

# **Tualatin Project**

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# **The Tualatin Project**

The Twality Valley, or more formally the Tualatin River Basin, is a bowl shaped hollow or saucer-shaped syncline nestled amongst mountain ranges. Formed by the ebb and flow of water in and through the area, the flood-plain valley now hosts agricultural and residential settlements, its existence still tied into the forces of water. Eventually these settlements took their toll on the land and the land retaliated in the only way it knew how, by proliferating drought and flood. The cyclical cycle of drought and flood prompted residents to explore ways of harnessing water, in an attempt to break the destructive pattern. Soon the idea of controlling floods gave way to irrigation of crops, and farmers began contemplating an irrigation project in the area. This contemplation eventually led to construction of the Tualatin Project by the United States Bureau of Reclamation, to irrigate existing farms throughout the region.

## **Project Location**

The Tualatin Project occupies roughly 17,000 acres of land in the northwest part of the Willamette Basin just south and west of Portland, primarily in Washington County, Oregon; a small portion of the project extends into Yamhill and Clackamas Counties. Project lands cover an area approximately fifteen miles wide and seventeen miles long in the foothills on the eastern slope of the Coast Mountain Range. Principal project features include, Scoggins Dam, Henry Hagg Lake, Patton Valley Pumping Plant, Spring Hill Pumping Plant, twenty booster pumping plants, and an eighty-eight mile piped lateral distribution system.<sup>1</sup>

## **Historic Setting**

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1. United States Department of the Interior, Water and Power Resources Service, *Project Data*, (Denver: United States Government Printing Office, 1981), 1223; United States Department of the Interior, Bureau of Reclamation, "Annual Project History, The Tualatin Project, Oregon, Volume 1, 1971-1972", 7; United States Department of the Interior, Bureau of Reclamation, "Final Construction Report: Scoggins Dam," Tualatin Project, Oregon, nd.

## Prehistoric Setting

The Pacific Northwest has long housed a large indigenous population. At the same time, the Columbia River long supported an active anadromous<sup>2</sup> fish population. Conveniently, the river provided ideal fishing spots for local native populations, what archaeologists consider Plateau people. Two of the prime fishing spots for both indigenous and later Anglo settlers were located approximately one-hundred miles north and east of the project. Celilo Falls and The Dalles, where the Columbia River plunges over waterfalls and down rapids, proved to be two of the most popular locales for native fishermen from tribes around the region.

The importance of the fishing spot, and its attraction for many different groups, made The Dalles a gathering place for trade, gambling, and fishing. Archaeologists speculate that this central gathering place facilitated intermarriage and trade relationships between different tribes and groups, which also guaranteed wide access to the productive fishing spots because of unspoken agreements to ensure equal access to a variety of fishing sites. The University of Oregon's Luther Cressman argues "that the various Plateau people contrived ways to assure access for all to the limited and unequally productive riverside sites."

Archaeological evidence of visitors at The Dalles dates back 11,000 years. As early as 9,000 BC native peoples fished in the area with tools such as: bone hooks and lines, dip nets, gill nets, seine and funnel nets, barbed spears and three-pronged leister, simple and toggled harpoons, nooses, snares, weirs, traps, torchlights, and poisons. Fishing being a seasonal

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2. Anadromous fish hatch in freshwater, migrate to the ocean where the mature, and then return to freshwater to spawn. Species in the Columbia River system include: salmon, steelhead, rainbow trout, smelt, and lamprey. For more information on the anadromous fish in the Columbia River system see: Lisa Mighetto and Wesley Ebel, *Saving the Salmon: A History of the U.S. Army Corps of Engineers' Efforts to Protect Anadromous Fish on the Columbia and Snake Rivers*, Seattle, WA: Historical Research Associates, Inc., 1994.

activity, these tribes likely were hunter-gatherers during the remainder of the year.<sup>3</sup> Modern day decedents of these early hunter-gatherers include the Yakima Nation and the Confederated Tribes, the Umatilla, Warm Springs, Celilo, Cascade, Klickitat, and Wasco Tribes.

At the same time, the Kalapuya inhabited the Tualatin Plains, as well as most of the Willamette Valley. Research suggests that each band or tribe of the Kalapuya inhabited its own valley or basin, and each was their own dialectical-ethnic entity. Archaeological evidence of the Kalapuya dates back to the end of the last ice age. The band within the Tualatin River Basin – called the Twality, Tualatins, Atfalati, Quality, Faladin, or Nefalatine – seem to be related to the Yamhill River Basin Kalapuya, but each retained its own distinctive dialect. Evidence of winter village complexes, characteristic of the Kalapuya, date back roughly 6,000 years.

The bands inhabiting the Tualatin River Basin were the northern most Kalapuya, and differed from their southern relatives because of their trade practices with the costal Tillamook and lack of reliance on field burning for agricultural and settlement purposes. The Twality also relied more on large game hunting than their southern neighbors who depended on seed and acorn processing instead.<sup>4</sup>

### **Historic Setting**

In August of 1788, Captain Robert Gray reached the northwest coast and saw the mouth of a large river, however he opted not to examine it and the interior of the Pacific-Northwest remained unexplored for another twenty years. Nearly five years later, Captain Gray did name the river, the Columbia, after his ship which in turn honored Christopher Columbus. In October of 1805, the first Anglos of record in the area, Meriwether Lewis and William Clark, camped

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3. Philip Kopper and the editors of Smithsonian Books, *The Smithsonian Book of North American Indians: Before the Coming of the Europeans*, (Washington, D.C.: Smithsonian Books. 1986), 187, 192-3.

4. Penny L. Cass and J. Ronald Miner, *The Historical Tualatin River Basin*, Tualatin River Basin Water Resources Management Report Number 7, (Oregon State University: Water Resources Research Institute, 1993), 7, 8.

near the mouth of Mill Creek on their journey to the Pacific. The Lewis and Clark expedition did not make it far enough inland to come into contact with the Kalapuya. Instead an explorer with the Northwest Fur Company, Donald McKenzie, holds that honor, when in 1812 he led a group of traders into the Tualatin Valley. Not long after, the Hudson's Bay Company established a trading post at The Dalles. It was later abandoned, however, in favor of the post in Vancouver, Washington, just up the river. The influx of fur trappers and traders into the area decimated the local populations through the spread of non-native diseases. The Kalapuya were especially hard hit by these outside influences and few if any living remainders of the tribe still exist. Other exploration of the region, designed to open the Oregon Country to settlement, followed in the 1830s and 1840s. Explorers to the region included Captain Benjamin Bonneville and Lieutenant John C. Fremont. These explorations proved successful and in 1838 and 1840 respectively, a Methodist and a Catholic Mission were established at The Dalles.

At roughly the same time missionaries began forming communities around The Dalles, pioneer farmers and retired mountain men began settling in an area known as the "Twality Valley" or the Tualatin River Basin, making the area one of the original four counties in the Territory of Oregon. The Valley offered ideal conditions for farmers, however, their presence soon taxed the land, in turn beginning a gradual destruction of the watershed; as farmers cleared more land for agriculture, the valley became more susceptible to both drought and flood. The Tualatin Valley also attracted several missionary settlements, though many of the early immigrants later turned to farming.

Construction of a road between the Valley and the city of Portland in the late 1840s, solidified the importance of the Valley and the burgeoning town. The road ensured the dominance of Portland over Oregon City, as well as the significance of the agricultural

endeavors in the Tualatin area. The local economy gradually diversified, expanding to include significant forestry and logging operations, and a comprehensive transportation network.

Beginning in the 1930s, local residents attempted to solve their compounding water problems. Initially small groups of farmers focused on drainage and flood control, but by 1940 irrigation had surpassed these concerns.<sup>5</sup>

### **Project Authorization**

Flooding caused concern even for the earliest settlers in the area. Between 1935 and 1941, the U.S. Army Corps of Engineers (Corps) studied the area with an eye specifically toward flood control storage and river channel improvements. Local interests opposed the Corps final proposed plan, citing a lack of irrigation storage in the proposed flood control reservoirs and concern about straightening the river channel.

In July of 1948, Reclamation issued an interim report which included a plan to provide irrigation water and drainage for 46,000 acres of potentially irrigable land, flood control for low-lying lands adjacent to the streams, and a municipal water supply for towns in the proposed project area. Three years later in 1951, local residents met to discuss the type of irrigation development best suited to the area. Based on recommendations from the local population, the Corps and Reclamation cooperated on a study to provide basic data on present and long-range development.

In a November of 1956 Report, Reclamation analyzed the storage potential at the Scoggins Reservoir site. Initially Reclamation proposed irrigating 31,000 acres of land and providing 4,500 acre-feet of supplemental municipal and industrial (M&I) water for local

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5. Cass, 17, 23; "Annual Project History, The Dalles Project, Western Division–Oregon, Volume 1, 1961," 1-2; "Annual Project History, The Tualatin Project, Oregon, Volume 5, 1976," 88; Fred Lockley, *History of the Columbia River Valley: From The Dalles to the Sea*, (Chicago: S.J. Clarke, 1928), 40, 74, 78, 564, 924-43.

communities. Upon further review, Reclamation determined a greater need for M&I water existed. At the same time, several owners of potentially irrigable lands indicated their lack of interest in further development. Together these two factors served to forestall any further development, at least for a few years.

In 1962, interest in the project resurfaced and in mid-December of 1962, local residents formed the Tualatin Valley Irrigation District, superceding the existing Tualatin Improvement District. Reclamation issued a revised feasibility report in May of 1963. The revised report called for irrigation of 17,000 acres of land and 14,000 acre-feet of water for M&I use, with additional water for fish and wildlife, recreation, quality control, and flood control. This report provided the basis for the project's authorization. Congress authorized the Tualatin Project under the provisions of Public Law 89-596, on September 20, 1966.<sup>6</sup>

### **Construction History**

In 1968, Reclamation opened the project office in Forest Grove, Oregon. Soon after, in 1969, Oregon State University conducted an archaeological survey of the project area for the National Park Service, in conjunction with Reclamation's study of the project. Pending completion of the definite Plan Report in 1970, Reclamation did not award the first construction contract until 1972.

Reclamation awarded a contract to Peter Kiewit Sons' Company, of Vancouver, Washington, in July of 1972, for construction of Scoggins Dam. On July 10, 1972, the contractor began excavating a bypass channel to divert Scoggins Creek out of the cutoff trench area. Work on the thirteen foot deep channel began at an old farm bridge located about 125 feet downstream from the toe of the dam. Just over two weeks later, a dike was pushed across the

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6. *Project Data*, 1225-6; "Annual Project History, The Tualatin Project, Oregon, Volume 5, 1976," 88.



creek, forcing water to flow into the diversion channel.

A change order lengthening the downstream foundation trench by 510 feet, issued July 31, 1972, forced the contractor to return the creek to its bed to continue excavation of the foundation trench on October 5, 1972, after the foundation trenches in the original creek channel were excavated and backfilled.

During 1973, the contractor began construction of the stilling basin and fish handling facilities at Scoggins Dam, and finished the concrete lining of the outlet works tunnel. Union strikes during June, July, and August, severely hampered construction activities on the dam itself. Though work resumed in September, heavy rains in October brought construction once again to a halt, with a few minor exceptions; including concrete work on the Scoggins Creek Bridge and the outlet works gate chamber being completed in November and concrete work on the spillway structure being completed in late December.

The contractor virtually completed Scoggins Dam, including the embankment structure, in September of 1974. Only minor electrical and mechanical adjustments and cleanup remained at the end of the year.<sup>7</sup>

In April of 1973, Reclamation awarded a contract to Lyle D. King, of Sweet Home, Oregon, for clearing portions of the reservoir area. The strike did not impact his construction and over half of the contract had been completed by the end of 1973. The remainder of the work was completed the next year, and Reclamation accepted the contract as complete August 23, 1974.<sup>8</sup>

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7. "Annual Project History, The Tualatin Project, Oregon, Volume 1, 1971, 1972," 7, 10, 13, 19; "Annual Project History, The Tualatin Project, Oregon, Volume 2, 1973," 21, 25, 28, 29; "Annual Project History, The Tualatin Project, Oregon, Volume 3, 1974," 21, 26-8.

8. "Annual Project History, The Tualatin Project, Oregon, Volume 1, 1971, 1972," 13; "Annual Project History, The Tualatin Project, Oregon, Volume 2, 1973," 21, 25, 28, 29; "Annual Project History, The Tualatin Project, Oregon, Volume 3, 1974," 26.

Reclamation and the State of Oregon, through the State Fish Commission, signed a contract May 22, 1973. This contract provided for the construction of fish rearing facilities, enlargement of incubation facilities, and purchase of transportation facilities. The fish rearing ponds, located at the State's Big Creek Fish Hatchery, mitigated anticipated losses of anadromous fish resulting from construction of Scoggins Dam.

On June 25, 1973, a second memorandum of agreement was signed between the National Marine Fisheries Service, Department of Commerce, and Reclamation. This agreement concerned the modification of an Oregon Iron and Steel Company dam located approximately three and one-half miles above the mouth of the Tualatin River. The first memorandum of agreement, signed in 1968, turned the modification of the dam over to Reclamation. Modifications included the addition of facilities to facilitate the movement of migrating fish over or around the dam.<sup>9</sup>

Relocation of several county roads in the vicinity of the dam was delayed until May of 1974, due to heavy rains and resulting slides; Reclamation awarded the contract the previous April. The slides required drain installation and repair as part of cleanup activities. The contractor, Babler Brothers, Inc., of Portland, Oregon, finished work under the contract in November, and Reclamation accepted it as substantially complete November 21, 1974.

A massive slide in the fall of 1975, along the relocated Scoggins Valley Road, forced Reclamation to contract with Barton Sand and Gravel to repair the damage, even though the road had been turned over to Washington County in March of 1975. Reclamation awarded a second contract to Jensen Drilling Company, for installation of horizontal drains in the slide area. Both

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9. "Annual Project History, The Tualatin Project, Oregon, Volume 1, 1971, 1972," 13; "Annual Project History, The Tualatin Project, Oregon, Volume 2, 1973," 21, 25, 28, 29; "Annual Project History, The Tualatin Project, Oregon, Volume 3, 1974," 26.

contracts were accepted as complete in November. Also in 1975, it became apparent the existing Scoggins Valley Road could not accommodate the increased traffic flow generated by Scoggins Dam and Henry Hagg Lake. A final decision on improvements to the road remained in the hands of the Regional Office at years end.

The following February of 1977, Reclamation awarded a contract to R. A. Hatch Company of Bend, Oregon, for improvements to the Scoggins Valley Road. Work progressed at a rapid rate throughout the year. With the exception of testing by the Oregon State Highway Division to determine if deficiencies existed in the asphalt surfacing, the contract was essentially complete by years end.

December of 1977, brought additional heavy rain to the area. Once again, the rain caused serious slide damage to the Scoggins Valley Road at several points around Henry Hagg Lake, this time forcing a closure of the road. The repairs, estimated at \$500,000, remained in the hands of the County, as their maintenance agreement with Reclamation had expired. As storms triggered slides throughout the Pacific Coast states, Congress authorized funds for repairs on the Scoggins Valley Road around the Lake in November of 1978. The county agreed to perform the repairs at federal expense.<sup>10</sup>

Reclamation awarded the contract for construction of the Patton Valley Pumping Plant and Pipeline to E. W. Eldridge, Inc., of Sandy, Oregon, in April of 1974. Work on the pumping plant portion of the contract proceeded rapidly and it was essentially complete by the end of the year. The contractor began laying pipe for the pipeline, however, in November rain halted construction activities for the year.

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10. "Annual Project History, The Tualatin Project, Oregon, Volume 2, 1973," 29; "Annual Project History, The Tualatin Project, Oregon, Volume 3, 1974," 21, 26-8; "Annual Project History, The Tualatin Project, Oregon, Volume 4, 1975," 26, 33-5; "Annual Project History, The Tualatin Project, Oregon, Volume 5, 1976," 29, 30; "Annual Project History, The Tualatin Project, Oregon, Volume 6, 1977," 27-8, 78; "Annual Project History, The Tualatin Project, Oregon, Volume 7, 1978," N-1.

Pipe laying in Patton Valley finally began in June of 1975, and the contractor completed it in September. At the end of the year, the contract was substantially complete, awaiting only delivery and installation of the unit substation. Reclamation accepted the entire contract for the Patton Valley Pumping Plant and Pipeline on April 16, 1976. This portion of the project was transferred to O&M status October 4, 1976.<sup>11</sup>

In July of 1974, Reclamation awarded a contract to Sivers-Kostur, Inc., of Portland, Oregon, for construction of the Spring Hill Pumping Plant. The contractor completed the bottom concrete slab before the heavy rains began. On November 21, high water washed out a portion of the upstream cofferdam, which caused flooding and hindered construction activities. Additional flooding occurred in late December, further hampering work at the site, and making the completion date seem unobtainable.

Heavy rains and subsequent flooding delayed work on the Spring Hill Pumping Plant until April of 1975. The contractor completed the first part of the contract, including building walls, installation of the fifteen-ton traveling crane, and the roof installed, by mid-December. The contractor completed the remainder of the contract the following spring and Reclamation accepted the contract as complete on April 1, 1976.

On April 2, 1976, Reclamation awarded a contract for construction of the Spring Hill Distribution System to Perini Corporation, of San Francisco, California. The contractor began work in June on the river channelization and gabion section. In July, work started on the concrete regulating tank and pipe laying. Concrete placement for the regulating tank began in October. Due to unseasonable fall weather, work progressed through December. By December,

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11. "Annual Project History, The Tualatin Project, Oregon, Volume 2, 1973," 29; "Annual Project History, The Tualatin Project, Oregon, Volume 3, 1974," 21, 26-8; "Annual Project History, The Tualatin Project, Oregon, Volume 4, 1975," 26, 33-5; "Annual Project History, The Tualatin Project, Oregon, Volume 5, 1976," 29, 30; "Annual Project History, The Tualatin Project, Oregon, Volume 6, 1977," 27-8, 78; "Annual Project History, The Tualatin Project, Oregon, Volume 7, 1978," N-1.

the contractor had completed all concrete placement for the regulating tank, and laid 136,735 linear feet of pipe to the East, West, North, and in the Discharge lines. The Tualatin River crossings, and highway and railroad crossings, were also completed in 1976. Reclamation accepted this portion of the contract as complete the following May of 1977.

The contractor resumed work the following June of 1977; somewhat surprisingly severe weather did not cause the delay, as the area experienced below average rainfall for the 1976 – 1977 season. Work continued through the next summer and fall. The initial filling of the Spring Hill Distribution System began November 16, 1977. Reclamation accepted the contract as complete May 25, 1978.

Reclamation awarded a contract to Electric Technology Corporation, Tacoma, Washington, on July 14, 1976, for completion of the Spring Hill Pumping Plant and Switchyard. The contractor completed the embankment and riprap for the switchyard and the bulk of the work on the traveling water screens, pump pedestals, and electrical conduit, before closing construction operations for the winter in December. Work resumed the following spring, and included removal of existing silt in the pump bays and installation of pumps. Difficulties in equipment procurement hindered progress until October when Portland General Electric loaned the contractor a generator to complete the facility. Reclamation accepted this contract as complete December 16, 1977.<sup>12</sup>

Reclamation awarded the contract for construction of recreation facilities at Henry Hagg Lake to Hellsgate Construction Company, of Oakridge, Oregon, in November of 1974. Rain did not seem to affect work on this contract. By the end of the year, the contract installed water and

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12. "Annual Project History, The Tualatin Project, Oregon, Volume 2, 1973," 29; "Annual Project History, The Tualatin Project, Oregon, Volume 3, 1974," 21, 26-8; "Annual Project History, The Tualatin Project, Oregon, Volume 4, 1975," 26, 33-5; "Annual Project History, The Tualatin Project, Oregon, Volume 5, 1976," 29, 30, 38, 39; "Annual Project History, The Tualatin Project, Oregon, Volume 6, 1977," 27-9, 34, 78, 88; "Annual Project History, The Tualatin Project, Oregon, Volume 7, 1978," N-1.

sewer lines, underground electrical installations. Work also began on the comfort stations and septic tanks.

Reclamation accepted the contract for recreation facilities at Henry Hagg Lake as complete on October 1, 1975. A second contract for recreation facilities was awarded to Anunsen Company on June 10, 1975. The contractor completed the contract the following July, and Reclamation accepted the contract as complete on July 20, 1976.<sup>13</sup>

Reclamation awarded a contract to Trailco in February of 1975, for construction of a spillway log boom at Scoggins Dam. The contractor took little over a month to complete the work and Reclamation accepted the contract as complete on March 14, 1975.<sup>14</sup>

A thirty enrollee Youth Conservation Corps (YCC) camp was established on the project June 20, 1976. The crews worked on improvements and additions to the recreation facilities at Henry Hagg Lake. The first venture proved so successful, on June 19, 1977, a second YCC camp was established on the project. Enrollees worked through August 13<sup>th</sup>, doing a variety of improvements, and clean up and additions to the recreation facilities. Each enrollee spent a day touring the project with a Reclamation employee. The experience gave the enrollees a sense of the importance of water resources development and the complexity of construction projects. The program was enthusiastically received.<sup>15</sup>

Located about twenty-five miles west and south of Portland, Oregon, Scoggins Dam

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13. "Annual Project History, The Tualatin Project, Oregon, Volume 2, 1973," 29; "Annual Project History, The Tualatin Project, Oregon, Volume 3, 1974," 21, 26-8; "Annual Project History, The Tualatin Project, Oregon, Volume 4, 1975," 26, 33-5; "Annual Project History, The Tualatin Project, Oregon, Volume 5, 1976," 29, 30; "Annual Project History, The Tualatin Project, Oregon, Volume 6, 1977," 27-8, 78; "Annual Project History, The Tualatin Project, Oregon, Volume 7, 1978," N-1.

14. "Annual Project History, The Tualatin Project, Oregon, Volume 4, 1975," 26, 33-5; "Annual Project History, The Tualatin Project, Oregon, Volume 5, 1976," 29, 30; "Annual Project History, The Tualatin Project, Oregon, Volume 6, 1977," 27-8, 78; "Annual Project History, The Tualatin Project, Oregon, Volume 7, 1978," N-1.

15. "Annual Project History, The Tualatin Project, Oregon, Volume 5, 1976," 29, 30, 38, 39; "Annual Project History, The Tualatin Project, Oregon, Volume 6, 1977," 27-9, 34.

spans Scoggins Creek, a tributary of the Tualatin River; the Stimson Lumber Company Mill sits about half a mile downstream from the dam. A zoned earthfill structure, Scoggins Dam stands 151-feet high, with a crest length of 2,700 feet. The entire structure contains four-million cubic yards of material. For protection against wave action, rock riprap covers the upstream side of the dam; topsoil and grass blanket the downstream face.

A combined spillway and outlet works channel is located on the left abutment. The spillway entrance channel is protected by riprap. An inlet structure contains two nineteen-by-twenty-foot radial gates, and a chute varying in width from forty-three feet at the upper end to fifty-feet at the downstream end. The stilling basin is fifty-feet in width, with an adjacent outlet channel with riprap protection at the upper end. The outlet works consists of an entrance channel, an intake structure, a six-foot diameter circular tunnel, and a gate chamber with a four-by-five-foot emergency gate. A ten-foot, four-inch diameter, horseshoe tunnel houses a sixty-four-inch inside diameter, and twenty-inch outside diameter, steel pipe and the tunnel access house.

On the Scoggins Creek Branch, the access house contains a three-foot by three-foot gate, while an eighteen-inch-outside-diameter steel pipe serves an aerator structure with a twenty-inch cone valve. The control house holds two, two-foot, by two-foot gates and one fourteen inch jet flow gate. A thirty-six inch diameter municipal and industrial water supply pipeline runs from the access house to a valve box. A second stilling basin and the fish facilities, including a trap and ladder and fish spawning areas, round-out the features on this branch of the river.

The resulting reservoir behind Scoggins Dam, Henry Hagg Lake, extends about three miles upstream from the dam and holds 59,170 acre-feet of water. A 2,578 acre park, containing wooded and pasture areas, and populated by a variety of wildlife, surrounds the reservoir area.

Henry Hagg Lake stores water for irrigation, municipal and industrial purposes, water quality control on the Tualatin River, recreation, and fish and wildlife.

Water released from Henry Hagg Lake travels through the outlet works, located on the left abutment of the dam, into Scoggins Creek. About two and one-half miles downstream of the dam, the Patton Valley Pumping Plant and Distribution system pumps water into the distribution system. The Plant, an outdoor plant, contains five vertical shaft turbines pumps with a combined capacity of almost forty cubic feet per second. The five pumping units deliver water a short distance, through a thirty-inch-outside-diameter steel discharge line, to a 19,118-cubic-foot-capacity regulating tank. From the tank, three and one-half miles of buried, gravity fed pipe deliver water to about 1,900 acres of land. The main pipeline runs over 6,000 feet, and is 30-inch-diameter reinforced plastic mortar pipe. Asbestos-cement pipe, ranging in diameter from twenty-one to ten inches, comprises the remainder of the pipe in the distribution system.

A cooperative venture between Reclamation and the city of Hillsboro, Oregon, the Spring Hill Pumping Plant, sits on the right bank of the Tualatin River roughly nine miles downstream of the dam and three miles south of the town of Forest Grove, Oregon. Nine irrigation pumps, with a combined capacity of 148.2 cubic feet per second, deliver water through a 2,472-foot-long, sixty-inch diameter prestressed concrete pipe, to a 84,900-cubic-foot capacity buried concrete regulating tank. From the regulating tank, eighty-five miles of buried pressure pipeline distribution system carries water to 10,300 acres of project land. Pipe in this portion of the distribution system ranges in diameter from fifty-four inches to six. Asbestos-cement comprises sixty-seven miles of pipe, while the remaining eighteen miles are reinforced concrete.

The city of Hillsboro installed an additional three pumping units in the Spring Hill Plant. These units, with a combined capacity of just over thirty-four cubic feet per second, deliver



water directly to the city's water treatment plant.

An additional 4,800 acres of project land receive irrigation water by pumping released storage water directly from Scoggins Creek and the Tualatin River.<sup>16</sup>

### **Post-Construction History**

Water deliveries from Henry Hagg Lake to the United Sewage Agency and to the Lake Oswego Corporation began June 1, 1976. In August, the Tualatin Valley Irrigation District began receiving water.

The same year, Reclamation began investigating a second phase of the Project, allowing for further development of the resources of the Tualatin River basin. The proposed second phase included additional storage capacity on the Tualatin River. Though Congressional field hearings took place in April of 1976, a second phase of the project never proved feasible.<sup>17</sup>

In September of 1977, vandals damaged the fish facilities at the reservoir, causing an estimated \$1,500 worth of damages, necessitating repairs. Vandals previously inflicted minor damage at various locations around the reservoir.<sup>18</sup>

In the late 1990s, the Tualatin National Wildlife Refuge was authorized. Reclamation now cooperates with the U.S. Fish and Wildlife Service, Oregon Department of Fish and Wildlife, and Ducks Unlimited to help design wetland impoundments and water distribution systems. The ultimate impacts of the new Wildlife Refuge remain to be seen.<sup>19</sup>

### **Settlement of the Project**

Settlement of the lands in the vicinity of the Tualatin Project dates back to the early 1840s. The area was essentially settled by the early twentieth century. As a result of the

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16. *Project Data*, 1223, 1225; "Final Construction Report: Scoggins Dam," 6-7.

17. "Annual Project History, The Tualatin Project, Oregon, Volume 5, 1976," 87, 90, 91.

18. "Annual Project History, The Tualatin Project, Oregon, Volume 6, 1977," 78.

19. Pacific Northwest Region, Reclamation Fish and Wildlife, "Sustaining Fish and Wildlife," <http://www.pn.usbr.gov/wil/index.html> accessed April 18, 2000.

previous settlement activities Reclamation did not withdraw any additional lands for settlement under the project. As such, there are no, “project lands” associated with the project.<sup>20</sup>

### **Uses of Project Water**

The Tualatin Project provides full irrigation water to approximately 17,000 acres of land about twenty-five miles west and south of Portland, Oregon. Principal crops on project lands include, grain, vegetables, berries, hay, and pasture. Project lands also support a significant thriving container-grown nursery stock industry.

The gated spillway at Scoggins Dam allows Reclamation and the U.S. Army Corps of Engineers to operate the dam and reservoir for flood control on the Tualatin River. The top 20,300 acre-feet of storage in the reservoir is allocated to flood control. According to engineers estimates, Henry Hagg Lake can completely regulate a fifty year flood. The available flood capacity also provides flood stage reduction at downstream points on the river.

In addition to irrigation water, the project provides 14,000 acre-feet of supplemental municipal and industrial water to four nearby communities and an industrial corporation. Under an agreement with the Unified Sewerage Agency of Washington County, Reclamation also makes 16,900 acre-feet of water available, through scheduled releases, to improve the water quality of the Tualatin River during the summer months when natural flows decrease.

Because of its proximity to Portland and its forested location, Henry Hagg Lake provides a prime recreation spot for local enthusiasts, as well as visitors from the Willamette Valley. In 1992, the Lake recorded 188,750 visitor days. Visitor facilities at the Lake include boat ramps, picnic tables, and shelters. The Lake also provides excellent fishing opportunities, as it is stocked annually with rainbow trout. Additionally, Reclamation constructed a fish trap below

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20. “Annual Project History, The Tualatin Project, Oregon, Volume 6, 1977,” 78.

Scoggins Dam to collect, for hatchery use, the anadromous fish blocked by the dam. The Lake also provides habitat for osprey, and winter range for elk and black-tailed deer.<sup>21</sup>

### **Conclusion**

Agricultural subsistence in the Tualatin River Basin dates back to its earliest indigenous residents the Kalapuya. These early Native Americans established a long tradition of subsistence agriculture in the area, which continues today. While the land once supported a thriving farming community without assistance, that is no longer the case. Now the local residents rely on the Bureau of Reclamation to supply water to crop land. This dependence on an outside source did not come easily – the project was not constructed until the mid-1970s, rather late in Reclamation's dam building career, and local residents did not easily or eagerly embrace the idea. A satisfactory working relationship developed between the two entities, however.

At the same time, the region supports several successful urban settlements, which also provides a drain on the local water resources. These residents also benefit by receiving water for M&I use from the multipurpose Tualatin Project.

Formed by the ebb and flow of water, the Tualatin Valley has always been tied to water. The construction of the Tualatin Project only further enhanced the relationship among the water, land, and people of the Valley. The Project ensures the tradition of farming and settlement in the area will continue for many decades to come.

### **About the Author**

Toni Rae Linenberger, a Colorado native, received her B.A. in History from The Colorado College in Colorado Springs, Colorado in 1996. In 1998, she earned a MS in Western American History from Utah State University in Logan, Utah. Ms. Linenberger's final paper, a case study entitled *A Dam for All Seasons: Hollywood, the Bureau of Reclamation, and Construction of Parker Dam*,

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explored the relationship between the growth of a small town in California and the development of the Colorado River.

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