I. Introduction

A. Background and Document Overview

Landscape Assessment Overview

A landscape is a large area of land (as much as 1,000,000 acres) where people, wildlife, water, and natural processes move with some predictability. Landscapes in southwest Montana tend to be isolated mountain ranges and the valley bottoms around them. Landscape areas have also been called "geographic areas" or "planning units" and include many ownerships in additional to federal lands.

Landscape assessment describes a long range planning process that looks at resource issues and social and economic needs across a large area with the objective of improving land use planning and management for all stakeholders involved. Landscape assessments describe past trends, existing conditions, and desired future conditions (DFCs) in both social and biophysical terms for each resource within the landscape. One product of a landscape assessment is a description of management opportunities that will help to bring resources towards their DFC. Potential projects are selected to comply with the goals and standards for specific management areas (figure IA-1 in appendix 1) delineated in the current 1987 Deerlodge National Forest Plan - FP (1987) (USFS, 1987).

The type of information collected varies for each landscape but always includes descriptions of the following conditions within the landscape:

- basic geology and landform
- vegetation conditions and changes
- key wildlife habitats
- watershed condition
- distribution of fish species
- recreation use patterns
- resource uses
- cultural or historic uses
- social and economic patterns

Document Purpose

Watershed restoration is an ongoing process in the Upper Clark Fork River Basin. State, federal, and non-governmental organizations including the Watershed Restoration Coalition of the Upper Clark Fork (WRC) have begun an integrated process of restoring both aquatic and terrestrial habitats within the landscape area. Much of the restoration efforts are tied to the Clark Fork River as part of the Milltown Reservoir / Clark Fork River Superfund Site cleanup described further in Section IIB Aquatic Habitats/Fisheries. The EDLV landscape assessment describes the existing conditions of terrestrial and aquatic resources in the EDLV with the goal of identifying opportunities for management actions on BDNF lands that will bring degraded resources towards a desired condition. The FP (1987) and amendments to that plan establish

management goals, objectives, and standards for resources on Beaverhead-Deerlodge National Forest (BDNF) lands in the landscape. The goals and objectives in the FP (1987) are designed to move the forest towards a desired condition. This assessment also develops a scientifically supported range of natural variability (RNV) for these resources. In this, the landscape assessment and opportunities identified herein complement the ongoing restoration in the Upper Clark Fork River Basin with the goal of providing improved terrestrial and aquatic habitats on National Forest lands and a clean supply of water tributary to the Clark Fork River.

This assessment is focused on National Forest lands in the landscape to identify Forest Service management opportunities to bring degraded resources towards their desired condition. The information presented in this assessment may include private and public areas off of the BDNF to aid in describing the existing condition of resources landscape-wide as well as to describe the affects of National Forest management on adjacent non-forest lands. Wherever possible, landscape-wide information is selectively analyzed for BDNF lands so that a comparison of existing condition with desired condition can be made for the BDNF.

The products of the landscape assessment are:

- A characterization of existing and reference conditions of resources.
- Explanation of desired future conditions of resources.
- Identification of management opportunities that will restore, maintain, and enhance the ability of natural systems in the landscape to function properly in response to natural change and human management.
- Identification of management opportunities with the purpose of sustaining the human uses of resources in the landscape.

Landscape Assessment as a Planning Tool

The landscape assessment does not propose any specific actions and is not a decision document. Rather, it examines the area on an ecosystem or landscape scale, identifies management needs and priorities, and then recommends strategies to address these needs and priorities. Any future action or site-specific projects on public lands would be designed and implemented through subsequent National Environmental Policy Act (NEPA) analyses, and separate decision documents would be produced.

Assessment Process

The EDLV Landscape Assessment was undertaken in 2007 by KirK Engineering & Natural Resources, Inc. (KirK) under contract to the WRC and under direction of the Forest Stewardship Partners (FSP). The FSP is a consortium of stakeholders in the EDLV landscape including the United States Forest Service (USFS) BDNF, Powell County Commissioners, the Montana Wilderness Association (MWA), Montana Trout Unlimited, Sun Mountain Lumber, Headwaters Resource Conservation and Development (RC&D), Rocky Mountain Elk Foundation, Clark Fork Coalition, and the Montana Department of Fish, Wildlife and Parks (FWP). The FSP was established in 2006 to integrate restoration of the natural resources within the EDLV landscape. It is important to all members of the FSP that natural resources be enhanced and protected on public and private lands to ensure them for future generations and to be enjoyed by the American public.

The FSP is comprised of individuals with specialized knowledge and experience in a wide variety of resource areas including: forest and range vegetation, aquatic habitats and fisheries, riparian assessment and management, geologic science, soils, wildlife and habitat management, recreation, road infrastructure, local cultural perspectives, and economics. The various members of the FSP, in cooperation with resource specialists from the BDNF, contributed to the assessment process through group meeting discussions, data compilation, and review and commenting on the products of the assessment. One of the products developed by the FSP is additional goals and objectives for the resources in the landscape which are presented in the Desired Future Conditions section of each resource area. In addition to providing resource specialists, the BDNF also provided oversight and guidance to the group.

The WRC's mission is to restore water quality, fisheries, and wildlife and to protect the heritage and open space of the Upper Clark Fork River Basin by working with landowners, stakeholders, and agency representatives interested in implementing Best Management Practices and stewardship projects that conserve natural resources. The values of the WRC are to support and preserve the way of life in the Upper Clark Fork River Basin, and especially ranching and/or farming, in concert with balancing the needs of natural resource conservation for all Montanans.

The USFS began a landscape analysis process for the entire Upper Clark Fork River Basin above Drummond in December 1995 which was partially completed as the draft Clark Fork-Flints Landscape Analysis (Clark Fork-Flints LA) in 2000. Because the EDLV landscape is completely contained within the area of this draft landscape analysis it is an important source of information. Where USFS data has been updated since the draft Clark Fork-Flints LA, that information has been incorporated into this report.

Another critical source of information for this EDLV Landscape Assessment is the East Valley Watershed Baseline Report completed by KirK Environmental (now KirK Engineering & Natural Resources, Inc.) in 2003. The East Valley Watershed Baseline Report study area coincides exactly with the EDLV landscape. However, data collection efforts for the East Valley Watershed Baseline Report were focused on private lands in the landscape. The purpose of the 2003 baseline report is to:

- Assess water quality conditions (nutrients, common ions, metals, TSS, temperature), field parameters, and flow data at selected sites to identify impairment issues.
- Assess watershed physical conditions (stream morphology, riparian, and upland forage) and link probable causes to impairment issues and restoration alternatives.
- Assess the biologic health of the watershed (fishery, benthic macroinvertebrate, periphyton, and wildlife).
- Describe potential metal impacts to soil from aerial deposition associated with historic smelting activities.
- Assist the Montana Department of Environmental Quality in evaluating water quality impairment status for the project streams.
- Develop water quality targets/goals for desired future conditions and allocate pollution sources for impaired stream reaches
- Identify data gaps in chemical, physical, and biological data
- Describe a monitoring strategy to gauge future restoration success

- Summarize baseline data and field observations to evaluate alternatives for conservation practices

To complete the EDLV Landscape Assessment, data archives from the USFS, WRC, FWP, the United States Fish and Wildlife Service (FWS), the Montana Natural Heritage Program (NHP), the Rocky Mountain Elk Foundation, the United States Geological Survey (USGS), the Montana Bureau of Mines and Geology (MBMG), the Montana Department of Justice Natural Resource Damage Program (NRDP), the Montana Department of Natural Resources and Conservation (DNRC), the Montana Natural Resource Information System (NRIS) as well as pertinent scientific literature were also consulted.

Document Organization

This document is divided into the following three sections. Tables and photographs are included in the text. Figures are also included in the text where possible. Many of the figures are larger maps that are included in appendix 1.

Section I – Introduction
Provides a background of the assessment process and purpose, the Forest Stewardship Partners, and the landscape area.

Section II – Resource Areas
Five resource areas: soils and geology, watershed health and aquatic habitat, vegetation, wildlife, and cultural resources and human uses are evaluated. Each section describes the existing conditions of these resources within the perspective of potential reference conditions and natural variability for natural resources. Following each discussion of existing and reference conditions the desired future condition (DFC) for these resources are outlined. The FP (1987) provides legally binding goals, objectives, and DFCs for resources on BDNF lands in the landscape. Goals and objectives that are based on appropriate guidance documents and those goals and objectives developed by the FSP are also presented in each resource section.

Section III – Gap Between Existing and Desired Condition
Describes how the existing condition of each of the resource areas is different than the desired condition.

Section IV – Management Opportunities
Describes proposed projects designed to improve resources and bridge the gap between current and desired conditions.

B. Landscape Setting

The East Deer Lodge Valley (EDLV) landscape in southwest Montana is bounded by the Clark Fork River along Interstate 90 on the west and the Continental Divide above the Deer Lodge Valley on the east (figure IA-2 provided in appendix 1). The Boulder Mountains comprise the high country on the eastern side of the landscape, including the Continental Divide. This approximately 106,000 acre landscape contains the drainages of Girard Gulch, Perkins Gulch, Sand Creek, Dry Cottonwood Creek, Sand Hollow, Orofino Creek, Caribou Creek, Peterson Creek, Cottonwood Creek, Baggs Creek and tributaries to these streams. Included in the landscape are portions of Deer Lodge and Powell Counties and the community of Deer Lodge. The communities of Galen, Dempsey, and Warm Springs are west of the Clark Fork River adjacent to the landscape.

Private ownership, USFS, and State of Montana comprise the majority of land management within the landscape (Table IB-1). National Forest lands within the landscape are completely within the BDNF Pintler Ranger District. In Southwest Montana, the BDNF covers 3.32 million acres, or about 42% of Beaverhead, Butte-Silver Bow, Deerlodge, Granite, Jefferson, Madison, Powell, and Broadwater counties. The BDNF is important among National Forest System Lands and within southwestern Montana for its contributions to species diversity, ecosystems, public open space, lifestyle recreation, tourism, commodity production, and to local economic opportunities.

Table IB-1: Ownership

Ownership	Acres in landscape	% of landscape
Local government	329	0.3%
State	6,444	6.1%
NPS	493	0.5%
Private	58,740	55.3%
Right of Way	464	0.4%
USFS	39,702	37.4%
Unknown	51	0.0%
Utility Easement	6	0.0%
Water	8	0.0%
Total	106,237	

The landscape is characterized by the broad Deer Lodge Valley, valley-margin bench lands, and the rolling mountains and foothills of the Boulder Mountains. Land cover from the Gap Analysis Project (GAP) (Redmond et al, 1998) is shown in figure IA-3. The overall pattern of mountain vegetation is coniferous forests, meadows, and aspen groves. Broad valleys are open grasslands with alfalfa fields and croplands in lower elevations, varied cultivated vegetation around homes and in towns, and transitional vegetation including aspen along the foothills and in moist draws and sagebrush along the grassland-conifer interface at the tops of the large benches and on southerly aspects of the mountain stream drainages. The valley bottom and foothills are predominantly private, while USFS manages much of the higher land base in the Boulder Mountains.


Photo: The Deer Lodge Valley and Flint Creek Range viewed from the Boulder Mountains.

The landscape includes and supports many native wildlife and plant species including large herds of elk and deer. Federally listed threatened and endangered species including grizzly bear, Canada lynx, and gray wolf have been observed in the landscape over the past several decades. Native bull trout, federally listed as threatened by the U.S. Fish and Wildlife Service (FWS) use the Clark Fork River incidentally. It is uncertain whether bull trout ever used streams within the landscape as core habitat; all though Peterson and Cottonwood Creeks are large enough that past use of these watersheds by bull trout is possible. The streams within the landscape are important sources of clean water to the Clark Fork River, aiding in the eventual restoration of sustainable bull trout populations in the Upper Clark Fork.

The landscape is agricultural and reflects traditional Montana ranching communities. Ranch building sites, fences, hay meadows, and haystacks as well as cattle and horses dominate the character of the landscape below forested mountains and rocky peaks. The USFS lands within the landscape contain unique features including historical mining sites, prehistorical Native American cultural sites, the Electric Peak Inventories Roadless Area (IRA), and several segments of the Continental Divide National Scenic Trail (CDNST). Roads traverse the landscape and noxious weed infestations introduced along roadways and from adjacent private lands are visible in varying densities across the landscape especially on lower elevation south and west aspects.

Fire has played an integral role in the landscape, and the exclusion of fire has resulted in a range of vegetative communities different from what occurred historically. Prior to the 1860's, lightning caused fires burned freely, and the American Indian used fire extensively. More frequent fires maintained open, park-like stands of Douglas fir and ponderosa pine at lower elevations and a mosaic of different age classes at higher elevations across the landscape.

In the early 1900's, a combination of events occurred that interrupted the regular occurrence of fire. First, the settling of the West ended the use of fire by the American Indian. Second, intense grazing at the turn of the century decreased light ground fuels that carried fires. Third, fire suppression programs initiated in the early 1900's became very effective. The results are changes in the composition and structure of plant communities including denser stands of timber,

multi-storied stands, and more area being forested. The effect of this change with regard to wildland fire is a gradual buildup of hazardous fuel conditions in many stands. Recent drought and warmer temperatures in the years since 2000 has exacerbated beetle infestation of lodgepole forested areas. This has lead to the combination of standing-dead timber, much of which still holds dry needles, with historic fuel build up and has created the potential for large landscape changing fires.

Historical Overview

Prior to European settlement, much of the area of southwestern Montana was utilized by the Bannock, Flathead, and Shoshone tribes as a common hunting ground. After the Lewis and Clark expedition passed through the area in 1805, they were followed from the 1810's through 1830's by fur trappers sent by the Missouri Fur Company and the American Fur Company. Native Americans and members of these fur companies heavily trapped beaver in the areas of western Montana.

Cattle ranching and settlement of the area by people of European descent began soon after float gold was discovered in 1852 on what is now Gold Creek. Settlement escalated in the 1860's as placer mining peaked in nearby Butte. Gold and silver lured men trying for their riches and others interested in settling the new land and providing commodities for the mining population. During this period, grazing use by livestock associated with the many homesteads began in earnest. Trees were logged to use in smelting processes, to build homes, and for fuel to heat homes. Communities grew in the Deer Lodge Valley along with roads, railroads, and large herds of cattle and horses. The ranching pattern in southwestern Montana included home ranches and winter ranges in the valleys, and rider's cabins (sometimes with corrals and roundup grounds associated) on the summer ranges in the adjacent mountains. Deer Lodge County, incorporated in 1865, was one of the original 8 counties in the newly formed Territory of Montana, and the city of Deer Lodge was the county seat. By 1870, Deer Lodge had a telegraph and stage. The first territorial prison was built in Deer Lodge soon after in 1871. In 1883, the northern transcontinental railroad was joined near Gold Creek.

That same year Marcus Daly built a smelter in what became the city of Anaconda. Soon the population of Anaconda exceeded that of Deer Lodge and the citizens of Anaconda thought they should have the county seat. In an election in 1897, Anaconda won the county seat of Deer Lodge County. In 1901, the citizens of the city of Deer Lodge and north Deer Lodge County succeeded in splitting the county. The original proposal had Anaconda as the county seat of Daly County and Deer Lodge the county seat of Deer Lodge County. However, the War of the Copper Kings was in full force and William A. Clark was not about to let his rival Daly have a county named after him. After much wrangling, Daly lost out and the State Supreme Court ruled that Anaconda was the county seat of Deer Lodge County and Deer Lodge chose the name Powell County.

President Theodore Roosevelt first proclaimed the Beaverhead and Deerlodge National Forests in two separate executive orders on July 1, 1908, pulling together lands which earlier presidents had withdrawn as the Hell Gate, Bitter Root, and Big Hole forest reserves between 1897 and 1905. Grazing continued by cattle, sheep, and horses after the National Forests were established.

Over the last century the population of the Deer Lodge area has stabilized and ranching, the Montana State Prison, and logging and lumber milling have been staples of the local economy.

Current Land Use

The landscape is primarily under ranching/agricultural land use and much of the landscape is used for rangeland. The narrow floodplains of the smaller streams that drain the Boulder Mountains are not irrigated, with the exception of several tens of acres on Dry Cottonwood Creek used for hay production. Peterson and Cottonwood Creeks which are larger and perennial have larger tracks of irrigated lands on their middle and lower reaches. Cattle have been driven through the valley in large numbers throughout the livestock grazing history of the area.

The Montana State Prison remains one of the largest employers in the Deer Lodge Valley. Currently, the prison has approximately 600 employees of which 318 are uniformed staff. Sun Mountain Lumber operates both a solid stud mill and a finger joint plant and is the largest private employer in the valley.

The BDNF is managed for a wide range of resources and opportunities including watershed, wildlife, wilderness, range, recreation and wood products. The diverse landscapes and resources of the BDNF are intricately tied to the cultural and economic fabric of Southwest Montana. Within the EDLV landscape, this connection between people and the land is no different. Current uses of national forest lands within the landscape are predominantly varied recreational uses, production of forest products notably firewood and timber, and permitted livestock grazing. Uses of the BDNF lands are tied to uses of the Helena National Forest in the adjacent Boulder River watershed east of the Continental Divide by the forest road network.

Recreation uses of BDNF outside of the Electric Peak IRA are mostly road orientated and include scenic driving, off highway vehicle (OHV) riding, hunting, camping, and fishing of the larger streams. The Electric Peak IRA provides a quiet, non-motorized recreational setting during much of the year where hiking, horseback riding, and mountain biking occur in a roadless setting. Snowmobiling is a popular winter use of the forest, with both designated snow routes which access the adjacent Boulder River area and off-route backcountry snowmobile use. Snowmobiling is currently permitted on all BDNF lands in the landscape outside of designated big game winter range closure areas.