

WIND/BIG HORN BASIN PLAN
Recreational and Environmental Demand and Projections

This memorandum discusses projected environmental and recreational water demand growth in the Wind/Big Horn Basin (WBHB). This memo focuses on outdoor recreational demands, including fishing, waterfowl hunting, and boating.

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Section 1 – Introduction

Recreation, including tourism, is one of Wyoming’s three major industries. Major recreational activities dependent on water are fishing, boating, rafting, waterfowl hunting, and swimming. Other recreational activities, such as big-game and upland game bird hunting, snowmobiling, skiing, sight-seeing, photography, camping, and golfing are also sensitive to water quantity and quality. Another minor environmental uses of water include consumption of water by wildlife.

In general water demand for recreational uses is non consumptive (Jacobs). However, some “uses” or “designations” may restrict use within and above such designations. For example, Wyoming’s only congressionally designated “Wild and Scenic River” is a twenty mile stretch of the Clark’s Fork River in Park County.

Section 2 – Future Recreational Water Considerations

The Basin’s State Parks are estimated to attract more than a million visitor-days per year (Calculated from Wyoming State Parks and Historic Fees Program). Boysen and Buffalo Bill State Parks are located on large reservoirs, Hot Springs and Sinks Canyon State Parks are located near unique water resources, and Medicine Lodge Creek adds significantly to the attractiveness of its State Park. It is useful to consider future recreational demands in a basin plan study for two reasons, to asses whether potential water development projects to meet water needs will impact recreational activities, and whether future recreational demands may exceed the current capacity of existing

recreational areas. The assessment of future demands is concluded from the quantification of current recreational use through out the WBHB, projecting future recreational use, and comparing future recreational use with the existing recreational areas (Harvey, 2000).

Table 1
Projected Annual Growth Rates In Wind/Big Horn Basins
Population and Tourism – 2000-2003

| Scenario | Average Annual Growth Rate | |
|---------------|----------------------------|---------|
| | Basin Population | Tourism |
| Low Growth | 0.00% | 1.00% |
| Medium Growth | 0.32% | 2.00% |
| High Growth | 0.91% | 3.00% |

Note: Tourism growth rate based off of Department of State Parks and Cultural Resources estimates of the average annual increase in tourism.

Boating

There is no available data on the number of boats, rafts and other water craft using the waters of the Wind/Big horn Basin. As such, quantitative measurements of the number of boating-days and estimates of future water use demands for boating could not be determined. However, based on projective growth in the WBHB, of both residents and tourist, it can be assumed that the demand for water craft use in the Basin will expand.

Fishing

Fishing is one of the WBHB’s major water-based outdoor recreational activities. The major source of data collected on fishing is from the Wyoming Game and Fish Department’s (WGFD) license sales and creel censuses. The available quantitative data on fishing is not readily adaptable to individual waters because angler surveys are usually conducted on major waters in response to specific needs (Annear, 2002).

In 2000, 20,942 resident and 30,372 non-resident licenses were sold in the five counties of the WBHB (Wiley, 2001). This equates to approximately 322,000 angler-days for residents and 123,000 angler-days for non residents. In comparison to 1995 resident sales have decreased by approximately 8% in the Basin, while non-resident sales increased by about 20%. This would indicate that the majority of fishing in the WBHB is done by people visiting the Basin. The majority of fishing licenses sold in the Basin were in Fremont and Park Counties (Wiley). This suggests that the drainages of the Upper Wind River and the Shoshone River have the heaviest amount of stream fishing. Boysen and Buffalo Bill Reservoirs are also very popular fishing venues. In anticipation of continuing growth in demand for stream fishing venues, the WGFD notes that ensuring an adequate supply of good fishing spots “is dependant on maintaining adequate stream flows in existing good segments and restoring stream flows in streams that have the potential to support good recreational fisheries.” (Annear, 2002)

Annual fishing day demand in 2030 is projected as follows:

2030 Low Growth Scenario

- Residential approximately 322,000 angler-days
- Non-residential approximately 166,000 angler-days

2030 Moderate Growth Scenario

- Residential approximately 354,000 angler-days
- Non-residential approximately 223,000 angler-days

2030 High Growth Scenario

- Residential approximately 423,000 angler-days
- Non-residential approximately 299,000 angler-days

Waterfowl Hunting

Wyoming straddles two migratory waterfowl flyways, the Pacific (west of the Continental Divide) and the Central. The WBHB is solely located east of the Continental Divide, in the Central flyway. The WBHB is divided by the WGFD into two waterfowl management areas. The majority of waterfowl hunting in the Basin is for ducks and geese, although coot, snipe, rail, and sandhill crane are also hunted.

While data on specific locations is unavailable, the WGFD estimated that in 2000 WBHB duck hunter-days totaled 13,395, with a harvest of 19,333 ducks. Goose hunter-days were estimated to be 7,730, with a harvest of 5,331 geese. Ducks Unlimited, which has over 4,000 members in Wyoming, reported that during the 1999-2000 hunting season 11,062 federal duck stamps were sold in the state. The WGFD reported that in 2000 a total of 36,208 bird licenses were sold in the state. According to the WGFD Annual Report of Upland Game and Furbearer Harvest for 2000, licenses sales for both resident and non-resident bird licenses have increased sharply over the past five years. Maintenance and improvement of existing wetlands and riparian areas, and establishment of new areas will help maintain and improve habitat for waterfowl.

Annual waterfowl hunting-days are projected as follows:

2030 Low Scenario

- Duck hunting approximately 18,050 hunting-days
- Goose hunting approximately 10,420 hunting-days

2030 Moderate Scenario

- Duck hunting approximately 39,010 hunting-days
- Goose hunting approximately 22,510 hunting-days

2030 High Scenario

- Duck hunting approximately 50,090 hunting-days
- Goose hunting approximately 28,910 hunting-days

Section 3 – Future Environmental Water Considerations

Environmental water uses including reservoir-allocated conservation pools, instream flows, wetlands, and riparian areas are mostly non-consumptive uses of water, and are not dependant on population change and tourism, as recreational uses are.

Wildlife

There is no easy way to quantitatively estimate the amount of water required by wildlife in the WBHB. Tyrell, in a review of the topic in the Green River Basin Plan, noted that estimates of wildlife use of surface water in that Basin ranged from 100 to 400 acre-feet per year. Tyrell concluded that “while some uncertainty exists in the exact consumption value, its probable magnitude is not so high as to materially affect the water plan” (2000). Since water use by wildlife is essentially constant, there is no foreseeable impact on future water demand.

Conservation Pools

The U.S. Bureau of Reclamation (USBR) has designated “Conservation Storage” for five reservoirs in the WBHB: Big Horn Lake, Boysen, Buffalo Bill Reservoir, Bull Lake, and Pilot Butte Reservoir. Each reservoir has an allocation for an “Active Conservation Pool” which holds a reservoir of inflow to be allocated for several purposes including fisheries, wildlife, water quality and recreation. As this a non-consumptive use “Conservation Storage” does not affect the Basin Plan. More detailed information on conservation pools can be found in the Water Uses from Storage Technical Memorandum found in Chapter 2.

In-stream Flow

The Wyoming State Engineer’s Office has interpreted the use of in-stream flows as being for fisheries protection only (Lowry, 2002). The WGFD has since 1994 taken action to identify streams for which the filling of applications is appropriate. As of 2002, there five permitted in-stream flow appropriations in various rivers totaling 280,520 acre-feet per year and three applications pending approval for 277,716 more acre-feet per year. However, in-stream flow rights are not a consumptive use and though in-stream flow designations can potentially cause conflict with new out-of-stream-uses, they have little impact on water availability within the Basin.

Wetland and Riparian Habitat

Riparian areas and wetlands are ecologically important. They help to maintain stream flows, reduce erosion, and provide habitat for wildlife. The U.S. Department of Agriculture (USDA) has a number of programs that are relevant to these areas. Although, riparian areas and wetland areas are non-consumptive uses and do not affect the consumptive use of water in the Basin.

Section 4 – Summary

Available information limits the extent that quantitative projections of the WBHB recreational and environmental demands can be developed. However based on the quantitative estimates made under the low growth scenario demands will be slightly higher due to slight increases in tourism, were as in the high growth scenario the future demands will greatly increase.

The largest potential affect of non-consumptive recreational and environmental uses on future consumptive uses of water in the WBHB is likely to be restrictions of water use to maintain in-stream flows, wetland, conservation pools, and related environmental and habitat features. Although these non-consumptive uses will generally not affect the total amount of water available in the Basin, such uses may affect consumptive use by limiting the location of water use and/or diversion, limiting the time of year water can be consumed or diverted, and limiting the type of water usage allowed.

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