# HISTORIC CONTEXT:

## The Development of Irrigation in the Bend Area c. 1890 to 1940

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## INTRODUCTION

This historic context was created to assist in the eligibility determination of several irrigation canals and a dam complex in the Bend Parkway project area.

The State Historic Preservation Office does not currently have a historic context appropriate for methodological and evaluative analysis of the resource. Potential new and useful historic contexts would discuss historic irrigation systems, dams, water resources, linear resources, Central Oregon, Deschutes County and Bend.

Limited evaluation assistance is provided by the draft revised historic context on Oregon's Agricultural Development (Speulda 1990). Excerpts from that context are shown in Appendix A.

## ASSOCIATED RESOURCE FEATURES

The following list is not intended to be exhaustive, but does provide those features usually associated with irrigation:

Canals
Diversion and storage dams
Pipes
Siphons
Pumps (above or below ground)
Laterals and sub-lateral canals or ditches
Flumes
Measuring clocks or water meters
Tunnels
Headgates
Culverts for side drainage
Turnouts for laterals
Release gates
Debris fences or mechanical cleaners
Roads or paths for ditchriders
Associated overcrossing roads and bridges
Canal bridges or aqueducts
Ditchrider cabins
Irrigation district offices and other buildings

## NATIONAL REGISTER AND STATEWIDE INVENTORY REPRESENTATION

Irrigation features are not well represented in the National Register of Historic Places listings for Oregon. Several dams, constructed primarily for water storage and dispersion for agricultural irrigation, have been determined eligible for the National Register, including McKay (Umatilla County), Owyhee (Malheur County), Agency Valley (Malheur County), and Wickiup (Deschutes County). These dams were completed in 1927, 1932, 1936, and 1949, respectively. The Bonneville Dam, completed in 1937, is now a National Historic Landmark, but was built primarily for power generation and has few if any irrigation functions. Donald Jackson, in his Great American Bridges and Dams (1988), chose to include in his Oregon selection Bonneville Dam, Owhyee Dam, and the Three-Mile Falls Dam across the Umatilla River in Umatilla County, built for irrigation in 1914.

An exhaustive search for irrigation features in the National Register was not done for this research, but none are recalled. (On May 22, 1991, the China Ditch, 1890-1894, on the upper reaches of North Myrtle Creek in Douglas County, was placed on the National Register. This ditch, however, is associated with mining, not irrigation.) Undoubtedly, several systems, particularly those on federal U.S. Forest Service and U.S. Bureau of Land Management properties, have been determined eligible either individually or in conjunction with agricultural, industrial, lumbering, milling, and mining resources. The Wallowa-Whitman National Forest, for example, has one of the few programmatic memorandum of agreements on water transportation canals and ditches.

In December 1990, Le Gilsen in the State Historic Preservation Office ran a computer search of the 19,800 properties in the Statewide Inventory of Historic Properties to reveal those under the function "canal or ditch." That search only revealed ten canals or ditches, seven of which are associated with irrigation. Those are listed below in chronological order by date of construction:

Irrigation Ditch near Bellfountain, diversion of Reese Creek, Benton County, SHPO No. 795, constructed in 1869.

Santiam-Albany Canal, Lebanon to Albany, 12 miles, diversion of the South Santiam River, Linn County, SHPO No. 61, 1860-1872, originally built for transportation and later used for power generation.

North Powder Ditch, North Powder, diversion of the North Powder River, Union County, SHPO No. 1, c. 1870-1872, millrace.

Ankeny Canal, Klamath Falls, diversion of the Link River, Klamath County, SHPO No. 72, 1878, irrigation.

Nevada Ditch Landmark (Site), Vale, Malheur County, SHPO No. 17, 1881, irrigation.

Oregon Roller Mills Ditch, Union, diversion of Catherine Creek, Union County, SHPO No. 24, 1891, millrace.

Central Oregon Irrigation Canal, Bend, diversion of the Deschutes River, Deschutes County, SHPO No. 98, 1904 (research in this report indicates c. 1907).

"A" Canal, Klamath Falls, diversion of the Link River, Klamath County, SHPO No. 71, 1905-1907, irrigation.

Crater Creek Ditch, Deschutes National Forest, diversion of Crater Creek into Tumalo Creek, Deschutes County, SHPO No. 189, 1911, irrigation.

Tumalo Canal Siphon, Bend area, diversion of Tumalo Creek, part of the Three Sisters Irrigation Company, later the Columbia Southern Irrigation Company and Tumalo Project, Deschutes County, SHPO No. unknown, 1919.

A search was not made of irrigation dams in Oregon in the Statewide Inventory. The North Canal (Steidl and Tweet) Dam, discussed in the cultural resources report and the topic of the determination of eligibility in Appendix F, is included in the Statewide Inventory.

## EARLY IRRIGATION IN OREGON

According to Corning's Dictionary of Oregon History (2nd Edition 1989), small scale irrigation for agriculture started in Oregon in 1852 when Jacob Wayner and a man named Thornton constructed what was probably the first irrigation ditch in Oregon, on the Rogue River near Talent of today. In 1857-1858, two brothers named Courtney dug irrigation ditches across the Umatilla Meadows, near future Hermiston. Sometime in the 1850s, a narrow 15-mile diversion ditch carried the waters of Mill Creek, near The Dalles, to adjacent acres of Wasco County. Early Baker residents recall that ditches dug for placer mining in the area, such as the Eldorado Ditch, were continued in use as irrigation ditches, after the gold was gone and land settlement began (Corning 1989).

As early as 1877, private enterprise had been encouraged by Congress, through the Desert Land Act, which provided for the sale of lands in units of 640 acres at $1.25 an acre, to anyone who would irrigate it within three years. A further encouragement was the Carey Act of 1894, which gave Oregon a million acres of desert land, with grants to individuals of 160 acres.

The Carey Act represented a transition from total reliance on private irrigation development in the 19th century to 20th century practice in which the federal government took almost total responsibility for some irrigation developments. Under the Carey Act, the western states were encouraged to organize large-scale irrigation projects by finding private entrepreneurs to build the necessary dams and canals and selling land to settlers who would in turn buy water from the private developers. Although private investors found western irrigation attractive, capital could not be attracted in large enough blocks to undertake most projects (Quivik and Hess 1989).

One of the state's earliest cooperative projects was begun at Hood River following the turn of the century. It served fruit growers. Then in 1902, by authority of the Federal Reclamation Act of that year, the Umatilla project was established; it was built in 1904-1908, and included an area of 17,000 acres lying along the south bank of the Columbia and east of the Umatilla River. Water for irrigation of 10,000 irrigable acres was diverted from the Umatilla near Echo, and stored in the Cold Springs Reservoir, 24 1/2 miles distant, to the north.

By that act also the Klamath irrigation project was authorized with work starting in 1903. It covered portions of the Klamath Basin. In 1904 the Deschutes Irrigation and Power Company through the Pilot butte Canal brought water to fertile acres in the new Central Oregon Bend development. Similar developments were the Hermiston project (1921), the Owyhee project (1926), Burnt River Valley (1938), Stanfield (1933-1935), Vale (1926), and a larger Owyhee project and dam (1938) (Corning 1989).

While as early as 1914, a total of 1,000,000 acres were listed as within irrigation projects, a 1930 survey showed 898,713 acres actually irrigated in cooperative, individual and partnerships, and Federal and local irrigation districts.

Until March 1907, all projects operated under the Reclamation Service of the Geological Service, U.S. Department of the Interior. After that date, until 1923, the Reclamation Service, a separated agency, oversaw projects. Not until the early 1930s was the U.S. Bureau of Reclamation created as a separate department.

## IRRIGATION DEVELOPMENT IN THE BEND AREA

Early settlers were not attracted to the Deschutes Basin, choosing instead more promising land with more rainfall west of the Cascade Mountains. The earliest agricultural use of the Deschutes Basin was for cattle grazing. The basin's open range was grazed by local stockmen, who began settling in the area around 1870, and by established ranchers from the Willamette Valley, who used the Deschutes for summer range. Some of those early settlers also began small-scale irrigation. In the 1880s, transcontinental railroads brought sheepmen and a few farmers who competed with cattlemen for use of the land. Stands of timber along the east front of the Cascades attracted loggers and a few saw mill developers. Yet, by the turn of the 20th century, the Deschutes Basin was still largely undeveloped for uses other than grazing stock (Quivik and Hess 1989).

The early development of Bend and settlement in communities around Bend are largely due to irrigation. The formation of irrigation districts, daming the Deschutes River, and building of canals and laterals were events which shaped and continue to shape Central Oregon (Figure 1).

The Deschutes River Basin is about 75 miles long and 30 miles wide. The Deschutes River and its tributaries drain about 9,000 square miles. Mean annual precipitation for Bend is about 12 inches and falls primarily as snow in the winter months. The growing season is short also. Irrigation is essential for successful farming in this arid, high desert area.

The General Land Office divided the Deschutes River Basin into two units. These units are important in understanding the names of some of the later canal systems. The North Unit, downstream of the Crooked River Canyon in what is now Jefferson County, was developed last. The first developed was the South Unit, upstream of the canyon in what is now Deschutes County. (Both Deschutes and Jefferson counties were carved out of Crook County in the mid 1910s.)

Long before Deschutes water flowed through canals to bring life to thousands of inert acres in Central Oregon, irrigation was practiced in the present Bend area, but on a very small scale. Diverted through ditches that did not reach far from the river edge, this water was used to irrigate gardens for the few ranches that bordered the river, and to cultivate small tracts of alfalfa.

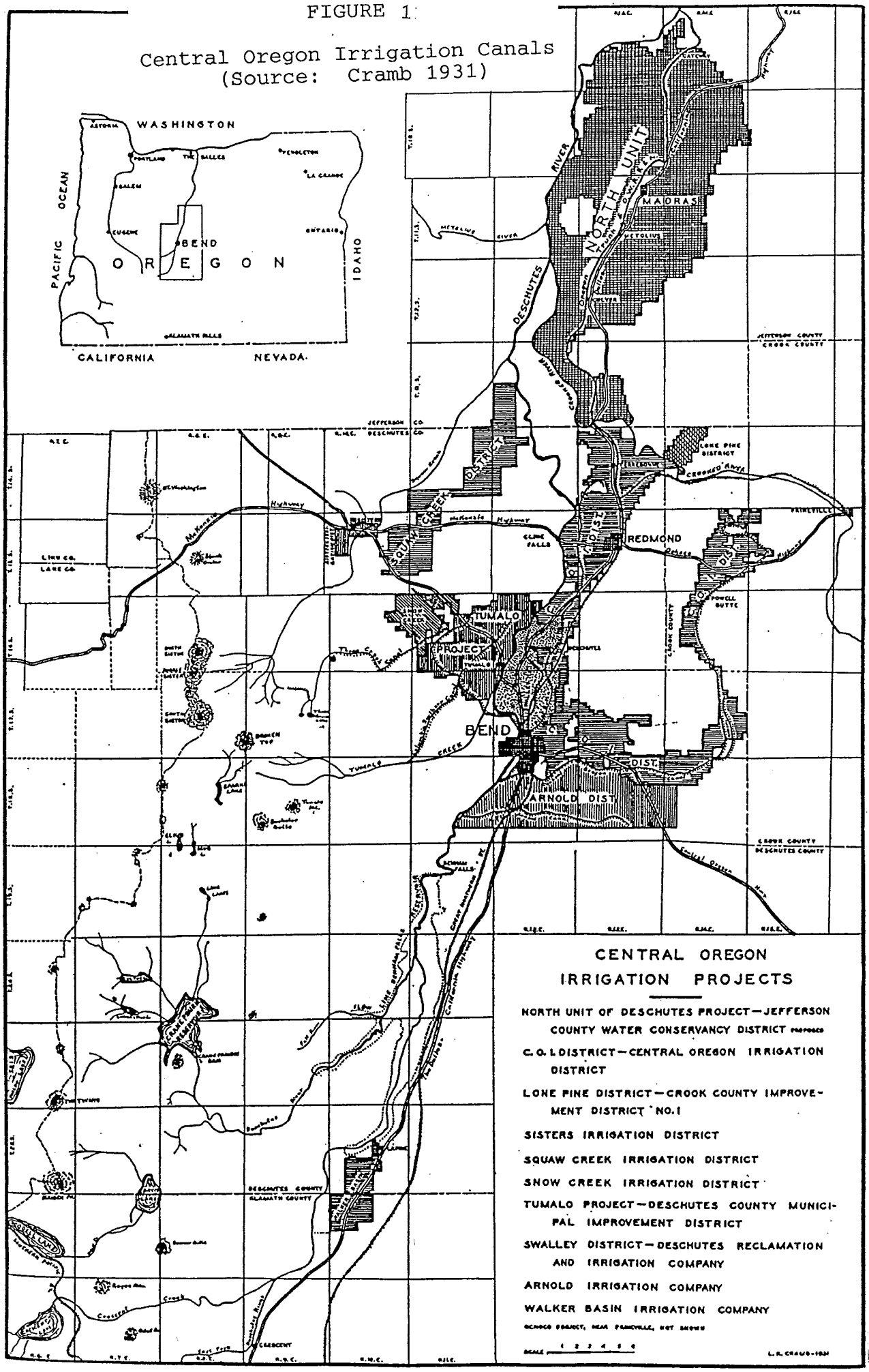
Probably the first diversion of Deschutes water for irrigation purposes in the Bend area was that on the "Dutch John" Felderwerst homestead, on the east bank of the Deschutes and just upstream from the site where Bend was later built and where the Brooks-Scanlon lumber mill took shape.

Felderwerst is believed to have been the first farmer to grow alfalfa in the immediate vicinity of the present Bend site. On his place about a mile upriver, he cleared a bit of bottomland, built the canal that for years was known as the "Dutch John" ditch, and for several seasons grew alfalfa.

Irrigation was also practiced on a small scale on the W.H. Staats place. At that point, water was taken from the Deschutes through use of a bucket mill which dumped the water into small ditches for use on a garden carefully cultivated by Mrs. Staats. That green garden, not far from the Deschutes channel, for years supplied fresh vegetables for stockman on their way to and from mountain ranges, in the late spring and early fall. At one time the Staats bucket irrigation system supplied water to 10 or 12 acres, old-time residents of Bend recalled. Just upstream, and also on the eastside of the

FIGURE 1

Central Oregon Irrigation Canals
(Source: Cramb 1931)



river, John Sisemore also had a small ditch on his Farewell Bend ranch (Bend Bulletin 1953).

After A.M. Drake erected his summer lodge in 1900 on the eastern bank of the Deschutes downstream from the Staats and Sisemore places, he constructed three pumping plants. One of these was at Staats, one was just below the present Tumalo Avenue bridge, and one a little farther downstream. It was the third plant that supplied water to the Drake lodge. Incidentally, the Drake lodge was equipped with a bath, something new in Central Oregon for the time.

Water from the Deschutes also provided irrigation for "Garden Row," the residential section where Bend's "high society" of early days lived. The early-day homes, with their fine gardens and an occasional lawn, were between the Tumalo Avenue and Drake Park bridges of the present, on the eastside of the river (Bend Bulletin 1953).

The development of early large scale irrigation on the Deschutes River and its tributaries in the Bend area is somewhat confusing in the historic literature, based in part on the frequent mergers and name changes of the irrigation companies. The literature also fails frequently to distinguish between the acreage intended for development and actually developed. There is also limited information about some irrigation projects. The chronology in Table 1 is provided to give contextual information about the canals discussed in the Bend Parkway cultural report and the determinations of eligibility on several of them. The canals are shown in order by the date of filing for water rights. All known names are shown in order from original to present. The present name is capitalized for current identification. It is hoped that future research and investigation into Bend's irrigation history will be made to clarify, correct and make additions to this chronology.

The earliest filing on record on the Deschutes River was that of the Cline Falls Power Company in January 1892, but that filing was intended to provide hydroelectric energy rather than irrigation water.

In 1893, organized irrigation of the South Unit began with the incorporation of the Three Sisters Irrigation Ditch Company, which designed a canal system to distribute and sell water from Tumalo creek to farmers just north of Bend. In 1895, construction began on the Squaw Creek Irrigation Company's canal and, around 1900, other local, private irrigation companies began surveying the area for possible irrigation projects. Charles C. Hutchinson formed the Oregon Development Company in 1898 and filed on Deschutes water that spring. The Deschutes Reclamation and Irrigation company (commonly called the Swalley), formed by Jim Benham, George W. Swalley, and others, was also incorporated in 1898. In 1902, the Pilot Butte Development Company entered into a contract with the State of Oregon for the reclamation of lands under the terms of the Carey Act. The Arnold Irrigation company incorporated in 1904, and the North Irrigation Company incorporated in 1908 (Figure 2).

Very little of the Deschutes River water was diverted until Alexander M. Drake arrived in Bend in 1900. Drake bought some land, built a lodge and started the task of creating a town. (Bend was platted in 1904 and officially incorporated in January 1905.) Drake's Pilot Butte Development Company and Hutchinson's Oregon Irrigation Company competed for several years, but finally sold to the Deschutes Irrigation and Power Company in 1904 (Clark 1985).

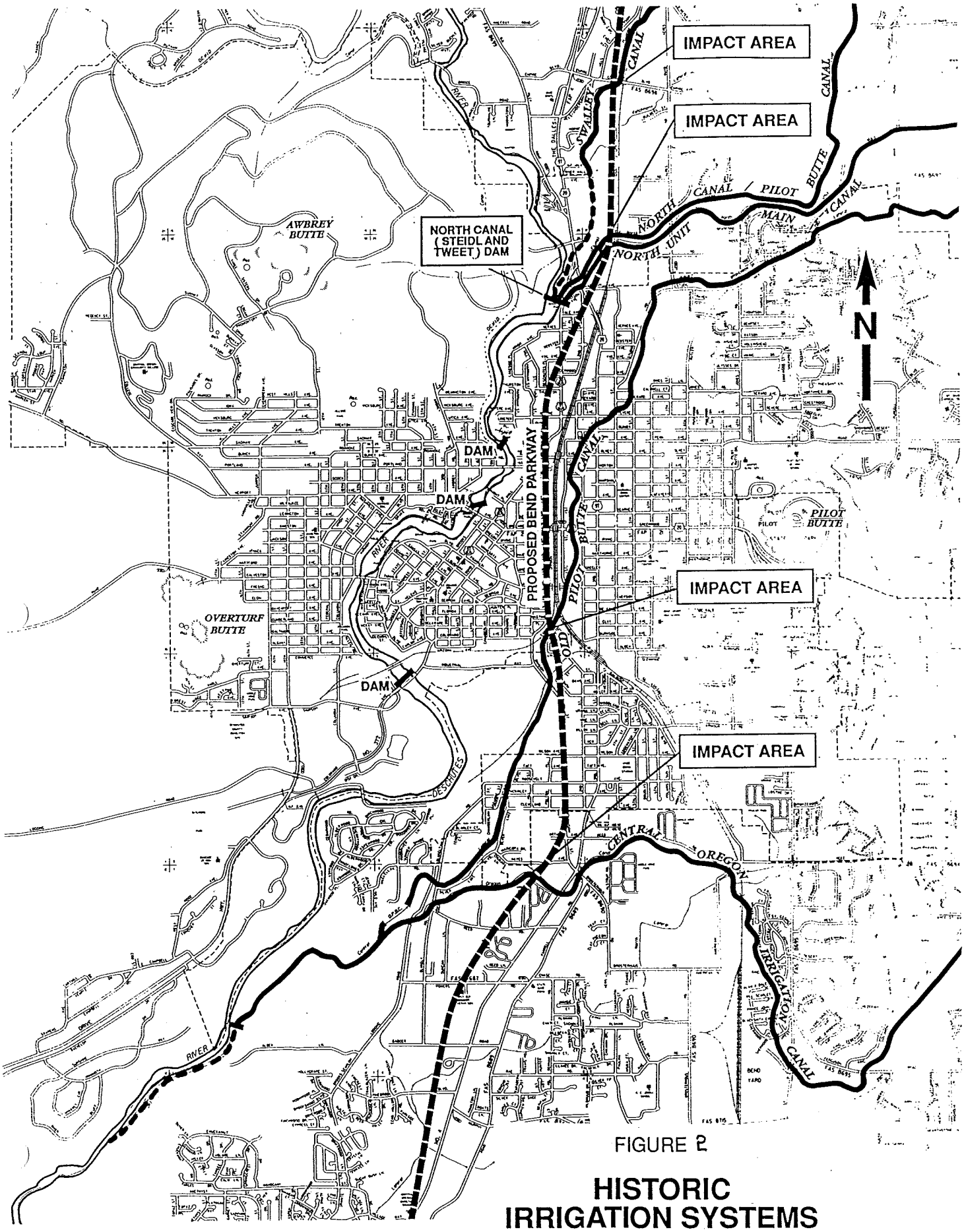



FIGURE 2

# HISTORIC IRRIGATION SYSTEMS OF BEND

TABLE 1
Chronology of Early Deschutes River Irrigation in the Bend Area

| | Name(s) | Date of Original Filing | Date of Initial Canal Const. | Diversion Point(s) | Area Served | Irrigated Acres (in 1920) |
|---|---|---|---|---|---|---|
| A. | Cline Falls Power Company (Inc., 1901); CENTRAL OREGON IRRIGATION DISTRICT (1930) | 1892* | Unknown | Cline Falls | Cline Falls | 300 |
| B. | DESCHUTES RECLAMATION AND IRRIGATION CO. (1898), "SWALLEY DITCH OR CANAL" (See DOE on Swalley Canal) | 1892/ 1899 | c. 1899 | North Canal Dam | North Bend; Redmond area | 3,000 |
| C. | Oregon Development Co. (1898); Oregon Irrigation Co. (1901); Pilot Butte Development Co. (1900); Deschutes Irrigation and Power Co. (1904); Central Oregon Irrigation District Co. (1910); CENTRAL OREGON IRRIGATION DISTRICT (1921) (See DOES on Old Pilot Butte Canal, North Canal Dam Complex and COI Canal) | 1898 | 1904 | South of Bend on Deschutes River/North Canal Dam/Crane Prairie in 1920 | Bend Central, North Bend, Redmond area | 35,600 |
| D. | Walker Basin Irrigation Co.; TUMALO IRRIGATION DISTRICT | 1901 | 1910 | Morson Intake | South of Bend | 200 |
| E. | Three Sisters Irrigation Ditch Co. (1893); Three Sisters Irrigation Co. (1900); Columbia Southern Irrigation Co. (1905); State "Tumalo Project" (1913); Tumalo Irrigation District (1919); Deschutes County Municipal Improvement District (1922); TUMALO IRRIGATION DISTRICT (1959) | 1902** | 1905 | Tumalo Creek Proposed Dams | West of Bend | 0 |

* Considered the earliest adjudicated water rights on the Deschutes River (Vaughan 1981). Another source lists spring 1900 (Federal Power Commission 1922).

** This filing may have been as early as 1893.

| | | | | | |
|---|---|---|---|---|---|
| F. Arnold Irrigation Co. (1904); ARNOLD IRRIGATION DISTRICT (1936) | 1905 | 1905 | Lava Island; Crane Prairie Dam in 1940 | South of Bend | 3,500 |
| G. North Unit Irrigation District (1916); Present Federal NORTH UNIT MAIN CANAL, initiated by government in 1937 with construction beginning in 1938. (See DOE on North Canal Complex) | 1913 | 1940 | Crane Prairie Reservoir; later Wickiup Reservoir via North Canal Dam | Madres and Culver area | 0 |

**NOTE:** This chronology excludes several small irrigation companies, short-lived companies, and those about which little is known. A Three Sisters Irrigation Ditch Company formed in 1893, as well as the Squaw Creek Irrigation Company in 1895. The North Irrigation Company and Pine Forest Irrigation Company were incorporated in 1905 and later merged with the Arnold Irrigation Company. The Odin Falls Land Company secured water rights for irrigation pumping in 1912. Other names about which little is known include Snow Creek Irrigation Company, Sisters District, Cloverdale Irrigation Company (1905), Lone Pine and Three Creeks companies.

**SOURCES:** Cramb 1931; Deschutes County Historical Society 1985; Federal Power Commission 1922; Vaughan 1981.

In July 1904, the Deschutes Irrigation and Power Company project began construction on a large scale, building flumes and canals north and east (Figure 2). From the diversion point on the Deschutes, two main canals were constructed. One, called the Central Oregon Canal (or later the Central Oregon Irrigation Canal), ran northeast toward the west side of Powell Butte. The other, the Pilot Butte Canal, pointed north toward Redmond.

Up to this point, the various irrigation companies had been consolidating. Drake and Hutchinson's companies became in 1904 the Deschutes Irrigation and Power Company, later in 1910, the Central Oregon Irrigation Company. The Arnold Irrigation Company eventually absorbed the North Irrigation Company and others. By the 1930s, the various companies in the Deschutes Basin had also reorganized as irrigation districts.

All rights to the use of water on the Deschutes River or any other stream in the State of Oregon which have been initiated since February 24, 1909, are on record in the office of the State Engineer at Salem. Up to December 1, 1912, a total of 183 permits have been approved by the State Engineer, authorizing the diversion and use of water from the Deschutes River and its tributaries. Of these permits, 24 were for domestic supplies, 126 for irrigation, 16 for power projects, and 17 for the purpose of storing water (Henshaw et al 1914).

Tables 2 and 3 indicate the early irrigation situation in the Bend area. The North Canal (Steidl and Tweet) Dam had been constructed, c. 1912, north of Bend, storing and diverting water for the Swalley Canal and the North/Pilot Butte Canal. In 1920, the largest amount of irrigated acres was from the Central Oregon Irrigation Company (which included the Pilot Butte Canals), about 35,600 acres. The Swalley Ditch and the Arnold Irrigation Company, each had about 3,000 acres under irrigation.

The initial flurry of irrigation activity in the Bend area occurred from about 1904 to the mid 1910s. The next major irrigation project, the North Unit Main or Deschutes Project, would not be dedicated until 1946, although work progressed for many years prior. This major canal, 65 miles long, irrigates Jefferson County, but originates in Bend.

Today, the Deschutes Water finds its way into six irrigation systems: the Swalley, the Central Oregon Irrigation District, the North Unit, the Lone Pine, the Arnold and the Tumalo.

The canals are a vital source of water for large acreages and thousands of customers. According to information provided by the State Water Resources Department on the Deschutes Drainage Basin (1978), Deschutes County has 58,540 irrigated agricultural acres (out of a total 1,785,302 acres). The primary use of the water is irrigation, and water supplies for livestock. There is some use of the water for domestic purposes, even though this is discouraged by the irrigation districts. The operating season for the canals is usually April 1 through the end of October, with the final shut-off date depending on local conditions. Several of the canals also operate for limited periods during the winter to allow stockmen to refill watering ponds and tanks.

## DETAILS OF CANAL CONSTRUCTION

The digging of canals in Central Oregon was not an easy task. It was labor intensive and difficult. The location was established by survey and engineering of the canals was relatively simple in the early days.

**TABLE 2**

Irrigation Diversion from the Deschutes River
(1914-1915)

| Canal System | Acre Feet of Water Diverted | Percent of all Water Diverted for Irrigation |
|---|---|---|
| Central Oregon Irrigation Canal | 110,000 | 37% |
| North/Pilot Butte Canal | 107,000 | 37% |
| Arnold Canal | 31,400 | 11% |
| Swalley Canal | 30,300 | 10% |
| Pilot Butte (original canal) | 15,900 | 5% |
| TOTAL | 296,600* | 100% |

**NOTE:** According to this source (Federal Power Commission 1922), the flow of the Deschutes River at Benham Falls, south of Bend, was measured at 914,800 acre feet. Less than a third of the river was used for irrigation at this time.

FIGURE 3

Early Water Rights on the Deschutes River in the Bend Area
(1922)

| No. | Appropriator or present owner. | Date. | Filing. | Purpose. | Maximum use to date. | Acreage. | | Power installed. | Point of diversion |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Irrigated 1920. | Water rights sold. | | |
| | | | | | *Second-feet.* | | | | |
| 1 | Swalley Ditch | Sept. 1, 1899 | 125 second-feet | Irrigation | 97 | 3,000 | 5,000 | | North Canal Dam. |
| 2 | Cline Falls Power Co. | Spring, 1900 | 420 | Power and irrigation | 210 | 300 | 700 | 150 kilowatts, 250 horsepower. | Cline Falls; pumping. |
| 3 | Central Oregon Irrigation Co. | Oct. 31, 1900 | 1,250 | Irrigation | 823 | 35,600 | 48,600 | | Central Oregon Holding and North Canal Dam. |
| 4 | Walker Basin Irrigation Co. | Oct. 31, 1901 | 680 (1911) | do | 50 | 200 | | | Morson Intake. |
| 5 | Arnold Irrigation Co. | Jan. 26, 1905 | 25 | do | 134 | 3,500 | 8,500 | | Lava Island. |
| 6 | do | Apr. 24, 1905 | 125 | do | | | | | |
| 7 | Bend Water, Light & Power Co. | Spring, 1906 | 4.5 | Domestic | 2 | | | | Central Oregon Holding. |
| 8 | Pringle Falls Electric Power & Water Co. | Nov. 14, 1903 | 1,200 | Power | 0 | | | 0 | Pringle Falls. |
| 9 | Bend Water, Light & Power Co. | Nov. 28, 1908 | 2,000 | do | 1,484 | | | 1,080 kilowatts | Bend Power Dam. |
| 10 | Steidl & Tweet | Dec. 3, 1908 | 107 | | | | | 150 kilowatts and ice plant. | North Canal Dam. |
| 11 | Odin Falls Land Co. | Feb. 8, 1909 | 400 | Irrigation pumping | 170 | 0 | 1,000 | Irrigation pumping | Odin Falls. |
| 12 | City of Redmond | Apr. 22, 1912 | 35 | Power and domestic | | | | Domestic pumping | Sec. 25, T. 15 S., R. 12 E. |
| 13 | State of Oregon | Feb. 28, 1913 | All | Irrigation and power | 0 | 0 | 0 | | T. 19 S., R. 11 E. |
| 14 | do | do | 900,000 acre-feet | Storage, irrigation, and power. | 0 | 0 | 0 | | Do. |
| 15 | Tumalo project | do | 30,000 acre-feet | Irrigation storage | 0 | 0 | 0 | | Do. |
| 16 | State of Oregon | Oct. 29, 1913 | 187,000 acres | Irrigation and power storage. | 0 | 0 | 0 | | T. 20 S., R. 7 E. |

SOURCE: Federal Power Commission 1922

The following description illustrates the problems and efforts of building the early Deschutes Irrigation and Power Company canals. Central Oregon's lava veneer proved stubbornly resistant in those days of dynamite, black powder and hand drills. Yet with teams of horse and scrapers, and crews of pick-and-shovelers, the main ditches and laterals were built.

In November 1904, the Deschutes Irrigation and Power Company made things considerably easier for its employees by purchasing two portable steam boilers which were shipped from Columbus, Ohio. One boiler was of twenty horsepower, the other six; both were to furnish power for operating rock drills. The larger boiler drove four drills; the smaller, one. Together they would bore 400 feet a day in lava rock, where ordinarily it would take a rock crew of three men to bore 18 or 20 feet a day. About 50 Italian laborers had been brought in during September, bringing the company's work force to 200 men and 100 teams.

With so many horses in demand, wild range horses were bought, then broken and provided with harness by the company. One of the suppliers of horses was Jesse Yancey of Prineville, who sold 68 animals from the ranges at Bear Creek and Alkali Flat during September of 1904.

Even in those days, there were some labor disputes. In March, 1905, the Deschutes Irrigation and Power Company posted notices at ditch camps that men receiving $2.25 and teams receiving $2.50 a day would get only $2.00 a day--the same rate of pay that way given in 1903 for a 10-hour day. (A man and a team received $4.50 in 1903.) Immediately, men threatened to quit, with 200 men actually leaving along with 125 teams (Vaughan 1981).

## DESCHUTES RIVER DAMS IN BEND

There are four dams on the Deschutes River in the city of Bend. The dams are shown on the location map in Figure 2 and photographs are in Figure 4.

Only two of the dams were built for irrigation--water storage and diversion. The others are for power and log storage uses.

The oldest extant dam on the Deschutes River in Bend was constructed in 1910 (Henshaw et al 1914; Vaughan 1981). The dam is located just north of Newport Avenue in the downtown area of Bend and created Mirror Pond. The Bend Water, Light and Power Dam supplied the wattage for Bend's first electric lights in November of that year. The dam powerhouse and distribution system cost $40,000 (Vaughan 1981) or $100,000 (Henshaw et al 1914) to construct. The dam was acquired by the Central Oregon Power Company in 1911 and later Pacific Power and Light Company. There is inconsistency in the dating of the dam and powerhouse. The Statewide Inventory of Historic Properties shows 1913, as well as a photo in Hatton's Bend in Central Oregon (1978). The dam was probably built in 1910, with the powerhouse and other changes made in 1913. This dam is in the Statewide Inventory and is also a Bend comprehensive plan inventory property.

The North Canal Dam or Steidl and Tweet Dam was the second dam, built c. 1912. It was the first dam in Bend built for irrigation, and is also the largest of Bend's dams. This dam is discussed in the determination of eligibility in Appendix F.

The third dam was built at the "bend in the river," south of Colorado Avenue, c. 1916, for a logging mill pond for the Shevlin-Hixon and Brooks-Scanlon mills that opened in that year. This low dam was built under a wooden bridge. This dam surprisingly, does not show up on the 1917 Sanborn map, but is in place and labeled on the 1920 map. Information about this dam is sketchy in the local literature.

The fourth dam was also built for storage and diversion of irrigation water. A history of the Tumalo Irrigation District (Deschutes County Historical Society 1985) states that this small dam was built in 1922 and extensively rehabilitated in 1973. This dam is located near Pioneer Park and the Riverside Motel, north of the Portland Avenue Bridge. This system diverts and carries water from the Deschutes River overland 4.8 miles to an intersection with the Tumalo Feed Canal at a point just north across Tumalo Creek. (This dam's date of construction is verified by the Sanborn maps. It is not present on the 1920 map, but appears on the 1928 map.)

## CONCLUSION

The first surge of homesteaders who followed the early settlers found most of the good land and the choice streams and water holes taken. These late arrivals looked on Central Oregon as a hard land, that hoarded its water hidden in deep lavas and was stingy with its forage. As a result, conquest of the once-wild land of Central Oregon was slow. Then came the awakening of the land, as water coursed through long canals. Eventually water in canals spread over thousands of acres of the inland country, changed the region's economy, and gave agriculture a ranking only below the income from the forests. Behind the story of the diversity of water to the thirsty acres is the history of the watering of a new Oregon frontier (Brogan 1977).

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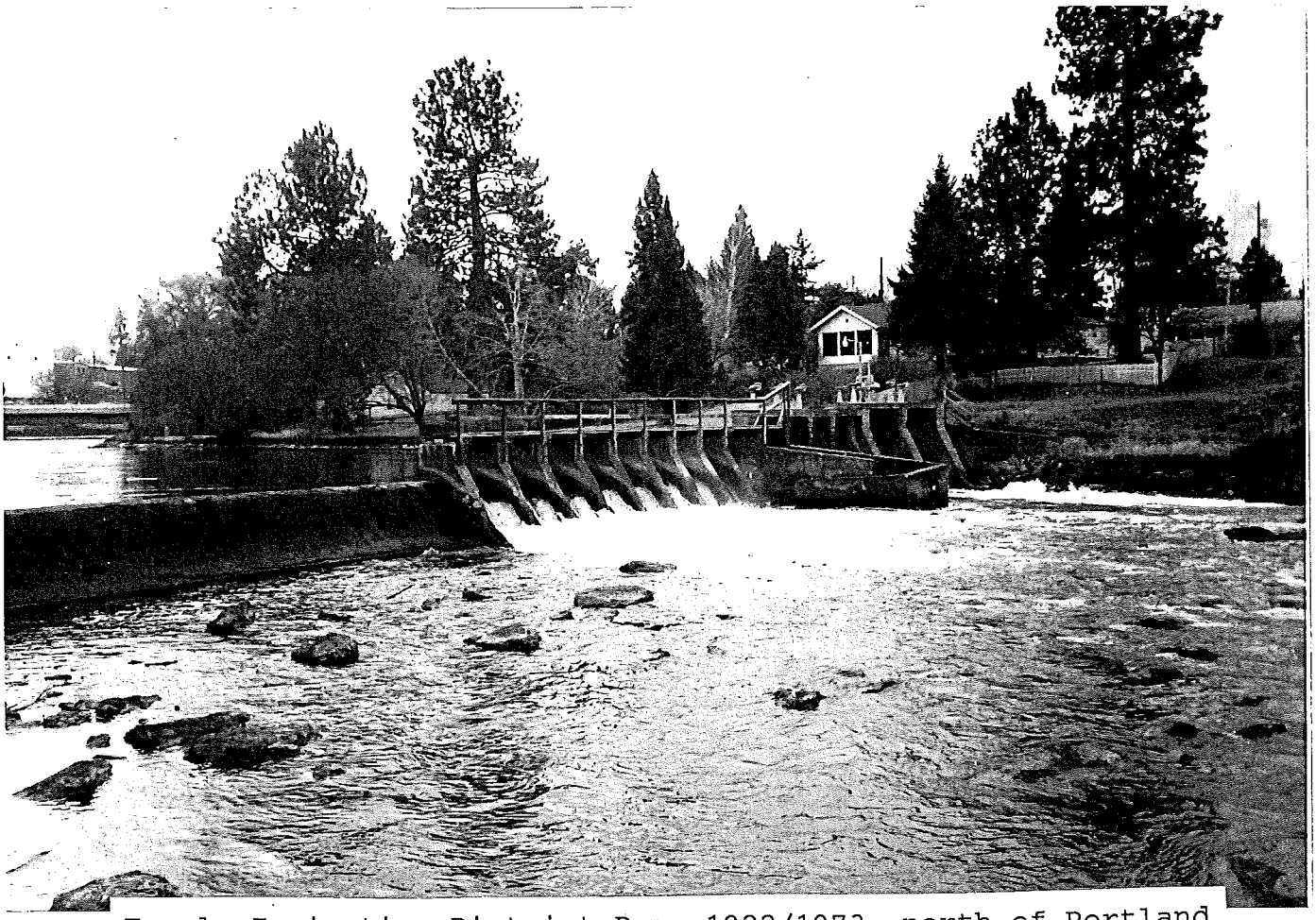
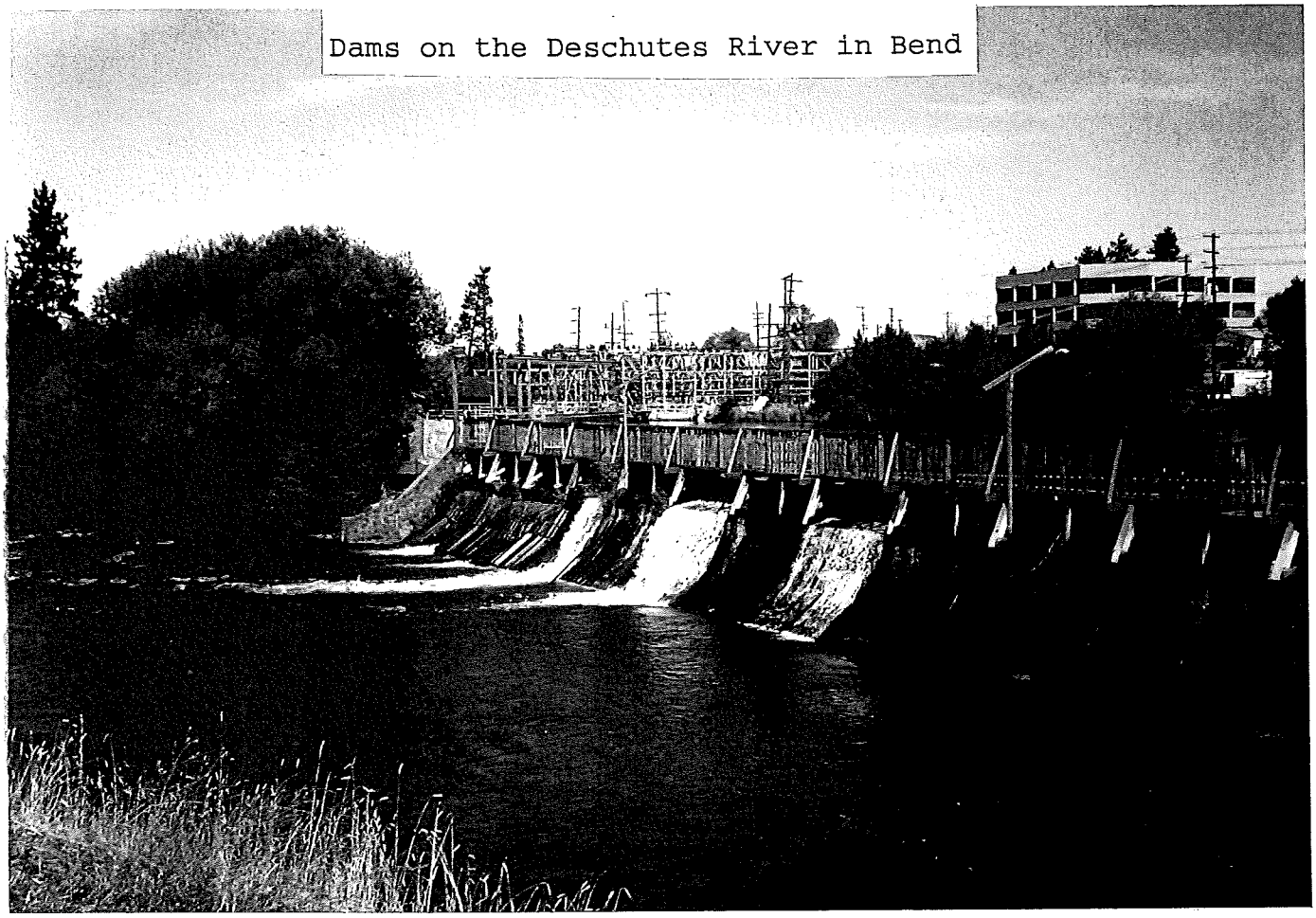
Shevlin-Hixon/Brooks-Scanlon Lumber Mills log storage dam, c. 1916, north of Colorado Avenue, N.W.



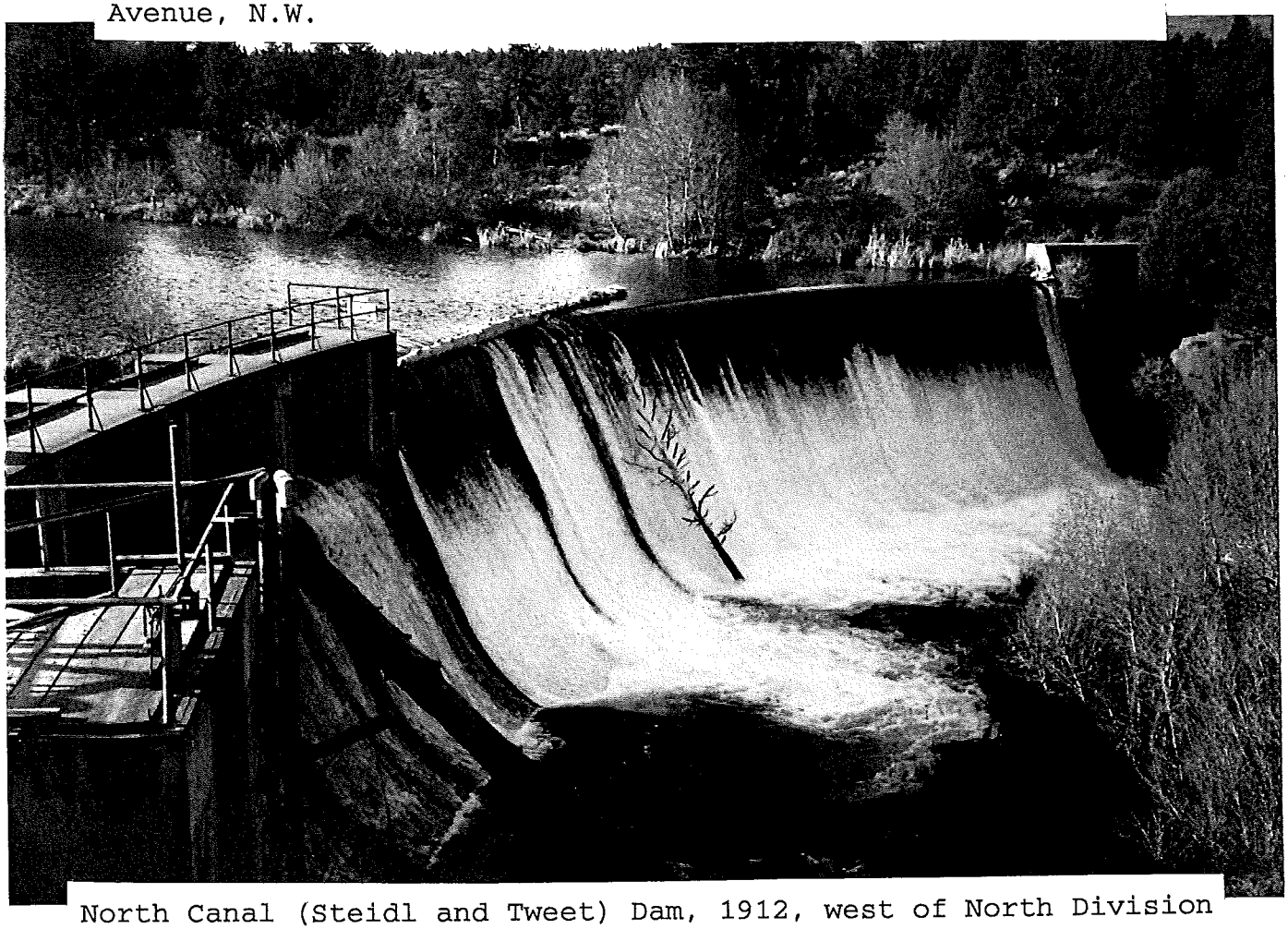
Tumalo Irrigation District Dam, 1922/1973, north of Portland Avenue, near Pioneer Park and the Riverside Motel.

FIGURE 4

Dams on the Deschutes River in Bend



Bend Water, Light, and Power Dam, c. 1910, north of Newport Avenue, N.W.



North Canal (Steidl and Tweet) Dam, 1912, west of North Division Street and U.S. 97.

APPENDIX A

Excerpts from the Agricultural Development Historic Context
(Speulda, State Historic Preservation Office, Rev. 1990)

Page 1:

INTRODUCTION

Agriculture has always been one of Oregon's leading industries. While the State of Oregon can be divided into several agriculture zones, this study will focus on the overall chronological development. The resource types associated with the development of agriculture are widely distributed across the state. The preservation of barns, outbuildings, farmsteads and ranches, **as well as fences, canals, and historic landscapes,** are an important link to the contributions of agriculture to the initial settlement and development of Oregon. Agricultural resource types have increasingly been threatened by technological advances in farming practices and urban expansion.

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Dry farming of wheat was started in Umatilla County by Andrew Kilgore in 1863. "As a supplement to dry-farming, irrigation was begun in a small way, in Umatilla County in 1869" (Carey 1922:805-

Page 15-16:

The Enlarged Homestead Act (1909) and the Stock Raising Homestead Act (1916) "sparked the wild influx of settlers into central Oregon between 1900 and 1920" (Minor 1987:136-37). Settlers were motivated by irrigation projects, several wet winters, land speculators, advertising, near completion of railroad lines, and passage of the land acts. Although thousands of people took up claims in the eastern basin the arid conditions soon forced settlers to give them up. Nearly half of the postal offices established between 1870 and 1920 were abandoned by the end of this period (Minor 1979).

> The founding of towns such as Bend (1903) and Redmond (1905) in the heart of the irrigated lands reflected the rush of settlers seeking land from developers operating under the Carey Act. The Pilot Butte Development Company, later called the Deschutes Irrigation and Power

> Company, was the chief developer of the Bend area irrigation segregations while the Central Oregon Irrigation Company promoted reclamation in the Redmond area (Toepel, et al 1979:153).

However, Central Oregon was still isolated until the railroad connection was completed to Bend in 1912 (Minor 1987).

The Klamath Basin flourished as reclamation projects, at the beginning of the 20th century, proved the area to be immensely fertile, especially for potatoes and onions. The first federally-sponsored reclamation project in Oregon, the Umatilla Project, diverted water from the Umatilla River into the Cold Springs Reservior for storage. The dam was constructed in 1908. The Klamath Project in southern Oregon was also designed during this period to serve 187,000 acres. By 1912 the Main Canal, Clear Lake Dam, and Lost River diversion dam were completed.

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The Bureau of Reclamation completed many projects in central and eastern Oregon during this time period. In 1914 the Bureau surveyed the Malheur River basin for a project but Congress did not authorize the money. However, the Warmsprings Irrigation District raised private capital and completed a dam for Warm Springs Reservior in 1919.

The Umatilla River project was expanded with the construction of McKay Dam from 1923 to 1927. The dam provided water storage to farmland located south of the river.

In 1932 the largest reclamation project, Owyhee Dam, was completed in southeastern Oregon. The dam was the highest in the world at the time and incorporated the highest morning-glory spillway. During construction the mass concrete buildng techniques were field tested for later use in Hoover Dam in Colorado.

During the 1940s the Bureau of Reclamation completed two projects in Central Oregon along the Deschutes River. The area received projects by early private irrigation companies consisting primarily of canals and diversion dams with no storage capabilities. Crane Prairie Dam was a privately financed facility dating from 1922 that the Bureau re-built in 1940. In 1949 Wickiup Dam was copleted to extend the amount of available water. The workforce included Civil Conservation Corps workers in the 1930s and conscientious objectors in the 1940s. The dam allowed the development and re-settlement of agricultural lands in Jefferson County.