy 93 W**<br>**Whitefish, MT 59937**<br>**(406) 863-5408** |



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# Valley Face Analysis Area

## *Summary of Findings*

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(406) 863-5400


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# Why conduct this analysis?

Watershed analysis is a procedure used to characterize the human, terrestrial, and aquatic features, conditions, processes, and interactions (collectively referred to as "ecosystem elements") within a watershed or similar analysis area.

This type of analysis enhances our ability to estimate direct, indirect, and cumulative effects of our management activities and guide the general type, location, and sequence of appropriate management actions on the land.

Our analysis followed guidelines described in the Federal Guide for Watershed Analysis - Ecosystem Analysis at the Watershed Scale (Version 2.2, August 1995). The federal guide was used to develop a local watershed analysis handbook, which directed the analysis efforts described in this document (USDA Flathead National Forest 1999). The table below provides prospective for the scale of this watershed analysis in relation to watershed hierarchy classification.

**Table 1.**
**Watershed Hierarchy Classifications**

| | Scale Hierarchy | Term | Example |
|---|---|---|---|
| | 1 | Region | Pacific Northwest |
| | 2 | Subregion | Upper Columbia |
| | 3 | River Basin | Flathead River |
| | 4 | Sub-basin | Stillwater River |
| EAWS | 5 | Watershed/Geographic Unit | Valley Face |
| | 6 | Drainage | Lost Creek |
| | 7 | Site | Road 542 stream crossing |

The purpose for this analysis and information gathering process included:

- Providing a means by which the analysis area can be understood as an ecological system.
- Developing and documenting an understanding of the processes and interactions occurring within the analysis area.

The Valley Face analysis followed an issue-driven process. The purpose was not to make decisions, but rather to set the stage for subsequent decision-making processes, including planning, project development, and regulatory compliance.

The results of this analysis will help to provide a means of refining the desired condition of the forest. It also helps identify the purpose and need for management recommendations for implementation of the 1985 Flathead Forest Land and Resource Management Plan (Forest Plan) and its amendments, current policy, and other applicable State and Federal regulations. Management decisions that may result from further analysis will be applicable to the forest plan in place at that time.

## How did we conduct the analysis?

An interdisciplinary team of resource professionals conducted the analysis to consider and assess important issues on National Forest System lands in the Valley Face Analysis Area. A vicinity map is provided on page 6.

The actual analysis of current conditions in the area included an examination of data collected during past surveys, interpretation of aerial photos taken of the area in 2003, and numerous on-the-ground visits by the various team members during the past year. The landscape features we analyzed included both natural and manmade components of the environment, including:

- An inventory of streams, trails, roads, culverts, skid roads, and other potential sources of sediment that could impair water quality.
- The extent and effects of off-road vehicle (ORVs), snowmobile, and other motorized recreational use of the area.
- The degree of fuel buildup in the area due to past fire suppression, drought, and insect and disease mortality affecting Douglas-fir and other tree species.
- The risk to life and property posed by catastrophic wildland fire.
- The importance of this area to native and non-native fish.
- The importance of this area to wildlife species including lynx, grizzly bears, and bald eagles.
- Population estimates for key closed-canopy, old growth-dependent species such as marten and pileated woodpeckers.
- The impact of noxious weeds in the area.
- The status of old growth forest in the area.
- The condition and productivity of soils in the area.

We also developed or referenced issues identified in higher-order assessments such as the Upper Columbia River Basin Project and the ongoing Flathead National Forest Plan revision process. We likewise considered issues that have come up in previous project-level National Environmental Policy Act (NEPA) analysis efforts.

In order to identify issues, our analysis incorporated these following steps, as outlined in the Flathead National Forest-Guide for Watershed Analysis:

***Step 1 - Characterization***: Briefly describes the dominant physical, biological, and human features that affect ecosystem functions or conditions.

***Step 2 - Issues and Key Questions***: Identify issues and key questions to be addressed in the analysis; and, focus the analysis on key elements of the ecosystem that are most relevant to management questions, human values, or resource conditions within the watershed.

***Step 3 - Current Conditions***: Develop information that is relevant to the issues

and key questions identified in Step 2. Document the current range, distribution, and conditions of the relevant ecosystem elements.

***Step 4 - Reference Conditions**:* Develop historic references for comparison with current conditions. This step helps explain how existing conditions have changed over time as the result of human influence and natural disturbances.

***Step 5 - Interpretation***: Compare existing and historical reference conditions of specific ecosystem elements and to help explain significant differences, similarities, or trends and their causes.

***Step 6 - Recommendations:*** Identify management opportunities that could move the ecosystem towards management objectives or desired conditions. Management opportunities are expressed in general terms; they identify the purpose and need ("what needs to done and why"), but does not specify the "how."

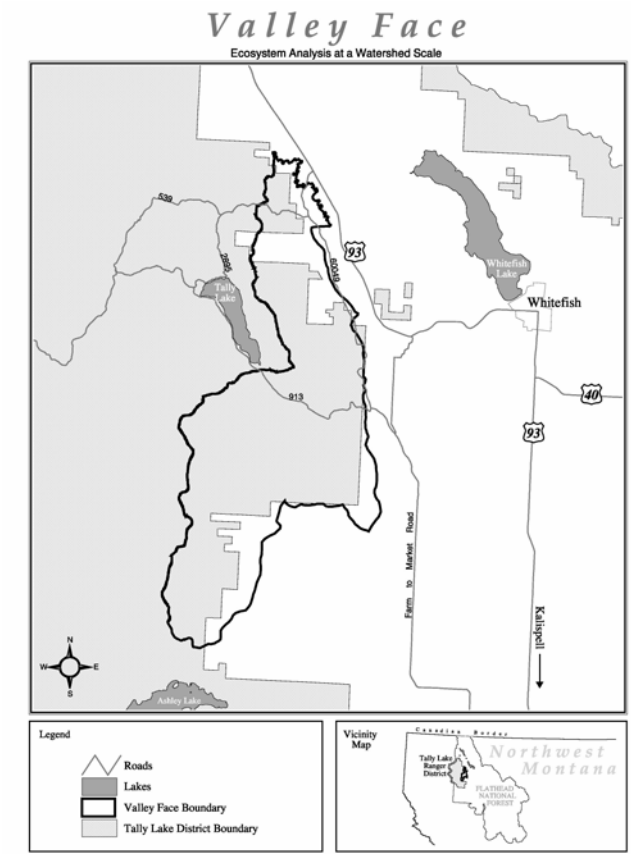
In March 2005, we sent a letter to local landowners and people interested in management of the Flathead National Forest, particularly the Tally Lake Ranger District, and invited them to review the findings of the preliminary analysis, share their knowledge of the area, and participate in the next phase of the planning process. Approximately 40 people attended two open houses hosted by the Tally Lake Ranger District later that month to review the analysis and preliminary findings.

The remaining portions of this document summarize key findings from Step 1 (Characterization), Step 2 (Issues), Step 5 (Interpretation), and Step 6 (Recommendations). More detailed information not provided in this document may be available by contacting the Tally Lake Ranger District Office, 1335 Highway 93 West, Whitefish, Montana, 59937 (406-863-5400).

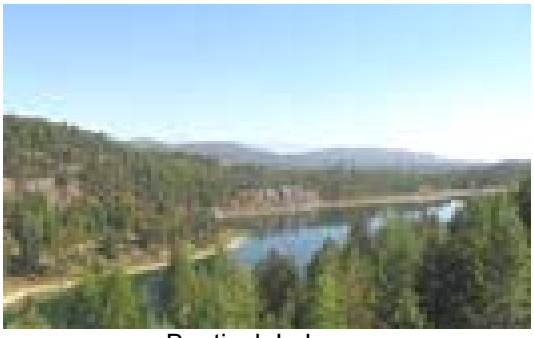
# What are the dominant processes and features of the Valley Face Analysis Area?

**Description of the Geographic Area**

The Valley Face Analysis Area consists of approximately 35,300 acres of mostly mountainous terrain that reaches from the valley floor to the crest of the ridge that marks the eastern boundary of the Logan Creek watershed. The analysis area stretches from just beyond the Star Meadows Road in the north almost to Ashley Lake in the south. Land ownership is a mixture of private industrial timberlands, private residential/recreational




Map 1. Analysis Area Vicinity Map



Bootjack Lake

parcels, and about 20,000 acres of National Forest System Lands. The entire area is within the Stillwater River watershed, but no streams within the area are connected to the river. Lost Creek is the largest stream in the analysis area, and there are also several lakes within the area, the largest of which is Bootjack Lake west of Whitefish. The elevation of the area ranges from 3,000 feet on the valley floor to almost 5,800 feet on Reid Divide.

The landscape of the Valley Face was carved out by the great continental ice sheets, the last of which retreated approximately ten thousand years ago. It is believed that Lost Creek once flowed out of Tally Lake, but was pushed into its present course by the advancing ice.

In the analysis area, there are no wilderness areas nor are there any lands classified as inventoried roadless during the Roadless Area Review and Evaluation process in 1977. The status of such lands on the Flathead National Forest has not changed since the completion of the roadless inventory process.

## CHARACTERIZATION OF THE HUMAN RESOURCES

Before European settlement, the Salish and Kootenai people inhabited the lands of the Valley Face area. The analysis area likely served primarily as seasonal hunting and gathering grounds. The Salish and Kootenai Tribes retain treaty rights to hunt, fish, and to gather roots and berries on the Flathead National Forest.

The analysis area adjoins the valley floor and is easily viewed from many valley locations. Nearly half the land within the analysis area boundary is privately owned, including some 7,000 acres owned by private timber companies. Private residences are common and increasing in number on the private lands near the valley periphery of the analysis area, and can also be found in more remote settings such as the Mountain Meadows area, where approximately 160 acres of private land are surrounded by National Forest System lands.

The principal historic use of the area in the past century has been timber harvest, which began around 1900. The area was also popular with early settlers for hunting and trapping, and horse trails traversed the area leading to Tally Lake and Star Meadows. An extensive network of roads was constructed beginning about 1910 to access the timber stands; several of these roads today provide the primary motorized access to the Valley Face area and the public lands to the west.

Today the area is popular with valley residents as a place to hike or ride mountain bikes and horses. Several maintained trails are within the area, including the trail through Stovepipe Canyon, which leads to the eastern shore of Tally Lake. A public access site on Bootjack Lake is popular with valley fishermen. Firewood gathering and berry picking occur throughout the analysis area, and hunting remains a popular activity.

## CHARACTERIZATION OF TERRESTRIAL RESOURCES

When viewed from the valley floor, the visual impression of the Valley Face Analysis Area is one of forested mountains. Several old harvest units, rock outcrops, and an occasional roofline create the only contrast to this forested landscape.

The major rock group underlying the Valley Face assessment area is Precambrian Belt Rocks consisting of limestone, argillite, and quartzite. These rocks influence the soils in the analysis area. Most soils are silts and fine sands that weathered from argillite and quartzite. Volcanic ash was deposited 6800 years ago by the eruption of Mt. Mazama in Oregon and contributed to a surface mantle of loess.

Soil productivity in the assessment area is similar to productivity throughout the Flathead National Forest. Soil productivity is a result of several characteristics such as the volcanic ash surface soil, the depth of the soils, and the soil textures, all of which work together to supply plants with adequate water and nutrients.

These soils affect, in part, the growing conditions for vegetation. The assessment area is dominated by temperate coniferous forest at all elevations. Tree species growing here (in approximate order of dominance by cover types) include Douglas-fir (*Pseudotsuga menziesii*), western larch (*Larix occidentalis*), lodgepole pine (*Pinus contorta*), Englemann spruce (*Picea*

*engelmannii*), subalpine fir (*Abies lasiocarpa*), grand fir (*Abies* grandis), and ponderosa pine (*Pinus ponderosa*). Scattered western redcedar *(Thuja plicata*), western hemlock *(Tsuga heterophylla*), and western white pine (*Pinus monticola*) can be found. Hardwoods occupy less than one percent of the area. Douglas-fir is the dominant cover type by far in all subwatersheds. Larch, lodgepole pine, and spruce/fir are well represented and widely distributed. Mature ponderosa pine is scarce and located only on drier, largely south-facing sites. The cedar/hemlock type is also scarce and isolated in just a few wetter locations.

The forest structure forms a mosaic pattern across the landscape, with patches of early successional seedling/sapling forest intermixed with patches of older forest (>70 years) composed mainly of trees that average 5-20" in diameter. This mosaic forms as a result of disturbance processes including timber harvest, forest insects and diseases, windstorms, and wildfire.

***From 1889 through 1940, approximately 15 percent of the assessment area burned in wildfires. From 1940 through 2001, about one-tenth of one percent of the area burned.***

Approximately 36 percent of the National Forest (14,000 acres) has been affected by past timber harvest (clearcut/seedtree, partial cutting or thinning).

From 1889 through 1940, approximately 15 percent of the assessment area burned in wildfires. Effective fire suppression efforts initiated in the 1940s, with the advent of smokejumpers, virtually eliminated wildland fire from the area. From 1940 through 2001, about one-tenth of one percent of the area burned.

After wildfire, the most common natural disturbance agent in the area has probably been insect and disease organisms. In recent decades, the mountain pine beetle was at epidemic proportions in the lodgepole pine stands, causing substantial yearly mortality of pine. Currently, root disease organisms in combination with Douglas-fir bark beetle are increasingly affecting the Douglas-fir within many stands in the analysis area. Since 1994, beetle populations have been increasing, creating patches of dead Douglas-fir. Western balsam bark beetle has been active in subalpine-fir, in conjunction with root disease. Bark beetles are frequently associated with the root diseases *Armillaria mellea, Phaeolus schweinitzii, Phellinus weirii*, and *Fomes annosus.*

The greatest effect of fire suppression and exclusion along with other natural disturbance processes has been the accumulation of biomass in most unmanaged forest stands. The volume of the biomass now present in the analysis area is in the form of dead standing and down trees and shrubs, as well as live shade-tolerant true firs, spruce, lodgepole pine, and Douglas-fir. The combination of dead fuel and continuous live vegetation from the forest floor to the upper forest canopy creates a complex of fuel that, when ignited under severe fire conditions, would leave little or no surviving above ground vegetation.

Noxious weeds exist within the analysis area. The dominant species are spotted knapweed (*Centaurea masculosa*), orange hawkweed (*Hieracium aurantiacum*), and Canada thistle (*Cirsium arvense*). There are also populations of St. John's wort (*Hypericum perforatum*), oxeye daisy (*Chrysanthemum leucanthemum*), common tansy *(Tanacetum vulgare*), yellow toadflax (*Linaria vulgaris*), tansy ragwort (*Senecio jacobaea*), wormwood (*Artemisia biennis*), common burdock (*Arctium minus*), and houndstongue (*Cynoglossum officinale*) scattered along roadsides and in isolated locations.

The assessment area provides a diversity of habitats for most of the species of wildlife that occupy the Flathead National Forest. These include several threatened, endangered, and sensitive species. Several of the Flathead National Forest's Management Indicator Species (MIS) such as elk (*Cervus elaphus*) and white-tailed deer (*Odocoileus virginianus*) are other species of concern known to use the area.

Suitable habitat is available within the assessment area for the federally listed wildlife: gray wolf (*Canis lupus*), grizzly bear (*Ursus arctos*), bald eagle (*Haliaeetus leucocephalus*), and Canada lynx (*Lynx canadensis).* The gray wolf and grizzly bear are apparently traveling visitors, although the area appears to provide all of the elements for a reproducing wolf territory. A pair of bald eagles nests and forages near Tally Lake, about 1/2 mile west of the area. Another bald eagle pair may nest on private land near the Stillwater River in the northern part of the analysis area. Based on currently available modeling of Canada lynx habitat, potential habitats for lynx are generally abundant and fairly well distributed.

An important habitat in the area is deer and elk winter range, located across the center and eastern edge of the analysis area. The approximately two square mile Pete Ridge winter range appears to be of key importance for white-tailed deer that summer on much of the Tally Lake Ranger District. Vegetation treatments may need to continue in order to maintain both short and long term suitability.

Most of the species that use the area are adapted to a fluctuating habitat mosaic driven by wildland fire. This is characterized by early- to late-seral habitats typically having extensive amounts of snag and downed woody material, and having forested connectivity. In this area, cavity-dependent species most often use western larch, which also depends on disturbances like fire. Snags and large downed-wood habitat are lacking in most previously logged areas. Fire suppression may also have altered the availability of open-understory feeding habitat for species such as flammulated owls (*Otus flammeolus*) and goshawk (*Accipiter gentilis*).

Due to previous logging activity, most of the old growth habitat areas are fragmented and include a substantial amount of abrupt edge along logged areas. The largest intact patch (about 1000 acres) is west of Mountain Meadows. There is very little old growth habitat in the northern portion of the Valley Face area. Largely due to fire suppression, much of the old growth has high stocking (trees per acre) levels in the understory and mid-story canopy. As with the Logan area to the west, some areas of old growth are losing old growth values due to bark beetles and root rot.

Secure habitat for elk during the hunting season is defined as larger blocks (>250 acres) of uncut forest that are over a half-mile from motorized traffic during hunting season. Such areas are very limited in the analysis area due to open roads, motorized trails, and areas of private ownership.

Riparian wildlife habitats in the Valley Face area appear to be functioning well. Numerous ponds, seeps, and streams provide a diversity of habitat for wildlife such as amphibians, birds, and rodents.

## CHARACTERIZATION OF AQUATIC RESOURCES

The Valley Face area is mostly dry, rugged, upland topography and aquatic resources are fairly limited. The entire analysis area is within the Stillwater River basin, yet not a single stream actually has surface water connectivity to the river. As a result, the area consists of numerous small water bodies that are totally isolated from one another. The majority of the streams are simply too small to support any fish. The only streams that have fish are Lost Creek and Big Lost Creek.

With few exceptions the water quality in the Valley Face area is good. There are several popular lakes, such as Bootjack that were formed by glaciers scouring the Stillwater drainage. This lake is a high value lake for home sites on private land in addition to public access for fishing through National Forest System lands.

The official State water classification for the water in this area is B-1, which means it is usable for drinking water with some treatment, bathing, swimming and recreation, cold water fisheries and agricultural uses. The water quality parameters of most concern are sediment and temperature.

Judging by the geology of the area, it appears that thousands of years ago, Lost Creek was a large stream that drained Tally Lake and allowed fish to colonize the lake. Today Lost Creek is a small stream that does not connect to any other water body and fish are isolated in the channel. The upper portion of Lost Creek has coldwater habitat and is dominated by small sized brook trout that were stocked decades ago. The lower portion is slow moving warm water that eventually slips underground. It is uncertain if Lost Creek contained native fish prior to stocking of brook trout. There are no records of native fish in Lost Creek and yet, inexplicably, a single cutthroat trout was captured in the headwaters of Lost Creek in a routine fish population survey. Big Lost Creek (which is actually even smaller than Lost Creek) probably never had native fish but today it also contains an isolated population of brook trout. Both streams receive almost no recreational fishing.

There are several lakes and wetlands on private lands and some may contain stocked, warm water fish species but there is no public access. The only recreational fishery in the Valley Face area is Bootjack Lake. Bootjack Lake was historically fishless but today managed as a trophy fishery for rainbow trout and cutthroat trout, plus it also has an illegally stocked population of pumpkinseed sunfish. The Montana Department of Fish, Wildlife, and Parks chemically treated the lake in the late 1990's to remove the sunfish but they have returned nonetheless. Bootjack Lake is annually stocked with trout and managed with special regulations to have a trophy (large sized) fishery. The majority of the lake is privately owned but National Forest System lands along about ¼ mile of shoreline offer access for portable rafts, canoes, and lightweight boats. The lake has a seasonal inlet from Little Bootjack Lake (on private land) and an outlet stream that slips underground a few miles downstream. Trout and pumpkinseed sunfish may periodically travel up and downstream from Bootjack Lake but they have no connectivity to the Stillwater River.

The Valley Face area does offer several wetlands and stream channels that are suitable amphibian habitat. Amphibian inventories have found an abundant number of spotted frogs, Pacific chorus frogs, long-toed salamanders, as well as low numbers of western toads. No non-native amphibian species have been detected in the area.

# What issues were used to examine ecosystem features and processes?

An issue is a known or suspected condition affecting public lands and causing concern to the public or resource managers. The identification of issues provides a focus for the analysis and management of an area in order to maintain or restore the land and its resources to a desirable condition. Identifying issues and dealing with them requires a collaborative effort between resource specialists, land managers, and the public.

## ISSUES FOR HUMAN RESOURCES

**Recreation**
Continued/increased recreational opportunities are an issue on all public lands. The Valley Face Analysis Area encompasses most of the Round Meadows cross-country ski and biking area, which is probably the most visited recreation site within the analysis area. The Bootjack Lake fishing access site receives moderate use during the fishing season. However, the entire analysis area is popular with the nearby residents and other valley citizens because of its proximity to the valley. Hiking, biking, hunting, and berry picking are among the popular activities enjoyed by the public in the area. In addition, many members of the public travel through the area en route to other popular recreation locales, particularly Tally Lake.

**Motorized Access**
The nearness of the Valley Face area to residential developments makes the area particularly subject to the increasing popularity of motorized off-road vehicles, along with the resource damage that can accompany their inappropriate use. Yet while more people are seeking opportunities for motorized off-road recreation, wildlife concerns and shrinking road maintenance budgets are resulting in less motorized access to the network of Forest Service roads within the analysis area.

**Special Use Permits**
There are a number of special use permits currently active in the analysis area. Most of these involve road access across National Forest System lands to private land parcels.

**Wildland Fire Safety**
There is concern that fuel loads in the analysis area are unnaturally high, due to the effects of drought and disease coupled with the effectiveness of fire suppression efforts. These fuel loads could result in extreme fire behavior that would increase the danger to residents and fire fighters in the event of a wildland fire.

**Firewood Gathering**
The Valley Face area is popular with local residents as a source of firewood, due to its proximity and relative abundance of open roads. Road closures thus become an issue to those people that depend on the public lands to supply their heating fuel. There is also an issue of resource damage, as firewood cutters sometimes drive off-road or winch trees greater distances to supply their needs.

**Heritage**
Heritage or cultural resources are key indicators of the level of historic human use in the area. They are also the reserved treaty rights of the Salish and Kootenai tribes. It is recognized that these resources need to be protected and preserved.

**Scenery**
There are several scenic vistas of the valley from roads within the analysis area that are gradually being restricted by the growth of roadside vegetation. There are also visual impacts from old timber harvest units and concern about the potential scenic effects of any future timber harvest.

## ISSUES FOR TERRESTRIAL RESOURCES

**Forest Vegetation**
There is concern that past management and fire exclusion has altered the vegetation composition, structure, and pattern in forest stands within the analysis area to conditions that are outside the range of natural variability.

**Insect and Disease Processes**
There is concern that past management practices, fire exclusion, and the introduction of exotic pathogens have altered insect and disease disturbance regimes to conditions that are outside the natural range. Specific concerns relate to root diseases and several species of bark beetles.

**Invasive Plants**
There are concerns that management activities and human uses have or will contribute to the establishment or spread of invasive plant communities.

**Values to be Protected**
There is concern that values-to-be-protected from unwanted wildland fire have appreciated over time and are at greater risk of loss from the hazards presented by the increased fuel loadings in the geographic area.

**Air Quality**
There is concern that smoke produced by wildland fire and prescribed fire can affect the air quality in the watershed as well as nearby impact zones and Class 1 airsheds.

**Snag and Downed Wood Habitat**
There is a concern that high-quality snag and downed wood habitat for wildlife is insufficient across the analysis area and that some of what is available is vulnerable to losses to firewood gathering. There is also a concern that over the 60 years of effective fire suppression there has been a lack of recent post-fire habitat in the Valley Face analysis area.

**Canada Lynx Habitat**
There is concern that lynx foraging habitat may not be adequate in the long-term, as well as a concern that the quality of future denning habitat will be inferior due to past harvest.

**Old Forest Wildlife Habitat**
Fire suppression has allowed a high percentage of older forests to fill in with thick under stories and mid-stories of trees. This increases the risk of stand-replacing fire in old growth habitat and other areas. It also makes some stands less desirable for species such as the goshawk and the flammulated owl.

**Ungulate Habitat**
Existing vegetation conditions within winter and summer ranges may not be providing desired habitat for white-tailed deer, mule deer, and elk. In addition, there is concern that elk security needs during the fall hunting season are not being met due to the amount and distribution of open roads.

**Old Growth Habitat and Forest Fragmentation**
A history of regeneration harvesting has altered the spatial distribution of old forested habitats as well as their internal integrity and forested connectivity. Dense understories and insect epidemics appear to be at least in part the result of 60 years of effective wildland fire suppression.

## ISSUES FOR AQUATIC RESOURCES

**Fisheries**
There are few fishery resources in the Valley Face Analysis Area, with Lost Creek and Bootjack Lake being the most notable. Bootjack Lake is managed as a native cutthroat trout fishery by the Montana Department of Fish, Wildlife, and Parks. Land management in this area should strive to maintain water quality in the watershed above the lake.

Lost Creek contains a population of non-native Eastern Brook Trout, and possibly a few native cutthroat trout in the very headwaters. Again, management of the Lost Creek watershed should emphasize protecting water quality and controlling erosion to prevent excess sediment from polluting the stream.

**Amphibians**
Amphibians are a group of animals that depend on permanent or seasonal water bodies during at least a part of their life cycle. This group has been the subject of increasing study in recent years due to concerns about declining numbers and vanishing populations. Frogs, toads, and salamanders are all known to inhabit the Valley Face area, along with several aquatic or semi-aquatic reptiles including turtles and snakes.

**Sediment Sources**
A survey of roads in the analysis area discovered some problems associated with poorly designed crossings that contribute sediment to streams and wetlands or impede aquatic organism passage.

# What Did We Find Out?

## KEY FINDINGS FOR HUMAN RESOURCES

**Residential Development**
The Flathead Valley in general has experienced rapid growth over the past decade, and many new homes have been constructed on private lands in and near the Valley Face Analysis Area. Several additional residential subdivisions are currently being developed in the mountains along the eastern edge of the analysis area. The result of this growth is many more people are living in areas susceptible to wildland fire than at any previous time. Minimizing the risk presented by wildland fire to these rural residents and their homes has emerged as a major issue for the Flathead National Forest in recent years.

**Recreation**
The use of off-road recreational vehicles, primarily motorcycles and all-terrain-vehicles (ATVs) has increased markedly in recent years, creating a demand for more areas of National Forest open to their use. At the same time, increasing numbers of people are looking to the National Forest for solitude and recreation opportunities that don't involve the use of motorized vehicles. Reconciling the wishes of these two divergent interest groups in areas like Valley Face presents a formidable challenge to land managers and planners.

**Scenery**
Driving for pleasure and viewing scenery has continually been rated as the number one recreation activity in the United States. The Valley Face area provides several loop routes for driving, although the scenery is not as spectacular as some other areas on the Flathead Forest. There are opportunities to view landscape features while driving along major travel routes, hiking on trails, or boating on Bootjack Lake. Some of these features include variation in colors and patterns of vegetation, large trees in the foreground, waterfalls, cascades, basalt cliffs, and forested hills.

Scenic vistas are scattered along most access routes, but are becoming obscured by vegetative growth along roads leading to and from the valley.

## KEY FINDINGS FOR TERRESTRIAL RESOURCES

**Vegetation**
The current proportion of vegetation cover types, structure classes, and patterns within the assessment area vary with respect to the range of natural, or historical, conditions. Some ecologically significant changes have been detected, as discussed below. Consistent with findings from the Columbia River Basin study, these results suggest that the functioning of ecological processes have declined as a result of fire exclusion.

Field surveys conducted in the analysis area, coupled with landscape modeling, indicate that the forests of Valley Face are generally representative of the historic forests in regard to the size classes of trees present. Large and very large trees, typical of old growth forests, are at the low end of the historic range of abundance. Shade tolerant species such as spruce and the true firs are slightly more common than they would likely have been at any time historically, likely due to the effects of fire suppression.

Some subwatersheds are near the historical mean or median value for a particular vegetative condition; others are at or near the maximum or minimum amount found historically. Variation between subwatersheds is desirable as it adds to the vegetative diversity of the landscape at the larger scale. Specific vegetation conditions of interest or concern - as well as areas of opportunity for changes - are discussed further below:

***Douglas-fir***
The Douglas-fir cover type historically represented 15% to 70% of the Valley Face landscape. Currently, Douglas-fir is the dominant species in over 65% of the area. Douglas-fir is susceptible to root disease, several insect species, and, where ladder fuels exist, fire. There is presently a very active Douglas-fir bark beetle *(Dendroctonus pseudotsugae)* population causing large patches of tree mortality.

An overabundance of the Douglas-fir cover type reduces the overall landscape diversity and resiliency, increasing its vulnerability to high intensity, large-scale fire or excessive insect/disease damage and mortality. The changes that occur due to fire or insect/disease infestations are likely to have significant effects on other resources, such as wildlife habitat, water quality, and social/recreational uses. This may or may not be acceptable, depending upon the management objectives for a particular area.

***Western Larch***
Western larch is considered a species of special concern in the Northern Region. Larch is a shade-intolerant tree and historically became established on sites that had recently burned, as long as a seed source existed. Fire exclusion has removed this natural pathway for larch to become a dominant cover type. In much of the analysis area, larch has a very minimal representation. Historical range of variability for larch was from 10% to 50% percent of the land area, but larch is now represented as a cover type on less than 10% of the area.

***Ponderosa Pine***
Ponderosa pine grows over a very small portion of the assessment area and has never historically been a major species on the typically cool, moist sites that predominate in these watersheds. However, it is considered an important component in the areas where it does exist. It grows most often in combination with Douglas-fir, lodgepole pine, and larch. These lower elevation forests provide high quality foraging, nesting, and shelter for many wildlife species, both as living trees and long-lasting, large pine snags. They are important elk and deer winter range areas. They are often in areas of high recreational value, and the large, old trees ("yellow pine") have high aesthetic values to many people.

Though the proportion of ponderosa pine may not be a departure from historical conditions, there have been notable changes in the overall health and condition of these forests. This is due primarily to the effects of fire suppression over the past 60 years. Though lethal fires did occur, these drier-site forests have historically

experienced more frequent, lower intensity types of fires as well. The historical fire regime of these sites is typically characterized by a 35-100 year fire interval with mixed severity types of fires. These fires would often kill the less fire resistant trees, such as lodgepole pine, leaving much of the larger, fire resistant ponderosa pine and Douglas-fir alive. This thinning effect would help maintain somewhat more open stand conditions, with trees less crowded and less stressed by competition for limited water and light. Suppression efforts over the past 60 years have eliminated any lethal or lower intensity, non-lethal fires that very likely may have occurred on these drier sites.

In some mixed species ponderosa pine stands containing lodgepole pine, the loss of the lodgepole pine due to mountain pine beetle has acted to reduce tree densities, reducing stress on the remaining trees. In other stands, without disturbance (human, fire or other) the trend is one of increasing tree densities as young conifers (primarily Douglas-fir) continue to regenerate on these sites. The higher than normal density of some of these stands has caused increased stress on all trees, which in turn can cause greater vulnerability to severe effects of insects and disease. These effects may or may not be desirable, considering other land management objectives.

**Wildland Fire**
Ecologically, wildland fire should play a larger role in the Valley Face area than it has in the past 60 years. Using wildland fire for resource benefit would restore fire to a more natural role and over time should reduce the size and intensity of some wildland fires in the analysis area. The Federal Wildland Fire Policy of 1998 provides for management of wildland fire to protect, maintain, and enhance resources, as nearly as possible, to allow fire to function in its natural ecological role. However, the large area of wildland-urban interface in Valley Face limits the opportunities to allow wildland fire a greater role in the ecological processes of the area.

Implementation of the authority to manage wildland fire to achieve resource objectives requires an approved plan specific to the area for which this fire management process may be applied. In the meantime, suppression of wildland fire will continue to be aggressive initial attack until a revised Forest Plan and Fire Management Plan are completed.

Several areas within Valley Face were found to have higher than normal total fuel loads and to be at an elevated risk of suffering a severe, stand replacement wildland fire. The elevated fuel levels are the result both of fire exclusion and increasing mortality from insects and disease.

The Bootjack Lake area was identified as being at high risk from a crown fire, which could also threaten the town of Whitefish. The lower Lost Creek/Beaver Creek area was also identified as an area with high fuel loads.

**Air Quality**
Smoke from wildland fire can be reduced over time through fuels modification and use of prescribed fire. Smoke from prescribed fire can be mitigated through the continued use of burn plans that prescribe specific weather, smoke dispersion, fuel, and fire behavior parameters. Generally, air quality will remain good in the analysis area except for rare combinations of wildland fire and unfavorable weather conditions.

**Insects and Disease**
Some 10,000 acres within the analysis area were found to be at risk from one of three species of bark beetles (the Douglas-fir bark beetle, the spruce beetle, or the mountain pine beetle) because of the age and density of the timber. Approximately 1,500 acres are considered to be at high risk of beetle attack. Various root diseases are also causing tree mortality in the area, particularly to Douglas-fir stands.

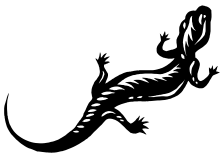
**Wildlife**
There is important deer and elk winter range, located across the center and eastern edge of the analysis area. The approximately two square mile Pete Ridge winter range appears to be of key importance for white-tailed deer that summer on much of the Tally lake Ranger District. Vegetation treatments may need to continue in order to maintain both short and long term suitability.

The recent history of disturbance events across the watershed has provided a spatial distribution, quality, and quantity of forest stand ages that are not typical of natural processes. The resultant habitat structure thus departs from that to which many wildlife species are adapted. For example, the black-backed woodpecker (*Picoides arcticus*) is thought to depend on areas of recent wildland fires, but there has not

been a major fire in the assessment area for over 75 years.

Past management, particularly regeneration harvest and road building, has fragmented the forests of the Valley Face area, reducing the amount of secure habitat for wildlife. Motorized trails and roads facilitate access to some of the most remote parts of the area.

Bootjack Lake supports a breeding pair of common loons that produced one chick in 2005. The relative lack of motorized boating on the lake has contributed to the nesting success of the loons.



## KEY FINDINGS FOR AQUATIC RESOURCES

The only fish-bearing stream on National Forest System lands is Lost Creek. The stream was surveyed from Mountain Meadows upstream for 2.5 miles in 1991. Surveyors divided the stream into five distinct “reaches” (segments of similar channel type and gradient). The stream is small (only 10 cubic feet per second at bankfull) and available habitat ends somewhere near the Forest Road 2942 culvert. The stream has plenty of shade and dense stands of dogwood, willow, alder and spruce stands. Most of Lost Creek has gentle gradient but a mile long stretch has high gradient (5-15%) and several short waterfalls that could possibly hinder fish migration. None of these waterfalls are tall enough to completely block all fish. The stream banks are stable but the streambed is covered with fine sediment. Lost Creek also has considerable deposits of calcium carbonate, which often “cements” gravels together. The combination of sediment and calcium carbonate deposits severely limit the amount of spawning habitat for trout.

A portion of Reach 2 was re-surveyed in 2002. Although the methodology was slightly different, the results are essentially the same. Since Reach 2 is virtually unchanged, it is assumed that the rest of Lost Creek has changed very little since 1991.

The lower portions of Lost Creek have never been inventoried and limiting factors are unknown. Observations by the fisheries biologist noted that trout habitat extends downstream of Mountain Meadows for about a mile, until the big bend toward the south. After this point the stream becomes warm and stagnant.

Brook trout are occasionally found in the lower portions but they probably are individuals that washed out from upstream and do not thrive. The only coldwater trout habitat is upper Lost Creek.

The interpretation of these data are that the most limiting factor in upper Lost Creek is probably both the small stream size and the limited amount of spawning habitat. Considering the stable stream banks and high gradient, it is unusual that the stream has so much fine sediment. The sediment may be a cumulative effect of past land management actions and existing conditions on some forest roads. There is also some concern about a gradually decreasing trend in pool habitat quality. Pools may not be as deep as before and this reduces the carrying capacity for trout, especially since Lost Creek is such a small stream to begin with. If this trend is real (it is too soon to be certain), the loss of pool habitat quality may also be due to sedimentation.

Presuming that at least some of the fine sediment deposition in upper Lost Creek is from land management, the most likely culprit is from the legacy of road construction in the drainage. Upper Lost Creek has 35.8 miles of roads (3.2 miles/per square mile). This is considered a very high road density by the USFWS and by scoring criteria used by the Forest Service. Some of the roads have stabilized and no longer erode but others still are actively running too much water and sediment into the stream channel. A survey conducted in 2002 found that many roads in upper Lost Creek need work to help mitigate the resource damage they cause upper Lost Creek. Several culverts were particular sources of erosion and are suspected to be undersized. Most of these are located on

small side drainages and only one culvert may be blocking upstream fish migration (FR 542, located just downstream of Mountain Meadows).

Another possible source of sediment is the legacy of old timber harvest practices on National Forest System lands and possibly private land clearing in the Mountain Meadows area. Some of these older cutting units were very close to the stream, which would have eroded sediment into the stream decades ago. These are gradually healing as vegetation becomes established.

No other possible source of sedimentation has been identified. There are no trails, recreation areas, or Special Use Permits in the upper portion of Lost Creek.

*Before and After Fuel Reduction*

# Recommendations

The following section lists recommendations of the interdisciplinary team that, if implemented in whole or in part, would begin to address the resource and human-use issues identified earlier in this summary document. All of these recommendations are derived from those issues and subsequent information summarized in the previous “What did we find out” section. We believe that implementation of some or all of these recommendations would improve the ecosystem in the Valley Face analysis area.

As stated earlier, no decisions have been made concerning these recommendations or any other statements included in this summary. Consideration of these recommendations in a site-specific manner (in some cases through analysis conducted under the National Environmental Policy Act) would confirm or refute their appropriateness in terms of time or place or level of activity.

We recognize that there may be real-world limitations to implementing some of these activities, as well as possible conflicts between them. A site-specific analysis would display these situations, enabling an administrative decision whether or not to proceed with an activity.

1. Fire suppression since the early 1940s has altered the normal disturbance regime and allowed an accumulation of ground and ladder fuels on the landscape. In some areas where a fire may have historically burned with low intensity along the ground, it will now be expected to kill all or most of the trees. In other areas, very large stand-replacing fires were the norm, but these are no longer socially acceptable because of the values to protect on the landscape. Presently, fuels are at levels that could contribute to fire behavior that would be very difficult to control, and in areas that are likely to threaten private land and valuable resources. *Fuel reduction treatments are recommended within a half-mile of the private boundaries in the wildland/rural/urban interface. The primary areas of concern are Bootjack/Cliff Lakes area and lower Lost Creek/Beaver Creek area. Mountain Meadows area is a secondary priority.*

2. Many wildland fires occurring over the last 300 years created very large "patches" of homogeneous timber stands on the landscape. Modern fire suppression and timber management have left a mosaic of relatively small openings compared to larger openings that natural wildland fires created prior to the early 1940s. This has caused fragmentation of what were, historically, large patches of varying age classes. Stand treatments applied strategically in these areas can help recreate the larger contiguous patches that existed historically while increasing our ability to control wildland fires before they spread to developed areas. *We recommend management policies that seek opportunities to direct the future trajectory of the forest toward this historic condition of large, homogeneous stands.*

3. Douglas-fir is now a more abundant component of the landscape than it was historically. Many of these trees have died from a Douglas-fir bark beetle outbreak, creating large patches with dead trees. Douglas-fir is more susceptible to insects when growing in high stand densities. Root disease is also prevalent in stands of Douglas-fir in the Valley Face area. Several areas no longer qualify as old growth habitat as a result of mortality to large Douglas-fir trees. Areas dominated by large trees, especially western larch and ponderosa pine, are less abundant than historically because of agriculture and other development on private land and timber harvest on both private and national forest land. *Management actions should attempt to restore a greater balance of stand types and species, which would better reflect the historic vegetation condition of the area.*

4. Some roads have contributed to poor water quality and continue to produce sediment. Road drainage systems could be improved by replacing culverts to accommodate 100-year flows, increasing the number of ditch-relief features, and general road maintenance. *We recommend a management effort to improve the hydrologic performance of substandard roads within the analysis area.*

5. In addition to measures intended to reduce road-related sediment as discussed above, there are areas within old harvest units that exhibit active or past occurrence of erosion. *We recommend stabilizing any such areas with planting and/or installation of drainage control structures.*

6. The area provides habitat for numerous wildlife species. Vegetation patterns, and therefore wildlife habitat, have been altered by forest management activities and by fire suppression. Connections between patches of older forests have been narrowed or severed. There is a higher than historic amount of edge (those areas adjoining younger and older forests) which is detrimental to species needing interior forest habitats. *We recommend that management actions in this area be designed to protect and enhance connectivity between stands and the diversity of stand types representative of the historic conditions in the analysis area.*

7. White-tailed deer use parts of the Valley Face area as important winter range habitat. Forest plan standards for hiding cover and browse are current being met and thermal cover standards are nearly being met. Elk security areas exist on about 19% of the Valley Face landscape and could be improved with road and trail access changes. *Vegetation management should protect the winter range habitat and encourage attainment of thermal cover standards. Transportation management should enhance security for ungulates and other wildlife species.*

8. The project area contains landtypes classified as sensitive, where forest management activities or roads not designed with adequate drainage are likely to result in sediment. *Roads on these landtypes should be considered for drainage improvement. Old cutting units should be surveyed to seek additional opportunities to restore soil productivity and reduce erosion.*

9. Current vegetation growth with successful wildland fire suppression may allow most stands to grow larger than the sapling stage. *There may be an opportunity to manage some stands for future lynx foraging habitat and other resource concerns, as long as sufficient amounts of large dead wood are left behind.*

# Contributions

### *Interdisciplinary Planning Team*

| | |
|---|---|
| Bill Basko | Aquatic Resource - Soils |
| Liz Hill | Aquatic Resources - Hydrology |
| Beth Gardner | Aquatic Resources - Fisheries |
| Bob Nowak | Terrestrial Resources - Fire |
| Jamie Tripp-Kahler | Terrestrial Resources - Fuels |
| Amy Jacobs | Terrestrial Resources - Wildlife |
| Betty Kuropat | Terrestrial Resources - Vegetation |
| Tim Light | Human Resources - Heritage |
| Becky Smith-Powell | Human Resources – Recreation |
| Pat Thomas | Human Uses - Scenery |
| Rick Stevens | Writer/Editor |
| Bryan Donner | Project Team Leader |

### *Public*

| | |
|---|---|
| Interested public | Provided us comments about the present and past uses of the Valley Face area and recommendations for the analysis |

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