

CHAPTER 2

Study Area Description

The Okanagan River Basin extends from north latitude 59° 50' in close proximity to Shuswap Lake. Flow is in a southerly direction for 127 miles in Canada and 73 miles in the United States to its confluence with the Columbia River. The main valley lake system is comprised of six lakes interconnected by river flow (Figure 2.1). Wood-Kalamalka Lakes sub-basin discharges via Vernon Creek to Vernon Arm of Okanagan Lake. The outflow of Okanagan Lake becomes Okanagan River which flows south, connecting Skaha, Vaseux and Osoyoos Lakes (Figure 2.1). From Wood Lake to Osoyoos Lake the elevation drops 371 feet from 1,284 to 913 feet (MSL).

Basic data pertaining to drainage basin area, major land use practice, climate, hydrology and population are supplied in Table 2.1. In general, the Okanagan Valley is  - shaped, with mountains rising 4,000 to 7,000 feet on both sides. Bench lands 100-200 feet above the lakes are a conspicuous feature of valley topography. The soil of the bench lands is good for fruit crops. The bottom lands adjacent to the Okanagan River are used for dairy farming and growing fruits and vegetables. The higher, open forest lands are grass covered, providing open range land for cattle and ungulate grazing as well as timber production.

While the entire valley lies in a dry belt, there is a gradual change in climatic conditions from south to north (Table 2.1). At Oliver in the extreme southern part of the Valley, average rainfall is 10.8 inches per year, while at Armstrong in the extreme north, it is 17.2 inches per year. Maximum temperatures in July/August may reach 110°F, while minimums of -20°F are not uncommon in January. There are approximately 152 frost-free days at Oliver, but only 114 at Armstrong.

Most of the main valley lakes are ice-covered in winter, generally from late December to the middle of March. Okanagan Lake seldom has a complete ice cover, but the bays and shallow inlets are often frozen over for long periods,

The majority of inflow water to the lakes comes during a three month period from April to June. Except for major tributary streams, most small streambeds are dry from July to November, due chiefly to upstream storage and irrigation demands. It is estimated that of an average annual gross inflow of 664,000 acre feet to Okanagan Lake Basin, up to 1/3 is lost by evaporation and transpiration from Okanagan Lake. About 15% of the mean annual surface runoff to Okanagan Lake is used for irrigation.

There are three major population centers in the Basin: Vernon, Kelowna and Penticton (Figure 2.1). The major industrial developments in the valley are associated with the agricultural, tourist and forest industries. Current population (1971 census) in the Valley is about 114,500 people.

TABLE 2.1
BASIC DATA ON OKANAGAN VALLEY DRAINAGE BASIN

Okanagan Basin Watershed (in British Columbia)	
Total Drainage Area	3,100 sq.mi.
Potentially Irrigable Lands (below elevation 1800 feet)	157,000 acres
Irrigated Lands	60,000 acres
Tree Fruits	34,000 acres
Vegetables	4,500 acres
Grapes	2,500 acres
Forage Crops	19,000 acres
Climate	
Mean Annual Temperature	46 degrees F
Average Annual Precipitation-Armstrong	17.2 inches (30-year average)
Average Annual Precipitation-Kelowna	12.2 inches (49-year average)
Average Annual Precipitation-Penticton	11.3 inches (49-year average)
Average Annual Precipitation-Oliver	10.8 inches (49-year average)
Hydrology	
Average Net Inflow to Okanagan Lake	355,000 acre-feet
Minimum Net Inflow to Okanagan Lake	80,000 acre-feet (1931)
Maximum Net Inflow to Okanagan Lake	763,000 acre-feet (1948)
Population	
1971 Census	114,500 people