Chapter 1

Why Should Local Governments Protect Wetlands and Riparian Areas?

Protecting public health and the environment are two of the most important responsibilities of local governments. As city and county officials across the state grapple with these issues, they are increasingly recognizing the important benefits that wetlands and riparian areas contribute to the overall protection of public health and the environment. This chapter describes the benefits of wetland and riparian resources to local communities, as well as the most common reasons why local governments are increasingly playing an active role in guiding development away from these important natural resource areas.

The Benefits of Wetlands and Riparian Areas to Local Communities

The following discussion outlines a number of the functions and benefits that healthy wetlands and riparian areas perform for local communities:

Pollution Control of Surface Water

Approximately 54% of Montana's population uses public drinking water systems that rely on clean surface water. One of the most valuable functions of wetlands and riparian areas is their ability to maintain and improve water quality. As suspended particles move through these areas, they are held by the vegetation and soil. Toxic substances, including heavy metals, toxic chemicals and pathogens, can be filtered out or broken down by plants, keeping these pollutants from entering nearby lakes and streams. Captured nutrients, including phosphorous and nitrates, are used by plants or are slowly returned to the water, thus stabilizing nutrient loads. Consequently, the filtering capacity of healthy wetlands or riparian areas can maintain—or even improve—water quality. Importantly, for vegetation to work efficiently as a sediment trap and pollution filter, studies show that 80% of the buffer area should be vegetated (Channing Kimball, 1993). The following are examples of Montana communities that depend upon clean surface water for their drinking water: the cities of Bozeman, Butte, Glasgow, Great Falls, Havre, Helena, Kalispell, Libby, Red Lodge, Ronan, Stevensville, Thompson Falls, White Sulphur Springs, Whitefish, and most of the communities along the Yellowstone River (Billings, Forsyth, Glendive, Laurel, Lockwood, and Miles City) (J. Meek, Montana Department of Environmental Quality (DEQ), written communication, 2002).

Ground Water Protection

In Montana, approximately 46% of the population that uses public drinking water systems depends on clean ground water for their drinking water. The two main ways surface water enters the ground are 1) precipitation falling on the land and penetrating the soil, and 2) water in streams, rivers, lakes, and wetlands seeping into the adjoining ground (Cohen, 1997). Naturally vegetated riparian areas and wetlands enhance the recharging of wells and aquifers by holding water long enough to allow it to percolate into the underlying soil. In areas dependent upon wells and springs for drinking water, the protection of

wetlands is particularly important. The following are examples of Montana communities that depend upon clean ground water for their drinking water: most of the people in the Bitterroot and Mission Valleys, and the cities of Missoula, Bigfork, Dillon, Livingston, and Twin Bridges (J. Meek, DEQ, written communication, 2002).

Public Health

All Montanans depend upon clean water that comes from ground water or surface water, through individual wells or public water supplies. Because everyone needs clean water, human health can be directly associated with wetlands and riparian areas. These areas break down and hold nutrients, chemical pesticides, salts, sediments, and organic wastes. They also act like a giant sponge and filter to reduce the amount of pollutants that enter lakes, streams, ground water, and—ultimately—drinking water, in runoff originating from sources such as city streets, lawns, construction sites, and agricultural fields.

Flood Control

Montana has over 175,000 miles of streams and rivers (DEQ, 2001); all are subject to periodic flooding. An undeveloped, vegetated floodplain can reduce the force, height, and volume of floodwaters by allowing them to spread out horizontally and relatively harmlessly across the floodplain. Water that floods vegetated floodplains is soaked up by floodplain wetlands and streamside vegetation (riparian areas), and then reenters the main channel slowly (Cohen, 1997). This action can lower flood peaks, slow water velocities, recharge local aquifers, and provide temporary water storage. These flood control functions can help to avert the damages caused by flooding to downstream urban and suburban areas, agricultural lands, and irrigation structures.

Building in a floodplain, channelizing streams through bank stabilization, and removing riparian vegetation, decreases or eliminates the flood control capabilities of riparian areas and consequently can cause a threat to life and property. In 1997, floods in Montana caused over $7.6 million in damage to public agencies, including school districts, cities, counties, and irrigation districts in 23 counties. The Federal Emergency Management Agency (FEMA) picked up 75% of the cost of this flooding—but local entities, including local governments, had to foot 25% of the bill (J. Anderson, Montana Disaster and Emergency Services, Montana Department of Military Affairs, written communication, 2002). Floods also impact private property. In 1992, Missoula County approved a 92-lot subdivision west of Missoula along lower Grant Creek. The subdivision was located *outside* the 100-year floodplain boundary on FEMA Flood Insurance Rate Maps. In 1997, during runoff calculated to be less than a 10-year flood, water submerged some of the lots, yards, basements, and the community sewage treatment system of this subdivision. As a result of this flood, homeowners filed a lawsuit against the property developer, the developer's engineer, local real estate agents, ***and*** Missoula County. A negotiated settlement paid $2.3 million to the homeowners (*see Missoula County, page 5-18*).

Erosion Control

Stream banks naturally erode and the material is deposited elsewhere, which in turn builds banks and their associated floodplain, because because streams and rivers are dynamic systems. Erosion, however, can be accelerated above natural rates because of human-caused activities, such as removal of riparian vegetation or upstream manipulation of stream channels (e.g. Ellis, 2002). Additionally, bank stabilization mechanisms designed to stop erosion in one location can increase erosion and cause other problems downstream. Streamside vegetation buffers the land against unnatural erosion rates by absorbing and dissipating wave energy, slowing stream flows, and capturing sediments that are suspended in the water. These plants, along with their complex root systems, also hold soils in place, filter the sediment from upland erosion, and, as a result, reduce unnatural stream bank erosion.

Economic and Community Values

Clean water goes hand-in-hand with a strong economy (National Association of Counties, 2001). Farmers, ranchers, and commercial activities need

water to produce crops, livestock, and manufactured goods. Healthy ecosystems attract tourists and recreation dollars. Maintaining clean water is almost always less expensive than cleaning polluted water. Wetlands and riparian areas can play a critical role in controlling water pollutants, providing flood protection, and maintaining or improving water quality. They also add economic value to communities as important components of parks, open space, trail systems, and wildlife habitat, contributing significantly to the quality of life for area residents. Additionally, private property values can benefit from the protection of these areas: ponds, streams, and lakes can increase the value and marketability of nearby parcels of land. And as property values increase, this in turn may translate into increased local tax revenue to support local government services.

It is difficult—and sometimes impossible—to calculate the monetary value provided to communities by protection of wetlands and riparian areas. However, some trends have been reported. For example, following a greenbelt acquisition in Boulder, Colorado, a 32% higher market value was noted for adjacent properties (Rubey Frost and Sternberg, 1992). Closer to home, a 1983 study done in Madison County concluded that "development along the Madison River will adversely affect the important economic and recreational opportunities that so many people depend on…(*see Madison County, page 5-3*)." And finally, wetlands and riparian areas protected as open space can reduce costs for local governments: a study completed in Gallatin County concluded that for every dollar generated by residential land in the county, it cost $0.25 to provide services to open space and agricultural land, while it cost $1.45 to provide the same services to residential land (Haggerty, 1996).

Agricultural Benefits

In Montana, approximately 90 million gallons of ground water are used every day for irrigation, and 16 million gallons are used to supply water for livestock (Solley et. al., 1993). In the arid west, the availability of water directly affects the value of land—especially for those whose livelihoods depend on agricultural production. Benefits of wetlands and riparian areas to agriculture can include: maintaining late summer stream flows which are critical for irrigating crops, watering stock, and recharging aquifers; maintaining a higher water table which increases subsurface irrigation and production of forage; filtering sediments, which protects water quality, prolonging the life of irrigation pumps, reducing the siltation of irrigation ditches, filtering out chemicals applied to the land such as nitrogen, phosphorous, and pesticides, and providing shrubs and trees that shelter livestock.

Recreational Benefits

The bounty of fish and wildlife species supported by wetlands and riparian areas provides a benefit in the form of outdoor recreation opportunities: hunting, fishing, birdwatching, hiking, and hands-on environmental education. In 1995, over 1,084,000 people participated in wildlife-associated recreation in Montana, spending more than $678 million. Of the total participants surveyed, 336,000 fished, 194,000 hunted, and 554,000 participated in wildlife-watching activities (U.S. Fish & Wildlife Service, 1998). Resident and nonresident anglers, hunters, and wildlife watchers are included in these statistics. Recreationists spend significant amounts of money on equipment and travel-related expenses, including food and lodging. The majority of their activities depended upon the existence of healthy, productive wetlands and riparian habitats. And research shows that recreational income is growing each year.

Wildlife Habitat

Perhaps the best-known reason for protection of wetlands and riparian areas is their importance as critical wildlife habitat. From deer, waterfowl, bulrushes, trout, and painted turtles, to beaver, cattails, bog orchids, frogs, and great blue heron, these areas provide a major part of the habitat required to support a staggering number of creatures. In fact, wetlands and riparian areas provide the most productive wildlife habitat in the state. Their multi-layered plant canopy offers a variety of nesting, resting, and foraging areas for wildlife. In Montana, these habitats provide:

- Important seasonal or year-round habitat for

such animals as deer, mink, beaver, muskrat, otter, elk, moose, and bear.

- Breeding and nesting areas for at least 134 (55%) of Montana's 245 species of breeding birds (Montana Audubon, unpublished data, 2002).
- Much-needed food and resting areas for migrating birds; this is especially true for temporary wetlands that only have water in the spring.
- Essential breeding, foraging, and overwintering habitat for Montana's 12 native amphibians, 3 turtles, and at least 5 of Montana's 10 snakes (Maxell, 2000).

Fisheries

Freshwater fish depend upon healthy riparian areas and wetlands throughout their existence. Shallow areas adjacent to streams provide spawning and feeding areas. Vegetation along streams removes, processes, and releases organic and inorganic material into streams, providing food for fish. Riparian vegetation also provides underwater hiding places from predators in roots, submerged logs, and other debris. By shading sections of the river channel, trees and shrubs such as cottonwoods, birch, alder, and willow help control and moderate water temperature, keeping streams cooler in the summer and warmer in the winter. Vegetative matter provides a large proportion of forage for invertebrates that, in turn, feed birds, fish, and other wildlife. In Montana, all 86 species of fish depend on healthy streams, including 54 species of native fish and 32 non-native; 31 of these fish species are considered game fish, important to fishing and the economy (Holton and Johnson, 1996). Without a healthy riparian system acting as a filter, high levels of eroded sediment from the land can kill aquatic insects and suffocate fish eggs.

Threatened and Endangered Species Habitat

Streams, lakes, and wetlands provide important habitat for many of the state's rare species. Currently 17 of Montana's 20 threatened, endangered, and candidate species of plants and animals depend upon wetlands and riparian areas for some part of their life cycle (R. Hazelwood, USFWS, oral communication, 2002). As an example, water howellia (*Howellia aquatilis*), a threatened plant species, occurs largely in the glacial potholes and old river oxbows of the Swan Valley. The Ute's ladies'-tresses (*Spiranthes diluvialis*), another threatened plant, is found in wet meadows in southwestern Montana valleys. The threatened bald eagle depends on river forests to provide critical nesting and wintering habitat. And the threatened bull trout depends upon western Montana rivers and mountain streams to spawn.

Why Local Government Protection Programs Make Sense

Protection of streams and wetlands historically was seen as a responsibility of federal or state government. With numerous state and federal laws already on the books, many local elected officials and citizens may wonder why wetlands and riparian areas need more protection. Several of the most important reasons for developing local conservation programs are outlined below:

Addressing Local Concerns

Some tools are best used at the local level. City, town, and county elected officials are uniquely positioned to understand community values, needs, and priorities, such as:

- Strengthening riparian and wetland protection in urban areas as a cost-effective mechanism to achieve water quality goals in stormwater runoff and flood protection.
- Increasing protection for wildlife corridors, greenways, stream corridors, and floodplains.
- Regulating certain types of activities of local concern that are not regulated by other entities such as the removal of native vegetation in setback areas along streams, the mowing of vegetation in riparian buffer strips, building roads down to a lakeshore, or the use of motorized recreational vehicles in sensitive areas.

Monitoring Cumulative Effects

Although current state and federal regulatory programs provide some level of protection for wetlands and riparian areas, these regulations often fall short because they focus on a narrow site-by-site approach to protection. Project-by-project decisions do not take into account the cumulative impacts of multiple development projects that impact water quality, flood control, local priorities, wildlife habitat, and other identified community values. It is therefore almost impossible to protect a river corridor or wetland complex without local government conservation programs.

Filling Regulatory Gaps

Not all wetlands and riparian areas receive protection from current state or federal laws. For instance, the central piece of federal legislation that regulates activities affecting wetlands is Section 404 of the Clean Water Act. It requires approval from the Army Corps of Engineers before placing dredged or fill material into waters of the U.S., including wetlands. The types of impacts not regulated under 404 permits include draining or flooding wetlands, activities impacting most riparian areas including vegetation removal, and placing fill material in certain isolated wetlands. In addition, the 404 program focuses on the *filling* of wetlands; establishing protective buffer strips to keep wetlands from being degraded by development activities is not typically covered under this program. Another regulatory program, Montana's 310 law administered by local Conservation Districts, only applies to projects that alter or affect the bed or banks of a natural stream or river—offering little protection to riparian vegetation and its associated wetlands.

In spite of the shortcomings of current regulatory programs, they play an important role in local conservation efforts. Therefore, it is important for local government officials and staff to understand the basics about these programs. For more information about the current regulatory programs that apply to Montana's wetlands and riparian areas, see Appendix IV.

Applying Land Use Tools to Resource Protection

Local governments have diverse protection capabilities through regulatory mechanisms such as subdivision regulations or zoning. These mechanisms are flexible, and it is possible to build conditions into these tools to address local concerns and priorities. For example, riparian setbacks in a subdivision regulation can be adjusted to suit site-specific conditions such as steep slopes, the presence of wetlands, the removal of native vegetation, and similar considerations. Municipalities and counties also have the opportunity to integrate resource protection with other land use planning goals during comprehensive planning efforts.

Providing Educational Opportunities

Local governments have direct contact with landowners through subdivision, floodplain, or building permit processes. These contacts provide important opportunities for informal landowner education about the benefits, values, opportunities, and challenges associated with owning and managing wetlands and riparian areas.