



Kelowna Joint Water Committee



# 2005 STRATEGIC WATER SERVICING PLAN

## Executive Summary



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## EXECUTIVE SUMMARY

### Plan Objective

This report provides a long-range water servicing plan for *all* lands within the City of Kelowna boundaries plus lands in the Regional District that are serviced by the KJWC utilities. The plan closely reflects Kelowna 2020, the Official Community Plan, which was completed in 2000. The report was authorized by the Kelowna Joint Water Technical Committee and was a joint effort from the following water utilities:

- City of Kelowna;
- Black Mountain Irrigation District;
- Glenmore-Ellison Improvement District;
- South East Kelowna Irrigation District;
- Rutland Waterworks District.

This plan updates the 1995 KJWC Water Servicing Plan and provides additional information on the available water sources, licensed capacity, and on water quality issues facing the water suppliers. Also included is a summary of the Capital Plans of the five water utilities complete with estimated costs.

### Existing Water Sources

Section 2 of this report provides an in-depth review of the water sources including licenses held, historical water use, and a summary of typical raw water quality of the sources. There are three primary sources of water available to the utilities: groundwater, runoff from the tributary watersheds, and water pumped from Okanagan Lake. The annual average contribution from the three sources to meet the present water demands is as follows:

Okanagan Lake supply	29 % (14,500 ML)
Mission, Kelowna and Hydraulic Creek Supplies	57 % (28,675 ML)
Groundwater supply	14 % (7,025 ML)

The watersheds provide more than half of the water supplied to the five water utilities. The watersheds also recharge the groundwater aquifers and fill Okanagan Lake. The level of water in Okanagan Lake is directly related to the volume of runoff from Mission Creek as Mission Creek is the single largest contributing source to recharge the lake and groundwater in the region. Licensed capacity was reviewed for all water suppliers. It appears that adequate licenses are held by the five water utilities to meet the foreseeable future water demands.

### Existing Water Systems

Section 3 provides a description of the distribution systems of the five major water supply systems along with a description of the smaller local utilities. The water system service area, the distribution system, and existing strengths and weaknesses of the systems are presented. Pressure zone mapping, plan drawings of the key infrastructure, and a summary table of major components for each utility are presented. The mapping includes the location of pump stations, reservoirs, PRVs and trunk watermain. Pressure zones drawings are necessary to determine how lands outside of the existing utility boundaries will be serviced, and to determine interconnection opportunities.

## Water Servicing Plans

Water servicing plans for the future are presented in Section 4 of this report. Water servicing capacity was reviewed based on meeting the growth projections set out in the Kelowna 2020 OCP. The growth shows that an additional 45,000 persons could be living in Kelowna by the year 2020. The resulting additional annual water demand is projected to be 10,000 ML. This amount is well within the licensed capacity of the five KJWC utilities. A probability review was carried out for the area watersheds and there appears to be sufficient water for the 20 year horizon. Drought cycles will inevitably occur in the future and the water utilities must closely manage their resources to weather these cycles.

Figure 4.2 (after page 68) presents recommended service boundary lines for the unserved land within the City of Kelowna and adjacent RDCO lands. Table 4.4 presents an explanation for the recommendations and the estimated water demand for the unserved areas.

## Conclusions

The major conclusions generated during the development of this plan include the following:

- Based on the information assembled, it appears that no major actions are required for the KJWC related source capacity and licenses as these appear sufficient for the foreseeable future. The utilities that rely on upland watershed storage are more susceptible to drought cycles. Drought management plans in place in draft form for BMID and GEID and will soon be passed as bylaws. SEKID has meters in place with which to manage drought conditions.
- The present annual average water demand for the five large water utilities making up the KJWC is estimated to be in the range of 50,000 ML. The compiled data for water demand had to be “normalized” to create an annual average demand as the characteristic of water use and the climatic factors are constantly changing;
- The current licensed volume of water available to the KJWC utilities is 131,850 ML, meaning that in an average water use year, the water utilities are utilizing only 33 % of their licensed allotment. It appears that there is sufficient licensing for the Kelowna water utilities for the foreseeable future;
- The average amount of water supplied on an annual basis by each of the five Kelowna utilities, and their percentage of the total supply is summarized as follows:

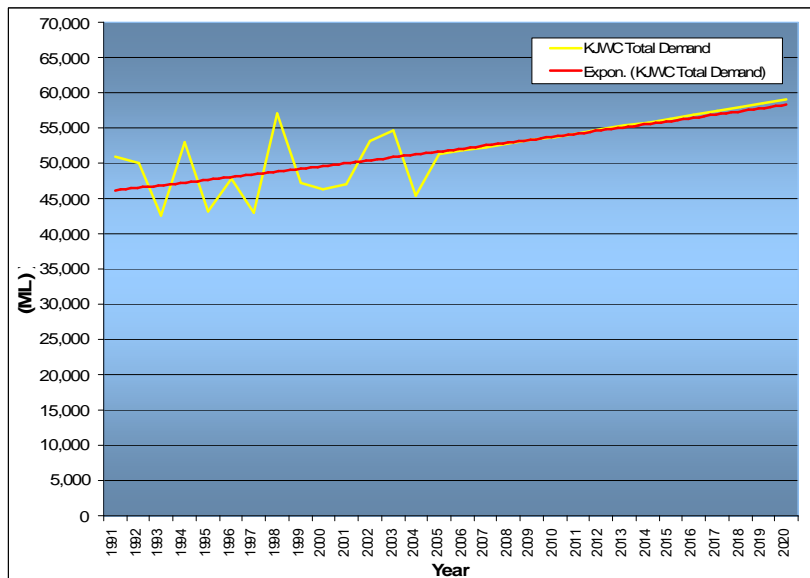
City of Kelowna	14,500 ML	29%
Black Mountain Irrigation District	13,400 ML	27%
Glenmore-Ellison Improvement District	6,800 ML	13%
Rutland Waterworks District	4,000 ML	8%
South East Kelowna Irrigation District	11,500 ML	23%
<b>TOTAL</b>	<b>50,200 ML</b>	<b>100%</b>

- Annual water demand is closely related to the climatic factors of temperature and precipitation. The climatic factors have a much more prominent impact than the impact of growth and development in the region as shown in the historical demand figures in Section 2 of this report;
- From the trend line in Section 2, Figure 2.12 (page 38) trended historic water demand was found to increase very slowly. Over the last 14 years, the data showed an increase of only 1,000 ML water demand or an annual rate of only 0.15%;



- The trend line on Figure 1 was developed factoring in the projected future growth. Over the 20 year span of the OCP, using an average daily demand of 500 L/person/day for SF and 300 L/person/day for MF development, the annual average water demand is expected to increase by 10,000 ML. The OCP growth rate is projected at 2.40%. The water demand growth rate is estimated to be lower at 0.93% over the lifespan of the OCP;

**Figure 1 - KJWC Projected Annual Average Water Demand**



- Meeting the long-term water supply requirements is expected to be manageable as it will be influenced by the following factors:
  1. The implementation of water meters and demand management tools will help to monitor and control water consumption;
  2. Future development will consist of more multi-family type housing which uses less water per person than single-family type development;
  3. There will be less "dry" land remaining to irrigate;
  4. The value of water will increase, making it more valuable and;
  5. Irrigation practices will continue to be more efficient as has been the case in the past 10 years.
- There is over \$120,000,000 in capital expenditures planned for the KJWC utilities in the next 20 years. Water treatment forms approximately half of the total expenditures identified. Major treatment and water quality improvement projects are planned for BMID, GEID and SEKID. The City has plans for additional water quality improvements, however, these will be driven by changes in regulations;
- As water treatment forms a significant portion of the overall water improvement projects, the water utilities are in the process of developing financial plans for how to move forward on these issues. Water quality and renewal initiatives will have the largest impact on utility rates in the next 20 years. Rate increases will be necessary to fund these initiatives.

## Recommendations

- Water rates must increase at a rate equal to or slightly above the construction inflation rate, otherwise the ability for the utilities to implement upgrading and renewal projects becomes extremely limited;
- With water quality regulations becoming more stringent, the implementation of water treatment will result in higher water rates for both domestic and irrigation users. Maintaining a low rate for irrigation water helps to maintain the green space and high quality of life enjoyed within Kelowna. A significant issue facing three of the KJWC utilities will be treatment and/or separation of the agricultural water supply;
- The KJWC should continue to develop common policies for water supply in the Kelowna area. Meeting occasionally with the Westside Joint Water Committee should yield benefits including the creation of common objectives, shared contributions to public education on water, shared advertising, common policies for water management, and common standards and practises;
- The use of water meters forms the most effective means of controlling water-use during drought years as demonstrated by the utilities with meters. All of the utilities should be working towards implementation of a education and metering program and adjusted rate structure to encourage responsible water-use;
- Local and senior governments must continue to work on expansion of the water quantity and quality monitoring as well as work on a Basin-Wide approach to assess, expand and improve water management in the Okanagan Valley. Once the Provincial work related to the Okanagan Basin capacity and the groundwater inventory are completed, the KJWC should move forward on groundwater protection issues.
- KJWC utilities should plan for expansions of their water systems to service the unserved lands as identified in Section 4 of this report;
- With 57% of the source water coming from multi-use Crown watersheds, protecting source water quality and quantity is beyond the authority of the KJWC. IHA, RDCO, MoE and the MoAL have statutory authority over watershed land-use and should be encouraged to develop pro-active source water protection policies.
- Land use planning and monitoring will be a component of protecting the groundwater resource and the City and RDCO organization must both be involved at a land use level. Their bylaws should be integrated to help protect the watersheds and groundwater resources;
- In accordance with Provincial direction, all new small scale development should be connected to the nearby larger existing water utilities where it is practical to do so. This allows for qualified operators and better redundancy and capacity to service the population;
- Emergency Response Plans for the KJWC utilities, which are currently being updated with IHA, should be circulated to the other utilities so that involvement and /or support will be made available in times of emergency.