Lewiston Orchards Project

Jedediah S. Rogers
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Contents

The Lewiston Orchards Project

The Lewiston Orchards Project began in 1906 as a private venture to provide water to small orchards in the area surrounding Lewiston, Idaho. Since original construction, most of the water features have been rehabilitated or rebuilt by the Bureau of Reclamation. The project consists of diversion dams, feeder canals, small storage reservoirs, and separate domestic and irrigation water distribution systems that serve the city of Lewiston and adjacent agricultural lands. An early federal municipal water project, the Lewiston Orchards Project has provided a dependable water supply to domestic users as well as farmers in the Lewiston area for over fifty years.[1]

Project Location

Lewiston, Idaho, the name sake of the intrepid explorer Meriwether Lewis, is located about halfway up the panhandle near the Idaho-Washington state line in Nez Perce County. Lewiston is straddled by Clarkston, Washington, across the river to the west and the Nez Perce Indian Reservation to the east. The university city of Moscow is located about twenty miles directly north of Lewiston. The built landscape is situated at the base of the Rocky Mountains and at the eastern edge of the Columbia Plateau that encompasses the Snake River plain and much of central and eastern Washington. Notable landmarks within striking distance of the Lewiston Orchards Project include the Blue Mountains in Oregon and the deepest gorge in the nation, Hells Canyon on the Snake River. The Snake River makes a wide arc 450 miles long beginning in northwestern Wyoming, continuing southwest and west through southern Idaho, then

[1] U.S. Department of the Interior, Water and Power Resources Service, *Project Data* (Denver: United States Government Printing Office, 1981), 577.

curving northwest and north into Oregon and forming the Idaho-Oregon and Idaho-Washington state lines. Along the way it receives several tributaries, notably Henrys Fork, Boise, and Salmon rivers. When the Snake reaches Lewiston at the mouth of the Clearwater River, it abruptly shifts course and proceeds directly west until it joins the Columbia River and eventually dumps into the Pacific Ocean.

The Snake River cuts through a physiographic region bound by the Cascade and Coast ranges to the west and the Rocky Mountains to the east known as the Plateau. Defined further, most of eastern Washington and part of western Idaho is the Columbia Basin. To the south, most of northeastern Oregon comprises the Blue-Ochoco Mountains. The Columbia Basin is the lowest landform in the region—Lewiston is only 738 feet above sea level; its mostly level plains receive low levels of precipitation since it lies in the rain shadow of the Cascades.[2]

Historic Setting

The Lewiston, Idaho, area has a long and varied history. It was the ancestral homeland of several native tribes including the Nez Perce. Lewis and Clark were the first white men to pass through, followed by a steady stream of explorers, trappers, missionaries, and, eventually, settlers. The economy of the region thrived on fishing, logging, ranching, and, to a lesser degree, irrigation. In the twentieth century, its economy has expanded with the help of an extensive electric power system and a market for river rafting and other outdoor sports.

The earliest human history traces back to a number of native tribes who had inhabited the northwest for millennia. The Nez Perce shared cultural, linguistic, and

[2] Deward E. Walker, Jr., editor, *Plateau*, vol. 12, of *The Handbook of North American Indians*, William C. Sturtevant, editor (Washington, D.C.: Smithsonian Institution, 1998), 29-32.

social characteristics with neighboring tribes like the Walla Walla, Yakima, Umatilla, Wayampam, and Palouse. In early spring, during salmon runs, the Nez Perce descended into the river valleys to fish, and they returned in mid-summer to higher land where they grew crops, fished in upper streams, and hunted. For generations native peoples had thrived in the area of the middle Snake and Clearwater rivers, and northern portion of the Salmon River basin. As the eighteenth century dawned in the Americas, bringing the first Europeans into the area, the native inhabitants of the Idaho region faced changes unlike any that had come before.[3]

The first direct contact came in 1805 when Lewis and Clark's Corps of Discovery, having traversed the Bitterroot Mountains, descended the Clearwater River in five small canoes and reached the confluence of the Snake River (what the natives called Tsceminicum, meaning "where the waters meet"). The Corps found the camp site to be flat, dry, and treeless—the Nez Perce lived further upstream where there was wood for fires. Clark described it on October 10: "The Countrey about the forks is an open Plain on either Side I can observe at a distance on the lower Stard. [starboard] Side a high ridge of Thinly timbered Countrey the water of the South for is a greenish blue, the north as clear as cristial."[4] Anglos did not permanently settle the future site of Lewiston until the mid nineteenth century, but that initial encounter and the Corps of Discovery's subsequent journey to the ocean set in motion heightened exploration and interest in the

[3] *Plateau*, 420; Merle Wells and Arthur A. Hart, *Idaho, Gem of the Mountains* (Northridge: Windsor Publications Inc., 1985), 13-18.
[4] The History of the Lewis and Clark Expedition, http://lewisandclark.state.mt.us/Expedition/complete_expedition_content.shtm (accessed April 3, 2008); William Clark, Journal, October 10, 1805, entry in *The Journals of the Lewis and Clark Expedition*, ed. Gary Moulton (Lincoln: University of Nebraska Press/University of Nebraska-Lincoln Libraries-Electronic Text Center, 2005), http://lewisandclarkjournals.unl.edu/journals.php?id=1805-10-10; Lewis and Clark Rediscovery Project, The Past: From Modest Beginnings, http://www.lcrediscovery.org/lcrp/external/lewisandclark/district_portfolios/Lewiston/past.htm.

Snake River and Columbia River basins. Canadian fur trappers began to explore the northern regions and established a post on the shores of Lake Pend Oreille. The British had long claimed the Oregon Territory (known by the British as the Columbia District) where they had established forts and trading posts though few settlements. From the east came American trappers and missionaries seeking to convert the native populations. Beginning in the mid-1830s, Catholic and Protestant missionaries traveled the area, ministering to the Nez Perce and Coeur d'Alene Indians, while in the central and southern regions of Idaho Mormon missionaries ministered to the Shoshoni.[5]

Prior to European contact, Native Americans in the Northwest had acquired Spanish horses and tools through trading contacts with other native groups. After contact, the Nez Perce traded extensively with the North West Company. On the Clearwater River, Lapwai and Kamiah, the most densely settled villages of the Nez Perce, were the centers of trade and also the site of mission stations established by Presbyterian missionaries. Along with the benefits associated with European contact, there came negative consequences. Smallpox and other European diseases—for which the native population had no natural immunity—devastated many groups. Disease was the principal reason why the Nez Perce dwindled from a population of 6,000 at contact to 1,800 at the dawn of the twentieth century.[6]

The history of Nez Perce-white relations is a sad tale of misunderstanding, paternalism, and military conquest. The Nez Perce War of 1877 culminated in the unsuccessful flight of the Nez Perce to Canada, their capture just before reaching the

[5] Wells and Hart, *Idaho, Gem of the Mountains*, 18-30.
[6] *Plateau*, 429, 433.

border, and return to reservations in Oklahoma, Washington, and Idaho. The Nez Perce Reservation in Idaho borders the Lewiston Orchard Project.

Subjugation of the Nez Perce paralleled Anglo settlement. The California Gold Rush largely passed Idaho by, but the region experienced a gold rush of its own in the early 1860s when construction crews building a road from Fort Walla Walla in eastern Washington to Fort Benton in Montana discovered gold near the Idaho-Washington border. Word soon got out, and hundreds of gold-hungry miners descended upon the region. Lewiston grew into a major outfitting and supply center for the northern Idaho gold fields and, briefly, beginning in 1863, served as Idaho's first territorial capital. Miners also struck it rich in southwestern Idaho at Idaho City and the Boise Basin, which turned out to be the more productive mining district, producing more than twenty-four million dollars in gold by 1866.

While mining drove the settlement of the western and northern regions of Idaho, a different settlement pattern was taking hold in southeastern Idaho. The early Mormon settlers had been driven out of the region by hostile Indians in the late 1850s only to return a few years later to found Franklin, the first permanent white settlement in what was then known as the Washington Territory. As Franklin grew, a fort was built and an irrigation ditch was constructed and placed into service. Several other Mormon settlements sprang up in southeastern Idaho, repeating the Franklin pattern, and by the end of the Civil War irrigated agriculture had a firm foothold in the region.[7]

In fact, the Snake River had already been heavily dammed by the time Reclamation drew up plans for a water project at Lewiston. Southern Idaho had dams,

[7] F. Ross Peterson, *Idaho: A Bicentennial History*, The States and the Nation Series (New York: Norton, 1976), 53-8.

reservoirs, and complex canal systems along the course of the Snake and its tributaries. Combined, the dams impounded two-thirds of the Snake River's average annual flow. Public and private money had combined to produce the most irrigated acreage in any western state—at the end of World War II nearly three million acres. Around the same time, Reclamation studied, proposed, and unsuccessfully supported several additional hydroelectric dams on the lower Snake River. It proposed four in Washington and five on the Idaho-Oregon and Idaho-Washington state lines, including one near the confluence of the Clearwater River. None of them became reality, but Idaho Power Company did construct three dams further upstream in Hells Canyon.[8]

At Lewiston, settlers made their living by mining, lumbering, and dry farming. Irrigated farming came later and developed on a smaller-scale than it did in the upper Snake River basin.[9] In 1906 a private company constructed wooden flumes that diverted water from Sweetwater Creek to the off-stream Reservoir "A", located seven miles southeast of Lewiston. The water was then diverted by a wood pipe system to orchards in the Lewiston area. Although developers had planned to subdivide about 7,000 acres into cherry and apple orchards, the actual acreage developed and sold was only 4,400.

The local water company and local interests expanded the original irrigation system considerably. In 1915 they secured additional water for the system by pumping from Lake Waha, a small natural lake with no surface outlet. The water company increased the capacity of Reservoir "A" from 2,000 to 3,000 acre feet, built Soldiers

[8] Karl Boyd Brooks, *Public Power, Private Dams: The Hell's Canyon High Dam Controversy* (Seattle: University of Washington Press, 2006) 14, 27.

[9] The exception to this is the opening in 1875 of the "Lewiston Ditch" which provided water for "lawns, flowers and trees, especially the poplars which lined the city's streets." Lewis-Clark Rediscovery Project, Lewiston: A Reflective History of 200 Years at 'The Place Where the Rivers Meet,'" by Cheryl Flory, http://www.lewiston.k12.id.us/staff/SBranting/LC1/lewiston2.htm.

Meadow Dam on Webb Creek situated at 5,000 feet elevation on Craig Mountain twenty-five miles southeast of Lewiston, constructed flumes and canals to divert water from Webb Creek to Sweetwater Creek, and rehabilitated the flumes and canal on Sweetwater Creek as precondition to selling the water system in 1922 to the newly organized Lewiston Orchards Irrigation District. By 1934 the district had expanded the water supply by diverting water from Captain John's Creek to Soldiers Meadow Reservoir. Five years later it decreased the total acreage serviced by the irrigation system from 4,400 to 3,430 acres. The district operated a complex irrigation system consisting of two reservoirs, flumes, canals, and wood-stave pressure pipe lines that delivered water to the Lewiston area.[10]

However, over time the project facilities deteriorated and stood in need of repair. At least three independent reports between 1922 and 1939 provided conditions or plans of rehabilitation: A. J. Wiley in 1922, D. P. Woods in 1936, and G. N. Klein in 1939. At the dawn of the New Deal, the Works Progress Administration provided labor for the construction of concrete flumes to replace the wooden ones, but for one reason or another it did not complete the job. Neither could the Lewiston Orchards Irrigation District convince private interests to make rehabilitation a priority. By the time Reclamation began its investigations at the behest of the district on a rehabilitation and expansion water project at Lewiston, the works had become so deteriorated that water losses had made irrigation nearly impossible. Even irrigating in day-light hours with the corrugation

[10] "Annual Project History, Lewiston Orchards Project," Volume III, 1951-61, 3-4, 11-12, in Record Group 115, Records of the Bureau of Reclamation, Accession 8NN-115-88-053, Box 97, National Archives and Records Administration, Denver, Colorado; hereafter "Project History" followed by appropriate volume and page numbers. U.S. Department of the Interior, Bureau of Reclamation, Regional Director, Region I, Boise, Idaho, to the Commissioner of Reclamation, December 3, 1945, 5, in Record Group 115, Records of the Bureau of Reclamation, Project Records, 1910-1955, Accession 8NN-115-85-05, Box 477, National Archives and Records Administration, Denver, Colorado.

method resulted in loss of up to thirty percent.[11] According to Reclamation's regional director in Boise, Idaho,

> The alternative to reconstruction is depopulation of the project area, a loss of investment in lands and buildings which approaches two million dollars, a loss in crop production now valued at more than a quarter of a million dollars annually, and contingent losses to businessmen in the project area and in Lewiston, and to the county and area as a whole.[12]

Investigations

Congress appropriated $36,800 each year for five years beginning in fiscal 1941 for field investigations and surveys at Lewiston Orchards. Reclamation's E. B. Debler, F. A. Banks, and C. C. Fisher supervised these investigations with the assistance of the U.S. Geological Survey, Idaho State Commissioner of Reclamation, Nez Perce County, and the irrigation district. Experts studied water resources in the area, examined geologic stability and seepage, surveyed the features to be rehabilitated, and prepared plans for the new project features.[13]

In December 1944 Reclamation released the result of these studies in a report, which proposed reconstructing the Webb canal and diversion dam and siphon on the Sweetwater Canal, enlarging a portion of the main pipeline, replacing the present irrigation distribution system, and installing an independent domestic water system. Reclamation had also considered alternative plans that delivered domestic water through an open or sectionalized irrigation system. Another proposal considered increasing the

[11] "Project History," Volume III, 1951-61, 3-4; U.S. Department of the Interior, Bureau of Reclamation, "Project Planning Report, Appendices, Lewiston Orchards Project, Idaho," Boise, Idaho, December, 1944, 25, in RG 115, Project Reports, 1910-1955, Accession 8NN-115-85-05, Box 477.
[12] Regional Director, Region 1, Boise, Idaho, to the Commissioner of Reclamation, December 3, 1945, 12, in RG 115, Project Reports, 1910-1955, Accession 8NN-115-85-05, Box 477.
[13] U.S. Department of the Interior, Bureau of Reclamation, "Project Planning Report, Appendices, Lewiston Orchards Project, Idaho," December, 1944, 3-4, in RG 115, Project Reports, 1910-1955, Accession 8NN-115-85-05, Box 477.

storage capacity of Reservoir "A" and constructing filters and a clear-water storage reservoir at the head of the distribution system. The last proposal was tabled on the grounds that it was too expensive, but the possibility of a filter and clear-water reservoir was left open "when water users desired them." As for the shared distribution system, Reclamation settled on an independent domestic water supply because the water delivered through the single-pipe system was unsafe and inadequate for domestic use.[14]

So, the proposed plan called for the rehabilitation and enhancement of the existing irrigation system and the construction of a new domestic water system including a treatment plant and clear water reservoir. The new features would add to an already complex system that stored and diverted water from reservoir to creek to canal to pipeline. Beginning at Soldiers Meadow Reservoir, the water would be released into Webb Creek and from upper Captain John Creek via the Captain John Canal, then continue via the Webb Creek Canal to Sweetwater Creek. Water from the west fork of Sweetwater Creek would be stored in the off stream Lake Waha and then pumped back into the creek during the irrigation season. A diversion dam on the Sweetwater would divert water into Sweetwater Canal, which emptied into Reservoir "A". From there, water would be diverted into the irrigation or domestic distribution systems, depending on its intended use. In all, the irrigation system consisted of about seventy-one miles of closed, steel pipe ranging from one to thirty-six inches in diameter, while the domestic system had about forty-seven miles of pipe. The domestic system would be linked to

[14] U.S. Department of the Interior, Bureau of Reclamation, "Project Planning Report, Lewiston Orchards Project, Idaho," Boise, Idaho, December, 1944, vii, 9, in RG 115, Project Reports, 1910-1955, Accession 8NN-115-85-05, Box 477.

Lewiston's existing water system, which derived its water from surface as well as groundwater sources.[15]

Project Authorization

The regional director of Reclamation's Region I recommended the project in December 1945, followed by concurrence by the commissioner of Reclamation and the secretary of the interior in 1946. As of July 10, 1946, when the report accompanying S. 2372 authorizing construction of the Lewiston Orchards Project was introduced in the Senate, "No recommendations adverse to its construction were received." The exception to this was comments submitted by the assistant secretary of the Department of Agriculture, who noted that the project lands required at least three acre feet per acre, that sedimentation ought to have been considered in the water supply studies, and that repayment estimates ought to be based on 3,360 irrigable acres and not 3,430. Reclamation Commissioner Michael Straus addressed each of these issues in his report to the secretary of the interior. The legislation authorizing construction of the project sailed through the House and the Senate and passed as Public Law 79-569 on July 31, 1946 (60 Stat. 717).[16]

When Congress authorized construction of the project, it amended the repayment contract by extending the repayment period to fifty years because it was decided that the water users would not be able to repay the costs of construction within the forty year period prescribed by federal reclamation laws. On August 15, 1947, voters approved a revised repayment contract of $1,990,000, but even this amount would fall short of actual

[15] U.S. Congress, Senate, *Lewiston Orchards Project, Idaho. Report on the Lewiston Orchards Project, Idaho, by the regional director of the Bureau of Reclamation, region 1, concurred in by the Commissioner of Reclamation and the Acting Secretary of the Interior*, 79th Cong., 2nd sess. S. Doc. 247 (Washington D.C.: United States Government Printing Office, 1946); "Project History," Volume III, 1951-61, 4.
[16] U.S. Congress, Senate, *Lewiston Orchards Project, Idaho*, VI-VII.

costs given the rising costs of construction. Moreover, because the population of Lewiston had grown beyond the projected water capacity of 4,000 and because people would be attracted to a new water system, planners adjusted for the demand. They increased the capacity of the water treatment plant to 1.3 million gallons per day and of Clearwater Reservoir to 1.5 million gallons. In a special election held in December 1948, voters approved the revised contract once again by agreeing to repay $2.5 million and extending the development period for irrigation from three to five years.[17]

Construction History

Construction on the project could not get underway immediately following authorization because engineers were in short supply due to a layoff in the Denver Office in June 1947. In a short time this labor problem was remedied and the project moved forward as planned. In a few instances Reclamation adjusted the original construction plans; it increased the capacity of the water treatment plant and Clearwater Reservoir, installed water lines from mains to the owners' property lines, purchased meter boxes, and rehabilitated the outlet works at Reservoir "A". Otherwise, construction generally proceeded as outlined in the 1946 report. By 1950 the project was operational, and by 1952, entirely completed.[18]

Reclamation first awarded contracts for the work on the remoter areas of the project—the rock fill or concrete diversion dams, flumes, siphons, stilling basin, and canals. On September 15, 1947, government forces began to work on the Sweetwater Creek diversion dam and flume, using equipment borrowed from Coulee Dam. Just as

[17] U.S. Congress, Senate, *Authorizing Construction of the Lewiston Orchards Project, Idaho*, July 10, 1946, 79th Cong., 2nd sess., S. Rep. 1675; U.S. Congress, House of Representatives, *Authorizing Construction of the Lewiston Orchards Project, Idaho*, July 11, 1946, 79th Cong., 2nd sess., H. Rep. 2497; "Project History," Volume I, 1947-48, 10; "Project History," Volume III, 1951-61, 18.
[18] "Project History," Volume I, 1947-48, 8; "Project History," Volume II, 1949-50, 4.

construction began, however, heavy rains and flooding made access into the area almost impossible, resulting in immediate delays. Eventually, the contractor used a D-8 dozer to excavate 1,500 feet of side hill bench and then built the concrete flume, sand trap, head works, and small rock fill diversion dam on the creek. Meanwhile, Hansen & Parr Construction Co. of Spokane, Washington, received the contract for the Webb Creek diversion dam and pipeline. The construction company had subcontracted the contract to supply 7,200 feet of thirty-inch, reinforced concrete pipe, but since the Spokane Concrete Pipe Company failed to deliver the pipe in the time specified, the construction contractor received another work order for just over $5,000 to supply the pipe itself. In total, the contractor earned $117,234.83 for the work, considerably more than the original bid of $50,011.75. Even still, the contractor "did not come out too well with his contract," according to project reports, in large part because workers unexpectedly encountered rock during excavation and found some canyon roads nearly impassable.[19] Other contracts on the upper project works went to Poe Bros. from Clarkston, Washington, to replace the wooden flume with concrete chute and siphon, and American Pipe and Construction Co., to erect a steel water tank.[20]

The distribution line was to begin at Reservoir "A" with a new 36.5-inch diameter steel outlet pipe built with government labor. From there, the water would continue through a 36.5-inch outside diameter enameled steel pipeline all the way to the intake of the treatment plant; then it would continue through a 30.5-inch pipe to the end of the main line. The contract to furnish and install the main pipeline went to Goodfellow Bros., Inc., of Wenatchee, Washington, who, in turn, sublet the fabrication and enameling

[19] "Project History," "Project History," Volume I, 1947-48, 12, 14; "Project History," Volume III, 1951-61, 15.
[20] "Project History," Volume I, 1947-48, 16.

to the Hydraulic Supply Manufacturing Co. of Seattle. The enamel began to spall shortly after the pipe segments arrived on site and had to be repaired by hand. The contractor then excavated the trenches, laid the pipe, placed the backfill, and did all other work for final completion on December 10, 1949.[21]

Two companies received contracts for the distribution systems: S. M. Gilbert and E. F. Pugsley, both from Seattle. Under Schedule 1, S. M. Gilbert placed seventy-one miles of steel pipe ranging in size from four to thirty inches. Under Schedule 2 on the domestic water distribution system, E. F. Pugsley placed forty-seven miles of pipe ranging in sizes from 3/4th of an inch to fourteen inches (the district built an additional eleven miles of pipeline). The government supplied the steel pipe from the Armco Drainage and Metal Products Co., and the pipes were then enameled on site by yet another sublet, the Walter Ferem Co. To cut down on construction costs, in some places contractors laid irrigation and domestic pipes in the same trench.[22]

In 1949 contractors completed the main pipeline, 4.42 miles long, from Reservoir "A" to 16th St. and Powers Avenue in Lewiston. They also made good progress on the treatment plant located about a mile west from Reservoir "A". Reclamation put the treatment plant work up for bid on two schedules: Schedule 1 for Clearwater Reservoir and Schedule 2 for the "filter plant, coagulation and sedimentation basin, influent and effluent lines, sewage disposal and appurtenant works." Although Reclamation put both schedules up for bid, it only awarded the second due to lack of funds. The award winner, J. F. Konen Construction Co., began work in 1949 but out ran Reclamation's funding and delayed construction several times before completing the plant in 1950. In 1950 Henly

[21] "Project History," Volume I, 1947-48, 17; "Project History," Volume III, 1951-61, 16.
[22] "Project History," Volume II, 1949-50, 16; "Project History," Volume III, 1951-61, 16; *Project Data*, 579.

Construction Co. of Boise, Idaho, received the contract for the Clearwater Reservoir, a covered concrete reservoir for storage of treated water located adjacent to the treatment plant.[23]

Several minor features wrapped up the construction phase of the water project. These included a steel warehouse, the operator's residence, and pressure regulating valves in the city.[24]

Post-Construction History

The total price tag of the project came to $2.5 million, significantly higher than the original projected cost of just under one million dollars. Unlike other water projects, however, this one could be repaid entirely by water users. Given the higher costs of construction, Reclamation settled on a fifty-year repayment schedule. According to estimates made in 1945, the ability of the district to make these payments depended on water users' willingness to pay more for a dependable, clean water supply. Domestic water users would pay two dollars more per month (up from $1.50 to $3.50 per month), and irrigation users would pay $8.50 or more per month depending on the size of their landholdings. Since most people did not depend solely on farm income, the ability to pay the cost of water was more closely correlated to employment in the area than to the price or yield of crops. Given the growth of commercial industry in the Lewiston area, Reclamation predicted that individuals would not mind making the payments.[25]

[23] "Project History," Volume I, 1947-48, 16-17; "Project History," Volume II, 1949-50, 17; "Project History," Volume III, 1951-61, 15.
[24] "Project History," Volume II, 1949-50, 2, 3, 4, 10, 11.
[25] H. Q. Clark, "'Drinking' Water," *Reclamation Era*, 37 (January 1951): 4-5; Regional Director, Region 1, Boise, Idaho, to the Commission of Reclamation, December 3, 1945, 12-13, in RG 115, Project Reports, 1910-1955, Accession 8NN-115-85-019, Box 477.

The operation and maintenance of the project did not require a large investment in labor or capital. Probably just over a dozen men worked at the project at any given time. Maintenance work included repairing dam facing, replacing an old wooden bridge at Webb Road, installing sets of meters and mainline extension, cleaning out the canals, and removing trees. Reclamation recommended such actions as removing trees from Mann's Lake area, creating a plat book of the area, removing new growth of fir and pine trees from the Webb Creek pipe line, and reviewing operations of Soldiers Meadow Dam and ensuring that the "roadway is not encroaching on spillway capacity." When in the early 1960s an inspector from Reclamation visited the project, he noted that all the recommendations except the last had been completed and that the district had aggressively addressed "the many problems of maintaining such a complex water system and of improving the system to take care of future demands."[26]

In April 1965 an unusually large amount of mountain rain water accumulated in Soldiers Meadow Reservoir, filled it to capacity and overflowed, creating a large hole in the reservoir where the road crosses the culvert. The district filled the hole with large rocks and material from a nearby pit, enlarged the culvert, and repaired the hole, but only after a large amount of water had already been lost. That same year muddy water from mountain rainstorms forced the district to clean out the canals and shut down the filter plant for a short time.[27]

Among the construction projects initiated during the post-construction period was the conversion of open canals to closed pipelines. Pipelines would improve the flow and quality of project water. To this end, Reclamation awarded a contract to Howard L.

[26] "Project History," Volume IV, 1962-63, 1-12, 19, 26.
[27] "Project History," Volume V, 1964-65, 15, 115, 131, 141.

Fosnot of Potlatch, Idaho, for construction of the siphon on Webb Canal and a contract to the American Pipe & Construction Co. of Portland, Oregon, to furnish the thirty-inch diameter concrete pipe for the Webb Canal. The work on the pipe line proceeded relatively slowly because of the steep hillsides but eventually was completed. The district also proposed installing pipe along the yet-un-piped sections of the Sweetwater Canal.[28]

The project also faced challenges related to sedimentation, which led to more weeds and reduced water quality. Plans were made to construct two desilting basins just above Mann's Lake on the Sweetwater Canal to reduce the flow of silt into the reservoir. The district removed heavy growth along the reservoirs and canals and reseeded the ground with native grasses. Care was taken to not use chemicals where water would be used for domestic purposes.[29]

The Bureau and the district also addressed the task of maintaining and updating aging project features. They updated the water treatment plant. In the late 1960s they made minor repairs to the reservoir at Soldiers Meadow. In the 1980s they replaced the top twenty-five feet of embankment and raised the crest by seven feet at Soldiers Meadow Reservoir. They modified the spillway and outlet works and added filters to the rebuilt embankment. At Reservoir "A" they constructed a stability wall with drainage capabilities along the downstream toe of the lower embankment and modified the upstream face of the embankment. Also under Reclamation's Safety of Dams Program, they reduced the holding capacity from 3,000 acre feet to 1,960 acre feet.

[28] "Project History," Volume V, 1964-65, 162; "Project History," Volume VI, 1966-67, Appendix 11-4; "Project History," Volume VII, 1968-9, Appendix 11-3; "Project History," Volume VIII, 1970-71, 8.
[29] "Project History," Volume VI, 1966-67, 5; "Project History," Volume X, 1974-75, 16; "Project History," Volume XI, 1976-77, 4.

Since construction, the project faced one particular challenge common in the West: the increase in the demand for water even as the supply leveled or declined. The district began to consider ways to augment its existing water supply in the 1970s during several years of crippling drought. The primary need was to increase the water used for irrigation, which during the peak of the growing season used up to ten times the amount of the domestic water usage. The district entered into a contract with the Washington Power Company for some surplus water to be used for irrigation purposes. Another proposal recommended using emergency funds to purchase supplemental water from the city of Lewiston or to drill a new well. Reclamation authorized a loan of $200,000 to the district to drill a well to provide irrigation water currently being used for domestic purposes. At first the district had intended to use funds from the Emergency Drought Act of 1977 to construct the well but instead received a grant from the Economic Development Administration to cover the costs. In the long run, however, drilling new wells for irrigation was an expensive solution given they would only be used three months of the year during the peak irrigation season. Likewise, transferring water from the domestic system to the irrigation system was not an effective alternative, since the domestic distribution system has a capacity of transferring only one million acre feet—much less than the irrigation needs during the growing season.[30]

As for the domestic water supply, the district expanded the domestic distribution system when population increases gradually outstripped the system capacity to provide water. In the 1970s the district considered drilling wells to supplement the domestic water supply, but at that time they opted not to take this option because of the expense.

[30] "Project History," Volume XI, 1976-77, N-1; F.A.Q.s and History links at Lewiston Orchards Irrigation District (LOID), http://www.loid.net/.

Rather, in 1977 and 1978, the district installed a rapid flow sand filter system, increasing the capacity of the water filtration plant (located about one mile west of Reservoir "A") to 2.3 million gallons per day. However, the filtration plant has not been used since 1985 because more wells were later drilled and the domestic water system began to get its water from a groundwater supply. Meanwhile, the irrigation system continues to be supplied exclusively by surface sources provided by Reclamation's Lewiston Orchards Project.

Around the same time it installed the new filter system, the district applied for a Small Reclamation Project Loan of nearly seven million dollars for additional improvements. With the funds, the district proposed to line the Sweetwater Canal to prevent severe water losses of as much as fifty percent, as estimated by district employees in 1962-63; build a new two-million-gallon domestic water reservoir and feeder canal; and install a pumping plant at Clearwater Reservoir and piping needed to transport the water to Reservoir "A." The secretary of the interior approved the loan, but local water users rejected the plan in a local election.[31] Rather, in 1978, the Economic Development Administration provided funding to drill a 1,520-foot well equipped with a 300-horsepower pump with the capability of pumping 1,000 gallons per minute. A second well was drilled in 1985 at the water filtration plant. This well, also equipped with a 300-horsepower motor, is linked to the 1.5 million gallon domestic reservoir. A third well was completed in 1998 to meet increasing domestic demands. It discharges about 1,275 gallons per minute into a new 2.5 million gallon storage reservoir.[32]

[31] F.A.Q.s and History links at Lewiston Orchards Irrigation District (LOID), http://www.loid.net/; "Project History," Volume IV, 1962-63, 11; "Project History," Volume XII, 1978-79, N-2.
[32] F.A.Q.s and History links at Lewiston Orchards Irrigation District (LOID), http://www.loid.net/.

Another recent program is implementation of a conservation schedule for irrigation water users, which has helped but not entirely alleviated the problems of water use, especially during the peak season. In recent years there has been concern over the impacts of the project on steelhead and Chinook salmon in the Snake River. Reclamation took several steps to address this problem; in 2002 it hired a liaison to assist willing landowners in improving habitat for fish in the Middle Fork Clearwater and Little Salmon basins.[33]

Project Benefits

At the time of the project's authorization, small landowners populated the project area, and many of them supplemented their farm income by working non-agricultural jobs. The average lot size was only four acres, not big enough to sustain a family that farmed full time. Because of this and to ensure that existing farmers receive irrigation water, the project would not supply new farms. Rather, 400 acres of land could be added to the district and converted to suburban home lots.

Thus, one of the original purposes of the project was to accommodate urban growth in the Lewiston area. Over a ten year period between 1930 and 1940, the population of the project area increased by nearly a third from a population of 1705 to 2,469.[34] Yet the project did not merely accommodate, it encouraged growth. The project

[33] U.S. Department of the Interior, Bureau of Reclamation, *2007 Overview: Pacific Northwest Region*, February 2007, http://www.usbr.gov/pn/about/pdf/overview.pdf (accessed April 2, 2008). In the 1970s, the Fish and Wildlife Service did express concern over proposals to line the Sweetwater canal and expand suburban development in the area. But with Reclamation and Idaho Department of Fish and Game it agreed to a number of mitigation measures to soften the impact on fish and wildlife populations. See Memo regarding the application of a Small Reclamation Project Loan, May 1979, in "Project History," Volume XII, 1978-79, 4.

[34] U.S. Department of the Interior, Bureau of Reclamation, "Project Planning Report, Lewiston Orchards Project, Idaho," December, 1944, 14; "Project Planning Report, Appendices, Lewiston Orchards Project, Idaho," December, 1944, 10, in RG 115, Project Reports, 1910-1955, Accession 8NN-115-85-019, Box 477.

remade Lewiston. It lured people into the area and directly led to 400 new houses by the time construction ended and a new domestic water system was in place. Indirectly, the water project gave rise to a new airport (housing Empire Air Lines and the U.S. Weather Bureau), several processing plants owned by frozen foods companies, a new steel bridge across the Snake River, new schools, and new businesses. The Potlatch Forests Inc., already a major employer in the area, constructed a new plywood plant in 1949 and a paper pulp mill in 1950.[35]

The Lewiston Orchards Project was to provide a reliable domestic and irrigation water supply. First, it supplied water to suburban lots, businesses, schools, and city offices. The demand for domestic water continued to increase as suburban hamlets spread outward. As new people moved into the area, the land plots shrank down to the point where today many are less than two acres in size. Second, the project delivered water to pastures, orchards, and nursery farms in the surrounding area. Over the years, fewer and fewer acres have been cultivated. In 1945, just prior to rehabilitation of the water system, there were 2,795 acres in cultivation within the project area. About a thousand acres were intensive crops such as orchards, berries, truck crops, gardens, and specialty crops, and 1,719 acres consisted of less intensive crops such as alfalfa, potatoes, hay, pasture, wheat, and corn.[36] The acreage irrigated declined to only 550 acres in 1970 and to 317 acres in 1978. In other words, Lewiston Orchards never came to support the irrigated agriculture that could be found upstream on the Snake River plain. At present,

[35] "Project History," Volume II, 1949-50, 7-8.
[36] Regional Director, Region 1, Boise, Idaho, to the Commissioner of Reclamation, December 3, 1945, 2-3, in RG 115, Project Reports, 1910-1955, Accession 8NN-115-85-019, Box 477; "Project History," Volume I, 1947-48, 11.

hay, grain, pasture, potatoes, and some fruits are the principal crops within the irrigated areas.[37]

The project was never designed for flood control, which means the district allowed the reservoirs to fill quickly and completely after withdrawals. The project is used for recreation except at Lake Mann, the principal domestic water supply, where the district did not allow swimming, wading, boating, or animals near or around the lake in order to prevent water contamination.[38]

Conclusion

Though small in scale, the Lewiston Orchards Project has been a critical factor in the growth and development of Lewiston, Idaho, and the surrounding area. When the project went into operation on October 22, 1950, it served 1,500 homes and 4,000 residents; today the domestic distribution system delivers to approximately 7,700 accounts about 500 million gallons per year from water sources developed by the Lewiston Orchards Irrigation District.[39] Though irrigated acreage has declined, in large part because fields have been converted to subdivisions, the project has for fifty years also enabled farmers to irrigate their orchards and fields. As a water project it has paid for itself; revenues from water sales enabled the district to make fifty annual payments and repay its debt to the federal government. In short, the Lewiston Orchards Project is one of Reclamations more successful small-scale water projects.

The project is significant in another sense: it was truly a pioneer in Reclamation-developed water for domestic purposes. It was over a decade ahead of the Norman

[37] "Project History," Volume IV, 1962-63, 18; "Project History," Volume VIII, 1970-71, 2; "Project History," Volume XII, 1978-79, N-3; "Project History," Volume X, 1974-75, N-2, N-3.
[38] "Project History," Volume X, 1974-75, N-2; Volume XII, 1978-79, 5.
[39] See Clark, "'Drinking' Water," 4; F.A.Q.s and History links at Lewiston Orchards Irrigation District (LOID), http://www.loid.net/.

Project and the Wichita Project, two multiple-use municipal and industrial (M&I) projects that reflected a new era of Federal development and management of water resources.

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Index