



Photo Credit - Carol Waller 2014

## Chapter 5 – Natural Environment: Resources, Hazard Areas, and Conservation

**Vision** The extraordinary natural environment of Blaine County contributes to a high quality of life. Strong conservation values will continue to guide our decisions related to land development, as well as recreation, agriculture, transportation and other aspects of planning. We are committed to protecting our natural environment and assets.

### Core Values

Blaine County residents value:

- Clean air and water
- Abundant and accessible public open space
- Uninterrupted scenic vistas and natural hillsides
- High-quality habitat for fish and wildlife
- Ordinances that protect and manage natural and developed environments to maintain our high quality of life

In 2014, the County conducted an online survey called "How Should We Use Our Land?" The question, "How important are natural environment-

al attributes (scenic vistas, forests, clean water/air, wildlife, etc.) to our community?" received an average rank of 9.3 on a scale of one to ten, with ten being "The Most Important". Related questions about limiting development on hillsides and regulating land use in hazardous and sensitive areas received average rankings of 8.9 and 8.7 respectively.

The focus of this chapter is the natural environment. It discusses the importance of our natural assets and why and how they must be considered when weighing development and other important economic growth decisions.

## Key Guiding Principles

***Natural environmental attributes, including scenic vistas, public open space, healthy forests and sagebrush steppe, clean water and air, and abundant fish and wildlife are the heart and soul of our community.***

The County's natural environmental assets contribute to our high quality of life, help to drive our economy and are seen as valuable assets for their own sake. Reliable scientific study and analysis help leaders to understand the County's natural environment, enabling sound decision-making.

***The hills and mountains of our community are to be preserved in their natural state and land uses on them shall be strictly regulated.***

The County's Mountain Overlay District is intended to preserve the beauty and integrity of our mountains and foothills. Primary purposes of the County's strict hillside regulations include preserving the natural character and aesthetic values of our hillsides, protecting wildlife habitat, maintaining soil stability and permeability and ensuring public safety. Any weakening of these regulations would be in direct conflict with this principle.

*Pioneer Mountains - Matt Leidecker*



***Land uses in hazardous areas and sensitive areas shall be closely regulated.***

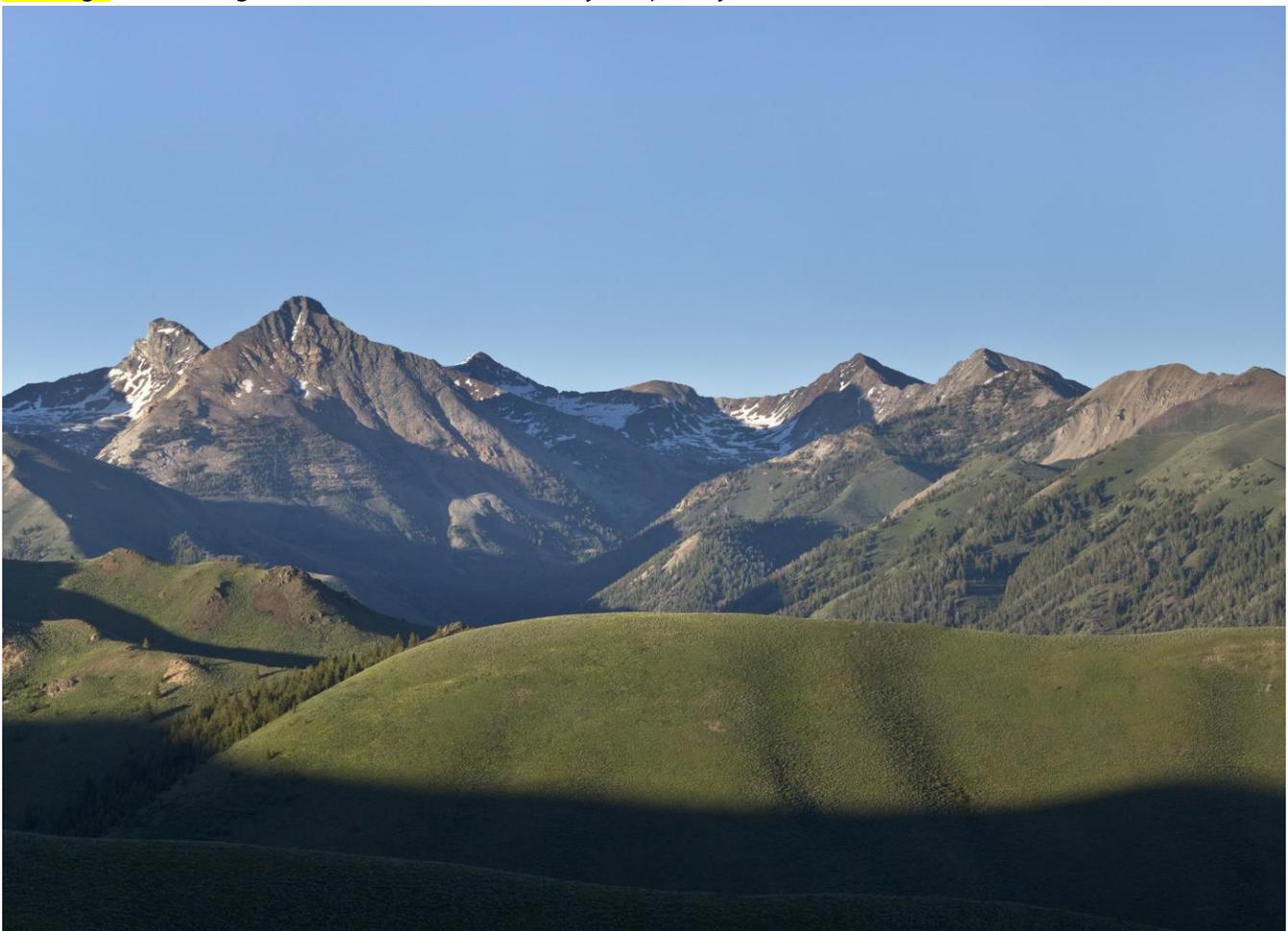
Development in hazardous areas such as avalanche zones, floodways, floodplains and wildland-urban interface locations leads to higher public costs and greater risks to human safety. These include the difficulty of providing emergency services and the potential loss of property or life. Development in sensitive areas like important wildlife habitat and movement corridors, wetlands and riparian zones threatens natural environmental assets. Any weakening of related regulations would be in conflict with this principle.

***Cooperation between jurisdictions can enhance our quality of life and contribute to sound and effective land use planning and implementation.***

Regional planning becomes possible when the County, its incorporated cities, state and federal partners and non-governmental organizations exchange information and cooperate on issues related to watersheds, aquifers and other environmental features that cross political boundaries. Putting **the natural environment** first can facilitate working together on regional issues and lead to better outcomes.

***Climate adaptation planning and strategies will increase our resiliency.***

Blaine County recognizes that predicted changes in climate will impact the County in many ways. The Intermountain West may see changes in mountain snowpack levels, earlier and potentially higher spring runoff, increased wildfires, more insect damage in our forests and changes to crop-growing seasons. Planning for climate change is **a challenge**, and finding solutions to increase resiliency is a priority.



*“Placing areas under environmental protection helps in the fight against climate change, but it also shelters ecosystems, improves food security, acts as a natural barrier against disaster, serves as a genetic bank for biodiversity and scientific research, and plays an important role in society and culture.”*

Sebastian Brixey-Williams,  
World Economic Forum

## Setting

Blaine County’s landscape is a unique and varied natural environment with alpine mountains, free-flowing rivers, spring-fed creeks, vast hillsides of sagebrush and jagged lava beds. This special setting appeals to both residents and tourists and contributes to a high quality of life. The public has long recognized the importance of the natural environment and County leaders have enacted strong ordinances and guidelines to protect hillsides, waterways, riparian areas, wetlands and other environmental features. The County’s first comprehensive plan, adopted in 1975, created the foundation for these protections and has resulted in hillsides with little development, highways with no billboards, areas of undisturbed riparian habitat and productive agricultural lands that continue historic farming and ranching and provide scenic open space.

Concerns about the cumulative adverse impacts of land development on the natural environment in 2005 resulted in an 18-month moratorium on subdivisions. The planning process undertaken during that time - “Blaine County 2025” – produced amendments to ordinances and the Comprehensive Plan that further protected sensitive lands and agriculture and guided residential and commercial growth toward existing cities.

In 2008, the citizens of Blaine County approved and funded the Land, Water and Wildlife Program(LWWP) “to protect lands and water quality in the Big and Little Wood River valleys, protect wildlife habitat throughout the County and protect working farms and ranches in the County.”<sup>1</sup> The LWWP and other conservation efforts described in this chapter, along with the regulations developed by the County over the past 40 years, are important tools for protecting the natural environment.

This Chapter seeks to create a framework for the County’s strong environmental stewardship efforts in the land use arena. Because 81 percent of the County is public land managed by federal and state agencies, collaboration with public agencies on long term land and water management strategies is a goal.

Several referenced maps and the subarea pages at the end of this Chapter help to illustrate facets of the natural environment such as land cover, habitat, water, sensitive lands and conservation. More detailed research information on the natural environment is provided in the Appendix.

<sup>1</sup> LWWP ballot language. See appendix.

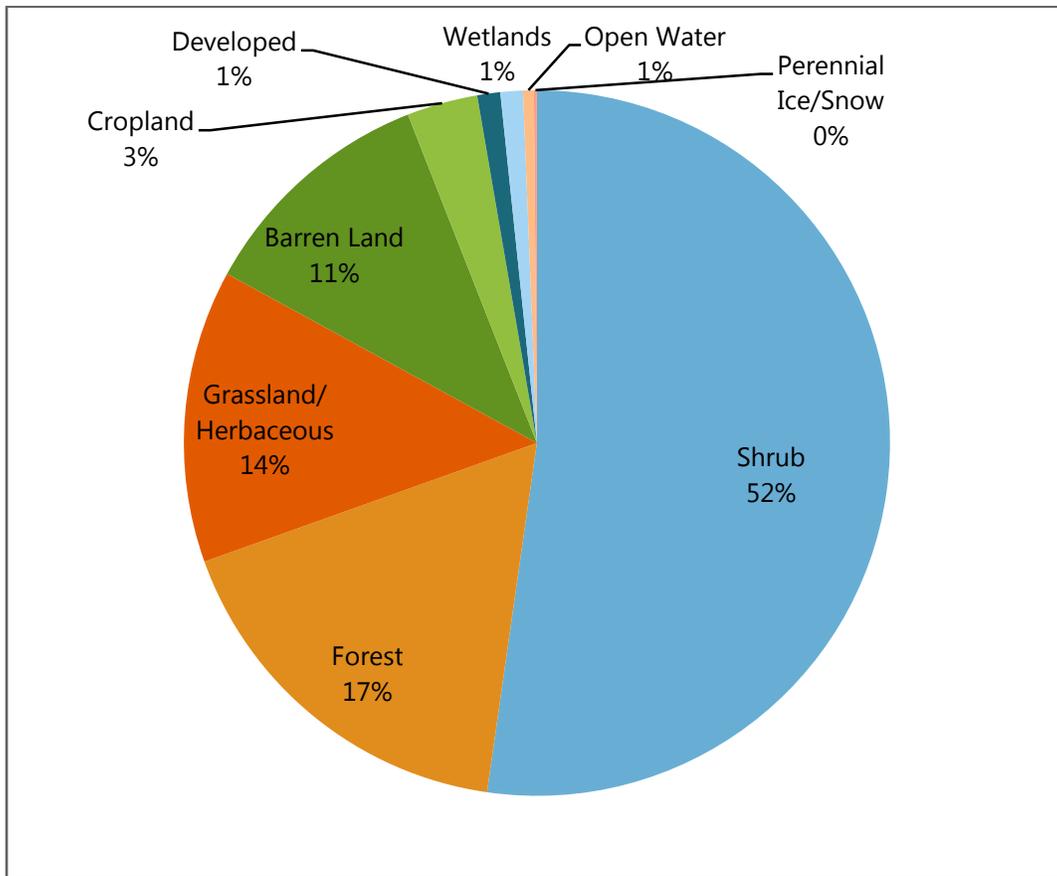
# Natural Resources

Blaine County is a semi-arid high desert ecosystem that receives an average of 13.4 inches of precipitation per year in the lower elevations (4000' to 5800') and 20.4 inches in the higher elevations (above 5800' e.g. base of Bald Mountain). Nearly 60 percent of the annual precipitation falls as snow from November to March. Elevations vary from 4,186' at Lake Walcott in the extreme south to

12,009' at Hyndman Peak in the northeast. A variety of land covers are found, as shown in Map 5.1.

Chart 1 shows the proportion of each major land cover type in the County, as defined in the USGS National Land Cover Database. Shrub (the vast sagebrush steppe landscape) is the predominant land cover. The following subsections cover habitat types, water, wildlife and other natural resources.

**Chart 1: Blaine County Land Cover Types**



Source: USGS, 2011

## *Designated Wilderness Areas*

Wilderness designation protects many of the high mountain areas that surround us. These wilderness designations are vitally important, as they ensure that intact habitat areas will be managed for plant and wildlife diversity, as well as for outstanding scenic beauty, for generations to come.

The Sawtooth Wilderness, part of the Sawtooth National Recreation Area, was designated in 1972, permanently protecting 339 square miles. Our newest wilderness area, the Boulder-White Clouds Wilderness, was designated in 2015, protecting another 431 square miles. While only small portions of these wilderness areas are within Blaine County, they are in our “backyard” and provide exceptional recreation opportunities on hundreds of thousands of acres of high mountain backcountry.

## Habitat Types

### Subalpine and Alpine Mountains

The Smoky, Boulder, Pioneer, Sawtooth and White Cloud Mountains punctuate the vistas of Blaine County. These breathtaking subalpine and alpine mountain ranges are almost entirely on public lands managed by the US Forest Service (USFS). Some areas have federal wilderness designation, as noted in the sidebar. Numerous wildlife species and wild plants make these high mountains their home.

### Forest Lands

Forested lands are most prominent on north slopes and contain a variety of tree species, depending on elevation and water availability. Predominant species include aspen, whitebark pine, Engelmann spruce, subalpine fir, limber pine, lodgepole pine and Douglas fir. Forestland is important as wildlife habitat and for moisture retention and shading. Forests also serve as a carbon sink, naturally absorbing carbon dioxide from the atmosphere, and are a vital component of ecosystem health.

### Sagebrush Steppe: Grasslands and Shrub Lands

Two thirds of Blaine County is covered by sagebrush steppe, most of which is managed by the Bureau of Land Management (BLM). These high desert shrub and grasslands, primarily treeless, host a variety of wildlife and plant species and contribute significantly to the watershed by naturally returning rainfall and snowfall to the aquifer. Large, contiguous areas of sagebrush steppe provide quality habitat and serve as an extensive carbon sink. Wildfire, livestock overgrazing, invasive weeds, power transmission corridors, roads and vehicular use are among the factors causing fragmentation of habitat; these factors must be managed. From an ecosystem standpoint, this landscape is of high importance and deserves thoughtful planning and land management.



*Sagebrush - Larry Barnes*

## Lava Fields

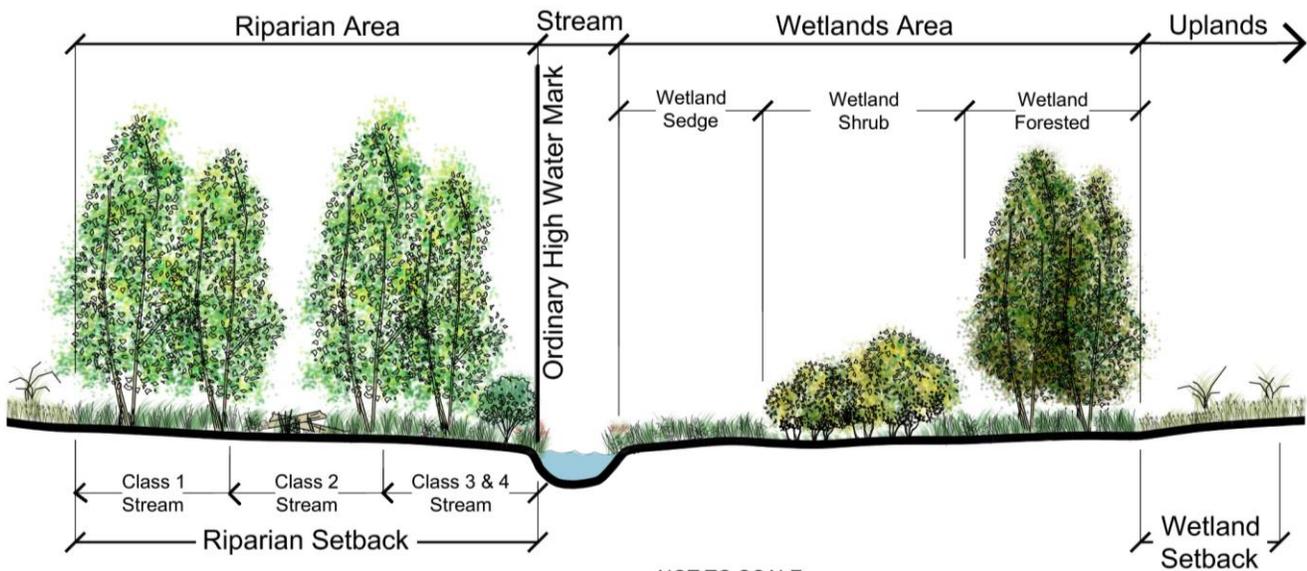
The lava fields of Craters of the Moon National Monument and Preserve represent one of the best-preserved flood basalt areas in the continental US. This is the largest area of its type in the lower 48 states. Lying on the eastern side of Blaine County and extending into Butte County, the three major lava fields lie along the Great Rift of Idaho. The dry winds and hot summers combined with deep cool recesses in the lava create a harsh and unique ecosystem.

## Riparian and Wetland Areas

While riparian and wetland areas proportionally comprise a very small portion of the County, they are productive and valuable natural resources. Riparian areas recharge the aquifer, store water, and provide plant diversity and habitat for common and sensitive species. Cavity-nesting birds, songbirds, and raptors utilize riparian tree and shrub habitat.

Ditches are the delivery systems for irrigation water and in some areas serve to recharge the aquifer. Although irrigation ditches are not regulated by the County, ditch-side cottonwoods, willows and other vegetation shade and cool the water and provide cover, food and corridors for wildlife.

County regulations protect wetlands and riparian areas, recognizing their role in mitigating flood damage, protecting aquatic systems and providing wildlife habitat. Disturbing natural riparian vegetation is prohibited within prescribed setbacks from ordinary high water marks of rivers and streams and from the edges of wetlands. The diagram below illustrates terminology used to describe County riparian and wetland areas (see Appendix for setback table). The Desired Outcomes in this Chapter outline further refinements to the County's riparian regulations to implement the goals of this Chapter.





*(Before)*



*(After)*

*Heart Rock Ranch stream restoration - Photos courtesy of Ron Pierce*

Many stream restoration projects have been accomplished County-wide affecting miles of riparian corridor and thousands of acres. These projects benefit fish and wildlife both on and off the properties. Downstream benefits include clearer and colder water with increased base-flows, improved spawning conditions and increased juvenile recruitment and the conservation of sensitive native aquatic species. Off-site wildlife benefits include the enhancement and creation of wetland and riparian habitats, improved migratory corridors and stop-over areas and increased winter forage.



*Belted kingfisher - Larry Barnes*

## *Areas Critical for Biodiversity*

---

Biodiversity is the variety of species in a particular habitat or ecosystem. The study of biodiversity is a cornerstone of ecosystem planning. While many agencies are prioritizing biodiversity within their land areas or within their discipline, no map exists of key biodiversity areas in Blaine County. Such mapping would help to identify areas that are crucial habitat for multiple species and aid decision-makers in land use planning.



*Anglers view at Silver Creek – Mike McKenna*

# Water

## Watersheds

Watersheds are areas of land that separate waters flowing to different rivers, basins, or seas. Blaine County includes five major watershed subbasins<sup>2</sup> (shown in Map 5.2.1 and 5.2.2):

- Big Wood River. The Big Wood River Subbasin is the largest in the County and contains the most development. Even so, only 1.6 percent of this subbasin is developed land.
- Little Wood River. The Little Wood River Subbasin is the next most developed subbasin, including a large part of the Bellevue Triangle and the Carey area.
- Lake Walcott. The Lake Walcott Subbasin drains the extreme eastern and Yale-area peninsula of the County, including the Craters of the Moon National Monument and Preserve.
- Upper Salmon. The Upper Salmon Subbasin comprises only a small area of the County north of Galena Summit, but is significant because it includes the headwaters of the Salmon “River of No Return.”
- Camas, American Falls and Big Lost. Very small areas of Blaine County land fall within each of the Camas Subbasin on the western boundary, the American Falls Subbasin on the southeast and the Big Lost Subbasin on the northeast.

Watershed planning is a comprehensive way of looking at surface and ground water systems, rivers, lakes and wetlands and the plants, animals and human development that inhabit them. Watershed planning works within a geographically defined area. Elements include water quality, water quantity, drainage, storm water runoff, natural flow regime and management of water rights.

---

<sup>2</sup> USGS Subbasin Hydrologic units

When watersheds function properly they sustain terrestrial, riparian, aquatic, and wetland habitats that support diverse populations of native aquatic and riparian dependent species. The USFS watershed coalition identifies five characteristics of functioning watersheds<sup>3</sup>, which are important considerations for land planning and resource conservation and management:

1. They provide for high biotic integrity, which includes habitats that support adaptive animal and plant communities that effect natural processes.
2. They are resilient and recover rapidly from natural and human disturbances.
3. They exhibit a high degree of connectivity longitudinally along the stream, laterally across the floodplain and valley bottom and vertically between surface and subsurface flows.
4. They provide important ecosystem services, such as water quality, recharge, maintenance of riparian communities and moderation of climate variability.
5. They maintain long-term soil productivity.

An example of a watershed planning project is the Big Wood River Basin Alternative Futures Project, which explores the interactions between agriculture, urban land use practices and recreational activities under future conditions of climate and water supply. This pilot project of the Climate Impacts Research Consortium explores how climate and other drivers of change may influence water and other systems that are important to stakeholders within the basin.<sup>4</sup>

---

<sup>3</sup> USFS Williams et al, 1997

<sup>4</sup> See Appendix for project team and partners.

## Surface Waters

### Big Wood and Little Wood Rivers

The 137-mile long Big Wood River is one of the most important environmental resources of the Wood River Valley. It supports fishing, agriculture and recreation, and contributes to the natural beauty that brings people here. The Idaho Department of Environmental Quality (IDEQ) has designated the Big Wood as a Total Maximum Daily Load (TMDL) limited waterbody, meaning limits on discharge of pollutants – including sediment – from all sources have been established to protect, restore and preserve water quality. IDEQ published the Big Wood River Watershed Management Plan in 2001, which set water quality targets. As of 2016, a subbasin review by IDEQ is in process.

The “natural flow regime” (see sidebar) of the Big Wood and Little Wood rivers features peak flows in the spring and low flows in the fall. (The Appendix contains hydrographs showing flow regimes on the Big Wood River.) Land use actions have changed the natural flow regime, modifying the Big Wood River floodplain, over time. A recent geomorphic assessment of the 46 miles of the Big Wood from the North Fork confluence to Magic Reservoir concluded that 52 percent of the reach examined has been impacted by human activity, resulting in the loss of floodplain function and impaired channel form. The assessment also developed restoration guidelines and management objectives that could enhance fisheries and reduce flood hazard, sedimentation and severe bank erosion.<sup>5</sup>

River proponents support management actions to restore the Big Wood and tributaries to a more natural flow regime, allowing the river to take a natural meandering course and managing water use in a way that mimics the natural water volume. A natural flow regime is recognized as healthiest for habitat and for long-term environmental and recreational prospects. It also carries risk to development in and near the floodplain.

The Little Wood River originates in the Pioneer Mountains and flows through the Little Wood Reservoir and Carey, joining the Big Wood south of Blaine County. It is a popular fishery above and at the reservoir.

Both the Big Wood and Little Wood rivers are key sources of irrigation water for Blaine County and most of Lincoln County. Surface water irrigation is crucial for agriculture but does affect natural flows.

### *What is a free flowing river?*

For years, river hydrologists focused on “minimum flow requirements” for healthy rivers. Recently the scientific focus has shifted towards trying to recapture a river’s “natural flow regime”. This is a scientific principle stating that the integrity of flowing water systems depends largely on their natural dynamic character. Natural flow regime can be said to organize and define a whole river ecosystem by a complex system of woody debris, sediment and water levels that define the habitat characteristics.

A river’s natural flow regime varies on a range of scales and includes:

- Magnitude
- Frequency
- Duration
- Timing
- Rate of change of hydrologic conditions

Together, these characterize the range of flows occurring naturally. Human alteration of the natural hydrologic processes disrupts the natural equilibrium of rivers. Many scientists believe that mimicking our rivers’ natural flow regimes will give wildlife the best chance to evolve in the face of climate change.

<sup>5</sup> Big Wood River Geomorphic Assessment, 2015.



*Silver Creek - Larry Barnes*

### **Tributaries and Spring Creeks**

Multiple tributaries flow into the Big and Little Wood Rivers, providing fisheries, riparian habitat and recreational and scenic amenities. In the Bellevue Triangle area, dozens of springs percolate up from the aquifer and create creeks, which merge into Silver Creek. Silver Creek is a globally unique aquatic ecosystem, featuring one of the highest densities of stream insects in North America and more than 150 annual bird species. The Audubon has designated Silver Creek as an Important Bird Area (IBA). It has high habitat value as an intact riparian system with associated wetlands and is renowned internationally for its fly fishing and scenic values. Silver Creek has been part of the recreational heritage of the County since Ernest Hemingway made it famous in the 1940's.

Silver Creek is a tributary of the Little Wood River. Most of the water flow is from springs discharging from the aquifer system; however, some of the spring discharge into Silver Creek is from Big Wood River water that has either leaked from irrigation canals or has moved through the root zone as excess irrigation water. The system depends on this supplemental flow from irrigation water rights.

Private landowners, the Nature Conservancy and Trout Unlimited have undertaken major restoration projects on Silver Creek and its tributaries. **These are positive responses to land management problems that have led to sediment loading, warming temperatures and the loss of stream side vegetation.**

### Lakes and Reservoirs

Northern Blaine County features hundreds of high altitude lakes on USFS lands. These lakes provide important habitat, scenic value and recreation for hunters, anglers, hikers and equestrians. Alturas Lake and Pettit Lake in the Sawtooth Mountains are accessible by road and are important tourist destinations with docks and boat launches managed by Blaine County.

Magic Reservoir and the Little Wood Reservoir are the County's largest manmade lakes. Both are managed primarily for irrigation. They are also popular fishing, ice fishing and boating destinations. The County manages six boat launches and multiple docks on Magic Reservoir and one boat launch and a set of docks on the Little Wood. **Drought, irrigation and dam maintenance have reduced** water levels in recent years.

Fish Creek Reservoir currently has limited storage capacity due to the aging **and deteriorating** dam, which has been placed on the National Register of Historic Places. Once a productive and popular fishery, **the dam was lowered for public safety reasons and** it now stores only a fraction of its original capacity. IDFG stocks it when possible, but it has not been stocked since 2010 due to drought.

The Lake Walcott Reservoir in the extreme south is less used by Blaine County residents but is easily accessible from I-84. It is the site of the Minidoka National Wildlife Refuge and an Audubon-recognized Important Bird Area (IBA).

### Wetlands

Wetlands adjacent to rivers and streams are found throughout the County and are particularly abundant along the spring creeks in the south County. Silver Creek is listed in the top 10 wetlands slated for protection within the State of Idaho, as is Lake Walcott/Channel Canyon on the County's southern border.

### Surface Water Protection

Blaine County code states, "The rivers and creeks of the county are important to the well-being of its citizens as a source of recreation, fish and wildlife habitat, aesthetic beauty, a source of irrigation water for the farmlands as well as other economic and lifestyle values." Blaine County manages floodplains and protects its surface waters through riparian and wetland setbacks and regulations. The County has a unique Stream Alteration Permit process, which includes concurrent joint applications to the Army Corps of Engineers and Idaho Department of Water Resources for disturbances to streams and rivers. A recorded security agreement to ensure the complete restoration of streambank vegetation is an example of additional requirements intended to protect surface waters and the adjacent habitat.



*High altitude lake - Matt Leidecker*

## Groundwater Flow Model

The Wood River Valley Groundwater Flow Model Project was initiated in 2008. According to the Idaho Department of Water Resources' website, the model "simulates the effects of climate and human activities on the aquifer system with an emphasis on the interaction of the surface and groundwater system." The model incorporates "the increased knowledge about the aquifer system which has been developed in the past several years." It examines effects on groundwater and its interaction with the Big Wood due to changes in water use, recharge or discharge. Ultimately the model can serve as a tool for conjunctive water-rights administration and water-resource management and planning.

## Groundwater and aquifer systems

Groundwater accumulates in shallow and deep underground aquifers, providing the primary water source for municipal and residential uses in the County. It plays a key role in agricultural production and in maintaining and sustaining river flows, springs and wetlands. Groundwater acts as a buffer against the impact of climate variability and drought periods. Because aquifers are underground, there is no evaporation loss. Aquifers help to buffer seasonal precipitation variations by storing water during high rainfall periods.

In Blaine County, porous soil and underlying cobble create a strong relationship between surface and ground water flows. The Idaho Department of Water Resources (IDWR) and United States Geological Survey (USGS) partnered to develop a groundwater-flow model of the Wood River Valley aquifer system which emphasizes this relationship (see sidebar).

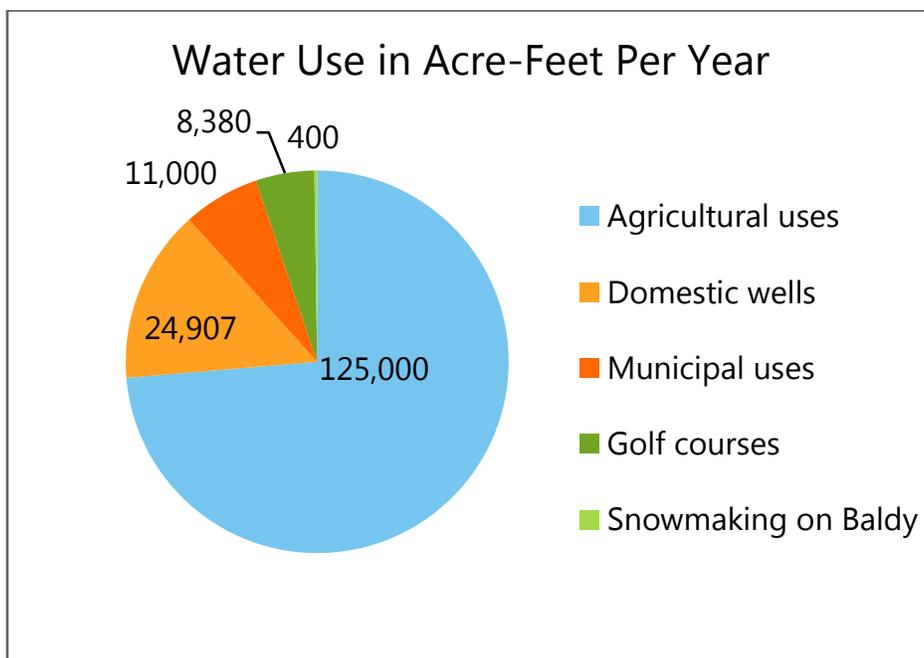
Unlike many western states, Idaho began establishing the framework to manage ground and surface water uses jointly over 30 years ago when it began adjudicating water rights in the Snake River Basin. This process was completed for the Snake River Basin in 2010. Now that both surface and ground water rights have been quantified and decreed by a court, they can be managed conjunctively. Conjunctive management of surface and ground water allows for integrated planning, putting Idaho ahead of many states in water resource planning opportunities. (The Appendix defines several water-related terms).

The Big Wood River drainage was designated a Ground Water Management Area (GWMA) in June, 1991 in order to address the connection between ground and surface water within the Camas Creek, Silver Creek and Upper Big Wood River drainages above Magic Reservoir. IDWR determined that junior ground water diversions were depleting senior surface water flows in the Big Wood River and Silver Creek. A moratorium on new consumptive ground water development was declared in 1991 requiring any applicants for new groundwater rights to demonstrate that sufficient supply is available and prior water rights will not be injured. IDWR maintains a monitoring network in the Big Wood GWMA. The data obtained provides input for the groundwater flow model and is a source of information for the management of water resources.

## Water Use

Because surface and ground waters are so vital to healthy ecosystems, careful planning and management of water use in the County will be essential for ongoing natural resource protection. Future growth, recreation and agriculture depend on the availability of water. While IDWR is the primary manager of water use, Blaine County has some role through the Local Land Use Planning Act and can actively support desired changes in state policies. The County can seek incentives for water conservation, promote best management practices and support conservation projects that achieve multiple use of water for streams, wetlands, agriculture and groundwater recharge. In Blaine County, as in the rest of Idaho, agricultural uses comprise the single largest water use (see chart).

**Chart 2. Estimated Human Water Consumption by Land Use - 2016**



Source: Water District 37 (June 2016)

Water rights establish the specific rights of owners to use water belonging to the State of Idaho. Under statute, the Department of Water Resources evaluates any application for a new water right, or changes to an existing water right – called a transfer – against criteria intended to ensure no other water right is injured by the proposed changes. The public uses these same criteria to ensure their personal interests are protected and as the basis for public comment on any application. They include "the local public interest." In 1998, the County adopted by resolution a *Local Public Interest Water Policy* defining what this means to Blaine County. The *Policy* prioritizes appropriate use of a scarce resource. It provides direction to future county leaders in working with the State on water use issues.

## Water Districts

*"The most senior water right decrees on the Little Wood system usually run through September. In the summer of 2015, they went off on July 19."*

Kevin Lakey, Watermaster, Water District 37

In February 2015, in the face of worsening drought, 63 water users south of Blaine County filed a "water call." If upheld, such a call could force junior ground water users in the Wood River Basin (those with newer water rights) to use less water. Junior groundwater users include cities and sub division community wells.

Looking to the future, two ground water districts were formed that year, the Galena Groundwater District and the South Valley Groundwater District, to empower groundwater users to work cooperatively, manage water rights on behalf of the members, represent them in water-use issues and develop mitigation and aquifer recharge plans.

## *Species of Greatest Conservation Need*

The Idaho Department of Fish and Game maintains a list of “Species of Greatest Conservation Need” – encompassing endangered, threatened and sensitive species. Tier 1 and 2 species found in Blaine County are listed below.

### Tier 1:

*Pacific Lamprey*

*Steelhead (Snake River basin)*

*Sockeye Salmon (Snake River)*

*Chinook Salmon (Snake River spring/summer-run)*

*Greater Sage-Grouse*  
*Western Yellow-billed Cuckoo*

*Wolverine*

*Snake River Physa*

*Bliss Rapids Snail*

*Blind Cave Leiodid Beetle*

*Morrison Bumble Bee*

*Western Bumble Bee*

*Suckley Cuckoo Bumble Bee*

### Tier 2:

*Western Toad*

*Northern Leopard Frog*

(continued on next page)

## Wildlife

Blaine County has a rich diversity of wildlife and habitat. Variations in elevation, aspect, land cover and precipitation create distinct habitat zones that support a wide range of fauna. Common species include elk, mule deer, moose, pronghorn, fox, black bear, golden and bald eagles and many more (see Appendix).

The proximity of residential areas to wildlife habitat on both private and public lands makes encounters with wild animals relatively commonplace, even in towns. These encounters illustrate how human habitation and development has displaced some of the historic wildlife habitat areas of Blaine County.

Habitat loss and the decline of many species occurred in the 19th century due to growing human population, unregulated trapping and hunting, widespread expansion of farming and grazing that brought disease and competition with livestock for forage, and habitat fragmentation from roads and timber harvesting. Bighorn sheep, for example, were widely distributed and plentiful in Idaho until the late 1800s. Now, bighorn sheep in Blaine County are at the edge of their range, with only occasional sightings in a small area of the Pioneer Mountains. Mountain goats in Blaine County are also at the southern-most periphery of their range in the United States. Protecting a population of wildlife at the edges of its primary range is important for maintaining genetic diversity for the species.

In spite of habitat loss, Blaine County continues to have significant areas of public and private lands providing quality habitat for wildlife.

## Management

All wildlife in Idaho belongs to the citizens of the state. The state holds it in trust for the benefit of its people. The Idaho Department of Fish and Game (IDFG) is responsible for protecting and managing all wildlife and providing continued supplies for hunting, fishing, trapping and viewing. IDFG has the legal responsibility to preserve and protect native plants and to consult with the Idaho Governor's Office of Species Conservation on threatened and endangered wildlife and plant issues.

As the wildlife management agency in Idaho, IDFG works with a variety of partners. These include the BLM, USFS, Natural Resource Conservation Service (NRCS), US Fish and Wildlife Service, National Park Service, Idaho Department of Lands, county and city governments and private landowners. The US Fish and Wildlife Service manages and protects endangered species in cooperation with federal and state natural resource managers.

Blaine County is a partner in the protection of wildlife. Greater understanding and mapping of habitat areas have guided land use decisions that support habitat protection, connectivity and permeability for wildlife. Permeability is the concept of making land travel by wildlife easier by careful planning of fences and other barriers, minimizing or grouping disturbance factors such as light and noise, providing visual cover and so on. Areas for nesting, fawning, feeding, winter range and movement corridors are to be protected. Recent local actions have included reducing the speed limit on the highway in wildlife-crossing areas and prohibiting potentially toxic ornamental plants. Various programs raise awareness about wildlife and the importance of controlling pets, avoiding animals in winter range when recreating, and creating wildlife friendly landscapes.

County land use regulations include the Wildlife Overlay District and subdivision standards. The Wildlife Overlay encompasses the entire County. Any proposed subdivision applicant must work with IDFG to determine whether there are Classified Lands (winter range, migration corridors, or sensitive species habitat) within the property. If so, further studies may be required and a conservation plan must be submitted. Standard mitigation requirements in new subdivisions include downcast outdoor lighting and advisory notes regarding fencing, pet management, storage of livestock feed, and ornamental plant depredation by wildlife. Map 5.3 shows Class I lands (deer and elk winter range), as currently designated by IDFG. It should be recognized that wild animals do utilize areas outside of mapped Classified Lands.

Of the 203 designated species of greatest conservation need in Idaho identified in IDFG’s 2016 State Wildlife Action Plan, several are known to occur in Blaine County (see sidebars).

The greater sage-grouse is listed in the first tier of species of greatest conservation need and is a key species in the sagebrush steppe. The largest grouse in North America, best known for its incredible courtship displays, has become emblematic of the sagebrush steppe habitat zone. Important sagebrush habitat throughout the West has been lost, altered and fragmented by fire, invasive species and human activities.

In 2015, the US Fish and Wildlife Service decided against listing the greater sage-grouse as an endangered species. Regulations have been enacted affecting BLM lands in Idaho and 10 other western states. Because of the abundance of high-quality sage-grouse habitat in Blaine County, land use, recreation and infrastructure planning will be significantly affected. Map 5.4 shows the sage-grouse conservation areas in and surrounding Blaine County.

## *Species of Greatest Conservation Need (continued)*

*Trumpeter Swan*  
*Harlequin Duck*  
*Sharp-tailed Grouse*  
*Western Grebe*  
*Clark’s Grebe*  
*American White Pelican*  
*American Bittern*  
*White-faced Ibis*  
*Ferruginous Hawk*  
*Golden Eagle*  
*Long-billed Curlew*  
*California Gull*  
*Caspian Tern*  
*Black Tern*  
*Burrowing Owl*  
*Lewis’s Woodpecker*  
*Sage Thrasher*  
*Sagebrush Sparrow*  
*Bobolink*  
*Pygmy Rabbit*  
*Silver-haired Bat*  
*Hoary Bat*  
*Fisher*  
*Bighorn Sheep*  
*A Cave Obligate (4 species)*  
*Western Pearlshell*  
*Deseret Mountainsnail*  
*An Ant-like Flower Beetle*  
*A Metallic Wood-boring Beetle (2 species)*  
*Idaho Dune Tiger Beetle*  
*A Mayfly*  
*A Miner Bee*  
*Idaho Point-headed Grasshopper*



*Sage-grouse – US Fish & Wildlife Service*

Gray wolves are no longer listed, but continue to be at the forefront of management challenges. County officials, with the support of the Wood River Wolf Project and many others in the community, have advocated for non-lethal practices that can serve as a model for coexistence of livestock with predators.

### Fisheries

Blaine County contains **many productive** fisheries. Silver Creek, as noted above, is a world-renowned trout stream. The Big Wood River is a productive cold-water fishery featuring wild rainbow, brown and brook trout, Wood River sculpin and other native nongame fish species. Portions of the river are stocked with catchable rainbow trout to meet the public's desire to harvest trout. Bull trout and salmon

spawn in the headwaters of the Upper Salmon River, but neither are found in other parts of Blaine County. Blaine County is home to the historic Hayspur Hatchery, a resident salmonid brood stock facility. Built in 1907, it was Idaho's first hatchery and continues to be operated by IDFG. Hayspur produces and ships about 8 million rainbow trout eggs annually to other state facilities.

The County's stream alteration **permitting** process helps to ensure that changes to rivers and their banks do not degrade fisheries and wildlife habitat. The County requires preservation or restoration of riparian vegetation and other steps to stabilize banks and maintain water quality, as well as adherence to all state and federal requirements.

## Other Natural Assets

### Vistas and scenic integrity

With five distinct mountain ranges visible from main travel corridors, scenic vistas are an integral part of the County landscape. These scenic values have been protected at the federal level in the Sawtooth Basin and at the local level by Blaine County's Mountain Overlay and Scenic Corridor Districts and Ketchum, Sun Valley and Hailey's hillside overlay zones. Early leaders realized the tremendous natural and aesthetic value of our "skylines, ridges, benches, terraces, knolls, and steep hillsides and mountains." Hillside protection was established in the 1977 zoning code culminating in the adoption of the Mountain Overlay District (MOD) in 1991. It regulates development of structures and roads on slopes exceeding 25 percent to protect views and aid soil stability, avalanche control and emergency access. Slopes over 15% which are visible from SH 75 are also regulated as "Scenic Corridor" – a subarea of

the MOD. GIS technology has been used to map the boundaries of the Mountain Overlay District. In 1999, the companion Scenic Highway Overlay District was established to preserve natural views from SH 75. It establishes regulations for berms and landscaping within 100 feet of the highway right-of-way. As a result of forward-looking planning, our undeveloped hillsides remain a visual asset and trademark of the Wood River Valley.

### Air and night sky

Blaine County has excellent air quality, with only limited exceptions during periods of wildfire. Our clear skies mean not only high air quality, but also an incredible night sky. Viewing the Milky Way is a common occurrence throughout the year – a sight not to be taken for granted. For over two decades, a local astronomy enthusiast has worked tirelessly with the County and its cities to protect our night skies. Careful regulation of exterior lighting by the County through its Outdoor Lighting ordinance and similar regulation by its cities have protected the visibility of our clear night sky, which is a valued local asset.



*Photo courtesy of Matt Leidecker*

## *Partners in Conservation*

---

Blaine County has the high value conservation and habitat areas that exist today because of the partnership of many conservation-oriented non-governmental organizations. These conservation groups have been instrumental in protecting over 80,000 acres of land in Blaine County. Their efforts protect habitat, raise public awareness and much more.

Local groups:

- Environmental Resource Center
- Lava Lake Institute for Science and Conservation
- Pioneers Alliance
- Sawtooth Botanical Garden
- Wood River Land Trust

State, regional and national groups:

- Ducks Unlimited
- Idaho Conservation League
- Idaho Parks and Lands Foundation
- Rocky Mountain Elk Foundation
- Sun Valley Institute for Resilience
- The Nature Conservancy
- Trout Unlimited
- Western Watersheds Project

## Renewable energy

Blaine County has renewable energy resources that can reduce the environmental impact of energy consumption. The county's solar resources are particularly strong, with an average insolation (direct solar radiation) of 5.5 kilowatt hours (kWh) per square meter per day, just 10 percent less than that of Texas and even greater than north Florida. There are several solar systems, both photovoltaic (electricity) and thermal (hot water and heating), installed on homes and businesses throughout Blaine County.

Blaine County's wind resources are relatively low and intermittent in the mid to north Valley, but are greater to the south. Wind energy is worth further assessment for its potential contributions to local power needs.

Like many areas in the West, the County has relatively shallow geothermal resources. IDWR has issued no drilling permits on geothermal leases in Blaine County to date. However, exceptional resources may be identified in the south county and these are worth further research, possibly in cooperation with Idaho Power and state universities and research institutions. The resources north of Bellevue have low temperature and cannot be used for power generation; however, they are potential heating resources. Currently, geothermal resources are used primarily for recreational purposes, with one developed hot springs at Easley and several undeveloped hot springs throughout the County.

In further efforts to protect our air and water quality and encourage the development of renewable energy, the County has adopted ordinances to promote safe and effective use of wind and solar energy. Residential wind energy facilities and active residential solar systems are encouraged where disruption to the natural environment is avoided or mitigated. Natural environment values, such as wildlife habitat and migration routes must be considered in the planning of larger renewable energy projects.

## Mineral resources

In 1879 prospectors moved into the County, establishing Galena as the first town. Rich mines in the Galena Gulch at Broadford, Bullion and eventually Triumph placed Wood River Valley as historically the second largest mineral producer in the state. Lead, silver and zinc were the primary minerals. Mining no longer plays a significant role in the economy. Currently, there are only two active private mines, both for sand and gravel. The "Moonstone Mine," a surface mine for pumice, is on BLM land south of US 20. State endowment land in Ohio Gulch is leased to private contractors for gravel. Blaine County also operates two gravel pits: one near Carey on County-owned land and one near East Magic which is a BLM community pit.

## Soils

Soil characteristics vary considerably throughout the County. The USDA soil survey and maps provide general information on soil suitability for various uses such as roads, buildings and septic systems.

Soil is important to healthy habitat. The soil layer supports many of the small insects in the food chain, provides the basis for healthy plant growth and retains water that is so crucial in a high desert ecosystem.

The County's subdivision ordinance includes a requirement for an erosion control plan. Standards are intended to prevent erosion by examining existing and proposed drainage features, removal of topsoil, and various aspects of hillside development including unstable slopes. Applications for development in the Mountain Overlay District must show how soil erosion will be prevented.



*Photo courtesy of Carol Waller*

## *Blaine County's Land, Water and Wildlife Program*

County citizens made the LWWP possible when they approved a two-year levy in 2008 that raised \$3.4 million. LWWP is the first ever taxpayer-supported County-level program in Idaho. The levy's purpose is "to protect lands and water quality in the Big Wood and Little Wood river valleys, protect wildlife habitat throughout the County and protect working farms and ranches in the County."

A voluntary citizens' Levy Advisory Board reviews applications to the program and provides recommendations to the Board of County Commissioners on the best use of funds to achieve optimal conservation value and public benefit.

To date, the County has granted \$1.4 million to partially fund six conservation easements and two non-acquisition projects. (See Chapter 4, Agriculture, for additional details.)

## How We Use Our Resources

While mining and timber harvesting were important historically, there has been a fundamental shift over the past decades towards an economy that depends upon protection of the natural environment. This section identifies how various elements of the natural environment are being used today. It also discusses the importance of each type of use to our economy, culture, lifestyle and values.

### Conservation and Open Space

Land conservation and the protection of open space are important local values. More than 80,000 acres of private land is protected via conservation easements in Blaine County. These protections are permanent measures that allow natural and agricultural landscapes to remain undeveloped or with very limited development. Private landowners typically work with non-profit conservation organizations such as The Nature Conservancy and the Wood River Land Trust, and often seek government and quasi-governmental funding sources to augment the tax benefits of an easement. The County's Land, Water and Wildlife Program is described in the sidebar.

The County has permanently protected agricultural land and open space in certain subdivisions – primarily in Cluster Developments in the agricultural and rural districts and in Planned Unit Developments.

The municipalities have protected open space within city limits ranging from parks and playing fields to hillsides and nature preserves. There are approximately 5,000 acres of municipal open space.

By far, the largest areas of open space are on public land managed by federal and state agencies, which covers more than 80 percent of our County. These lands are primarily managed by the USFS and BLM and are closely regulated for specific uses, including recreation (e.g. Bald Mountain alpine ski area, Galena Lodge and recreation area, and many area trails, campgrounds and leased cabins). Map 5.5 shows public lands and conservation easements on private lands.

### Tourism and Recreation

Tourism is the largest component of our economy and is heavily dependent on outdoor recreation for success. Recreation opportunities in unspoiled natural settings make Blaine County a premier destination for a variety of year-round activities.

Most of the County's tourism and outdoor recreation is dependent on a healthy natural environment for success. Recreational facilities should be planned to avoid degradation of sensitive wildlife nesting and breeding



*Photo courtesy of Matt Leidecker*

areas, winter range and other important habitat. Cooperative recreation planning with the USFS and BLM has been and will continue to be important. Chapter 3 contains more information about recreation.

### Urban and residential development

Development is largely concentrated in the Wood River Valley, particularly within and between the cities of Ketchum, Sun Valley, Hailey and Bellevue. Some side canyons – Warm Springs, East Fork, Greenhorn Gulch, Indian Springs and Croy Canyon – have seen significant residential building. Development within the Big Wood and other subbasins of Blaine County is shown in Map 5.2.2.

Most urban and residential uses are located on valley bottoms. Considerable development is close to river and riparian areas, particularly the Big Wood River and some of its tributaries. County regulations aim to direct building away from hillsides and other sensitive and hazardous areas. Map 5.6 shows the County's Floodplain, Wetland and Mountain overlay districts.

Population growth has been higher within the incorporated cities over the past decades, a trend that this Plan and local decision makers strongly encourage. If the majority of growth occurs in the cities where infrastructure allows for much denser development, county land resources and sensitive areas will be subject to less development pressure. The use of other limited resources including water and energy is also reduced in more compact neighborhoods and cities.

## Conservation Funding Sources

Many funding opportunities exist for those interested in protecting our natural environment. Some of these include:

- Agricultural Conservation Easement Program (ACEP)
- Blaine County Land Water and Wildlife Program (LWWP)
- Idaho Fish and Game Habitat Improvement Program (HIP)
- Idaho Landowner Incentive Program (LIP)
- Land And Water Conservation Fund (LWCF)
- National Forest Foundation
- National Wildlife Federation
- Natural Resources Conservation Service (multiple programs)
- Sagebrush Habitat Conservation Fund
- US Fish and Wildlife Service – Partners for Fish and Wildlife Program (Partners)
- US Fish and Wildlife Service North American Wetlands Conservation Act (NAWCA)

See Appendix for University of Idaho survey of resources.

Chapter 2, Housing, includes more detailed discussion about residential development, cost of housing and related challenges and desired outcomes. Chapter 8, Land Use, will more fully explore development of all types.

## Agriculture

Approximately 58 percent of the County's private land is in productive agriculture, making it the largest human-modified land use category. (See Chapter 4, Agriculture, for more information.) Agricultural lands contribute to visual open space and, in some instances and areas, to wildlife habitat. Farming practices that protect the natural environment include reducing water use and potential contaminants, employing proper grazing practices, reducing soil erosion, allowing for wildlife passage and avoiding monocrops.

## Forestry/Timber Harvesting

Of the 1 million acres of board feet of timber harvested in Idaho in 2014, less than 1 percent came from Blaine County. Over the past decade, commercial timber sales by the USFS in Blaine County averaged only 50 MBF (thousand board feet) per year. More firewood for personal use was sold: an average of 1300 MBF per year. Minimal timber is harvested on state lands in the County.

In Blaine County, the growing of timber is considered an agricultural use and may be permitted

on private land, though on hillsides it would be regulated by the Mountain Overlay District. Clear-cutting and deforestation, erosion, surface water pollution, climate impacts and visual scarring are all environmental concerns; therefore, large-scale timber harvesting is no longer a primary industry in Blaine County. Salvage logging has become a necessity following wildfires and beetle infestations that have killed trees.

## Mineral Extraction

Mineral extraction drove much of the early European-American economy in the County, but is no longer a desired industry. Mining can harm the environment and human health by erosion, loss of biodiversity and contamination of soil and water by chemicals used in mining processes. Secondary impacts include logging and road-building in the vicinity of mines for access and storage.

Decisions concerning the extraction of minerals on public lands are controlled primarily by the USFS or the BLM. Those agencies' procedures call for public input when processing a mineral permit, mineral lease, or mining claim. The community has a strong commitment to preventing environmental degradation. Local regulations including the Mountain Overlay District would strictly govern the development of mining claims on private land.



*Photo courtesy of Matt Leidecker*

## Challenges and Hazards

Blaine County faces various threats to our **natural environment**. Some are planning challenges, others are hazardous conditions. The Desired Outcome(s) that most specifically address each challenge are listed below.

**Water use.** Addressing water availability and reducing water use is a serious task. Studies by the USGS and the Pacific Northwest Climate Impacts Research Consortium (CIRC) indicate that water levels are **declining** in the Wood River aquifer and related surface waters. Water is the dominant factor limiting sustainable growth in our valley and agricultural uses in Blaine County and counties to the south.

State policies and legal decisions direct how water rights are managed in Idaho, directly affecting water use. The “use-it-or-lose-it” concept embodied in the prior appropriation doctrine is not designed to **conserve water**. However, in some cases it can result in conservation outcomes. For example, Minimum Streamflow Rights held by the Idaho Water Resources Board contribute to conservation goals. Water flows that most closely follow the natural flow regime of the river, even at low water levels, increase the ability of fish and wildlife to adapt. If water in rivers is managed like a “faucet” for irrigation delivery, the multiple changes to channel depth, water temperature and streamside vegetation make it hard for wildlife to adapt. **Provisions to allow water right holders to leave water in rivers without losing those water rights could lead to improvement in natural flows.**

**Agriculture uses more water than any other land use, by far. Farmers will need to adopt practices to conserve substantial amounts of water,**

## *Carrying Capacity*

“The carrying capacity of a biological species in an environment is the maximum population size of the species that the environment can sustain indefinitely, given the food, habitat, water, and other necessities available in the environment. In population biology, carrying capacity is defined as the environment's maximal load, which is different from the concept of population equilibrium.

For the human population, more complex variables such as sanitation and medical care are sometimes considered as part of the necessary establishment. ... The carrying capacity of an environment may vary for different species and may change over time due to a variety of factors, including: food availability, water supply, environmental conditions and living space.”

(Wikipedia, October 2015)

## *US Forest Service Vulnerability and Adaptation Planning*

In 2015, the U.S. Forest Service Intermountain Region began a region-wide climate vulnerability assessment and adaptation-action project. The new Intermountain Adaptation Partnership, comprised of key personnel from throughout the region, intends to synthesize the best available scientific information to assess the sensitivity of natural resources to a changing climate and develop science-based adaptation options that will reduce potentially adverse effects.

Over approximately two years, the IAP will conduct a vulnerability assessment of identified resource areas and develop adaptation strategies to enhance resilience for the Intermountain Region. The assessment and adaptation strategy will be peer-reviewed and published, providing a scientific foundation for planning, ecological restoration and project management.

particularly in light of recent periods of drought. Ensuring that these practices will optimize production and save money as well as water is a challenge that the farming community seeks to meet.

Domestic wells also use significant amounts of water. Maximum domestic use is 13,000 gallons per day including water for up to one-half acre of landscaping. Reducing domestic water consumption, either by incentive or regulation, is a challenge. Methods include drought-tolerant landscaping, smaller landscaped areas and improved irrigation technology. State court orders in 2015 could require municipal water supply users to reduce their consumption, while owners of rural domestic wells would not be affected. These orders are potentially at odds with the County's policy of directing growth to the cities. (Desired Outcomes E-1 through E-15)

Water quality protection. Surface and groundwater quality remains generally high. The USGS Wood River Aquifer System Water Quality Assessment conducted in 2012 found that the level of contaminants met EPA drinking water standards. Concentrations of nitrate and nitrite in all of the samples were well below the EPA maximum levels for drinking water.

However, numerous surface water tributaries of the Big and Little Wood rivers do not meet state water quality standards for primary and secondary contact recreation<sup>5</sup> primarily because of agricultural pollutants. These include run-off of fertilizer and pesticides as well as bacterial contamination from livestock waste. Pesticide run-off from lawns and golf courses also pollute surface water. Point sources such as wastewater treatment plants and non-point sources such as roadways and other impervious surfaces are all potential water pollution threats.

The County established an Onsite Wastewater Management Program in 2007 to oversee inspection and management of approximately 4000 septic systems. Unfortunately the program was discontinued in 2009 due to lack of available funding during the recession. (Desired Outcomes E-10 through E-12)

Air quality protection. The DEQ monitoring station in Ketchum documents local air quality as generally high (good). Localized dust from fields and roads can impair air quality, but smoke during wildfire events is typically more serious. Wildfires, even outside the area and in other states, frequently cause smoky skies in the summer. Smoke is hazardous to health and can have devastating economic effects on local communities dependent on tourism and

<sup>5</sup> Primary contact recreation: Activities such as swimming, wading, water skiing, diving, tubing, surfing, whitewater kayaking, canoeing and rafting that involves significant risk of ingestion of water. Secondary contact recreation: Water recreation activities, such as fishing and boating and limited body contact.

recreation under clear blue skies. Climate change forecasts include the threat of more wildfires. (Desired Outcomes C-14, D-5)

Climate change. Regional changes will systemically affect our ecosystems. Predicted changes include increased temperatures, reduced mountain snowpack levels, earlier spring runoff into streams and reservoirs, and changes to growing seasons. Outcomes will likely be drought, lower summer water levels, more wildfires, increased insect damage (such as the mountain pine beetle infestation) and violent weather. These will affect habitat zones and patterns, as well as the economy, most notably recreation and agriculture. The challenge for the County and its residents will be to anticipate and understand the range of variables and adapt to changes. The Pacific Northwest Climate Impacts Research Consortium (CIRC) selected the Big Wood Basin as a pilot project exploring possible impacts of climate and other drivers of change on water resources. This project is an example of expanding information about adapting to climate change. (Desired Outcomes F-1 through F-7)

Wildfire. Wildfires are common in the West, and can be particularly intense during periods of drought. While some ecosystems rely on naturally occurring fires to regulate growth, most can suffer from too frequent or exceedingly hot fires. Natural cycles and native plant communities can be destroyed and the growth of non-native weeds can be accelerated. Invasive species greatly degrade sagebrush steppe habitat for rangeland species including sage-grouse. Cheatgrass, a prolific re-seeder and already a region-wide problem, flourishes in burned areas. Cheatgrass and other invasive plants are highly flammable and increase the risk of wildfires. Additionally, post-burn sedimentation in surface waters negatively affects fisheries. **Post-fire revegetation is crucial, but costly.**



*Beaver Creek Fire - Carol Waller*

## *After a Wildfire*

Following large wildfires, Burned Area Emergency Response “BAER” teams, which include civil engineers and multi-discipline scientists, conduct rapid assessments of fire affected areas. BAER determines what areas were most severely affected, what emergency conditions exist, and what emergency response action should be taken.

The 5B Restoration Coalition, a broad group of stakeholders, joined forces after the 2013 Beaver Creek fire to develop cooperative approaches to habitat and recreation infrastructure restoration, prioritize needs, and build solutions for establishing community resilience.

Other efforts, including a project partially funded by the Land, Water & Wildlife Levy, have focused on revegetation and fighting invasive weeds.

***“The link between invasive species and wildfires in the Great Basin is undeniable.”***

Virgil Moore, Director of the Idaho Department of Fish and Game.

## *Species Conservation*

A new approach to sensitive species may be ahead. Traditional approaches have focused on saving individual species in specific locations, with little or no attempt to reconcile those protections with the needs of human society. Many conservationists argue that this view is far too narrow, especially in an era of climate change, when species are already being forced into new terrains. A new paradigm focuses on large landscapes and entire ecosystems, and the benefits that nature provides to humans, rather than on preserving single species in small islands of wilderness. Proponents of this new approach consider the recent ruling on the greater sage-grouse as one that may protect more than 350 other species that share the landscape with the sage-grouse in the West. Opponents cite the success of the Endangered Species Act, with strict penalties for non-compliance and forcing collaboration where it may not have occurred.

The Castle Rock Fire of 2007 and the Beaver Creek Fire of 2013 (see Map 5.7 showing wildfires since 2000) caused dramatic changes to the ecosystem locally. The financial impacts were monumental from the combined costs of firefighting, structure protection, and the severe impacts on tourism — including evacuations, cancellations of many outdoor events due to poor air quality, and post-fire trail closures.

Many homes have been built at the base of forested or sagebrush slopes. The proximity of development to land highly susceptible to wildfire is of grave concern. The Wildland Urban Interface (WUI) is the transition zone between unoccupied land and human development, where damage to homes and other buildings is most likely to occur. “Firewise” practices help to reduce fuel in close proximity to homes, but homeowners often do not follow those practices. Both the Community Wildfire Protection Plan and the Blaine County Multi-Jurisdiction All Hazard Mitigation Plan address wildfires. (Desired Outcomes D-4, D-8, F-7)

Wildlife and habitat protection. Healthy wildlife habitat is a core value for our citizens, but protecting and managing habitat for both common and sensitive species is a challenge. This is particularly true in areas where development is planned. Issues include winter recreational use near urbanized areas, planning for wildlife corridors, wildlife crossing the highway and other roads (particularly at night), pesticide use and toxic ornamental plants such as some varieties of yew. Ranching and grazing impacts can include dewatering of habitat, loss of native food sources, diseases, and fencing.

The details and impacts of the Endangered Species Act can have a profound impact on land development and recreation. For example, the BLM travel plan and other uses planned for federal land must carefully examine sage-grouse conservation areas. Humans recreating during the winter or other sensitive seasons impact common and sensitive species. Understanding the relationship between development and wildlife is needed to help the County and other land managers make sound planning decisions.

Potential impacts to fisheries include water temperature increases resulting from reduced flows and climate change, dewatering from irrigation uses and water management that does not follow the river’s natural flow regime. (Desired Outcomes A-7, B-1 through B-12, C-1, C-5 through C-8)

Land development. Development is concentrated in the Wood River Valley and cities as seen in Map 5.1. On a large scale, Blaine County has remarkably low development levels (approximately 1.61 percent in the Big Wood subbasin<sup>7</sup>), including very limited industry and manufacturing. However, the concentration of development is highest near rivers and streams, affecting the natural river channel, riparian habitat and wildlife corridors. Over the past 20 years the County has strengthened its ordinances that manage and protect important resources in riparian, wetland, and floodplain areas and on hillsides. Disturbing soil for any development may cause soil compaction and decreased soil health, causing invasive weeds to flourish.

Greater cooperation with other jurisdictions can help to ensure that the location of new growth is sustainable. Cooperative efforts include encouraging growth within incorporated cities rather than in unincorporated areas.

Keeping public land undeveloped and in public ownership is important for resource conservation. One development-related challenge is that the County does not have jurisdiction on state endowment lands owned by the Idaho Department of Lands. IDL's mission is to maximize the value of its lands. It can permit uses that may not reflect the values of the community. Uses on the 640 acres of IDL land adjacent to both sides of Ohio Gulch Road in the mid-valley include a gravel pit and spoils storage on the hillside as well as a shooting range and a large composting operation. (Desired Outcomes A-4, A-8, B-1, B-3, B-8, B-11, C-1 through C-14, D-1)

Recreation. Negative impacts on wildlife and habitat are growing with the increase in population, visitors, and the demand for more trails for various uses. Off-trail uses and citizen-created trails, both motorized and non-motorized, are increasing. This fragments habitat, especially in open country with little cover.

New technology has allowed more recreationists to venture farther into the backcountry and its wild habitat. Mechanized trail users seek admittance to wilderness areas. Dispersed recreation and demands for public access in areas previously protected are threats to wildlife and their habitat. Cooperation between jurisdictions and agencies on seasonal closures, forest recovery, and other activities is needed. (Desired Outcomes A-4, A-6 through A-8, B-1)

Mineral exploration and mining. Mining results in environmental degradation and the impacts of past mining activities are still being addressed. Abandoned mine entrances, tunnels and shafts and exposed mine tailings represent continued hazards, and the cost of remediation is high. The economic benefits of recreation in safe and clean natural areas are of much higher community value than extractive mineral exploration and mining. (Desired Outcomes C-3, C-10, D-7)

Over-Grazing. While grazing numbers have diminished over the past 20 years, grazing remains an important challenge, partly because of changes in agency management and regulation. Over-grazing can cause erosion and an increase in noxious weeds and non-native plants such as cheatgrass. These are highly flammable when dry. Improper grazing and weed growth adversely affect soil health, and disrupt habitat systems. Grazing damages wetlands and domestic animals consume the forbs and grasses that native species depend on. There are health risks to Rocky Mountain bighorn sheep from domestic sheep grazing in bighorn habitat. Sustainable grazing practices are needed to ensure the long-term health of affected ecosystems. (Desired Outcomes A-4, A-7, A-9, B-2 through B-5, B-9, C-7, C-8)

---

<sup>7</sup> Pacific Northwest Climate Impacts Research Consortium

## *Invasive Species*

“With each passing year, it becomes more obvious that noxious weeds and other invasive species are an enormous threat to a wide range of fish and wildlife.” 2011 State of Idaho Wildlife Action Plan.

Idaho’s Invasive Species Strategic Plan focuses on three goals: prevent the introduction of new invasive species, limit the spread of existing invasive populations, and abate ecological and economic impacts that result from invasive species.

Blaine County is one of 20 parties sharing resources in the Cooperative Weed Management Area. The County’s Noxious Weed Department provides:

- Free site inspections and weed management plans
- Herbicide information and methods of application
- Weed identification and methods of control
- Equipment rental and loan programs
- Publications, education materials and website
- Public outreach projects
- Speeches, trainings and other engagements



*Cheatgrass – Toiyabe ( Wikipedia )*

Invasive species. Invasive species are successful in colonizing new ecosystems through their abilities to tolerate a variety of habitat conditions, grow and reproduce rapidly, and compete aggressively for resources such as food, water, and nesting sites. They often lack natural enemies or pests in the new ecosystem, taking over native species. Invasive weeds degrade natural habitat, decrease property values, devastate sagebrush steppe ecosystems for wildlife and livestock, and can cause health risks. Herbicide treatment threatens native plants and pollinators. Blaine County alone spends about \$250,000 annually combating the spread of noxious weeds, including outreach and education. Cheatgrass is not listed as a noxious weed in the State of Idaho, because the problem is too big and the financial burden to the counties and state agencies would be prohibitive.

Invasive insect, bird, and animal species are less evident than plant species, but are also of concern. The New Zealand mud snail has been found in Lake Walcott and in the Little Wood drainage. Introduced species such as the Eurasian collared dove and some sport fish (such as brook trout) can out-compete natives. (Desired Outcomes B-3, D-3, D-4, F-5)

Flooding. During a flood event, the floodway and floodplain are inundated with water. A functioning floodplain dissipates flood flow and recharges the aquifer. Flooding is a natural process that provides a valuable function in a natural environment unencumbered by structures and development. Many natural systems benefit from flooding. However, in Blaine County and its cities, buildings have been constructed in flood areas, resulting in costly damage and significant impacts when natural flood events occur. The County participates in the National Flood Insurance Program and has adopted a floodplain management ordinance. New construction in mapped flood hazard areas is regulated and building areas in new subdivisions must avoid the floodplain. Climate change will likely change the nature and duration of flood events, posing additional challenges. (Desired Outcomes C-1, C-5, C-7, C-8, D-1, D-8)

Erosion. Erosion by wind and water is a natural process, but severe erosion can threaten resources. The post-Beaver Creek Fire debris flows caused serious gully erosion and sedimentation in the Big Wood River and its tributaries, causing short-term water quality issues and some loss of riparian vegetation. When landowners seek to protect their property from eroding stream banks, the natural meander characteristics of the river are changed. In the south county, soil erosion caused by wind is of particular concern. Poor agricultural practices can cause topsoil loss. Winds during cultivation can increase deposits of soil as silt, which clogs streams and rivers. (Desired Outcomes C-7, C-9, D-1, D-5)



*Photo courtesy of Matt Leidecker*



*1917(?) Avalanche - Photo courtesy of Hailey Public Library Mallory Collection*

Avalanches and Debris Flows. Avalanche hazards exist in several residential areas, in the Bald Mountain ski area, and in the backcountry. New recreational technologies allow skiers, snowmobilers and others to push deeper into backcountry avalanche terrain, straining limited backcountry rescue resources. The County prohibits new habitable buildings in high (red) avalanche hazard areas and regulates building in the moderate (blue) hazard areas. Avalanche forecasting and monitoring has improved. However, avalanche zone mapping in some cases may be outdated and changes due to climate change are unknown. Areas where landslides and debris flows occur are of equal concern, and less understood and mapped. Severe debris flows occurred in burned areas after the Beaver Creek Fire of 2013. The effects of wildfire, alluvial fans and other terrain features warrant further study. The USGS, in cooperation with Blaine County, developed a model to estimate the relative hazard ranking for debris flow in the Beaver Creek Fire area. (Desired Outcomes D-2, D-4, D-5, D-8)

Radon. Radon is a cancer-causing, radioactive gas formed by the natural radioactive decay of uranium in rock, soil, and water. Once radon is produced, it

moves up through the ground into the air and can dissolve into ground and surface water. Blaine County is rated Zone 1 for radon potential, the highest rating on the scale. Zone 1 ratings have predicted average indoor radon screening level greater than 4 pCi/L (picocuries per liter), above the point at which mitigation action should be taken. Radon mitigation systems are required for new residences, but older homes are also susceptible. Testing is encouraged. There are a variety of systems available to mitigate concentrations of radon. (Desired Outcomes D-6, D-8)

Fragmented planning efforts. Despite a high level of local commitment to maintaining the sustainability of the natural environment, integrated and comprehensive planning efforts are fragmented. For example, inconsistent riparian regulations as rivers and streams flow from federal lands into the County and cities undermine best practices. Similarly, wildlife crosses the landscape without regard to jurisdictional boundaries. The lack of integrated mapping, aerial imagery, special analysis and multi-jurisdictional planning adds to the challenge. (Desired Outcomes A-1 through A-9, B-1)

# OUR PAST AT A GLANCE

## 1994

The **1994 Comp Plan** reiterated many of the goals and background information from the County's 1975 Plan.

Water was of paramount importance, with the Plan noting that "only through careful management of the water resource can the future viability of the residents and economy of the county be maintained."

Regional planning concepts were promoted. The Plan recommended that other jurisdictions and public agencies coordinate policies and ordinances related to critical natural resources and hazard areas.

The seed for the future Land, Water and Wildlife Levy, approved in 2013, may have been planted in in the 1994 Plan within this statement, "Blaine County desires...to support projects that protect or enhance the natural resources of the county."

## 1975

In **1975**, identified the link between the natural environment, recreation and the County's economy. It stated, "Preservation of this environment is mandatory if Blaine County is to retain its desirability as a recreational area."

Water was understood to be a precious resource. Wastewater management was at the forefront and the Plan supported standards for

individual systems. A water monitoring program for the Big Wood River was encouraged, along with preservation of the natural characteristics of water courses and floodplain areas.

Hazardous areas subject to flooding, avalanche, and unstable soils were to be identified to minimize loss. Development on slopes over 25% was already prohibited by code, but this Plan called for refinement of the ordinance to consider other aspects of hillside development.

The Plan encouraged creative and efficient use of geothermal and mineral resources. In 1975, several hot springs were being commercially utilized.

Did you know...? "Nasa Astronauts inspected the lava formations in the Southern portion of the county to familiarize themselves with the lunar landscape."

(1975 Comprehensive Plan)



*Reflection on Alturas Lake – Matt Leidecker*

## Desired Outcomes

Desired outcomes are the intended result of our planning efforts. Each desired outcome includes several active policy statements that will guide future decision-making.

Stewardship of the natural environment, economic development and planning for recreation are all important goals. Growth is desired, but should not be at the expense of healthy wildlife habitat, clean air and water, hillsides, or any of our natural environmental assets.

### A. Planning and Partnerships

**Desired Outcome:** Good planning and partnerships strengthen our natural environment and quality of life. Decisions are based on solid planning principles and available scientific information.

#### **Policy Statements:**

- A-1: Strengthen in-house staff and technical resources in order to participate in regional environmental planning, ensure compliance with land use and resource protection ordinances

and maintain adequate and up-to-date maps and databases. Adequately staff conservation planning efforts such as the Land Water and Wildlife Program.

- A-2: Recognize mapping and Geographic Information Systems (GIS) as essential components to monitoring and tracking the success of natural resource planning. Build GIS databases collaboratively with databases in the private sector, government agencies, and nonprofit agencies.
- A-3: Collaborate with nonprofit conservation groups, government agencies and the private sector on scientific studies that further understanding of the natural environment of Blaine County.
- A-4: Encourage ongoing public education about the importance of environmental assets. .
- A-5: Recognize importance of and augment partnerships with the Blaine County Recreation District, DEQ, BLM and USFS on planning for recreation, wildlife habitat, water quality, sensitive species and other topics. Fully participate in BLM and USFS travel plans and other management decision processes by providing relevant comments expressing the core values of the County's citizens.
- A-6: Encourage all cities and public agencies with jurisdiction in or around Blaine County to coordinate their policies and ordinances regarding environmentally sensitive or hazardous areas. Environmental planning should be regional in scope and promote sustainable actions and education.
- A-7: Ensure that natural resource protection remains a priority as new growth is directed to the cities and their Areas of City Impact. Collaborate with the development community and cities to achieve appropriate types of growth in suitable locations.
- A-8: Support planning efforts that bring multiple interested parties together for cross-jurisdictional studies and projects, and consider funding such efforts.

## B. Conservation Opportunities

**Desired Outcome: We use all available opportunities for preservation and restoration of the natural environment and open space. We encourage partnerships between private landowners and public land and wildlife managers. We develop incentives as well as regulations.**

### **Policy Statements:**

- B-1: Give conservation and stewardship of the natural environment primary consideration when working toward other goals, including economic development and recreation.
- B-2: Support federal and state projects that promote conservation and preserve habitat. Conserve areas that represent a wide range of land cover and habitat types in order to maximize biodiversity.
- B-3: Prioritize the enhancement and restoration of degraded lands and waters for public and private benefit. Use conservation easements and other incentives to protect sensitive lands, important habitat and riparian and migration corridors.
- B-4: Track the progress of completed land conservation and restoration projects to make informed decisions about types of projects to prioritize and support.
- B-5: Support the management and protection of both common species and species of greatest conservation need. This effort should include habitats on private and public lands.

- B-6: Recognize the sagebrush steppe as an integral habitat and participate in state and local planning efforts to protect and enhance it.
- B-7: Implement Best Management Practices in local land use planning and support BMPs in all forms of public lands utilization, including those developed by the National Resource Conservation Service.
- B-8: Encourage where possible the voluntary retirement of grazing permits on public lands to facilitate habitat restoration and healthy wildlife populations.
- B-9: Encourage people to get out and experience nature as a key component of appreciation and conservation of natural assets. However, human intrusion should be minimized in the most sensitive areas.
- B-10: Encourage the acquisition of inholdings through appropriate land exchanges or other means.
- B-11: Ensure that nurseries, landscaping firms and landowners avoid the use of ornamental plants that are toxic to wildlife.

## C. Local Regulations

**Desired Outcome: Strong local regulations and policies continue to protect our natural environment.**

### **Policy Statements:**

- C-1: Continue analysis of environmental assets in the land use planning and decision-making process. Enlist assistance from agencies and local experts to clarify, refine and improve the County's regulations.
- C-2: Base land use decisions on good science, including inventory and monitoring. Consider ecological and environmental values relative to land use and infrastructure installation on a cumulative as well as per project basis.
- C-3: Review allowable uses in the County's zoning districts and consider changes to reflect the natural resource protection goals of this Plan. An example would be stricter regulation of extractive timber and mineral uses.
- C-4: Implement categorical exclusions for certain activities in overlay districts. Use this as a tool for encouraging positive activities that promote environmental stewardship and/or cause the least adverse impact on protected areas. Review existing categorical exclusions and eliminate any that allow evasion of regulations.
- C-5: Review the County Code's purpose statements for the overlay districts to ensure that they provide adequate explanation and direction for proper interpretation and enforcement of their provisions. Clearly state the complementary relation between protected assets, such as the importance of riparian areas as wildlife habitat.
- C-6: Wildlife Overlay District
  - a. Work with Idaho Fish and Game to identify and map high priority areas for conservation, e.g. areas critical for biodiversity, areas with critical habitat designation and crucial winter range and corridors. Keep maps current. Require new developments to eliminate or mitigate features that may fragment or otherwise adversely affect areas identified as high priority for conservation.

- C-7: Riparian Setback District
  - a. Continue strong emphasis on maintaining and restoring the natural characteristics of streams and riparian areas. Develop voluntary and educational programs, with incentives to achieve this goal.
  - b. Support projects that encourage flows within natural corridors and provide natural recharge areas.
- C-8: Wetlands Overlay District
  - a. Continue the emphasis on wetlands protection, including no net loss of wetlands. Keep abreast of potential regulatory changes. Review and clarify existing provisions and consider feasibility of new requirements.
  - b. Understand and clarify when site-specific wetland delineation studies are needed for land use proposals.
- C-9: Mountain Overlay District (MOD)
  - a. Continue policies and regulations governing hillside development for natural and scenic resource reasons, erosion management and public safety.
  - b. Ensure that public agencies understand the County's goal of protecting MOD lands from development and of retaining the scenic integrity of MOD lands, including roads and other impacts that may scar hillsides.
  - c. Consider revisions to the MOD that incorporate aspects of the Wildland Urban Interface.
- C-10: Outdoor Lighting
  - a. Continue to enforce exterior lighting to maintain dark skies.
  - b. Partner with government and non-governmental agencies to explore the potential for portions of Blaine County to be included in a Dark Sky Reserve or similar designation.
- C-11: Mining:
  - a. Strengthen zoning regulations related to mining in order to protect the natural environment from adverse consequences, including downstream water quality issues.
  - b. Support efforts to reform the General Mining Act of 1872.
  - c. Discourage recreational dredging in Blaine County.
- C-12: Support review, analysis, and evaluation of renewable resources for their potential contributions to meeting local power needs. Renewable energy facilities should be carefully planned in terms of scale and impacts upon other natural environment values.
- C-13: Adopt policies that protect geothermal resources, and encourage creative programs for efficient utilization of such resources for broader public benefit.
- C-14: Continue to refine the BuildSmart Energy Code and seek opportunities to educate and incentivize energy efficiency and the use of renewable energy.
- C-15: Consider local policies, legislation or incentives intended to maintain a high level of air quality.

## D. Natural Threats and Hazardous Areas

Desired Outcome: Strong local regulations and policies protect life and property from natural threats and hazards.

### Policy Statements:

- D-1: Floodplain Overlay District
  - a. Keep up to date with flood hazard area mapping and requirements for participation in the National Flood Insurance Program and Community Rating System.
  - b. Continue to improve floodplain management policies that preserve or promote natural fisheries and native streamside vegetation.
- D-2: Avalanche Overlay District
  - a. Continue to require site-specific studies by accepted experts in the field. Understand and clarify when site-specific studies are needed.
  - b. Research the feasibility of adding debris flow hazard areas to the avalanche overlay or as a separate overlay district.
- D-3: Noxious Weeds and Invasive Species
  - a. Use GIS as a tool in the fight against invasive species such as cheatgrass.
  - b. Ask the state and the federal government to address the most invasive species not on the noxious weed list, such as cheatgrass.
  - c. Continue participation in the Cooperative Weed Management Area, developing coordinated plans with other agencies to manage the spread of invasive weeds. Support and encourage non-chemical control methods, such as integrated pest management.
  - d. Continue to support and encourage any programs or activities that establish and maintain native vegetative characteristics, including requiring landscaping and restoration plans as part of certain land use application approvals.
  - e. Continue support for the noxious weeds program to increase public awareness and to expand enforcement efforts.
- D-4: Wildfire and Wildland Urban Interface
  - a. Utilize the Wildland Urban Interface (WUI) maps (from the All Hazards Mitigation Plan) in future planning. Consider an overlay district for the WUI.
  - b. Raise awareness of fire hazards. Encourage landowners within the WUI to be prepared and take precautionary "Firewise" measures to mitigate the risks of fire.
  - c. Collaborate with USFS and BLM about how to best address and mitigate wildfire risks and impacts.
  - d. Update and implement Blaine County's Community Wildfire Protection Plan.
- D-5: Erosion
  - a. Continue to protect steep slopes and erosive soils from development. Require adequate on-site mapping of slopes, alluvial fans, and other erosion and debris flow hazard areas in development submittals.
  - b. Support best practices in soil conservation in agricultural areas.

- D-6: Expand awareness of radon hazards and continue to require radon mitigation in new residences. Incentivize installation of radon mitigation in existing residences with high levels.
- D-7: Seek opportunities to keep the public safe from open entrances, tunnels and shafts at abandoned mines.
- D-8: Ensure that the All Hazard Mitigation Plan thoroughly addresses natural and man-made hazards and the County's response to them.

## E. Water and Water Use

**Desired Outcome: Conservation and careful utilization of water resources to ensure adequate quantity and quality, is a top priority.**

### Policy Statements:

- E-1: Remain vigilant on water use issues, participating wherever possible to ensure that consumption is compatible with the carrying capacity of the aquifer. Recognize surface and ground water over-use as a very serious issue for the natural environment, agriculture and land use.
- E-2: Review, update and strengthen where possible the County's *Local Public Interest Water Policy* as it relates to protecting a limited public resource. Keep the *Policy* current, particularly in light of conjunctive management and other changes to state water law.
- E-3: Encourage the local agricultural community – the largest water users – to conserve water by all practical means.
- E-4: Work towards the development of a balanced water budget for surface and ground water systems in the entire basin.
- E-5: Develop and foster collaborative relationships with state and local organizations that administer, distribute, monitor, and measure water use with a goal of improved water quality, water conservation, and ecological resilience. Work with IDWR on the following changes, which are aligned with Blaine County's policy direction:
  - Revisions to Idaho's water policies that would incentivize conservation of water used for agricultural irrigation.
  - Better regulation of water diversions and systematic installation of monitoring gauges.
  - Revisions to Idaho's domestic well water-use law such as lowering the overall water-use maximum.
  - Improved enforcement of domestic water-use limits.
  - Actively participate in the Water Sustainability Policy underway at the Idaho State Water Board
- E-6: Build low water-use incentives into land use regulations.
- E-7: Support and encourage water conservation and water quality programs operated by nonprofits, government agencies and other entities.
- E-8: Develop education and incentive programs to reduce water use. Increase awareness of the impacts of water overconsumption on the natural environment and about new technologies to limit over-use.
- E-9: Recognize in-stream flows and natural flow regimes (see Sidebar page \*10?) as high priorities when creating policy. Support the development and implementation of policies and practices to

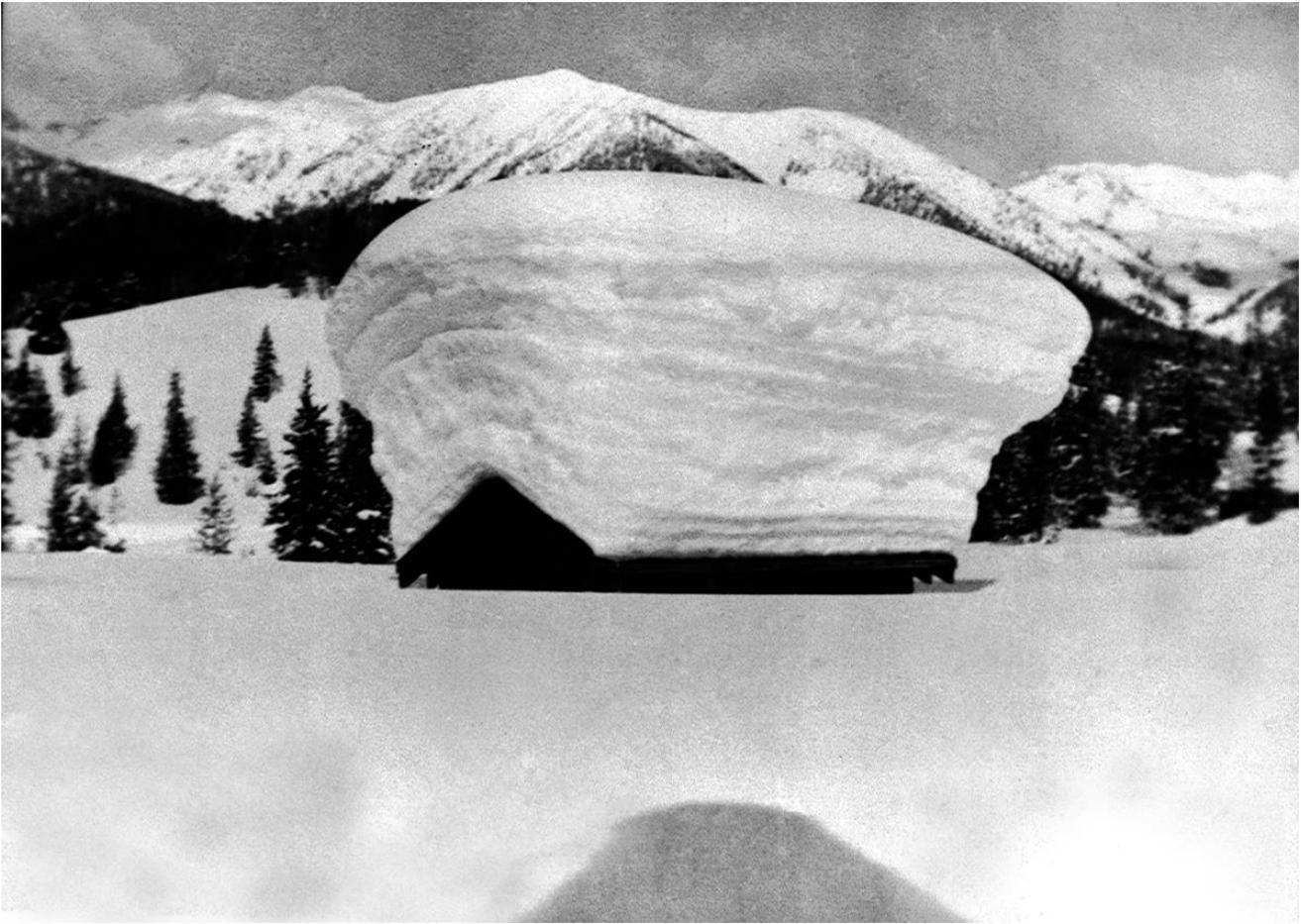
- help achieve natural flow regime in rivers and streams and to protect and enhance fisheries and riparian habitat.
- E-10: Seek opportunities to work collaboratively with irrigation companies to protect ditch-side vegetation, so long as natural water flows in rivers and streams remain the higher priority.
  - E-11: Protect the natural sinuosity of rivers and support efforts to reconnect disconnected tributaries where practical.
  - E-12: Consider state and federal water quality standards to be minimum requirements. Encourage IDWR and Idaho DEQ to continue regular monitoring of both ground and surface water.
  - E-13: Continue to review and regulate any use of potential contaminants within mapped wellhead protection areas.
  - E-14: Consider re-establishing the Blaine County Onsite Wastewater Management Program to monitor and protect groundwater from contamination by private wastewater treatment systems.
  - E-15: Develop a policy position regarding precipitation enhancement programs based on established research.
  - E-16: Support water policies at state and local levels that direct the majority of growth into incorporated cities, the Areas of City Impact and areas with central water and sewer infrastructure.

## F. Climate Change

**Desired Outcome: Adaptation strategies for dealing with the cumulative impacts of climate change are at the forefront of planning.**

### **Policy Statements:**

- F-1: Utilize research and available nationwide tools for understanding the cumulative effects of climate change in the West, and where available, in our County.
- F-2: Partner with other entities to raise awareness about the potential effects in our region and devise strategies for addressing climate change and improving resiliency.
- F-3: Identify species and habitats vulnerable to transition under climate change with a goal of sustaining native biodiversity. Participate wherever possible in studies of vulnerability and risk assessment for common species as well as species of greatest conservation need.
- F-4: Prepare the community for potential disasters related to climate change, including violent weather.
- F-5: Ensure that the All Hazard Mitigation Plan and the Community Wildfire Protection Plan continue to be updated, based on current climate change forecasts. Implement the plans' projects. Ensure all stakeholders are a part of the plan updates and understand their roles.



*A big snow year at Galena. Donated to the Community Library by Donna Payne.*

## Appendix - Chapter 5. Natural Environment

### Land Cover and Habitat Types

#### Land Cover - USGS, National Land Cover Database, 2011

Value*	Definition	Description
11	Open Water	All areas of open water, generally with less than 25% cover or vegetation or soil
12	Perennial Ice/Snow	All areas characterized by a perennial cover of ice and/or snow, generally greater than 25% of total cover.
21	Developed, Open Space	Includes areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses... most commonly include large lot single family housing, parks, golf courses...
22	Developed, Low Intensity	Includes areas with a mixture of constructed materials and vegetation.... Most commonly single family housing units.
23	Developed, Medium Intensity	Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50-79% of total cover. Most commonly include single family housing units.
24	Developed, High Intensity	Includes highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80 to 100 % of total cover.
31	Barren Land (Rock/Sand/Clay)	Barren areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits and other accumulations of earthen material. Generally, vegetation accounts for less than 15% of total cover.
41	Deciduous Forest	Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of tree species shed foliage simultaneously in response to seasonal change.
42	Evergreen Forest	Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of tree species maintain their leaves all year. Canopy is never without green foliage.
43	Mixed Forest	Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. Neither deciduous nor evergreen species are greater than 75% of total tree cover.

52	Shrub	Areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage or trees stunted from environmental conditions.
71	Grassland/Herbaceous	Areas dominated by grammanoid or herbaceous vegetation, generally greater than 80% of total vegetation. These areas are not subject to intensive management such as tilling, but can be utilized for grazing.
81	Pasture/Hay	Areas of grasses, legumes, or mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20 percent of total vegetation.
82	Cultivated Crops	Areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20% of total vegetation. This class also includes all land being actively tilled.
90	Woody Wetlands	Areas where forest or shrub land vegetation accounts for greater than 20% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.
95	Emergent Herbaceous Wetlands	Areas where perennial herbaceous vegetation accounts for greater than 80% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

\*In Chart 1 and Map 5.1, the 20s, 40s, 80s, and 90s values are combined for simplicity.

<b><u>Land Cover</u></b>	<b><u>Total Acres in Blaine County</u></b>
Open Water	8,373
Perennial Ice/Snow	2,301
Developed	17,865
Barren Land	188,305
Forest	293,621
Shrub	887,872
Grassland/Herbaceous	228,038
Cropland	55,156
Wetlands	17,479

## Riparian and Wetland Setbacks

The “Blaine County 2025” process resulted in code revisions increasing riparian setbacks from the ordinary high water mark, and setbacks from wetlands, within new subdivisions. The required setback for the Big Wood River is now 200 feet in new subdivisions. This table shows all current riparian and wetland setbacks in the Zoning Ordinance (Title 9) and Subdivision Ordinance (Title 10).

Stream	Zoning (Title 9)	Subdivision (Title 10)
Class 1	75'	200'
Class 2	50'	125'
Class 3	25'	100'
Class 4	25'	100'
Wetland	25'	75'

## Water

### Watersheds

The USGS has divided the United States into large, and then successively smaller hydrologic units. Within the 22,900 square mile Upper Snake Basin. The Upper Snake Basin is then divided into Subbasins and much smaller watersheds, which follow individual stream drainages. Blaine County falls into nine subbasins shown in Table 2. For the purposes of this Chapter, the term “watershed planning” is used on a subbasin level.

### Watershed Subbasins in Blaine County

Subbasin Name	Acres in Blaine County	% of Blaine in Subbasin
Big Wood	558,770.54	32.9%
Lake Walcott	534,053.07	31.4%
Little Wood	466,958.04	27.5%
Upper Salmon	85,210.84	5.0%
Camas	26,674.25	1.6%
American Falls	25,849.47	1.5%
Big Lost	1,457.75	0.1%

Big Wood River Subbasin. The Big Wood River Subbasin covers 1,496 square miles of land, of which 61% is in Blaine County. The remainder of the basin is in Gooding, Lincoln and Camas counties. Primary Blaine County streams that drain into the Big Wood River are Croy Creek, Eagle Creek, East fork of the Wood River, Greenhorn Creek, Lake Creek, Quigley Creek, rock Creek, Seamens Creek and Warm Springs Creek. Magic reservoir is also part of the Big Wood River Subbasin. 69% of the Big Wood subbasin is in shrubland, rangeland, grass, pasture or hayland. 8% is irrigated cropland and the remaining area is a combination of forest, water, wetlands, developed or barren.

Little Wood River Subbasin. The Little Wood River Subbasin contains 1,132 square miles of land, of which 59% is in Blaine County. The remainder of the basin is in Gooding, Lincoln and Jerome counties. Primary Blaine County streams that drain into the Little Wood River are Dry Creek, Fish Creek, Muldoon Creek and Silver Creek. 84% of the Little Wood subbasin is in shrubland, rangeland, grass, pasture or hayland. 8% is cropland and the remaining 8% is a combination of forest, water, wetlands, developed or barren.

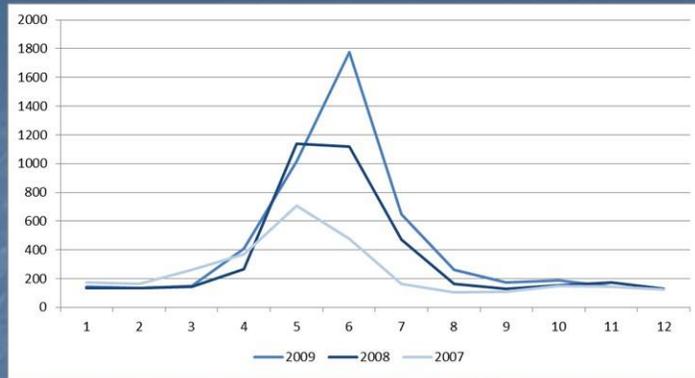
Lake Walcott Subbasin. The Lake Walcott Subbasin contains 3,638 square miles of land, of which 24% is in Blaine County. The remainder of the basin is in Minidoka, Power, Lincoln, Cassia and Butte counties. There are no primary streams in Blaine County that drain into Lake Walcott, which along with the Snake River forms the southern boundary of the Yale area panhandle. However, Lake Walcott and associated wetlands are of statewide significance. 67% of the Lake Walcott subbasin is in shrubland, rangeland, grass, pasture or hayland, 12% is irrigated cropland, 3% is in CRP, and the remaining 18% is a combination of forest, water, wetlands, developed or barren.

Upper Salmon Subbasin. The Upper Salmon Subbasin contains 2,425 square miles, of which 5.5% is in Blaine County. The remainder of the basin is in Custer and Lemhi counties. Primary Blaine County streams include the Salmon River and its tributaries such as Smiley Creek, and Alturas Lake.

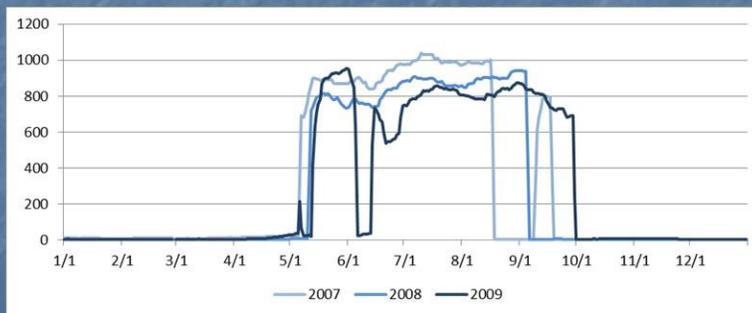
Camas, American Falls and Big Lost Subbasins. Only 1.6 2% of Blaine County falls within the Camas Subbasin on the County's western boundary; 1.5% in the American Falls Subbasin on the southeast and 0.1% in the Big Lost Subbasin.

## Surface Waters

Big Wood River - The following hydrograph shows the hydrographs of the Big Wood River at the Hailey gauge and the gauge below the dam. Per the Wood River Land Trust staff, the data is over 6 years old, but the shapes of recent years are similar. The Hailey gauge shows a fairly typical graph that ramps up to peak runoff and ramps down to base flows of around 130cfs. The gauge below the dam shows almost zero flow for 7 months of the year and fairly constant high flows during irrigation season.



Big Wood River flow (cfs) near Hailey – 2007, 2008, and 2009.



Big Wood River flow (cfs) below Magic Reservoir – 2007, 2008, and 2009.

Magic Reservoir - is the largest reservoir in Blaine County, and is located on the main stem of the Big Wood River at the confluence of the Big Wood River and Camas Creek. Magic Reservoir is privately owned and is managed for irrigation, flood control, and power generation by the Big Wood Canal Company; however, meeting irrigation needs is the primary operating objective. The 112 foot tall earth and rock dam has the capacity to store 191,500 acre-feet of water. In an average water year, the reservoir fills in the spring due to snowmelt runoff, with maximum storage generally occurring in May (USDA NRCS, 1996). During the agricultural growing season, the stored water is released and routed through a series of canals below the reservoir to irrigate approximately 36,500 acres in the Big Wood and Little Wood river basins<sup>8</sup>.

## Groundwater

Ground water is stored in deep underground systems called aquifers. A single unconfined aquifer underlies the Wood River Valley, and while only 3% of Blaine County falls within that Wood River Valley aquifer system<sup>9</sup>, most of the developed portions of the County overlay this aquifer. A separate underlying confined aquifer is present only in the southernmost valley, with a confining ridge that separates the two aquifers. The majority of the population of Blaine County depends on groundwater for domestic supply, either from domestic or municipal-supply wells.

<sup>8</sup> John Bolte, Oregon State University, Envision Bigwood Basin, 2012

<sup>9</sup> Bartolino, 2015

## Studies

### USGS Studies

Blaine County, Blaine County Soil Conservation District, City of Bellevue, City of Hailey, City of Ketchum, City of Sun Valley, The Nature Conservancy, Silver Creek Preserve, and the Sun Valley Water and Sewer District were partners with the U.S. Geological Survey on the following major studies related to hydrology in the Big Wood sub-basin:

**Skinner, K.D., Bartolino, J.R., and Tranmer, A.W., 2008, Trends and Comparisons Between Partial-Development and October 2006 Hydrologic Conditions, Wood River Valley, Idaho (abs.): Idaho Water Resources Research Institute, 2008 Ground Water Connections Conference, Sept. 23-24, 2008, Boise, Idaho. Available online at URL: <http://boise.uidaho.edu/default.aspx?pid=105291>**

For the surface-water portion of the report, mean annual and monthly trends were evaluated for three stream gages in the Wood River Valley: the stream gage at Hailey showed snowmelt runoff trending earlier, while the Stanton Crossing and Silver Creek gages show the effects of lower groundwater levels. The groundwater portion of the report showed statistically-significant declining trends in water levels in three wells with 50 years of record and included groundwater-level maps for pre-development and 2006 conditions. Other findings:

- The Big Wood River at Hailey stream gaging station (13139500) showed an increase in mean monthly base flow for March over the 90-year period of record, possibly because of earlier snowpack runoff.
- Low-flow analyses for the Big Wood River near Bellevue stream gaging station (13141000) showed a mean decrease of about 15 cubic feet per second since the 1940s, whereas the mean monthly discharge showed decreasing trends for the winter months.
- The Silver Creek at Sportsman Access near Picabo stream gaging station (13150430) showed decreases in annual discharge, as well as mean monthly discharge for July through February and April, during the 1975–2005 period of record. Because Silver Creek and its tributaries are fed primarily by groundwater through seeps and springs, seasonal fluctuations in groundwater levels affect streamflow.

**Bartolino, J.R., 2009, Ground-Water Budget for the Wood River Valley Aquifer System, South-Central Idaho: U.S. Geological Survey Scientific Investigations Report 2009-5016, 36 p. Available online at URL: <http://pubs.usgs.gov/sir/2009/5016/>**

This report describes groundwater budgets for the Wood River Valley aquifer system for the 10-year period 1995–2004, as well as for a wet year (1995), and a dry year (2001) within that period. The groundwater budget includes estimates of recharge to and discharge components from the aquifer system and required quantification of each of these components. One of the main findings was that the aquifer responds quickly to variability in precipitation.

**Bartolino, J.R., and Adkins, C.B., 2012, Hydrogeologic framework of the Wood River Valley aquifer system, south-central Idaho: U.S. Geological Survey Scientific Investigations Report 2012–5053, 46 p., 1 plate in pocket. Available online at URL: <http://pubs.usgs.gov/sir/2012/5053/>**

This report describes an updated hydrogeologic framework for the Wood River Valley aquifer system including the horizontal and vertical extent of the aquifer, distribution of rock types that make up the aquifer, and geologically-constrained estimates of subsurface outflow from the aquifer. Subsurface outflow of groundwater from the Wood River Valley aquifer system into the eastern Snake River Plain aquifer was estimated to be 4,000 acre-feet per year. Groundwater outflow beneath Stanton Crossing to the Camas Prairie was estimated to be 300 acre-feet per year.

**Hopkins, C.B., and Bartolino, J.R., 2013, Quality of groundwater and surface water, Wood River Valley, south-central Idaho: U.S. Geological Survey Scientific Investigations Report 2013-5163, 32 p. Available online at URL: <http://pubs.usgs.gov/sir/2013/5163/>**

In order to assess the ambient groundwater quality in the Wood River Valley, in the summer of 2012 samples were collected from 45 wells and 5 surface-water sites. Samples were analyzed for major ions, nutrients, bacteria, and field parameters. Water from two wells exceeded USEPA secondary drinking-water standards: one for iron and the other for sulfate. All nutrient concentrations in groundwater and surface water were well below the USEPA primary drinking-water standard. All surface water and two groundwater sites showed the presence of bacteria above USEPA primary drinking-water standards. These results agree with earlier water-quality studies and suggest that overall, water in the Wood River Valley is of high quality.

Other related USGS studies include two in partnership with the Idaho Department of Water Resources:

**Bartolino, J.R., and Vincent, Sean, 2013, Groundwater resources of the Wood River Valley, Idaho—A groundwater-flow model for resource management: U.S. Geological Survey Fact Sheet 2013-3005, 4 p. Available online at URL: <http://pubs.er.usgs.gov/publication/fs20133005>**

This fact sheet describes the current understanding of the Wood River Valley aquifer system and announces the development of a groundwater-flow model of the aquifer.

**Bartolino, J.R., 2014, Stream seepage and groundwater levels, Wood River Valley, South-Central Idaho, 2012–13: U.S. Geological Survey Scientific Investigations Report 2014-5151, 34 p., 3 pls. Available online at URL: <http://pubs.usgs.gov/sir/2014/5151/>**

Stream-discharge measurements were made at 51 sites on three occasions in 2012-13 in order to better delimit groundwater/surface-water interaction between the aquifer and surface-water bodies. The report also includes groundwater-level maps for 2012 and 2006-12 changes.

USGS is partnering with Blaine County, The Nature Conservancy, Trout Unlimited, and Wood River Land Trust on an **Aquatic Biology and Habitat Assessment, Wood River Valley**. It will analyze streamflow, water-quality, habitat and community data, and data from previous studies to provide resource managers with a baseline of biological conditions and associated habitats. This information can also be used to design a long-term trend monitoring network that will be necessary to identify changes in habitat and biological conditions over time.

## Additional Big Wood River Studies

Big Wood River Fisheries Assessment, Healthy Waters Healthy Future, Wood River Land Trust, May 2005. [\\*ADD link to report](#)

Geomorphic Assessment of the Big Wood River: River Mile 79.5 (Glendale Diversion) to River Mile 100.05 Confluence with Warm Springs Creek), prepared for the Wood River Land Trust by Cygnia Rapp, December 2006. [\\*ADD link to Exec Summary](#)

Geomorphic Assessment Report, Big Wood River, prepared by Biota Research and Consulting, Inc., October 30, 2015. Biota was retained by Trout Unlimited to complete a geomorphic assessment of the Big Wood River from the confluence with the North Fork Big Wood River downstream to Magic Reservoir in Blaine County. Project proponents include the Bureau of Land Management and the Wood River Land Trust. The assessment effort is an attempt to quantitatively describe fluvial system conditions and to develop restoration guidelines and management objectives within the watershed. [\\*ADD link to General Summary](#)

## Wildlife

The mission of Idaho Department of Fish and Game (IDFG) is to protect, preserve, perpetuate and manage Idaho's wildlife resources. To fulfill this mission, IDFG has four overarching goals:

- Sustain Idaho's fish and wildlife and the habitats upon which they depend.
- Meet the demand for fish and wildlife recreation.
- Improve public understanding of and involvement in fish and wildlife management.
- Enhance the capability of the agency to manage fish and wildlife and serve the public.

IDFG achieves its goals through several core functions including:

- Fisheries – Inventory, monitor, and manage Idaho's fish resources.
- Wildlife – Inventory, monitor, and manage Idaho's wildlife and plant resources.
- Enforcement – Enforce the law and provide public information to achieve compliance with regulations.
- Communications – Inform, educate, and involve people in the management of Idaho's fish and wildlife.

IDFG develops wildlife species management plans which provide direction, goals and strategies for a species or group of species. Current wildlife management plans can be found on IDFG's website, currently at <http://fishandgame.idaho.gov/public/wildlife/>

The **Idaho Comprehensive Wildlife Conservation Strategy** provides a framework for conserving "species of greatest conservation need" and the habitats upon which they depend. It is the state's guiding document for managing and conserving at-risk species, most of which are not hunted, trapped, or fished. The Idaho Comprehensive Wildlife Conservation Strategy (CWCS) was accepted by the U. S. Fish and Wildlife Service in [February 2006](#). [-UPDATE!!!](#) The state overview can be found here, along with regional plans affecting Blaine County, the Challis Volcanics and the Snake River Basalts. [\(need to add these as local links – NEED TO DOWNLOAD new – draft, or final if approved by then\)](#)

## Common Species (Source: iNaturalist.org)

Golden eagle	<i>Aquila chrysaetos</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
American dipper	<i>Cinclus mexicanus</i>
Great horned owl	<i>Bubo virginianus</i>
Northern flicker	<i>Colaptes auratus</i>
Hairy woodpecker	<i>Leuconotopicus villosus</i>
Downy woodpecker	<i>Picoides pubescens</i>
Great blue heron	<i>Ardea herodias</i>
American kestrel	<i>Falco sparverius</i>
Northern harrier	<i>Circus cyaneus</i>
Common magpie	<i>Pica pica</i>
Turkey vulture	<i>Cathartes aura</i>
Swainson's hawk	<i>Buteo swainsoni</i>
Rough-legged hawk	<i>Buteo lagopus</i>
Sage grouse	<i>Centrocercus urophasianus</i>
Common mallard	<i>Anas platyrhynchos</i>
Canada goose	<i>Branta canadensis</i>
Osprey	<i>Pandion haliaetus</i>
Sandhill crane	<i>Grus canadensis</i>
Mule deer	<i>Odocoileus hemionus</i>
Moose	<i>Alces alces</i>
Elk	<i>Cervus elaphus</i>
Pronghorn	<i>Antilocapra americana</i>
Mountain goat	<i>Oreamnos americanus</i>
Coyote	<i>Canis latrans</i>
American marten	<i>Martes americana</i>
Red fox	<i>Vulpes vulpes</i>

Gray wolf	<i>Canis lupus</i>
Black bear	<i>Ursus americanus</i>
Mountain lion	<i>Puma concolor</i>
American badger	<i>Taxidea taxus</i>
North American river otter	<i>Lontra canadensis</i>
American beaver	<i>Castor canadensis</i>
Muskrat	<i>Ondontra zibethicus</i>
Short tailed weasel	<i>Mustela erminea</i>
Yellow bellied Marmot	<i>Marmota flaviventris</i>
American pika	<i>Ochotona princeps</i>
Red Squirrel	<i>Tamiasciurus hudsonicus</i>
Vole	<i>Microtus spp</i>
Shrew	<i>Sorex spp</i>
Deer mouse	<i>Peromyscus maniculatus</i>
Chipmunk	<i>Tamias spp</i>
Golden-mantled ground squirrel	<i>Callospermophilus lateralis</i>
Ground squirrel	<i>Uroditellus spp</i>
Raccoons	<i>Procyon lotor</i>
Striped skunk	<i>Mephitis mephitis</i>
Mountain cottontail	<i>Sylvilagus nuttallii</i>
Snowshoe hare	<i>Lepus americanus</i>
Garter Snake	<i>Thamnophis spp</i>
Gopher or bull snake	<i>Pituophis catenifer</i>
Western rattlesnake	<i>Crotalus viridis oregonus</i>

## Classified Lands

From Blaine County Code, Title 9 Zoning Regulations. 9-20-4:

Class I Lands: Lands within Blaine County that include elk winter habitat or mule deer winter habitat as defined within references used by IDF&G and other professional sources.

Class II Lands: Lands within Blaine County that include elk migration corridors or mule deer migration corridors as defined within references used by IDF&G and other professional sources.

Class III Lands: Lands within Blaine County that include current endangered, threatened, and candidate species pursuant to the endangered species act of 1973, species of greatest conservation need as listed within IDF&G's 2005 Idaho comprehensive wildlife conservation strategy, or defined within references used by IDF&G and other professional sources.

## Other Resources

### Geothermal

Hot springs in Blaine County:

1	Lower Bowery Hot Spring
2	Pierson Hot Springs
3	Magic Hot Springs
4	Easley Hot Springs (developed)
5	Russian John Hot Spring
6	Guyer Hot Springs
7	Warfield Hot Spring
8	Hailey Hot Springs
9	Clarendon Hot Springs

### Mineral

In 1879 prospectors moved into the County, establishing Galena as the first town. Rich mines in the Galena Gulch at Broadford, Bullion and eventually Triumph placed Wood River Valley as historically the second largest mineral producer in the state, surpassed only by the world-class mining region of the Coeur d'Alene. Ore from these mines contained lead, silver, zinc and small amounts of copper with gold-bearing quartz, all in a mix of iron, silica arsenic and other non-metallic elements. Mining as a significant economic driver ended in the 1970's with the closure of the Queen of the Hills mine near Bellevue. Currently, Blaine County has two active private mines in south Blaine County, Anderson Asphalt Paving Pit, which mines for sand & gravel, as well as operating as a plant, and Walker Pit, which also mines for sand & gravel and operates as a plant. Periodic efforts at exploration have occurred, but no active metal mines are currently operating. Mine tailings exist in a variety of locations around the County, which have triggered hazardous waste removal and stabilization efforts.

## Soils

Soils data for Blaine County is found in USDA, NRCS data base:

<http://www.nrcs.usda.gov/wps/portal/nrcs/surveylist/soils/survey/state/?stateId=ID> or

<http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

(The Land Use and Building Services office also has a printed copy of the Soil Survey of Blaine County Area, Idaho. USDA, Issued May 1991.)

## Resource Management Agencies

A wide variety of federal, state, and local agencies contribute towards managing and regulating the natural environmental assets of Blaine County. This table shows the geographic area and resource focus for each agency.

<b>AGENCY</b>	<b>Geographic Area</b>	<b>Resource/Focus</b>
US Forest Service	National (see Map 5.5 for land in Blaine County)	Natural resource management, recreation
BLM	National (see Map 5.5 for land in Blaine County)	Public lands, grazing, minerals, forests, recreation
National Park Service	National (see Map 5.5 for land in Blaine County)	National Parks and National Monuments
US Fish and Wildlife Service	National (see Map 5.5 for land in Blaine County – “National Wildlife Refuge”)	Migratory birds and ESA listed species, National Wildlife Refuge System
US Bureau of Reclamation	Western U.S. (see Map 5.5 for land in Blaine County)	Water, specifically diversion, delivery, and storage
Idaho Department of Lands	State (see Map 5.5 for land in Blaine County – “State”)	Endowment trust lands; timber sales; forestry practices; lakes and rivers; some regulation of mining industry
Idaho Department of Fish and Game	State (see Map 5.5 for land in Blaine County)	Wildlife, including mammals, fish, birds, plants, and invertebrates; hunting, trapping, fishing
US Army Corps of Engineers	National	Primarily water and related infrastructure; other ecosystems
US Environmental Protection Agency	National	Multiple
Bureau of Mines	National	Minerals
US Geological Survey	National	Landscape, natural resources, hazards
Natural Resource Conservation District	National	Farm, ranch and forest lands
Idaho Governor’s Office of Species Conservation	State	Threatened, endangered, and candidate species under the Endangered Species Act
Idaho Department of Water Resources	State	Water rights, wells, streams, dams
State Historic Preservation Office	State	Cultural heritage
Idaho Department of Parks and Recreation	State	State Parks
Idaho Department of	State	Air and water

Environmental Quality		
Southern Idaho Solid Waste Division	Region of state	Landfill
South Central Public Health District	Region of state	Septic systems, public water systems, solid waste
Blaine County departments	County	Land Use (floodplain, riparian, wetlands, avalanche, hillside, wildlife), Recycle Center, Noxious Weeds
Local Fire Districts	Districts within County	Fire protection

## Funding

Funding Conservation in Idaho: A Survey of Federal, State & Local Resources Assisting Conservation on Private Lands. University of Idaho College of Law Economic Development Clinic and Idaho Coalition of Land Trusts. Version 1.0 (June, 2015) [ADD LINK HERE](#)

## Climate Change

### Identifying Resilient Terrestrial Landscapes in the Pacific Northwest

The Nature Conservancy has evaluated areas in the Pacific NW, including South Central Idaho, for climate resilience and permeability for wildlife as they move to access habitat. The purpose of this project, funded by the Doris Duke Charitable Foundation, is to identify the most resilient sites in the Northwest that will collectively and individually best sustain native biodiversity even as the changing climate alters current distribution patterns. The central idea is that by mapping key geophysical features and evaluating them for landscape characteristics that buffer against climate change, we can identify the most resilient places in the landscape in order to guide future conservation investments

[Insert link to fact sheet here](#)

### The Big Wood River Basin Alternative Futures Project

The Climate Impacts Research Consortium is a climate knowledge network established by the National Oceanic and Atmospheric Administration (NOAA) provides information and tools for adapting to a changing climate in the northwest. This local project is exploring water futures under alternative climate and management scenarios.

**Researchers:** Denise Lach (Oregon State University), John Bolte (OSU), and John Stevenson (OSU)

**Graduate Students:** Allison Marshall (OSU) and Matt Bragg (OSU)

**Partners:** Bureau of Reclamation, Idaho Department of Water Resources, University of Idaho Cooperative Extension, Big Wood Canal Company, Twin Falls Canal Company, Northside Canal Company, The Nature Conservancy, Wood River Land Trust, Trout Unlimited, Idaho Conservation League, City of Ketchum, Blaine County, Idaho Department of Water Resources, US Geological Survey, US Bureau of Reclamation, USDA Natural Resources Conservation Service, and Idaho Power.

The current website is: <http://envision.bioe.orst.edu/StudyAreas/BigWood/default.aspx>

## Partner Agencies

---

Blaine County relies on many partners in the stewardship of the natural environment. The federal government plays a crucial role due to their vast land ownership in Idaho (61.7%, second only to Alaska and Nevada) and in Blaine County (81%). The state also plays an important role, as they are the agency tasked with wildlife management in Blaine County. These agencies' primary goals form the basis of Blaine County's partnership planning for the natural environment:

### US Forest Service

The agency strives to administer its lands so that they:

- Have ecological and watershed integrity, meaning the lands have a viable combination of all the diverse elements and processes needed to sustain the systems and to perform desired functions,
- Are dynamic in nature and resilient and resistant to natural and man-caused disturbances,
- Have a range of vegetative composition and structure that provide habitat for desired plant, wildlife, and aquatic species, and
- Are managed in an environment of public and interagency trust, and cultural and socio-economic sustainability.
- Are managed to promote meaningful relationships with American Indian Tribes to understand and incorporate tribal cultural resources, needs, interests, and expectations.

### BLM

The BLM's mission is to manage and conserve the public lands for the use and enjoyment of present and future generations under our mandate of multiple-use and sustained yield.

### US Fish and Wildlife Service

Mission: Work with others to conserve, protect and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people.

1. Assist in the development and application of an environmental stewardship ethic for our society, based on ecological principles, scientific knowledge of fish and wildlife, and a sense of moral responsibility.
2. Guide the conservation, development, and management of the Nation's fish and wildlife resources.
3. Administer a national program to provide the public opportunities to understand, appreciate, and wisely use fish and wildlife resources.

### Idaho Department of Fish and Game

The Mission of IDFG is to protect, preserve, perpetuate and manage Idaho's wildlife resources.

"All wildlife, including all wild animals, wild birds, and fish, within the state of Idaho, is hereby declared to be the property of the state of Idaho. It shall be preserved, protected, perpetuated, and managed. It shall be only captured or taken at such times or places, under such conditions, or by such means, or in such manner, as will preserve, protect, and perpetuate such wildlife, and provide for the citizens of this state and, as by law permitted to others, continued supplies of such wildlife for hunting, fishing and trapping."

## GENERAL REFERENCES

Adapted from Seaber, P.R., Kapinos, F.P., and Knapp, G.L., 1987, Hydrologic Unit Maps: U.S. Geological Survey Water-Supply Paper 2294, 63 p.

Assessing the vulnerability of watersheds to climate change: results of national forest watershed vulnerability pilot assessments. **Author:** Furniss, Michael J.; Roby, Ken B.; Cenderelli, Dan; Chatel, John; Clifton, Caty F.; Clingenpeel, Alan; Hays, Polly E.; Higgins, Dale; Hodges, Ken; Howe, Carol; Jungst, Laura; Louie, Joan; Mai, Christine; Martinez, Ralph; Overton, Kerry; Staab, Brian P.; Steinke, Rory; Weinhold, Mark. **Date:** 2013. **Source:** Gen. Tech. Rep. PNW-GTR-884. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 32 p. plus appendix. **Publication Series:** General Technical Report.

Tom Blanchard, personal correspondence

John Bolte, Oregon State University, Envision Bigwood Basin, 2012

Cally Carswell. "Genetic research lays foundation for bold conservation strategies." High Country News, June 8, 2015

John Falk, PE, IDWR Dam Safety Program

Idaho Wetland Conservation Prioritization Plan 2005

Idaho Department of Water Resources, website. (<https://www.idwr.idaho.gov>)

Idaho Invasive Species Strategic Plan (2012-2016), Idaho State Department of Agriculture

Idaho Wetland Conservation Prioritization Plan, Idaho Conservation Data Center, Idaho Department of Fish and Game. (Lisa Hahn, Chris Murphy, Angie Schmidt, Tamara Fields) December, 2005

Matt Leidecker, Exploring Sun Valley and Exploring the Sawtooths, 2010, Idaho River Publications

The Natural Flow Regime. N. LeRoy Poff, J. David Allan, Mark B. Bain, James R. Karr, Karen L. Prestegard, Brian D. Richter, Richard E. Sparks and Julie C. Stromberg. *BioScience* Vol. 47, No. 11 (Dec., 1997), pp. 769-784. Published by: Oxford University Press on behalf of the American Institute of Biological Sciences DOI: 10.2307/1313099 Stable URL: <http://www.jstor.org/stable/1313099>

USDA, US Forest Service Publication, Idaho Forest Products Industry trends, 2011-2013. Eric A. Simmons, Steven W. Hayes, Todd A. Morgan, Charles E. Keegan, III, and Chris Witt

## MAP SOURCES:

Historic Fire Perimeter is from the The Geospatial Multi-Agency Coordination Group (GeoMAC)

Incorporated Cities is from the Idaho State Tax Commission

Conservation Easements is from a combination of data from NRCS, Nature Conservancy, Wood River Land Trust, USFS, and Idaho Foundation for Public Lands.

Sage Grouse Areas are from Idaho Fish & Game

Subbasins are from the USGS National Hydrography Database

DRAFT Appendix