

Technical Memorandum 2.1.1

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Platte River Basin Water Plan

Technical Memorandum 2.1.1

SUBJECT: Platte River Basin Water Plan
Section 2.1.1 – Federal Water Projects on the North Platte River in Wyoming

PREPARED BY: Trihydro Corporation

DATE: June 14, 2005

PURPOSE: The Platte River Basin Plan is a planning tool developed for the Wyoming Water Development Office. It presents estimated current and estimated future uses of water in Wyoming's Platte River Basin. The Plan is not used to determine compliance with or administration of state law, federal law, court decrees, interstate compacts, or interstate agreements.

2.1.1 FEDERAL WATER PROJECTS ON THE NORTH PLATTE RIVER IN WYOMING

2.1.1.1 Introduction

The federal government constructed many dams, diversions, canals, and related facilities during the twentieth century on and near the North Platte River in Wyoming. These structures are the largest reservoirs in Wyoming's Platte River Basin and play a major role in controlling and utilizing Basin surface water resources. These structures are located in the Above Pathfinder and Pathfinder to Guernsey subbasins of Wyoming's Platte River Basin. The locations of federal reservoirs in these subbasins are shown on Figures 2.1.1.1 and 2.1.1.2.

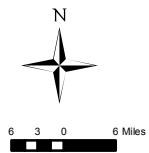
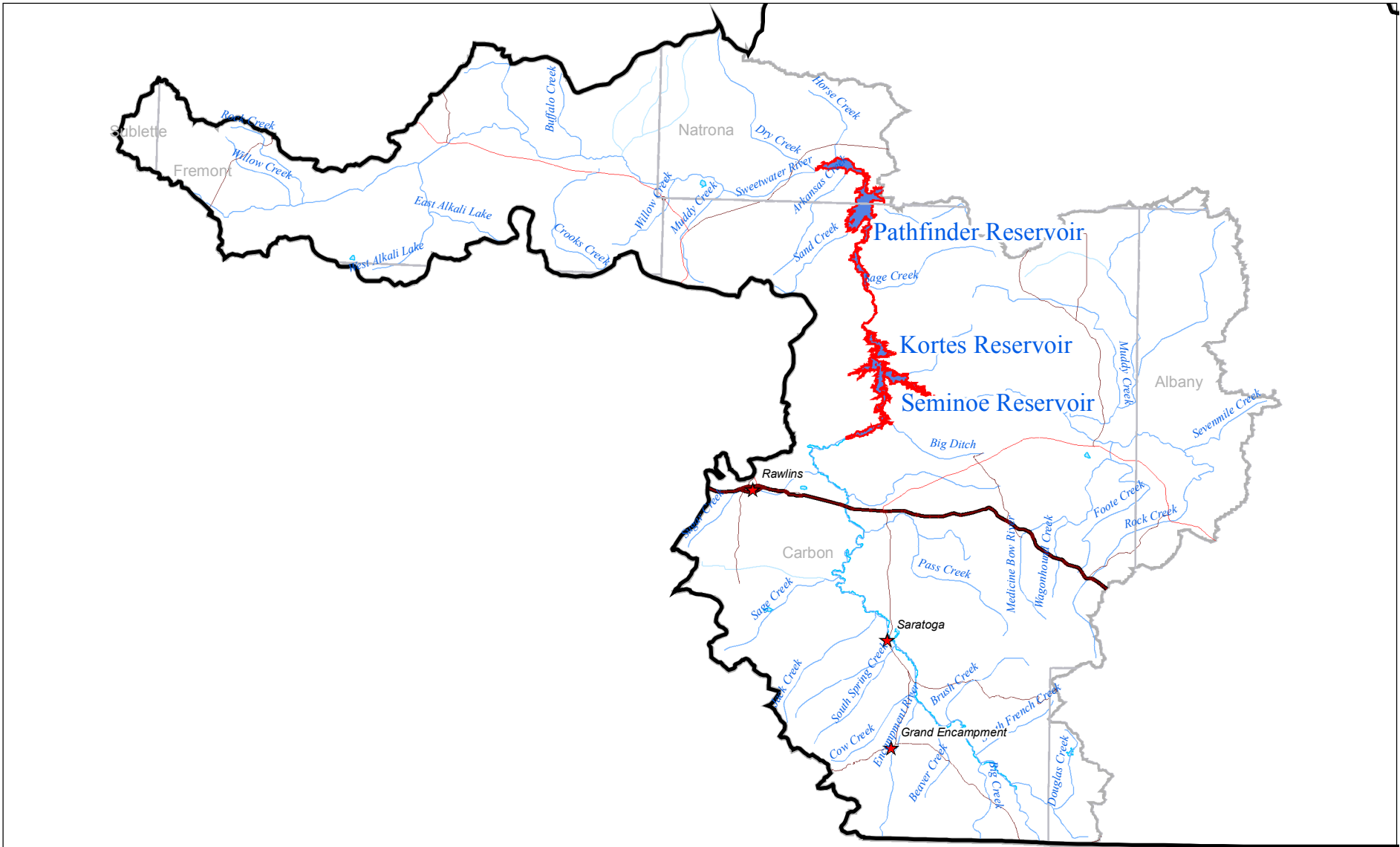
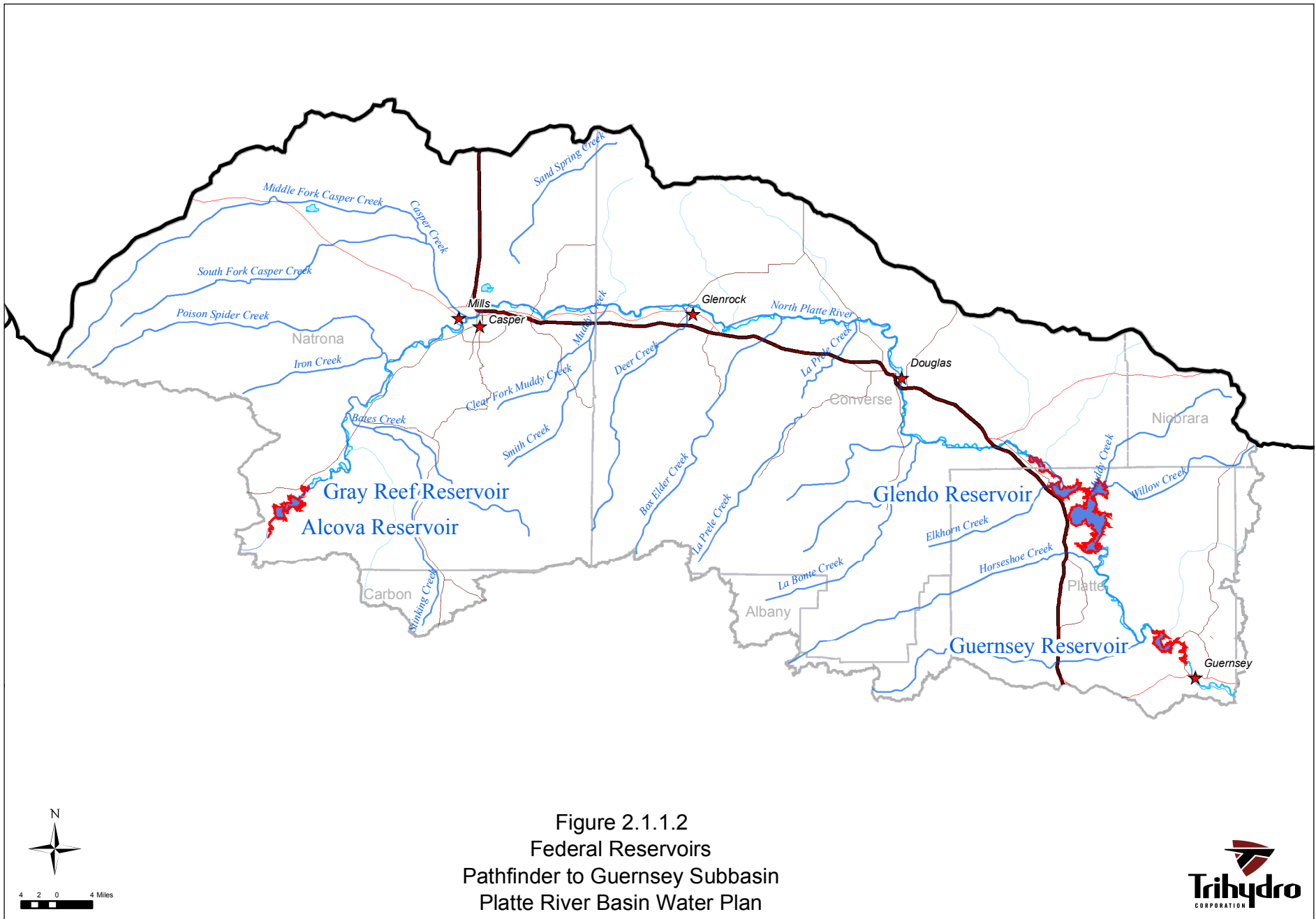


Figure 2.1.1.1
 Federal Reservoirs
 Above Pathfinder Dam Subbasin
 Platte River Basin Water Plan





Individual facilities were typically constructed as components of large federal projects, including, in chronological order:

- the North Platte Project
- the Kendrick Project
- the Kortess Unit of the Pick-Sloan Missouri River Basin Project
- the Glendo Unit of the Pick-Sloan Missouri River Basin Project

These federal facilities are administered by the U.S. Bureau of Reclamation (USBR) and are intended primarily to provide storage of irrigation water and subsequent generation of electrical power as the irrigation water is released. These projects are described in more detail below.

2.1.2.2 North Platte Project

The North Platte Project was authorized under the Reclamation Act of 1902, followed by construction in 1909 of Pathfinder Dam. Pathfinder Dam, constructed in a then-remote area southwest of Casper, Wyoming, near the confluence of the North Platte and Sweetwater Rivers, was named by its builder, the United States Reclamation Service (USRS), for nineteenth-century explorer John C. Fremont. The USRS was the precursor to the U.S. Bureau of Reclamation (USBR). The North Platte Project became a “testing lab for Reclamation’s earliest attempts at design.” (USBR, 2004a, p. 1) Between 1905 and 1924, more than 2,000 miles of irrigation canals, irrigation laterals, and irrigation canal drains were constructed in Wyoming and Nebraska (USBR, 2004a, p. 11). Construction of the North Platte Project dams and canals supported the transition of some lands within the North Platte River Basin from supporting only grazing to supporting grazing and farming. It also supported the founding and growth of a number of towns, including Guernsey, Lingle, and Torrington in Wyoming. (USBR, 2004a, p. 15)

North Platte Project water is used primarily by irrigators (USBR, 2004a, p. 4). Lands irrigated by North Platte Project water include approximately 335,000 acres (USBR, 2004a, p. 16) of farmland along about 111 miles of the North Platte River between Guernsey, Wyoming, and Bridgeport, Nebraska.

The project provides full-service irrigation for about 226,000 acres divided into four irrigation districts (Pathfinder, Gering-Fort Laramie, and Northport Irrigation Districts in Nebraska and the Goshen Irrigation District in Wyoming). Supplemental irrigation service is furnished under Warren Act contracts to nine water-user associations (Farmers, Gering, Central, Chimney Rock, Browns Creek, and Beerline in Nebraska and Lingle, Hill, and Rock Ranch in Wyoming), serving a combined area of about 109,000 acres. Pathfinder and Guernsey Reservoirs are the two federal North Platte Project reservoirs in Wyoming that store and provide irrigation water for the project.

Guernsey Dam and Reservoir, constructed near the town of Guernsey, Wyoming, between 1925 and 1927, was the second and last major North Platte Project dam. This structure also provided hydroelectric power generation for eastern Wyoming residents. Guernsey Dam was built by the U.S. Bureau of Reclamation (USBR) as a companion dam to Pathfinder (USBR, 2004a, p. 12).

During the Great Depression and until shortly after the December 1941 entry of the United States into World War II, federally funded Emergency Conservation Works (later Civilian Conservation Corps) workers operating from five camps along the North Platte River rerouted and lined North Platte Project canals, constructed canal flow control structures, and planted trees to provide wind breaks (USBR, 2004a, p. 13).

2.1.1.3 Kendrick Project

Known as the Casper-Alcova Project until 1937, the entire Kendrick Project is located in Natrona County, Wyoming. The project was permitted in 1934, and the first irrigation water deliveries to the project occurred in 1946. (Hinckley and Schmidt, 2000, p. 4.2.3.1.2) Project facilities store and convey irrigation water and generate hydroelectric power. Seminole Dam and Reservoir, Seminole Powerplant, Alcova Dam and Reservoir, Alcova Powerplant, and the Casper Canal and laterals are major components of the Kendrick Project. Operations of Kendrick Project facilities are integrated with those of North Platte Project facilities and the Kortes and Glendo Unit facilities of the Pick-Sloan Missouri River Basin Program. (USBR, 2004c, p. 1) Alcova Dam was constructed between 1935 and 1938, Seminole Dam and Powerplant were completed between 1936 and 1939, and Alcova Powerplant began producing electrical power in 1955. (USBR, 2004c, p. 3)

Irrigation components of the project are based on irrigation water storage at Seminole Reservoir, which is located upstream of Pathfinder Reservoir, and irrigation water diversion at Alcova Reservoir, which is located downstream of Pathfinder Reservoir. About 24,000 acres of land on the northwest side of the North Platte River between Alcova and Casper, Wyoming, receive Kendrick Project irrigation water via the Casper Canal and laterals. (USBR, 2004c, p. 2)

Initially considered in 1904, the Casper Canal first received water diverted from the North Platte River in 1946. The Casper Canal has a maximum flow capacity limited to 600 cubic feet per second, is about 59 miles long, and distributes irrigation water to about 190 miles of laterals and sublaterals. Principal Casper Canal structures include the headgates at Alcova Reservoir about one mile west of Alcova Dam, six concrete-lined tunnels, several siphons, bridges, and numerous flow control and measuring devices (USBR, 2004c, p. 2). The Casper Irrigation District operates all Kendrick Project irrigation facilities.

2.1.1.4 Kortes Unit – Oregon Trail Division – Pick-Sloan Missouri Basin Project

The Kortes Unit of the Pick-Sloan Missouri Basin Project includes Kortes Dam, Reservoir, and Powerplant located in the deep, narrow Black Canyon of the North Platte River about two miles downstream of Seminole Dam. Named for a local pioneer family, the primary benefit derived from the Kortes Unit is hydroelectric power generation. (USBR, 2004d, p. 1)

The Kortes Dam project was originally approved in 1941 as a component of the Kendrick Project, but was dropped and subsequently incorporated into the Pick-Sloan Missouri River Basin Project. Approval of the Pick-Sloan Missouri River Basin Project and of construction of Kortes Dam and Powerplant was included in the Flood Control Act of 1944. (USBR, 2004d, p. 5) The Kortes Unit was the first project initiated by U.S. Bureau of Reclamation (USBR) and the U.S. Army Corps of

Engineers (USCOE) under the \$2 billion Pick-Sloan Missouri River Basin Project. (USBR, 2004d, p. 1) Kortes Dam was constructed between 1946 and 1951. Because of increasing regional electrical power demand, the Kortes Powerplant was constructed concurrently with Kortes Dam.

Kortes Dam and Reservoir were sited to optimize the head (the difference in water surface elevations) between the Seminole Reservoir tailwater and the Pathfinder Reservoir water surface elevation, thereby enhancing hydroelectric power generating capabilities.

2.1.1.5 Glendo Unit – Oregon Trail Division – Pick-Sloan Missouri Basin Program

The Glendo Unit of the Pick-Sloan Missouri Basin Program consists of six major structures, including:

- Glendo Dam and Reservoir, which are located about 80 miles southeast of Casper, Wyoming
- Glendo Powerplant
- Gray Reef Dam and Reservoir, which are located about 27 miles southeast of Casper, Wyoming, upstream of Glendo Dam and about four miles downstream of Alcova Dam
- Fremont Canyon Powerplant, located about four miles below Pathfinder Dam

The Glendo Unit was designed as a “multi-purpose natural resource system, which is adjacent to, and works in conjunction with, the North Platte and Kendrick Projects, which are not part of the Missouri River Basin Program.” Glendo Unit facilities provide supplemental irrigation water to 37,250 acres in Wyoming and Nebraska and provide electrical power to parts of Wyoming, Colorado, and Nebraska. (USBR, 2004b, p. 1) Unit facilities also provide flood control, sediment retention, water storage, recreation, fish and wildlife enhancement, and pollution control in accordance with the 1953 modification of the 1945 North Platte Decree.

Original project authorization occurred as part of the Flood Control Act of 1944, and project reauthorization took place in 1954 following controversy regarding the project details. The purposes of the dam and reservoir were to help reduce loss of capacity in Guernsey Reservoir due to silting and to allow more power production at the North Platte River hydroelectric powerplants. These goals were met by storing additional water for power production and restoring water from releases made through upstream powerplants at Fremont Canyon and Alcova, thus allowing year-round operation of these plants.

In addition to stipulations regarding total and incremental Glendo Reservoir water storage, the 1954 plan stated that electrical power generated at the Fremont Canyon and Glendo Powerplants would be distributed among Wyoming, Colorado, and Nebraska users and that the project would be financed through sale of irrigation water and electrical energy. The three states and Congress approved this plan in 1954. (USBR, 2004b, p. 3)

Glendo Dam was constructed between 1954 and 1958. The Glendo Powerplant was constructed during 1957 and 1958. Fremont Canyon Powerplant, constructed below Pathfinder Dam, was

constructed between 1957 and 1961. Gray Reef Dam and Reservoir, located two miles downstream of Alcova Reservoir and named for a nearby geographical landmark, was constructed between 1959 and 1961. (USBR, 2004b, pp. 4 and 5)

2.1.1.6 References

Hinckley, B. 2000. *U.S. Bureau of Reclamation Procedures for Allocation of Water to North Platte Project and Warren Act Contractors.*

Hinckley, B., and others. 2000. *Implementation and Administration of the 1945 North Platte Decree.*

Hinckley, B., and T. Schmidt. 2000. *Post-Decree Changes in Irrigation – Platte River Basin – Colorado, Wyoming, and Nebraska.*

U.S. Bureau of Reclamation. 2004a. *The North Platte Project.*

www.usbr.gov/dataweb/html/noplatte.html

U.S. Bureau of Reclamation. 2004b. *The Glendo Unit.* www.usbr.gov/dataweb/html/glendo1.html

U.S. Bureau of Reclamation. 2004c. *Kendrick Project – Wyoming.*

www.usbr.gov/dataweb/html/kendrick.html

U.S. Bureau of Reclamation. 2004d. *The Kortes Unit – Oregon Trail Division – Pick-Sloan Missouri Basin Program.”* www.usbr.gov/dataweb/html/kortes2a.html