

THE WINFIELD, OKANAGAN CENTRE, IRRIGATION DISTRICT.

1908 - 1989

Research Paper 1989, funded by  
Challenge 1989

for  
The Lake Country Heritage And Cultural Society

by  
Miss Jackie Mitchell and Miss Amber Escombe.

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The early Irrigation system stands tribute to the pioneers who built it, as it did successfully fulfill it's function of bringing water through difficult terrain and enabled Winfield to begin the development to it's present day Agricultural status. The route by which the Irrigation system has grown and developed has proved to be an interesting one. WOCID has successfully brought water to Winfield and area for many years.

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The original installation was an effective and reliable distribution system. The water came from the Beaver Lake chain and passed through both open flumes and various diameters of wooden stave pipe. Sections of usable wooden stave pipe still exist in Winfield today that date from the turn of the century.

Stave pipe was made from wooden stave sections wrapped on the outside with coiled iron wire and was waterproofed with a tar substance on the inside. The original flumes were of wooden construction but were later replaced with metal and cement piping.

In the early days of the WOCID operation, the present flow control valve was not in use. Volume at the point of usage was controlled by a combination of different diameters of pipe and a restricting valve at the junction where the water user connected to the mainline.

The original main supply line from the Beaver Lake chain followed a different route than today's mainline. From the Beaver Lake intake, the early system travelled down Wrinkle Face Mountain adjacent to Sunburnt Ridge. Reaching Lodge road, the flume serviced Sam Takenaka's and A. Walker's properties. In the area of the Old Catholic Church, the water was piped under the highway, up the hill, and south to the Cole place.

The flume proceeded past Ross McDonagh's and Art Arnold's. The original flume/pipeline went up the Camp road hill servicing the Duggan's and the Monroe's, finally arriving at the reservoir.

A man-made bowl, this reservoir was abandoned by WOCID in 1965. Nature has since reclaimed the old reservoir which in 1989 is fully overgrown. This reservoir was a key component in the early system. It was used to

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contain excess water that had been released during daily operations. Conversely, the reservoir provided a back-up supply should demand prove greater than supply for Okanagan Centre.

Three main distribution networks lead from the mainline to service Winfield and Okanagan Centre properties. These were:

- 1) The Calgary Line, which began at the Duggan's to service north and south lying areas;
- 2) The Bush Line, which ran between the Monroe's and the Kunstar's, and serviced areas to the north and south;
- 3) The Rainbow Line, which travelled to Walter Knoph's and serviced the Okanagan Centre.

A separate flume serviced C-grade land and the flats (lower Winfield -- ie, Bottom Woods Lake Road) through a pre-emption on the water supply. Crucial to the flume operation were the ditch riders. The ditch riders travelled the system regulating the flow of water to the various allotments. Because the ditch riders were in daily contact with the entire system, they monitored the condition of the system and were able to anticipate breakages and effect repairs and improvements.

The gradual introduction of sprinkler systems from the 1940's onwards allowed a relatively painless transition from the original flume/pipe system to the present day pressure pipe system. The old system, however, stands as a tribute to the pioneers who built it, as it did successfully fulfill its function of bringing water through difficult terrain and enabling Winfield to begin the development to its present day agricultural status. The simplicity and effectiveness, construction methods and cost efficiency of the system was a major factor in Winfield and District's low cost irrigation supply.

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An important factor in the operation was a man who lived in the canyon and who monitored that section of the line. A unique and interesting feature of his work was the phone that existed between the work shed and the canyon. It was via this phone link that the flow was regulated on the mountain. Presumably, conversations were held every day at 8:00 am and 4:00 pm. The line was strung over the range. Unfortunately, it was not always reliable but it was excellent for the time.

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Today's main line originated at an intake about a mile north of the old intake. The main line travelling via Clark's Creek down the mountain then back to pass through two pressure reducing stations and the chlorinator. Entering Winfield, the line travels down Beaver Lake road and underneath Highway 97. The pipe follows Dick and Chase Roads through Bond road, traversing to Goldie road. At this point, the line travels down Rainbow Hill out towards Carr's Landing as far as McCriight Road. Okanagan Centre is serviced by a line off of Chase and Camp roads. Numerous pressure stations are located along the main line with the total number reaching 59.

Today's system is divided into three major parts -- the reservoir, the main line and the distribution lines.

The water for the irrigation system finds its source in two of the lakes in the monashee mountain range: Crooked and Beaver Lakes. The water flows along a controlled and regularly monitored path. Today, Beaver Lake's optimum depth is 10.75 m or 35 ft over an area of 8200 acres. The water flows from Beaver Lake to the settling reservoir by Beaver Lake creek. The settling reservoir covers an area of two and a half square miles. At this point, the water is screened for debris. These screens are made from unbelievably fine mesh that requires cleaning two or three times a day during peak season (summer) and usually once a month during the winter. The water enters the main line which is 104 miles of pipe constructed of 3/8" steel and cement and measuring 32" in diameter.

Regularly, the water runs at 800 lbs/inch<sup>3</sup>, which is roughly the pressure at the top of the hill. Gradually, the water gains momentum as it flows down the hill towards Winfield. Each pressure station is responsible to reduce this pressure by about 300 lbs, until the final pressure at the taps, 16 lbs/inch<sup>3</sup> is reached.

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The new system was implemented in the last week of July, 1988. The new chlorinator combines the use of computer and laser technology. At the Beaver Lake road substation, two laser-sensing probes are mounted inside a pipe. As the water flows past the probes, the lasers relay to a computer the flow of water and the water's temperature.

The water flow information is accurate to one tenth of one gallon per second. With both sets of information the onboard computer instructs how much chlorine gas is to be released into the water.

A total analyzer monitors parts per million of chlorine that is in the water and further instructs the computer to adjust to any variances. Variances in flow will occur at different times of the day when water consumption changes. The computer also performs a function previously done manually. When a tank of chlorine empties, the computer will now automatically engage the use of a second tank.

An overdose or a period of no chlorination will be prevented by the new technology. When such occurrences become eminent, set levels trigger an alarm.

A built in monitoring device to detect chlorine leaks within the chlorination room stores three tanks. Approximately one tank is used every nine to ten days.

The reservoir located near Jack Seaton park has a storage capacity of 12 000 cubic feet. It takes seven hours for the water from Beaver Lake to reach our taps. This system was first put into use in conjunction with ARDA in 1967.

Major accomplishments of the irrigation district have been to encourage proper water use and conservation, both domestically and agriculturally. The flow control valves have enabled the district to

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Major accomplishments of the irrigation district have been to encourage proper water use and conservation, both domestically and agriculturally. The flow control valves have enabled the district to

expand their boundaries by 250 acres. A study has been done but is on hold at this time concerning pumping water from Okanagan Lake. Due to cost, this project is not feasible, but in ten or twenty years it may be considered as a viable supplementary water supply. The irrigation district believes it will be able to agument this plan, depending on the population growth within this area and the ability to expand existing boundaries.

The District is also looking at a turbine system which will generate energy through the water . This energy will be used to turn and clean the screens. \$250 000 will be needed to introduce these turbines, but the district will make no definitive plans until observing the Revelstoke turbine system.

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THE MINUTES.

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In 1909, the Maddock Brothers relinquished the newly constructed system to the Okanagan Centre Irrigation and Power Co. The system operated until 1948, when it was purchased and amalgamated with the Winfield, Winfield Irrigation District. Extensive repairs were undertaken to upgrade the old Okanagan Centre district and provide a more reliable service. The Winfield Irrigation District was incorporated in 1930, prior to that it had been an Improvement District which had been formed in 1929.

WOCID's earliest obtainable set of records begin in 1943. At this time and still today, there are pre-emptions on the creek which services our water supply. These pre-emptions explain the flume which existed on the Flats and the pre-emptions also provided such opportunity for conflict. Answers were needed for questions such as "who had water rights to the water supply?" and "who was responsible for labour and manpower needed to maintain the flume?"

Since the beginning of WOCID's existence the flumes were in need of constant attention. An interesting procedure was undertaken by Mr. J. Goldie to measure the flume. Mr. Goldie travelled the line by car and measured the mileage by speedometer.

From Beaver Lake Creek to Dan Clark's gate	.3 miles
From Beaver Lake Creek to McCarthy's barn	.4 miles
From Beaver Lake Creek to Powley's gate	.6 miles
From Beaver Lake Creek to Creek	.7 miles

The next notable entry was on July 18, 1944 when the plans for the Beaver Lake Dam were discussed and the following was established:

The estimation on the cost of building was \$10,000, the contractor would lose 2% for every thousand of a fraction over the estimated cost and for every thousand or fraction under estimated cost would gain 2%.

The Dam was completed by December 5, 1944 at a cost of \$ 16, 994.03 however, with commission being 8%, on the total.

On Thursday 5, 1948 the Irrigation District assumed they were free of any obligations to the water users in the Flats. From future expenditures, however this belief was proved otherwise.

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WOCID was also approached at this time, to purchase the Okanagan Centre Irrigation District which was owned by the Okanagan Centre Irrigation and Power Co. Plans were underway in regards to the water users of WOCID becoming the owners of the system.

As one of eventual expenditures WOCID began installations of a cement flume in January of 1952, which was to replace the wooden and ditch flume that serviced the Flats.

The 1960's saw the end of a great era and the beginning of an even brighter horizon for WOCID. The Government of B.C. recognized a growing population and a need for improvement. ARDA (Agricultural, Rural, Development Association) was the product of this need, providing essential funding and services. The funding at this time was 70/30 - 70% from the Federal and Provincial Government and 30% from the District. Many successes can be attributed to ARDA, such as the new Main Line, and the first Chlorinator. As a result of hardwork and perseverance on behalf of ARDA and the Board of Trustees, our expanding needs were being fulfilled.

The annual meeting on April 19, 1966 saw a new outlook for the Irrigation District. It was proposed that after WOCID had their plans approved by ARDA that a study be done on the sources of the water supply with the idea of extending the District and the number of acres serviced. With time another 250 acres were gradually serviced, although this was not the equivalent of the proposed vast expansion it was a much more sensible goal for our water reserves, not putting a large stress on the system.

WOCID was faced with many problems of production and upkeep, in April of 1968. The cost of Flow Valves, the availability of water for the irrigation season, the location of new connections and the imposition of surcharges were all major concerns. Eliminating the sand and silt from the water would later be dealt with by the new screens.

The Narramata type screens were installed in the fall of 1969, to eliminate any debris but silt.

In April of 1971, any faults in the new line were being repaired and hopefully would be ready for the irrigation season. Safety precautions were taken in case of problems, both the old and new lines would be

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Amber and I have enjoyed working on this paper. It seems that many gaps have been filled and yet it is apparent that many still exist. We would appreciate any information and or pictures that anyone may have to provide for this project. For their time and help we would like to Thank the following people:

Wray Finlay and the Staff of WOCID.  
Heber Mitchell  
Malcolm Mitchell  
Graham Campbell  
Tom Escombe  
The Calendar

\*\* please note that the Chlorinator excerpt was taken from an Calendar article. Wednesday August 3, 1988  
Andrew Powell

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2007.024.012 Upgrade of irrigation line to Beaver Lake



2007.000.054 Men working on irrigation lines



2007.000.049 Wooden Irrigation Pipe