



The Communicator

Published by The Central Nebraska Public Power and Irrigation District
to inform all water users of District activities

“Day 2”: Continuing the tour of Central’s project

In the last issue of *The Communicator*, our tour of the Platte River Basin and the Central District’s project took us from a mountain meadow in Colorado to the shores of Lake McConaughy. We followed the North Platte River through the foothills of the Rockies, across the plains of eastern Wyoming, and through the Nebraska Panhandle. “Day two” of the tour will explore the uses and benefits of the water after it is released from the lake.

Following the Flow

When water is released from Lake McConaughy, it can follow two routes east: down the North Platte River and/or into the Nebraska Public Power District’s Sutherland Canal at the Keystone Diversion Dam. This canal takes the water to Sutherland Reservoir and NPPD’s Gentleman Station power plant. From here it flows to Lake Maloney south of North Platte, which is a regulating reservoir for NPPD’s North Platte Hydroplant. After passing through the hydroplant, the water is returned to the South Platte River just above the confluence with the North Platte River.

The South Platte tends to be a boom-or-bust river. When water is available, Central can divert South Platte flows into its Supply Canal. Any amount of water that the South Platte contributes is that much less that might otherwise come from Lake McConaughy.

The North Platte Diversion Dam, an 874-foot-long concrete and steel structure, sits across the Platte River just below the confluence of the North and South Platte rivers. At this point, Cen-

tral can divert water into its 76-mile-long Supply Canal, or pass it down the Platte River.

Irrigation delivery

The Supply Canal delivers water to Central’s three main irrigation canals, E65, E67 and Phelps. These canals serve about 105,000 acres in Gosper, Phelps and Kearney counties, while approximately 7,000 acres in Lincoln and Dawson counties receive water directly from the Supply Canal.

Central’s delivery system includes more than 500 miles of canals, laterals and pipelines. The headgate for the E65 Canal is just above the inlet to Johnson Lake and the E67 Canal begins just below the lake. The Phelps Canal begins at the end of the Supply Canal, adjacent to the Johnson No. 2 (J-2) River Return. The J-2 Return — like the Jeffrey Return above it (see map on pages 2-3) — provides a means to return water to the river if there are senior calls for water in the river. During the non-irrigation season, water that has passed through the three Supply Canal hydroplants is returned to the river at this point.

Irrigation offices in Bertrand and Holdrege are responsible for maintenance and irrigation service along the system of canals and pipelines.

Most of the turnouts to which Central delivers water are equipped with water meters, while deliveries at the rest of the turnouts are measured manually. Central’s irrigation service specialists transfer delivery data from the turnouts to small computers and then download the data to computers in the irrigation of-

fices at the end of each day. This allows Central to track exactly how much water is being delivered to each irrigation account.

Because limitations in canal capacities prevent “on-demand” deliveries, irrigation customers are on a rotation. Each spring they receive schedule cards telling them when they can take water. The allotment of water is delivered in equal amounts over two-week “runs.” Because of water shortages during the past several years, Central has delivered 6.7 or 8.4 inches/acre over eight- or ten week seasons, whereas normal deliveries are 15 to 18 inches/acre over 12 weeks. After a customer’s two-week rotation ends, the next customer in the rotation takes his turn and so on throughout the irrigation season. For example, during 2008’s eight-week season, each account received four runs of 1.67 inches/acre every two weeks.

Elwood Reservoir, which was added to the system in 1976 as part of a major rehabilitation project, provides supplemental storage water from Lake McConaughy (under normal circumstances) to the E65 canal system. Construction of the reservoir enabled E65 Canal customers to receive water in two-week rotations rather than the three-week rotations in place before the reservoir was added. During normal years, water is pumped into the reservoir and allowed to gravity-flow back out for delivery. The reservoir has not been used for irrigation operations during the last four years because of storage water shortages at Lake McConaughy.

On several occasions in the last four years, Central has diverted water into

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the reservoir to preserve the fish population. This was possible through cooperation with the Central Platte and Tri-Basin NRDs, the Nebraska Game and Parks Commission and the Department of Natural Resources.

Groundwater recharge

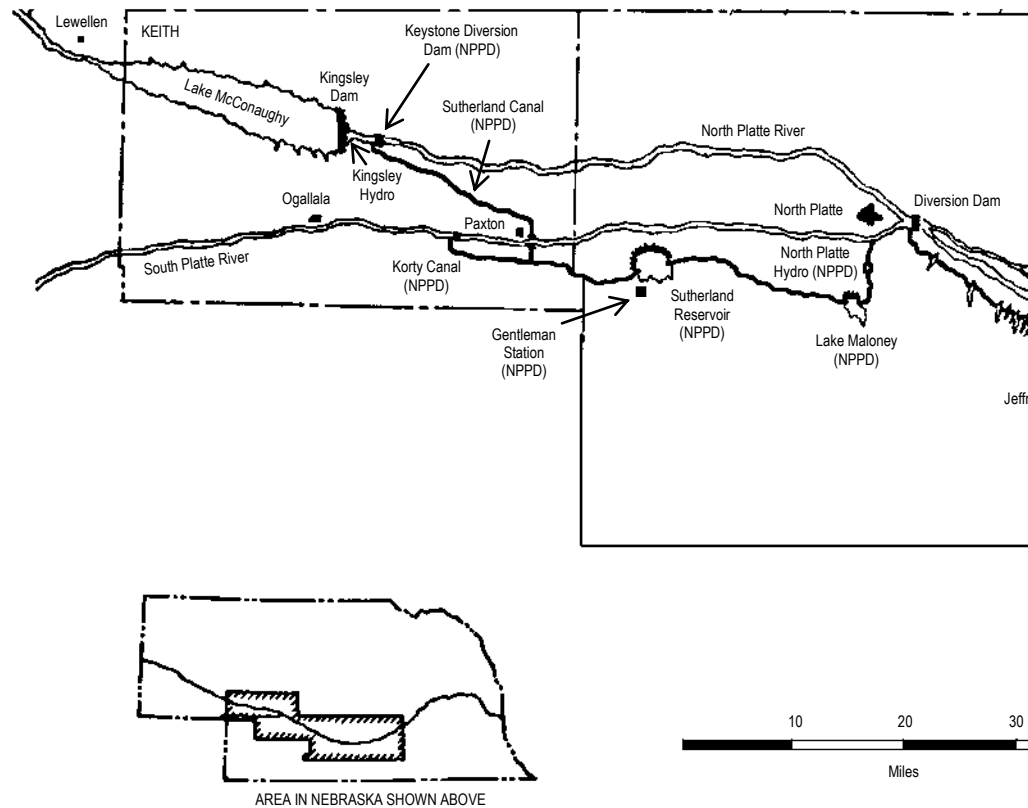
The system also provides documented groundwater recharge benefits to more than 310,000 acres in and adjacent to the project area. These recharge benefits are recognized by the state within Central's U-2 and U-12 incidental underground storage water rights.

In the 1970s, Central began a major rehabilitation project on its E65 and Phelps systems. The project was designed not only to improve delivery efficiency to irrigation customers, but to address the conjunctive nature of the delivery system. While measures such as pipeline installations and compacted-earth linings were implemented to prevent losses from the canal system in some areas, other portions of canal were left unlined to help provide recharge to the area's groundwater.

Most parts of Nebraska that have seen a significant growth in the number of irrigation wells have also experienced a decline in the water table. However, due to recharge from Central's system, the opposite has happened in and adjacent to Central's service area. Whereas water tables in some parts of the state have declined by anywhere from 10 to more than 60 feet since 1940, the water table in Central's service area has *risen* from 10 to more than 50 feet. One of the purposes of the rehabilitation project, as well as ongoing operations, was to stabilize the water table and provide for long-term conjunctive use of surface water and groundwater in the area.

Balancing act

It takes about five or six days for water to move from Lake McConaughy to the irrigated area. The water needs to be at the customers' turnouts on schedule, but weather events can sometimes wreak havoc on that schedule. A rainstorm may suddenly reduce irrigation demand just as water is on the way down the canal according to schedule. Conversely, demand can spike during hot, dry spells when conveyance issues and water uses by other irrigators complicate the task of running water through the system. How does Central



balance these changing demands?

The system's designers anticipated fluctuations in irrigation demand and built some flexibility into the system. Johnson Lake can act as a "rubber band" for the system, stretching or contracting to accommodate supply and demand. Additional water can be released from the lake to meet higher irrigation demand, or held temporarily in the lake when demand is less. Consequently, Johnson Lake's level will sometimes fluctuate during irrigation season. Central tries to avoid such fluctuations, but that's not always possible under some circumstances.

Regulating reservoirs

Johnson Lake is also a "regulating reservoir" for two downstream hydroplants. As such, it serves to convert the controlled flow in the Supply Canal to the varying flow requirements of the hydroplants, which fluctuate with the demand for power. Regardless of the flow rate in the canal, Central attempts to maintain a uniform water level to minimize bank erosion. The water level in the lake is also important because the hydroplants require sufficient "head" to operate efficiently (head being the difference in the water's elevation and pressure above the plant and the point at which it passes through the

plants' turbines).

Jeffrey Lake serves the same purpose for the Jeffrey Hydroplant.

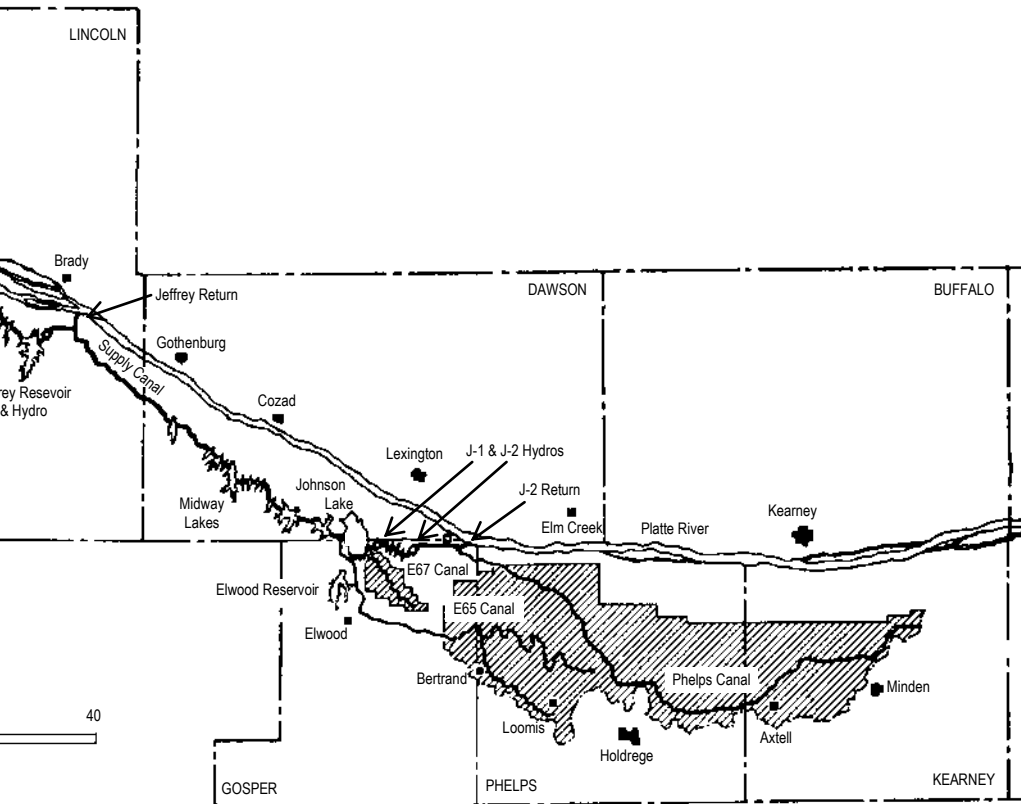
Johnson Lake also can serve to regulate water for a couple of other purposes related to Central's Federal Energy Regulatory Commission (FERC) license: flow attenuation and bypassing Environmental Account water.

A condition in Central's operating license requires a plan to attenuate increased flow in the Platte River which might occur if irrigation customers decline to take scheduled deliveries because of local rainfall during the designated nesting season for least terns and piping plovers (June 1 to Aug. 15).

Johnson Lake's water level may also be affected by its role in an agreement regarding Environmental Account (EA) water. The EA is a block of water

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stored in Lake McConaughy and managed by the FWS to benefit target species' habitat. Central and NPPD agreed to assist the Platte River Recovery Program in creating or enhancing pulse flows intended to benefit threatened and endangered species along the Platte River.

Under certain conditions during the spring or fall, the FWS may request that Central bypass EA flows and re-time outflows from Johnson Lake to enhance pulse flows in the river. The request may lead to a greater and faster than usual decline in Johnson Lake levels as Central's system is used to regulate flows to the river.

While there is no net impact to Central or its customers in terms of water amounts, such a circumstance may result in fluctuations in the water level at Johnson Lake, although those fluctuations should not occur during the primary irrigation or recreation season.

Hydroelectric Plants

As water travels down the Supply Canal, it produces power at the Jeffrey, Johnson No. 1, and Johnson No. 2 hydroplants. The three hydroplants are operated remotely from the Gothenburg Control Center. With the addition of

the Kingsley Hydroplant in 1984, also operated from Gothenburg, Central can generate up to 113 MW of electricity. For perspective, that's enough power to meet the residential needs of a city of 92,000 people. All power generated at Central's hydroplants is sold to NPPD for distribution to the state's electrical customers.

In addition to the hydroplants, the Control Center maintains remote supervisory control over the Keystone Dam, the Supply Canal's headgates and control structures, and the headgates and control structures along the three main irrigation canals.

Recreation and Habitat

Central's project also provides a variety of recreational opportunities. Visitors to the Lake McConaughy/Lake Ogalala area annually spend an average of about 700,000 days at the lakes.

Twenty-six lakes, ranging in size from less than one acre to more than 2,500 acres, are located along the Supply Canal, providing additional recreational opportunities. The largest of these lakes are Jeffrey, Midway, Gallagher, Plum Creek and Johnson. NGPC manages State Recreation Areas with campgrounds at McConaughy, Ogalala, Gallagher and Johnson lakes.

Housing developments, including approximately 1,100 year-round homes and vacation cabins, are located on Central property at McConaughy, Jeffrey, Midway, Plum Creek and Johnson lakes.

Through cooperation with the NGPC, FWS and other wildlife entities, Central's facilities provide significant area for wildlife habitat. Approximately 6,800 acres of project land, including Clear Creek at the west end of Lake McConaughy, are designated by the NGPC as Wildlife Management Areas. Central also manages more than 4,000 acres on Jeffrey Island (located between channels of the Platte in the Lexington/Overtown area) as wildlife habitat. Central also leases 500 acres along the North Platte River in Lincoln County that is managed for wildlife.

Structure and governance

Central is a political sub-division of the State of Nebraska. Unlike most other political sub-divisions, Central has no authority to levy taxes. Revenues are primarily generated by selling electrical power produced at four hydroplants, and providing irrigation delivery service. It is governed by a 15-member board of directors elected by voters in Gosper, Phelps, Kearney, Adams, Keith, Lincoln and Dawson counties. Central's hydroelectric facilities are licensed by the FERC.

Holdrege Water Conference Set for Jan. 29

The annual Holdrege Water Conference is scheduled for Jan. 29, 2009 at the Phelps County Ag Center.

The conference, which begins at 10 a.m., features experts in water resources addressing issues important to area residents.

Now in its 15th year, the conference is sponsored by Central, Tri-Basin NRD, the Holdrege Area Chamber of Commerce and Phelps County Extension.

The final agenda was still being constructed at press time, but watch the media and Central's web site over the coming weeks for a list of speakers.

Electric rates rising, but Nebraska's are nation's fifth lowest

A report from the Nebraska Power Review Board shows that Nebraska's electric customers, on average, pay the fifth lowest rate for power in the nation.

The report indicates that although electric rates in the nation are rising, Nebraska's average rates remain low on both a regional and national level. Comparing average retail rates in Nebraska to six adjoining states, Nebraska has the second lowest rate, based on the most recent data from 2006. Only Wyoming residents pay lower rates.

Nebraska's average retail rate of 6.07 cents per kilowatt-hour is approxi-

mately 32% below the national average rate of 8.90 cents per kWh.

Don Kohtz, chairman of the Power Review Board, said, "Everyone is aware that energy prices are rising, and electricity is no exception. We were pleased to find that despite the upward trend, Nebraska's electrical industry has been able to keep rates low enough so that the state's rates are the fifth lowest in the nation, which is a benefit to all Nebraskans."

Nebraska is the only state that receives its electrical power solely from public power providers.

Central consolidates Minden and Holdrege irrigation offices and operations

After providing service to irrigation customers in Kearney County for almost 70 years, Central's irrigation office in Minden closed its doors at the end of the irrigation season.

Central began consolidating equipment and materials with the Holdrege office after irrigation season ended. The transition was completed in October.

The consolidation is part of Central's efforts to improve operational efficiency

and reduce costs. Customers will continue to receive prompt and efficient service, said Irrigation Division Manager Dave Ford, and maintenance in the area will not be adversely affected.

The five employees who previously were based at the Minden now report to the Holdrege office to begin the work day. During the irrigation season, irrigation service specialists in the Minden area will go directly to their patrols in the morning.

<http://www.cnppid.com>

On the Web

Remember to check Central's web site regularly for news releases, notices, announcements of meetings and events, river flows/lake elevations, and many other items about project operations and water issues.

Employees honored for years of service

Several Central employees were recently recognized for reaching service anniversaries in 2008.

40 years

Richard Lavene, Bertrand.

30 years

Tim Long, Holdrege.

25 years

Ron Sinsel, Holdrege; Glen Bevard, Kingsley Dam; Glenn Finke, Gothenburg; Dennis Wilken, Bertrand.

20 years

Eric Hixson, Jeff Bunger, and Shelli Daily, Holdrege.

15 years

Myron Miller, Holdrege.

10 years

Frank Vetter, Holdrege.

5 years

Dell Wolfe, Gothenburg; Keith Jauken, Sue Hunke, and Jeff Richardson, Holdrege.

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