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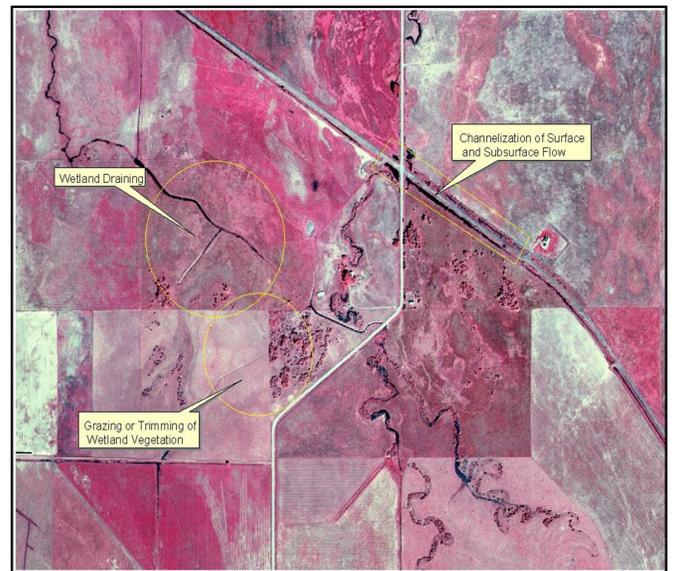
Where are the Wetlands?

Wetlands are important components of any landscape. They serve a number of valuable functions and provide benefits to humans and wildlife which are often overlooked. Wetlands serve as a sponge by absorbing water during flood events and releasing it over time, thereby reducing peak flood flows. Holding all that water which allows it to slowly infiltrate into the ground helps to replenish aquifers. Wetlands improve water quality by trapping sediments, filtering excess nutrients from agricultural and urban runoff, and breaking down many waterborne contaminants. Wetlands also provide habitat for wildlife and plants, many of which are unique to these specialized habitats. Up to 85% of Montana's threatened and endangered species rely on wetlands to meet all or part of their life cycle needs. Historically, the benefits of the ecological services provided by wetlands were undervalued. As a result, many acres of wetlands have been filled or drained in the course of human activities. Prior to the 1980's, wetlands were mainly converted to agricultural fields. Since then, it is estimated that over 80% of wetland losses are due to non-agricultural activities.



In 2001, the Gallatin Local Water Quality District conducted a study to inventory the extent of the remaining wetlands in the Gallatin Valley. The researchers used color infrared (CIR) digital imagery to document the current state of wetlands in the valley. Historical aerial photographs from as far back as the early 1800's were also examined to understand how and where human activities in the area occurred and may have impacted wetlands. This information was combined to create a visual representation of current and historical extent of wetlands in the Gallatin Valley. The inventory revealed only about 38% of the valley's original wetland habitat remained by 2001.

A pattern of human activities impacting wetlands emerged from this study. Several activities appear to have played a significant role in the loss of wetland habitat in the Gallatin Valley. Prior to an influx of human settlement in the area, beavers were abundant. As nature's engineers, the beaver built dams which slowed water flow and created vast areas of water build-up behind the dams. With settlement in the Gallatin Valley, beavers were trapped and this caused a significant reduction in their populations. The result was a decrease in wetlands, ponds and backwater areas. Once beavers were removed, agricultural development further depleted wetland habitat. Wetlands were drained to allow for cattle grazing and to increase areas for crop production. Next, the construction of transportation corridors altered surface water flow patterns. Roads and railroad beds caused damming of surface water on the uphill side of these corridors and reduced surface and subsurface flow on the downhill side. Intensive land use changes from urban and suburban development has had the largest impact on the loss of wetland habitat in the Gallatin Valley. Much of the land area now occupied by the City of Bozeman was originally covered by wetlands.



The digital maps created from this project provide an important source of information for planners and policy-makers in the area. It is one more tool that can be used to make informed decisions on where to guide future development and provide opportunities for preservation and even restoration of the wetlands that remain on our landscape.