The Fort Peck Irrigation Project: A Class I Overview of Irrigation on the Fort Peck Reservation

FINAL REPORT

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The Fort Peck Irrigation Project is a significant part of the history of the Fort Peck Reservation and its inhabitants. The irrigation project was an integral part of the federal government plan for transitioning the Sioux and Assiniboine people from traditional nomadic life on the northwest Plains to sedentary agriculture life on the reservation. Irrigation on Fort Peck Reservation land was first formally attempted in 1884 by early Indian Agents trying to illustrate the benefits of irrigation practices. However, the early attempt soon failed due to lack of support. The Indian Irrigation Service subsequently planned several irrigation projects, but actual construction was on a limited scale and few of the irrigation efforts were very successful. The lack of significant progress in developing irrigation on the Fort Peck Reservation over the next two decades led the Secretary of the Interior to arrange an agreement between the Bureau of Reclamation (BOR) and the Indian Service in 1908, whereby the BOR would assume direct responsibility for materials, workmanship, and economy of construction of the irrigation system on the Fort Peck Reservation (USRS 1910). The irrigation project received broad support from both tribal leaders and government officials, who were concerned about establishing tribal water rights amid increasing settlement and agricultural development of the region. Irrigation construction on the Fort Peck Reservation reached its peak circa 1912 to 1918, just prior to and during World War I. The BOR relinquished control of the Fort Peck Irrigation Project to the Indian Irrigation Service in 1924. Debate continues over how best to maintain, manage, and utilize the irrigation system, particularly amid perceived underutilization of the irrigation system and the increasing demand for water in the region. This report documents some aspects of the history of irrigation on the Fort Peck Reservation, with an emphasis on the irrigation units and their components.
SECTION 1 - INTRODUCTION

Irrigation and water rights have been integral parts of the farming experience on the Fort Peck Reservation since before the establishment of the Fort Peck reservation in 1888.

The objective of this study will be to document the project origins, project design, and development of an engineering record of the project. Information will be used to guide the removal and replacement of irrigation features on the reservation.

This report is a Class I overview of the Fort Peck Irrigation Project, which currently consists of two irrigation units: The Wiota Unit and the Frazer-Wolf Point Unit. The Bureau of Reclamation (BOR)\(^1\) constructed the irrigation units from 1908 to 1924 in conjunction with the Bureau of Indian Affairs (BIA)\(^2\) (Figure 1.1). After this time, construction and maintenance fell primarily to the Indian Irrigation Services under the direction of the BIA. Expansion of the irrigation units effectively ceased after the late 1930s and some units were abandoned or consolidated. The irrigation units have remained essentially unchanged since 1959. However, the irrigation units have undergone periodic maintenance in order to keep the system operational. Maintenance has included the replacement of decayed structures with like structures at the same locations. The objective of this report is to provide an overview of the history of the Fort Peck Irrigation Project and its system components, along with information about relevant document repositories.

The project focused on the identification of document repositories and a review of documents about the construction and history of the Fort Peck Irrigation Project.

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\(^1\)The BOR was known as the Reclamation Service from its founding in 1902 until its name change in 1923. It is referenced under BOR in this report.

\(^2\)The BIA was known as the Office of Indian Affairs from its founding in 1824 until its name change in 1947. It is referenced under BIA in this report.
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Figure 1.1 - Irrigation Project Area in 1922, Illustrating Completed and Incomplete Irrigation Units (USRS 1922).
SECTION 2 - METHODS

Historic records of the Fort Peck Irrigation Project are archived in two primary locations: the Bureau of Indian Affairs (BIA) regional office in Billings, Montana, and the National Archives repository in Denver, Colorado. Some of the original irrigation system construction reports, blueprints, and engineering drawings are located in the BIA regional office. The BIA also has some of the Bureau of Reclamation (BOR) construction histories for Fort Peck. The BOR documented construction histories annually from 1909 to 1923. Six volumes in this series, Volume 2 (1910), Volume 5 (1913), Volume 7 (1915), Volume 8 (1916), Volume 14 (1922) and Volume 15 (1923), are on file at the BIA regional office library. The other volumes are archived at the National Archives repository. These histories are valuable research tools because they track the construction progress of the Fort Peck Irrigation Project and include original blueprints and photographs of features and construction activity.

A representative sample of irrigation project maps is also housed at the BIA regional office library. Copies of various maps illustrating the history and functional use of the Fort Peck Irrigation Project are reproduced in this report. Indian Irrigation Service Annual Reports for District 3 for 1919, 1923, 1924, and 1931 are also on file at the BIA regional office library. These reports provide information on the physical status of the Fort Peck Irrigation Project units, water use and crop production.

Current Fort Peck Irrigation Project structure location information is maintained in a Geographic Information System (GIS) database as a BIA Central Office function (Rhonda Knudsen, personal communication 2007). The database contains information about the type and location of each structure within each irrigation unit along with a photograph of each structure. Unfortunately, the database does not have dates of construction for the structures.

The National Archives in Denver have historic irrigation construction progress letters and reports, which provide good information about specific structures within the units. Fort Peck Project construction histories are on file in Record Group 75 (BIA) and Record Group 115 (BOR). These documents are the best available source for detailed information about the original construction activity. Unfortunately, the series is incomplete.

Other relevant document repositories include the BOR regional office in Billings and the BIA Irrigation Office in Poplar, Montana. The BIA Irrigation Office records in Poplar consist of unorganized photographs and papers related to the
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Fort Peck Irrigation Project dating back to the 1930s and possibly back to the 1910s. Unfortunately, the materials are not indexed. Therefore, any effort to retrieve specific information would require a significant amount of time to sift through documents, limiting their accessibility as a research resource.

The best feature-by-feature description of the Fort Peck Irrigation Project is found in the Morrison-Maierle (MMI 1976) feature evaluation report. Although only 30 years old, the Morrison-Maierle (MMI 1976) report is the best available source for a historic description of individual structures within the Fort Peck Irrigation Project.

The evaluation of NRHP eligible irrigation systems or elements closely follows the guidelines established to evaluate the significance of prehistoric and historic properties. There are four Criteria for Evaluation that can be applied to the evaluation of a property:

- Criterion A identifies properties associated with events that have made as significant contribution to the broad patterns of our history on a local, regional or national level (National Park Service [NPS] 1997:2).
- Criterion B identifies properties associated with the lives of persons significant in our past (NPS 1997:2).
- Criterion C identifies properties that embody the distinctive characteristics of a type, period, or method of construction, that represent the work of a master, that possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction (NPS 1997:2).
- Criterion D identifies properties that have yielded, or may be likely to yield, information important in prehistory and history (NPS 1997:2).
In the early 1800s, the area that would become the Fort Peck Reservation was occupied primarily by the Gros Ventre and Assiniboine. While traveling up the Missouri River, Lewis and Clark noted, “We know that the Minnatarees of the Missouri [Hidatsa] extend their excursions on the south side of the river as high as the Yellowstone and the Assiniboine visit the northern side, most probably as far as the Porcupine [Poplar] river. All the lodges between that place and the Rocky Mountains we suppose to belong to the Minnatarees of the Fort de Prairie [Gros Ventre], who live on the south fork of the Saskatchewan” (Coues 1965:337). The Blackfoot occupied the region to the west of the Gros Ventre. By the 1830s, the River Crow dominated the area to the south of the Missouri River.

The first permanent presence of whites in the region was established with the development of Fort Union in 1829. Fort Union became a major depot for the fur trade. The fur trade, which provided European trade goods in exchange for furs, quickly shifted Indian adaptation patterns from a subsistence-based to a trade-based economy. The Indians changed their hunting patterns to obtain the highly desired European trade goods, by placing a greater emphasis on gathering trade commodity furs. The fur trade also changed the perception of land ownership. The exclusive right to use a particular territory became more important to the tribes in the northern Plains (Deaver 1983:5.7-5.8). The introduction of guns also changed the dynamics of intertribal warfare, providing those with guns a military advantage over those without. As the fur trade expanded to the west, it destabilized the balance of power between Indian tribes, leading to conflict between Indians and whites along the edge of the frontier.

Because conflicts interfered with trade and American expansion, the U.S. Government attempted to resolve the issue through the establishment of treaties. Their strategy was twofold. First, the U.S. government wanted to broker a deal that would immediately reduce tensions. Second, the government wanted to guide Indians from a hunting/trading economy to an agrarian/cash economy.

In 1851, many of the Plains tribes, including the Assiniboine, gathered and negotiated the Fort Laramie Treaty. According to the treaty, the tribes agreed to honor the territorial boundaries established and to live in peace with one another. The Assiniboine territory included present-day Fort Peck Reservation. It also included the area south of the Missouri River from the mouth of the Yellowstone River to the mouth of the Musselshell River (Malone and Roeder 1976:88).
Isaac Stevens, the appointed governor of Washington Territory, headed a railroad survey expedition through several counties in northwest Montana during the summer of 1853. During this trip, Governor Stevens held two councils with members of the Blackfoot confederation (including the Gros Ventre), who had not participated in the Fort Laramie Treaty. The negotiations resulted in the Lame Bull or Stevens Treaty of 1855. It designated lands south of the Missouri River and west of the Musselshell to the Blackfoot (including the Gros Ventre). It also designated a common hunting territory that stretched across northern Montana that would be shared with both the Gros Ventre and the Assiniboine (Flannery 1975:22; Fort Belknap 1980:18; Smith 2001:121-124; Van West 1986:60).

The discovery of placer gold at Grasshopper Creek in 1862 and subsequent gold discoveries at Alder Gulch, Last Chance Gulch, and the Little Rockies instigated a rush of gold seekers to the mines in Montana. The Missouri and Yellowstone Rivers became a veritable highway of immigrants trying to reach the gold fields. Nearly all the tribes objected to these new incursions into their lands. Furthermore, American attention shifted to the economic opportunities available in the west after the Civil War. White settlements moved steadily, and the takeover of Indian lands was only a matter of time. The tribes were determined to keep whites off their lands. As a result, skirmishes became more frequent and became an increasing threat to commerce, travel, and settlement (Thompson 1968:101-102). The military was called upon to protect American interests.

The Sioux were especially resolved to stop white expansion. They became especially obdurato after the 1862 Minnesota Massacre. In 1862, the Santee, faced with a decreasing land base and starvation, rose against whites in Minnesota. After the uprising was quelled, 29 Sioux were hung and others were imprisoned or chased into the Dakotas (Carley 1976). After 1863, only 200 Sioux remained in Minnesota. Throughout 1863, the Sioux fought against the forces of General Sibley and General Sully in the Dakotas, culminating in a devastating defeat in the Killdeer Mountains (Utley 1993:57).

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1930:224). Fort Union and Fort Buford (established in 1866) were also harassed at this time.

The loss of men and money led the U.S. government to review their policy in Indian Territory. They looked for a means to obtain a level of peace with the northern Indian tribes. In the spring of 1868, the U.S. held a series of meetings with the tribes. This culminated in the Fort Laramie Treaty of 1868. Weist (1977:72) argues this is the only agreement the U.S. made that essentially met Indian demands.

By September 1868, some 1,000 Indians representing the Cuthead bands of the Yanktonai and two bands of the Sisseton arrived at Fort Buford. They agreed to peace with the U.S., but requested that their annuities be distributed from the fort (Miller 1987:103; Smith 2001:154-155). The Sioux reached an alliance with the Lower Assiniboine (Miller 1987:108-109; Smith 2001:170-171), and were able to subsist during the first year, in large part, because of the annuities that the Lower Assiniboine shared with them (Smith 2001:176).

In the summer of 1868, the Milk River Agency (near the mouth of People’s Creek) was established for the Assiniboine, Gros Ventre, River Crow, and some Sioux groups (DeMallie 1986; DeMallie and Miller 2001; Miller 1987; Smith 2001). Indian Agent Sully recommended that the Assiniboine go north to the Milk River Agency and join the Gros Ventre because of conflicts with the Sioux. Many of the Assiniboine agreed (Miller 1987:105). Because of this move, the Assiniboine began to split into two groups. The Upper Assiniboine lived along the Milk River. They were allied with the Gros Ventre and Crow against the Blackfoot and the Sioux. The Lower Assiniboine stayed along the Missouri River near the mouth of the Poplar River (Miller 1987:108-109). They were allied with the Yankton, Yanktonai, and Santee Sioux (DeMallie and Miller 2001). During the fall and winter of 1871-1872, 1,000 Hunkpapa Lakota, under the leadership of Sitting Bull and Black Moon, also arrived at the Milk River Agency wanting provisions and trade (Smith 2001:163, 170, 171).

Annuities were not sufficient to feed the increased population and starvation was common. Numerous bands of Mandan, Hidatsa, Arikara, and Sioux arriving at Fort Union in the winter of 1871 were starving (Larpenteur’s Journal 1871). Despite repeated urgings, the Sioux refused to leave and demanded status equal to the Assiniboine (Miller 1987:112-113; Smith 2001:192-3). General John Pope summed up the U.S. policy, “it seems to be the policy of the government to give the Indian just enough to eat to enable them to starve slowly, and that the army is expected to see that they starve with tranquility” (Warner 1986:104).

In 1873, the Fort Peck Reservation was created by executive order. It was a joint reservation (Blackfoot, Assiniboine, Sioux, and Gros Ven-
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tre) consisting of 20 million acres of land north of the Missouri River (Hoye 1976:35-39). The Indian Agency was established at Fort Peck, which had been built by the trading company of Durfee and Peck in 1867 (Deaver 1983). To avoid pre-emption, President Grant issued another executive order on January 31, 1874, to prevent settlement in the region (Silliman 1974:5). That same year, Fort Belknap was a built as a sub-agency designed to accommodate the Assiniboine, Gros Ventre, and River Crow, who feared the Sioux living nearby at Fort Peck (Hoxie 1995:104; Miller 1987:116-117).

Despite the establishment of reservations, tribal members often left in pursuit of game. In the winter of 1875, the U.S. ordered all Indians to return to their reservations by January of 1876. If they did not, the government would consider them hostile and would use military force to send them back to their reservations (Bradley 1991:105; Grinnell 1985:328). The Indians in southern Montana were either unable or unwilling to comply. Throughout 1875-1876, battles ensued between the Sioux and their allies and the U.S. military and their allies.

Although the major battles occurred to the south, the conflicts gradually moved north as Indian bands attempted to avoid the onslaught of military actions and obtain badly needed food and supplies. Sitting Bull moved to the Missouri River valley near Fort Peck, where he camped with friendly Yanktonai Dakota for a time (Miller 1987:125-126). In September 1876, Sitting Bull offered 100 horses to any tribe that would trade with him (Smith 2001:248-249). The Assiniboine living near Wolf Point complained repeatedly that the Sioux had stolen their horses. Apparently, Sitting Bull (Greene 1994:115; Miller 1987:128-9) used the horses stolen from the Assiniboine to establish alliances with bands living in Canada (Miller 1987:125-6). In October, several Hunkpapa bands, including Sitting Bull’s, arrived at Fort Peck requesting peace talks. However, rumors of the oncoming military caused most of the bands to leave for Canada.

In 1877, the Milk River Agency closed and more than 8,000 Indians traveled en masse to the Poplar River, where the new Fort Peck Agency was established. The Gros Ventre refused to go because of continued warfare with the Sioux. That same spring, Old Fort Peck was inundated with water. This necessitated moving the fort to its current location (Smith 2001:251-267).

The initial Fort Peck reservation boundaries established for the Blackfoot, Assiniboine, Sioux, and Gros Ventre extended north of the Marias and Missouri rivers to Canada and from the summit of the Rockies to the Dakota line (Hoye 1976:39; 51-52). In 1887, the U.S. Congress passed the Dawes Act, also known as the Allotment Act. The reported rationale was that only through ownership of individual plots of land could Indians become "civilized." Those lands not allotted would be opened to settle-
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ment. The highly destitute Assiniboine and Sioux ceded large portions of their land, in part because the government convinced them that if they refused, improvements they had made on their land could not be passed on to their children (Hollow and Parks 1980). Because of the Dawes Act, six million acres were divided into three reservations: Fort Peck, Fort Belknap, and Rocky Boy. The 17.5 million acres of "extra" or "unused" land opened up to homesteaders.

3.1 Beginning of Agriculture

From the very beginning, it was in the interest of the U.S. government to convert the nomadic plains tribes to pursuits of ranching and agriculture. While traveling through the area in 1853, Stevens was impressed by the agricultural and livestock-raising potential of the region. He instructed his assistant, James Doty, to remain in the area and further investigate the matter (Ewers 1982:214). The following year Doty reported "a treaty with these Indians and the establishment of an agency and farm in their country, will do much towards changing them from a warlike and nomadic to a peaceable and agricultural nation" (Commissioner of Indian Affairs [CIA] 1854:207). This vision of the agricultural transformation of the region became an important part of official government policy for the next several decades.

Supplies and support to help Indians establish farm operations were provided from officials stationed at the reservation agencies. Shifting of agency locations during the early reservation period adversely affected the establishment of farming operations. The Milk River Agency was first suggested in 1867 by Agent Mahlon Wilkinson, the Agent at the Fort Berthold Agency (CIA 1867). Eventually, Agent William Cullen established the Milk River Agency near the confluence of the Milk and the Missouri Rivers in 1868 (Smith 2001). The location of the Milk River Agency was highly criticized by Bureau of Indian Affairs (BIA) officials for its poor location. It was susceptible to surprise attack and the water of the Milk River was of poor quality and unreliable (LRCIA 1870; CIA 1870). Additionally, the soil was unsuitable for farming. Despite these difficulties, the first tribal agricultural attempts occurred at this location (LRCIA 1868).

The Assiniboine were amenable to agricultural pursuits. In addition to gardens near the Milk River, fields were being developed in or near present-day Fort Peck Reservation. As early as 1869, 80 lodges of an Assiniboine band camped along the Missouri River near the Poplar River, planting corn and cutting steamboat wood. They requested a clerk from Fort Union to help them sell the wood (Larpenteur's Journal, May 30 1869).

The Sioux were more resistant. In September of 1868, 1,000 Indians representing the Cuthead bands of the Yanktonai and two bands of the
Sisseton arrived at Fort Buford. They agreed to peace with the U.S., but requested that their annuities be distributed from the fort (Miller 1987:103; Smith 2001:154-155). They were familiar with farming and knew they would have to begin again, but they wanted to hunt bison for as long as they could (LRCIA 1871; Miller 1987:108-109; Smith 2001:170-171).

In 1872, Indian Agent Andrew Simmons worked to align the Upper Assiniboine and the neighboring Sioux to encourage peace and increase the potential for the Sioux to take up agriculture (Smith 2001:177-179). Simmons authorized the construction of new buildings within the Fort Peck trading post to help accommodate government supplies targeted for the Sioux groups. In December of 1874, the Milk River Agency was formally shifted to the Fort Peck Agency. Simmons was replaced by William Alderson shortly after the agency was relocated.

Alderson worked toward establishing a successful agricultural settlement for the Lower Assiniboine at Wolf Creek (Smith 2001:203). Realizing the consequences in dealing with political red tape and the necessity for agriculture to succeed, Alderson tried to skirt competitive bidding and urgently requested appropriate supplies from the Indian Commissioner Smith (CIA 1873; LRCIA 1874; Smith 2001:214-218). Alderson was authorized in 1874 to issue bids, but was unable to begin that year due to delays in paperwork.

Black Tiger of the Assiniboine started the first Indian farm on the Fort Peck Reservation in 1874 (Anonymous 1965:18; Montana Federation of Women’s Clubs 1925:21). Approximately 50 acres were turned to crops including wheat, corn, peas, potatoes, turnips, squash, and other vegetables. However, Alderson and Commissioner Smith were already discussing a reorganization of the Agency with the intent of making Wolf Creek the primary agency location and making the Fort Peck location a sub-agency.

Alderson continued to work hard to ensure the success of the Assiniboine agricultural settlement, firmly believing that agriculture would prove to be one of the most effective means by which to convert Native Americans to a Euro-American lifestyle (Smith 2001:219). The agent was so intent on keeping the lower Assiniboine engaged in agriculture that he gave them provisions meant for the Sioux (LRCIA 1976). He did this both to punish the Sioux for not farming and to reward the Assiniboine by keeping extra provisions in reserve for them should the crops fail (LRCIA 1976).

Alderson was replaced in 1876 by Thomas Mitchell. Mitchell arrived to find the agency in poor condition and the tribes suffering from hunger, despite the positive spin Alderson had given in his reports (Smith 2001). Conditions at the agency only continued to worsen. To attempt to alleviate the situation, Mitchell told the tribes to embark on their summer hunt because
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no provisions were available. Like his predecessor, Mitchell deplored the current agency location and argued to relocate to the Poplar River. That same year, the BIA Office closed the Fort Belknap Agency. Mitchell moved the remaining property from Fort Belknap to Fort Peck, as well as convincing the Upper Assiniboine there to relocate to Wolf Creek. However, the Gros Ventre refused because of hostilities with the Sioux (Smith 2001:239-240).

The Wolf Creek farm was expanded to include 200 acres of cropland. The farmland was divided into smaller plots operated by individuals, a system implemented by the Assiniboine so that each chief could provide by example, thus encouraging other tribe members to take up farming (Smith 2001:244). Despite this success, farming efforts were hampered by the lack of planting materials, incompetence, and bad weather (Smith 2001:220-230). For instance, eight acres each was planted with oats and wheat, but they had no reaper and it had to be cut as hay. Furthermore, the continuously poor provisions often left the Indians starving and too weak to break new ground (Smith 2001:275).

After a flood essentially destroyed the Fort Peck agency location in 1877, it was moved to the Poplar River location.Shortly after the flood, Wellington Bird replaced Mitchell as the Fort Peck Agent. By the end of the year, Bird was approached by leaders of the Yanktonai. They had settled near the Poplar River, and indicated that they wanted to start farming and were demanding annuities to start such an enterprise (Smith 2001). However, shortages in annuities and supplies continued to hinder Bird in his primary objective, which was to acculturate the Assiniboine and Sioux with agriculture. In 1878, though the Assiniboine had managed a 100-acre planting, the Sioux managed only a 30-acre plot (Smith 2001:274).

By 1979, the revolving position of Fort Peck Agent again changed with the appointment of Nathan Porter. Porter’s reports indicated a continued shortage of supplies for the agency, though he also reported increased amount of Assiniboine and Sioux farming activity (CIA 1879; 1880; LRCIA 1879). Cultivated acreage continued to increase over the next few years, with greater variety in produce. However, poor rainfall began to have a devastating effect on the crops as well as the general Indian population.

The winter of 1879 was severe and hunting was very poor (Smith 2001:283-284; 288). Once again, there was insufficient food to feed everyone. This condition was exacerbated in the spring of 1880 when Sioux that escaped to Canada returned by the hundreds. Most of them camped near Poplar, contemplating surrender as they hunted and asked for necessary supplies (Smith 2001:287-288). During the severe fall and winter of 1880, the Gros Ventre and Assiniboine in the region were forced to
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kill all of their horses and dogs for food (Miller 1987:129; Smith 2001:274-277; 299).

Despite these difficulties, the number of gardens increased. In 1881, Porter noted 400 acres at Poplar River and 175 acres at Wolf Point. New agricultural fields were also being developed at Alkalai Creek, Frenchman’s Point, Box Elder, Two Chimneys, Grangerville, Little Wolf Creek, and Spread Eagle. Porter also reported men were beginning to take on some of the tasks associated with farming (Smith 2001:302-303).

Samuel Snider replaced Porter as Indian Agent in 1883. Another period of starvation hit the tribes in 1883-1884 (Smith 2001:309). The fall annuities (rations) were delivered late, the buffalo were gone, and a severe drought brought total crop failure. This was followed by an extremely harsh winter that limited transportation in or out of the area. Over 300 Assiniboine died in the Wolf Point area alone (Presser 1997:3). Between 200 and 2,000 dogs were also killed that winter (Smith 2001:310-311). Despite these deaths, U.S. Inspector Barr berated the Agency for allowing the Indians to kill 100 horses for food. Additional foodstuffs did not arrive until June of 1885.

3.2 Fort Peck Irrigation Project

The first discussion of irrigation associated with the agency occurred in 1883 when U.S Inspector Howard visited the agency and met with the tribal leaders (CIA 1883). He suggested the construction of a dam and irrigation ditch on Wolf Creek. Following a year of drought and starvation, tribal leaders embraced the idea (Smith 2001:311-312).

Work on the project began in the spring of 1884, which included a dam and irrigation ditch at both Wolf Creek and Poplar River (Smith 2001:312). Snider claimed 600 Indians were working on the project. Indian laborers were paid $.50 a day with four days work paid in supplies and two days in cash. (Smith 2001:313). Due to neglect and corruption, the irrigation projects were never finished and crops commonly failed.

When Secretary of Interior J. R. Garfield examined the state of irrigation on the Fort Peck Reservation in 1907, he was unimpressed. He concluded the BIA was not capable of constructing large-scale irrigation projects. Therefore, Garfield called a meeting between Acting Commissioner Charles F. Larrabee and Chief Engineer William H. Code of the BIA and Director Frederick H. Newell of the Bureau of Reclamation (BOR) to address issues regarding treaty obligation, allotment, and financial matters relating to developing the Fort Peck Irrigation Project, as well as make a determination of project locations (Indian Service 1907). The proposed extent of the Fort Peck Irrigation Project was based on the need to provide 40 acres of irrigated land for each eligible tribal member. The agencies agreed the BIA would oversee project selection,
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Authority for construction of the Fort Peck Irrigation Project was initiated under the Act of May 30, 1908 (35 Stat. 558; Kappler 1913). This legislation provided for both the irrigation and the allotment of the Fort Peck Reservation. Congress intended for this legislation to enable the Fort Peck tribes to become self-supporting through resettlement onto irrigation project land and the cultivation of hay to support livestock herds.

To accomplish this task, irrigation engineers began surveying, assessing, and designing seven irrigation units in 1907 (Figure 1.1). Early estimates anticipated up to 152,000 acres of land as irrigable by the proposed system (Clotts 1939; Stout 1921). From 1908 to 1922, the Bureau of Reclamation Services oversaw the construction of four irrigation systems, including the Big Muddy, Poplar River, Little Porcupine, and Big Porcupine Units (Figure 3.1).

Figure 3.1 - Indian Horse Teams Constructing a Portion of the Big Porcupine Unit (USRS 1913).
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Initially, attitudes toward the Fort Peck Irrigation Project were positive. Government officials were happy because they perceived it as eventually providing the Fort Peck tribes with the means for self-sufficient subsistence. Tribal members were happy because it provided many with steady employment at a time of economic deprivation. An Indian laborer received $2.50 per day (USRS 1913:83). An Indian with a two-horse team earned $4.70 per day. With a four-horse team, an Indian earned $7.00 per day (USRS 1913:83). The labor camps were well maintained and a physician was hired to provide medical services for the workers.

Despite progress in the construction of irrigation systems, farming did not progress as projected. A number of hurdles had to be surpassed before irrigated farming could be effective. The first hurdle was to establish water rights. As whites began to settle in the areas around reservation lands, they began to set claim to the waters that were designated for reservation irrigation systems. Without water, the prospects of Indian agriculture quickly began to diminish. The issue of water rights for the Fort Peck Reservation proved to be largely dependant on legal battles and precedents established outside of Fort Peck on other Reservations. Two court cases decided in 1908, Winters v. United States (207 US 564 [1908]) and Conrad Investment Company v. United States (156 F. 123 [1907]; 161 F. 829 [1908]), were instrumental in defining Reservation water rights in Montana. Briefly, these decisions stated that the establishment of a reservation implied a reserved right to sufficient water for the irrigation of Indian lands that supercedes claims by other appropriators of such water under state laws. These decisions established what is known as the Indian reserved water rights doctrine.

The second hurdle that needed to be overcome was the establishment of split estates. The Appropriation Act along with the Act of May 30, 1908 (35 Stat. 558) for the Fort Peck Reservation, stipulates “... there shall be allotted to each [tribal] member forty acres of irrigable land and two hundred and eighty acres of additional land valuable only for grazing purposes,” with an option to select all 320 acres of an allotment as grazing land (Kappler 1913:3:286). Most allottees opted to reside on the 280-acre parcel of rangeland so they could tend their livestock. The distance between allotment sections severely limited the ability of allottees to access the irrigated land, resulting in little or no farming effort. The problem of how to successfully operate split allotments was never adequately addressed. By 1916, the BIA came under increasing pressure to allow leasing of idle irrigated reservation land to white farmers (Horseman 1975:12).

Finally, most tribal members lacked the expertise and financial capital needed for successful irrigated farming. There were few provisions to provide sufficient training and assistance to
Historic Overview

utilize the available irrigation systems to their advantage. This resulted in underutilization of irrigated land.

In 1914, Congress enacted legislation that required individuals with irrigated lands to pay for the construction and maintenance of the systems. When Indians could not pay, the government placed liens on their property until payment was made (Hurt 1987: 170-171). The tribes were quite aware that the development of the irrigation system was becoming a boondoggle. With the exception of the Big Muddy Unit, which had already been planned, the development of irrigation units quickly disappeared. Unrealized units included the Missouri River Division, Galpin Division, and the Milk River Pumping Division.

After 1924, the BIA Indian Irrigation Services took over oversight for Fort Peck Reservation irrigation projects. Only maintenance and some improvements to existing units took place until the mid-1930s (USRS 1923:2). This work was most likely initiated as part of the New Deal. These projects included the Missouri River Unit and the combined Frazer-Wolf Point Unit.

During the mid-1930s, a subsistence garden project was developed in response to drought and the effects of the Great Depression (Clotts 1939). The development of subsistence gardens on many Indian Reservations was deemed a necessity for long-term land utilization. To insure the success of these gardens, it was emphasized that the development of additional irrigation systems would be needed. The projects fell under the auspices of the Irrigation Division with funding coming from the Public Works Administration (PWA) and Civilian Conservation Corps (CCC). The Indian Irrigation Service utilized some of these funds to expand on the existing irrigation projects. Many small reservoirs and water storage units were constructed wherever water was obtainable.

On the Fort Peck Reservation, eight subsistence gardens are identified. Each irrigation unit contained at least one subsistence garden and the Poplar River Unit contained four gardens. The identified gardens included Brockton (Big Muddy), Chelsea (Big Porcupine), Fort Kipp (Little Porcupine), Garfield (Missouri River Pumping Station), Macon, South Poplar, Riverside, and Wolf Point (Poplar River) [Clotts 1939]. The extent of construction projects and number of physical features associated with the subsistence gardens on the Fort Peck Reservation is unknown.

3.2.1 Description of Fort Peck Irrigation Projects

Five irrigation projects were developed on the Fort Peck Reservation. These included the Little Porcupine, Poplar River, Big Porcupine, Big Muddy, and the Frazer-Wolf Point units. Over time, some existing or planned units/divisions
were abandoned or absorbed into new irrigation units. A description of these units is provided below.

### 3.2.1.1 Little Porcupine Unit

In October 1909, construction of the Fort Peck Irrigation Project began at the Little Porcupine Unit, which was completed in 1910. The unit consisted of 2,000 acres east of Frazer, supplied by a reservoir filled from Little Porcupine Creek by a diversion canal. The diversion dam cost $8,200 while the 3,900 acre-ft., gravity operated storage area cost $10,750 to construct (Clotts 1939). The unit, thought successful, was plagued by water shortages. A pumping plant in the Frazer-Wolf Point Unit was developed to help supplement water for this unit. In 1964 and 1965, a pump was constructed in the Frazer-Wolf Point main canal, also to supplement water from the Little Porcupine Reservoir.

The Little Porcupine Unit is considered the most successful of the four originally proposed units, and the only one still operating under much of its original form. The main elements of the current system consist of six main features (MMI 1976). The Little Porcupine Diversion Dam is located northeast of Frazer on Little Porcupine Creek. The dam is a gravel-filled crib diversion, measuring 150 ft. long and 3 ft. high. Diversion of water to the feeder canal is controlled by a four-wheel lift gate. The Little Porcupine feeder canal is 1.21 miles long with a capacity of 200 cfs. The Little Porcupine storage reservoir is located southeast of Frazer. The water is contained by a 1,800-ft. earthen dam with a height of 18 ft. The 3,549 acre-ft. of water storage is released through a concrete conduit by a wheel lift gate. The Little Porcupine relift pump is a vertical pump with a capacity of 10 cfs and a dynamic head of 20 ft. Water is taken from the Frazer-Wolf Point main canal and is discharged into the Little Porcupine pump canal. The Little Porcupine pump canal is .6 miles long with a capacity of 20 cfs. The main canal A is 2.16 miles long with a capacity of 5-50 cfs. It takes water from the Little Porcupine Reservoir as well as from the pump canal.

In 1939, the system totaled 13 miles with 130 structures (Clotts 1939). The current distribution system consists of laterals A-1 and A-5. Drain D-7 constitutes the only primary drainage system (MMI 1976). Sometime after 1976, the remaining active portions of the unit were subsumed by the Frazier-Wolf Point Unit.

### 3.2.1.2 Poplar River Unit

Construction of the Poplar River Unit started in 1910 and continued through to 1914. The unit was designed to service 28,000 acres along the Poplar River Valley. Three canals, labeled A-C, were planned. However, canal A was never constructed and a canal D was implemented. Canals B-D served over 10,500 acres (Clotts 1939). The head for canal B was located on
the west bank of the Poplar River and the head for canal C was on the east bank. Water supply from the Poplar River for this unit proved to be highly irregular and undependable. The Cusker storage basin of 50,000 acre-ft. of water was also planned; however, the cost turned out to be too high and the reservoir was never built. This led to severe underutilization of the unit as it often suffered water shortages (Clotts 1939). In 1937, the Cusker Site was reexamined for development because it would have greatly improved the reliability of the water supply for the unit. The revised estimate concluded that the construction of a reservoir there would cost $1 million, with a distribution system costing an additional $250,000 (Clotts 1939).

The diversion dam for the B canal was originally a gravel-filled crib topped with concrete, containing a concrete headgate and a concrete siphon with a capacity of 75 sec. ft. Total cost of the combined structures was $16,611. The C canal contains a reinforced concrete headgate and a concrete siphon with a capacity of 100 sec. ft., for a total cost of $11,266. A diversion dam was not built for the C canal (Clotts 1939).

No information is provided on the D canal or structures in the Clotts Report. The Poplar River unit included 89 miles of canals of varying capacity along with 294 structural elements, two being concrete siphons. No further developments were made for the unit past 1939, though the exact date the unit was abandoned is unknown.

### 3.2.1.3 Big Porcupine Unit (Wiota Unit)

The Big Porcupine Unit was started in 1913 and finished in 1918. The unit is located near the junction of the Milk and Missouri rivers and was initially designed to service 16,000 acres. A concrete diversion dam and canal headwork was located on the east fork of Big Porcupine Creek (Figure 3.2). Stored water was transported via a channel of the Big Porcupine Creek for a distance of 40 miles to a gravel-filled crib dam with a concrete crest. The 3,800 acre-ft. storage dam cost a total of $114,000 to construct. The spillway for the dam was damaged several times due to floods, in 1922 (Figure 3.3), 1925, 1927, 1928, and 1939 (Clotts 1939). As of the late 1930s, the unit consisted of 42 miles of canals and laterals with 212 structural elements, many of which were reinforced concrete. The long transportation and porous substrata often resulted in a great deal of water loss for the unit. A second reservoir identified as the Midway Dam was constructed approximately 15 miles north of Nashua (Personal Communication with Carl Fourstar 2007). The dam was destroyed in a flood sometime in the 1930-1940s and has been abandoned ever since.

A pumping plant that cost $28,000 was added on the Milk River near Wiota in 1931 to augment the water supply (Clotts 1939). The pump had a capacity of 35 sec. ft. and was operated by a diesel engine. Irrigation was discontinued on portions of the unit lying above the Wiota
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Figure 3.2 - Overview of the Finished Big Porcupine Dam and Headworks (USRS 1915:6).

Figure 3.3 - Washout Damage to the Diversion Dam on the Big Porcupine Creek, 1922 (USRS 1922:30).
Pump. The pumping plant was too small to accommodate irrigation needs and the Milk River was an unreliable water source. As a result, the pumping site was abandoned in the 1960s and a new station was built in 1965 approximately eight miles below the confluence of the Milk and Missouri Rivers. The unit was eventually renamed the Wiota Unit.

At the time of construction, the Missouri River Pumping Station had three vertical mix-flow pumps with a capacity of 40 cfs each, with a 65-ft. lift. The pumps were powered by a 350 hp motor, generating a capacity of 120 cfs. Water is discharged from the pump station through three steel conduits into a concrete outlet structure serving the pump canal. An examination of the pump in 1976 indicated the need for rehabilitation of the pump (MMI 1976). The current system consists of two main canals: the Wiota Unit Pump Canal and the Old Main Canal. The distribution system consists of several laterals: 51, 54, 56, 60, 65, 66, 74, and 76. The drainage system has four drains: D-1, D-1A, D-2, and D-3.

3.2.1.4 Big Muddy Unit

Construction on the Big Muddy Unit started in 1918 and continued until 1922. The concrete headgate and overflow weir in the creek bed and Medicine Lake were capable of containing approximately 2,000 acre-ft. of water (Clotts 1939). Cost of the construction for the headgate was $16,527. The system contains 17 miles of canals with a capacity of 50-250 sec ft. and 19 miles with a capacity less than 50 sec. ft. One hundred twenty-eight structures were identified by Clotts (1939). Two major reservoirs were initially proposed to feed this unit: the Wolf Creek and Smoke Creek reservoirs. There is no indication that either of these reservoirs was constructed.

Like the Poplar River Unit, the water supply for the Big Muddy proved to be unreliable. Though the annual water supply for the unit is adequate, the majority of runoff occurs in the spring, leaving little for later in the year. During initial use of the unit, the small amount of storage that had been constructed proved to be highly inadequate due to heavy evaporation losses. In addition, Medicine Lake had been claimed by the U.S. Biological Survey for use as a bird refuge (Clotts 1939). It is unknown when this unit was officially abandoned.

3.2.1.5 Frazer-Wolf Point Unit

Initial planning of this unit identified it as two separate units: the Missouri River Unit and the Frazer-Wolf Point Pumping Unit. The BIA began the project with the construction of a pumping station on the north bank of the Missouri River, south of the Little Porcupine Reservoir, which is also known as Frazer Lake (Personal Communication Carl Fourstar 2007). Construction of Frazer Dam was begun in 1913 and was completed in 1920 (BOR 2006). The dam had
to be rebuilt in 1936 when a flood caused significant damage (Clotts 1939). When the dam was reconstructed, the Missouri River Unit and Frazer-Wolf Point Pumping Unit projects were combined into the Frazer-Wolf Point Unit. This unit is located along a 16-mile stretch west of Wolf Point between the Missouri River and US Highway 2. Construction of the irrigation unit took place over four years, with $100,000 appropriated each year for construction.

Additional features of the unit include a main canal and laterals extending to the east. The system was designed to irrigate approximately 13,000 acres on the north side of the Missouri River between Frazer and Wolf Point. The unit was also designed to supplement approximately 1,200 acres of the Little Porcupine Unit (Clotts 1939). The electric pumps were supplied by a transmission line from the Fort Peck Dam. Over the years, several new diversions have also been placed upstream of Frazer Dam. These diversions have reduced the amount of water available for Frazer Lake (BOR 2006).

During a 1975 (MMI 1976) inventory, the Frazer-Wolf Point Pumping Plant was found to consist of three 67 cfs pumps and one 75 cfs pump, with a hydraulic lift of 27 ft. The pumps are vertical mixed-flow taking water directly from the Missouri River with a capacity of 276 cfs. Power for the pumps is supplied by the BOR. The Frazer-Wolf Point Unit Main Canal is 8.04 miles in length extending from the Missouri River pumping plant to Oswego. The canal has a capacity of 205 cfs. The distribution system is made up of 16 laterals of differing length and dimension. Identified laterals are: 2M, 22M, 23M, 25M, 28M, 29M, 31M, 33M, 34M, 36M, 38M, 42M, 42M-Alt, 42-IM, 43M, and 43M-Alt. The drainage system for the unit consists of 19 drains and utilizes Wolf Creek. Identified drains are: D-1, D-2, D-3A-1, D-3C, D-3D, D-4, D-4A, D-4B, D-5, D-5A, D-5A-1, D-6, D-7, D-7A, D-7B, D-7C, D-7E, and D-8.

Until the late 1990s, the Little Porcupine Reservoir had been “maintained in a drained state” for well over a decade (BOR 2006). The BOR performed an evaluation in 1997 and determined the dam to be in satisfactory condition; though a “Significant” downstream hazard classification was assigned due to the proximity of several homes less than a mile away. In 1998, Frazer Dam and the reservoir were taken out of service.

The BIA reevaluated the site in October of 2005 and determined that in its current state there is little potential for the dam to fail. They have assigned a “Satisfactory” safety classification primarily because the dam is not currently in use. However, should this change and the dam is flooded, then the recommendations made by the BIA concerning public safety need to be addressed. There is some discussion on reclaiming the property into prairie or tillable land; however, no decision has been made whether the reservoir will be abandoned or not (BOR 2006).
3.2.2 Uncompleted Projects

Two units or divisions were never realized. The Missouri River Diversion was planned to be 84,000 acres extending entirely across the reservation and adjacent to the Missouri River. The system was to be fed by a gravity canal heading outside the reservation toward the location old Fort Peck. For the most part, the Missouri River Unit was supplanted by the Frazer-Wolf Point Unit. However, the Missouri River Pumping Unit is identified as its own unit in some sources up until 1939 (Clotts 1939).

The Galpin Pumping Division was planned to feed 10,000 acres west of the Milk River, which was to be supplied by pumping water out of the Missouri River Canal. In addition, several proposed reservoirs were never realized. The Poplar River Reservoir site was proposed to be located north of the town of Cusker at the northern end of the Poplar River Unit. Records indicate this reservoir was never developed. The Smoke Creek Reservoir located on Smoke Creek, just to the west of the Big Muddy Unit was never implemented. The Wolf Creek Reservoir was to be located northwest of the northern portion of the Big Muddy Unit, along Wolf Creek but was never constructed.

3.2.3 Fort Peck Irrigation Project Today

The construction of the Fort Peck Dam in the late 1940s had a profound effect on irrigation on the Fort Peck Reservation. Though the reservoir is largely far to the west of the Fort Peck Irrigation Project, the dam and reservoir serve to provide a consistent level of water within the Missouri River, the primary source for water in the Fort Peck Irrigation Project today. In addition, the dam power plant supplies the power for many of the projects’ electric pumps and helped drive modernization of agricultural fields (Kipp 1988). The Rural Electrification Administration (REA) created by President Roosevelt helped to implement the electrification of rural areas, including Indian Reservations with a primary focus on electrification on ranching and irrigation enterprises.

Maps examined from 1959 (BIA 1959a, 1959b: Appendix) identify three irrigation units: Wiota, Little Porcupine, and Frazer-Wolf Point. As of 1976, the Fort Peck Irrigation Project consisted of two irrigation units, identified as the Wiota Unit and the Little Porcupine and Frazer-Wolf Point Unit (the two units combined as one) totaling 150 miles of canals and laterals, with an additional 31 miles proposed for construction (MMI 1976). In addition, 1,294 structures were inventoried with 543 more proposed for future development. The Wiota unit has largely encompassed portions of the original 1908 Big Porcupine and Missouri River units though it is smaller in scope than either of those original units. It has also absorbed the Milk River Pumping Unit. The Little Porcupine and Frazer-Wolf Point Unit
has absorbed major portions of the original Missouri River Unit. The Poplar River and Big Muddy Units have been completely abandoned.

In 1994, the Irrigation Project consisted of two irrigation units: Wiota and Frazer-Wolf Point [The Little Porcupine nomenclature now having been dropped completely] (Nelson and Davis 1995). These two units serve 18,952 acres. Only a representative sample of the laterals and features were examined during the investigation. Based on the sample, recommendations for future maintenance and rehabilitation were made.

Maintenance, replacement, and upgrade of structural components are important aspects of the history of the Fort Peck Irrigation Project and are vital to its continued operation (Figure 3.4). The Fort Peck Irrigation Project also continues to play an important role in maintaining tribal water rights. Beyond the irrigation delivery system, new technology in the application of water to the fields, particularly sprinkler systems, have modernized irrigated farming on the reservation since the 1960s. The irrigation system, however, generally remains underutilized. Nevertheless, the Fort Peck Irrigation Project remains an important part of the Fort Peck Reservation agricultural history and economy.
SECTION 4 - IRRIGATION SYSTEM COMPONENTS

Irrigation systems operate in two distinct parts: the water conveyance system and the application of water to land (i.e., farming methods). Water conveyance system refers to the irrigation system infrastructure that diverts water from a source and carries it to its destination. Application of water to land refers to the use of irrigation water once it leaves the conveyance system.

Administratively, water conveyance systems are usually the responsibility of the government agency that maintains them and the application of water to land is usually the responsibility of individual farmers. Annual fees are levied by the government on farmers using the Fort Peck irrigation system based on assessment of irrigable acres, regardless of whether the land was actively irrigated in any given year. The fees are used to operate and maintain the irrigation conveyance infrastructure. Government subsidies may also be granted for the maintenance of the irrigation system. Both the water conveyance system and the application of water to land must operate effectively for the irrigation project to be successful.

Documentation of water conveyance systems dominates the historic record. This is not surprising because the government agencies or private companies organized to create the conveyance systems often generate extensive reports tracking various aspects of design, construction, maintenance, and accounting associated with an irrigation project. In contrast, individual farmers maintained few, if any, records of their farm operation. If farmers did maintain records, then they are rarely preserved or opened to researchers. Although government agencies or private companies usually recorded a general census of acres irrigated, crop yields, and crop value within an irrigation district, these records often lack specificity regarding individual farmer applications of water to land.

The engineering methods, structural components, and construction materials used in the creation of the Fort Peck Irrigation Project were designed from standardized Bureau of Reclamation (BOR) specifications typical of irrigation projects of the period (USRS 1913). The Fort Peck irrigation units use both gravity feed and pump systems. In fact, the Fort Peck Irrigation Project, at the time of development, was the only irrigation project in Montana that utilized pumps.

General components of the Fort Peck irrigation units include diversion works, conveyance systems, crossings, and distribution systems. These components were constructed of concrete, metal, and wood. The placement of these
components within the irrigation system depended upon the engineering considerations of the terrain and field location. Irrigation structures, particularly those made of wood, needed periodic repair or replacement.

Diversion works divert water from its source into the irrigation canal (Figure 3.2). Diversion works in a gravity irrigation system consist of several structures. They include a diversion weir across the river, scouring sluices through the diversion weir, a canal headgate at the beginning of the canal, and a wasteway in the canal just below the headgate (Etcheverry 1916:III:1). Most or all of these structural components are present on each of the Fort Peck Irrigation Project canals. Available records indicate that some of the original diversion weirs were constructed of logs, but have since been replaced with concrete structures (Clotts 1939).

A diversion weir, also known as a diversion dam, is designed to raise the river water level sufficiently to divert the desired flow in the canal through the headgate. A diversion weir is generally placed at right angles to the direction of the river water flow and its height is based on a consideration of the river flow during its period of low flow (Etcheverry 1916:III:8). There are two general classes of weirs: closed and open (Etcheverry 1916:III:13). Closed weirs include rock and brush weirs, log weirs, pile weirs, crib weirs, and frame weirs. Open weirs are built across a river to produce the least obstruction to flow. A river channel is divided into several openings, or bays, separated by piers that support an operating platform. Water flow is controlled by opening or closing horizontal flashboards or lift gates. A scouring sluice consists of either an open sluiceway or an undersluice in a diversion weir that is designed to maintain a well-defined channel in front of the headgate; prevent course material, such as rock, from entering the canal; and regulate river water level during minor flow variations (Etcheverry 1916:III:84).

The headgate controls the water supply admitted at the head of a canal system (Etcheverry 1916:III:119). A headgate is located at the point where the water supply is diverted from the river. Some headgates do not require a diversion weir, depending upon the character of the river flow. Primary components in a headgate include gates and gate lifting devices. Historic photographs indicate that cast iron or steel gates with threaded gate stem and operating wheel gate-lifting mechanisms were used on headgates in the Fort Peck Irrigation Project. Concrete was used in the construction of all of the headgates on the Fort Peck Irrigation Project.

A wasteway protects a canal system from excess water flow. Although there are two main types of wasteway structures (spillways and escapes),
these can be combined into one structure. Available blueprints indicate that both types of structures were used on the Fort Peck Irrigation Project and were constructed from poured concrete with cement pipes and steel threaded gate stem and operating wheel gate-lifting mechanisms (USRS 1913).

The water distribution system consists of irrigation channels that convey water from its source to its destination and various structures that facilitate the control of water flow through the system. Water distribution systems such as those found in the Fort Peck Irrigation Project generally consist of ditches, such as canals and laterals, and structures, such as pumps, lifts, chutes, drops, flumes, checks, and turnouts. Materials used for constructing structures in the Fort Peck Irrigation Project include sheet metal, concrete, wood, and cast iron.

Canals are the primary irrigation channels used to divert water from its source. Laterals are subsidiary irrigation channels used to deliver water to fields within the system. Canals and laterals are often collectively referred to as ditches. Irrigation ditches can be either lined or unlined, depending upon seepage loss conditions. Most of the Fort Peck irrigation system consists of unlined ditches. There are, however, some ditch segments that are lined with concrete. Riprap, often consisting of concrete or metal, was also placed at various locations throughout the system to help control erosion.

Pumps and lifts are used to transfer water when gravity techniques will not suffice. A lift irrigation scheme is set up to lift water from rivers, canals, and surface water bodies. Generally, the system requires construction of an intake in the water source (Figure 4.1), which in turn supplies water through an intake pipe into a jack well/sump constructed on the bank. A pump installed on the well/sump to lift water and convey through a rising main into a delivery chamber (Figure 4.2). From this delivery chamber, water

Figure 4.1 - Milk River Pumping Plant, Suction Pipe, Big Porcupine Unit (IIS 1931:186).
Irrigation System Components

is conveyed through the distribution system to all parts of the irrigation unit. Pump operation is generally through a fuel operated (earlier) or electric motor. Most pumps in the Fort Peck Irrigation Project were replaced with electric motors after the construction of the Fort Peck Dam and Powerhouse, which made electricity readily available and more cost effective.

Drops and chutes are structures designed to discharge water from a higher to lower level within an irrigation system (Etcheverry 1916:III:222). Drops discharge water vertically and chutes discharge water on an incline. Drops are often composed of a breast wall across a canal, inlet wings and floor on the upstream side, two walls on the downstream side, a floor at the base to receive falling water and outlet wings (Figure 4.3). Chutes consist of concrete, wood, or steel lining in the canal to help resist erosion due to high velocity, or of a pipe connecting the upper and lower levels of the incline. Documents indicate that most drops and chutes in the Fort Peck Irrigation Project are made of concrete. Many drops and chutes have been replaced at least once.

Flumes and siphons are structures designed to transport water over or under terrain obstacles such as intersecting stream valleys (Etcheverry 1915:II:198-199, 213, 340-347; 1916:III:356-358). Documents indicate that rectangular timber flumes and steel half-pipe flumes were placed during early construction (Figure 4.4). Concrete walls at the flume intake and exit were placed to prevent erosion.

Checks are structures placed across a canal to control water depth and flow in a canal (Etcheverry 1916:III:303). It is generally used to raise the water level within the system in order to divert water to a lateral on the upstream side.
or stop the flow of water down a canal and into a wasteway. Checks on the Fort Peck Irrigation Project were made of wood or concrete with wood or metal control gates.

Turnouts are structures that control water flow from main canals into laterals and/or fields. The turnouts associated with the Fort Peck Irrigation Project are made predominantly of wood, with some made of concrete. They have wood or metal control gates. No measuring devices are attached to the turnouts because there is no irrigation water quota.

Crossings are structures that allow access across irrigation ditches. Two types of crossings are identified for the Fort Peck Irrigation Project. The first type are culverts (Figure 4.5). The second type are primarily wood stringer bridges with wood decks (Figure 4.6). These bridges generally consist of only rudimentary structures with no distinctive architectural style.
Figure 4.5 - Concrete and Steel Culvert (USRS 1916:54).

Figure 4.6 - Wood Deck Crossing Bridge (USRS 1923:21).
SECTION 5 - CONCLUSION

Based on an analysis of information available for this Class I overview of the Fort Peck Irrigation Project, it is recommended that the entire irrigation system is eligible for listing in the National Register of Historic Places (NRHP) under Criterion A. Some individual structures and components within the irrigation system are recommended eligible for listing in the NRHP under Criterion C. Neither the system nor individual elements are recommended eligible under Criterion B or D.

Eligibility Under Criterion A

The Fort Peck irrigation system is an important part of Fort Peck Reservation history. The political, economic, and social history surrounding creation of the irrigation system express how agriculture was seen by government agents as a means of making the Fort Peck tribes economically self-sufficient, and how that vision was perceived by the tribes and how that vision changed through time among both Indians and whites. In this respect, all of the Fort Peck Irrigation Project units are recommended eligible for listing in the NRHP under Criterion A.

Eligibility Under Criterion C

Most of the structures within the system, such as metal pipes, concrete drops, and wood bridges do not exhibit a distinctive architectural style or method of construction. Collectively, they are recommended not individually significant architectural features under NRHP Criterion C. Most structures were based on standardized plans, made of common materials, and used common construction techniques. These individual structures contribute collectively to the historic operational integrity and engineering design of the irrigation system.

Two distinctive architectural elements are recommended NRHP eligible under Criterion C: wood flumes or siphons and cast iron fittings, including gates and control mechanisms. Evidence suggests that early box flumes and siphons were replaced with creosote-treated wood stave structures in the 1930s. However, some abandoned units may retain earlier elements. Although it appears that the wood flumes and siphons have been replaced with concrete structures, any flume or siphon exhibiting the creosote-treated wood stave method of construction may be individually eligible for listing in the NRHP under Criterion C. Cast iron components found in the Fort Peck Irrigation Project primarily consist of gates and gate lift mechanisms. Although cast iron components are still manufactured for use in irrigation systems, these components represent a historic method of construction that may be individually NRHP...
eligible under Criterion C. Significant cast iron components are those cast at regional foundries, such as the now defunct Sheridan Foundry.

Cast iron components and creosote-treated wood stave flumes or siphons are the only known architectural elements within the Fort Peck Irrigation Project recommended eligible for listing in the NRHP under Criterion C. These components should be looked for when conducting field inventory. The condition of cast iron components, along with their date and place of manufacture, should be examined to identify historically significant features. The wood flumes and siphons should be examined to identify the creosote-treated wood stave method of construction. Available documents indicate all of the creosote-treated wood stave flumes or siphons in the Fort Peck Irrigation Project have been replaced. However, the documents are not conclusive and may not relate to early elements that were abandoned. Field crews should be aware of their possible presence in the unlikely event that any creosote-treated wood stave flumes or siphons still exist. There could also be significant structures or components that were not identified in this report. Field crews should therefore look for any unusual components or methods of construction while conducting work on the irrigation system. All regionally manufactured cast iron components, creosote-treated wood stave structures, or any structure exhibiting unusual design or method of construction should be noted for further NRHP eligibility evaluation.

The components within the Fort Peck Irrigation Project are made of wood, concrete, or metal and many of the smaller structures appear to have an operational life expectancy of approximately 20-40 years. As structures sustained damage due to frost cracking, erosion, alkali damage, rot, or similar operation-related wear, it was standard practice to replace them in order to maintain operation of the irrigation units. Worn out structures were replaced with the same type of structure in the same location. However, the replacement structure may have been made of a more durable material, such as concrete in place of wood. This type of structural replacement is a historic part of the Fort Peck Irrigation Project maintenance and is not considered an adverse effect to the historic integrity of the system.

It is recommended that structure replacement should not be considered an adverse effect to the historic eligibility and integrity of the Fort Peck Irrigation Project units provided that the worn out structure is replaced with a like structure in the same location, with two known exceptions – regionally manufactured cast iron fittings and creosote-treated wood stave structures. Historic cast iron fittings and creosote-treated wood stave flumes or siphons are generally recommended individually significant under Criterion C (design/construction) and should be evaluated on a case-by-case basis. Unusual features not addressed in this report should also be evaluated on a case-by-case basis.
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APPENDIX:
Fort Peck Irrigation Project Maps