

## 2 System Description

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## SECTION 2

# System Description

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The City of Lebanon operates a community water system serving most of the residents of Lebanon, Oregon, and a small number of customers located outside the city limits. The city's water system has been assigned the state and federal Public Water System Identification No. 4100473. This section provides an overview of the system by describing the customer base, recent water use history, water rights, and the facilities that make up the system.

## Service Area and Population

**Exhibit 2-1** provides an overview map of Lebanon's existing service area. The estimated service population for year 2004 is 13,260. **Exhibit 2-2** is a system schematic.

## Water Use

The city's system provides an average of nearly two million gallons per day (mgd) of drinking water to the community. The average day demand has steadily increased over the past 8 years by approximately 0.04 mgd each year.

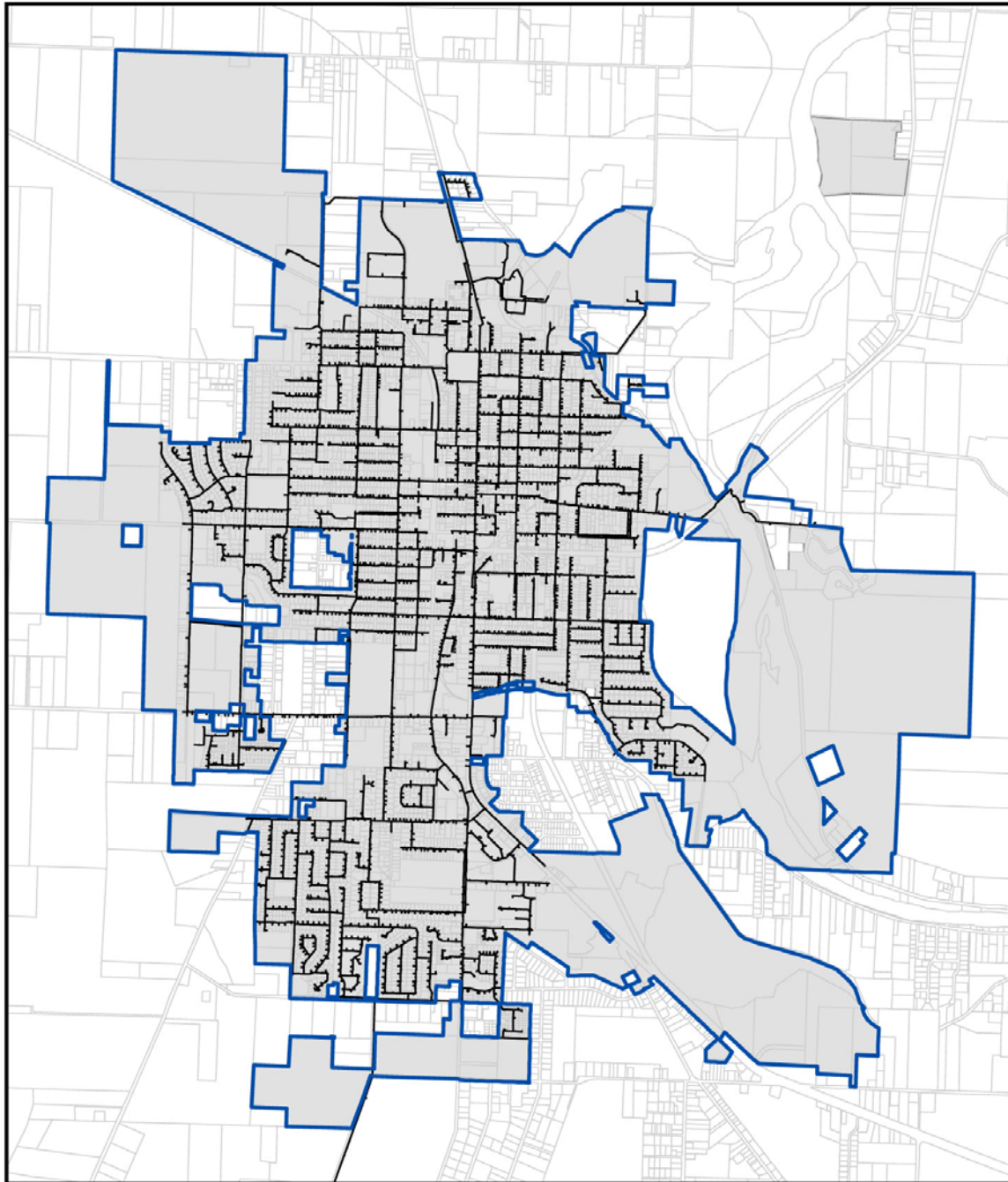
Lebanon's demands show a large increase during the summer months because of outdoor irrigation. The maximum summer day demand is approximately 1.8 times the annual average. The highest recorded single day demand for the system was 3.75 mgd on July 29, 2003.

About 56 percent of water use in the Lebanon system is by residential customers, 41 percent by commercial and industrial customers, and 3 percent by governmental customers.





## Water Supply

The Santiam Canal, which draws water from the South Santiam River serves as the city's sole source of potable water. The city's intake on the canal and the water treatment plant (WTP) are located on the block between Main Street and 2<sup>nd</sup> Street, and between A Street and Elmore Street. This location on the canal is approximately 3.5 miles downstream from the canal headworks on the South Santiam River.

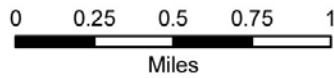
The canal was owned and operated by Pacific Power and Light Company until 1984, at which time it was sold to the City of Albany. Albany holds water rights on the canal both for its Vine Street WTP and for power generation located at this plant. Lebanon pays Albany annually for canal operation and maintenance. Albany is currently implementing a project to modify the diversion dam and fish screens at the headworks to bring them into compliance with current fish screening requirements. This upgrade is scheduled for completion in 2006.



**Legend**

-  Water Lines
-  Tax Lots
-  Service Area
-  City Limits

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**Exhibit 2-1**

Existing Service Area  
Lebanon Water Master Plan



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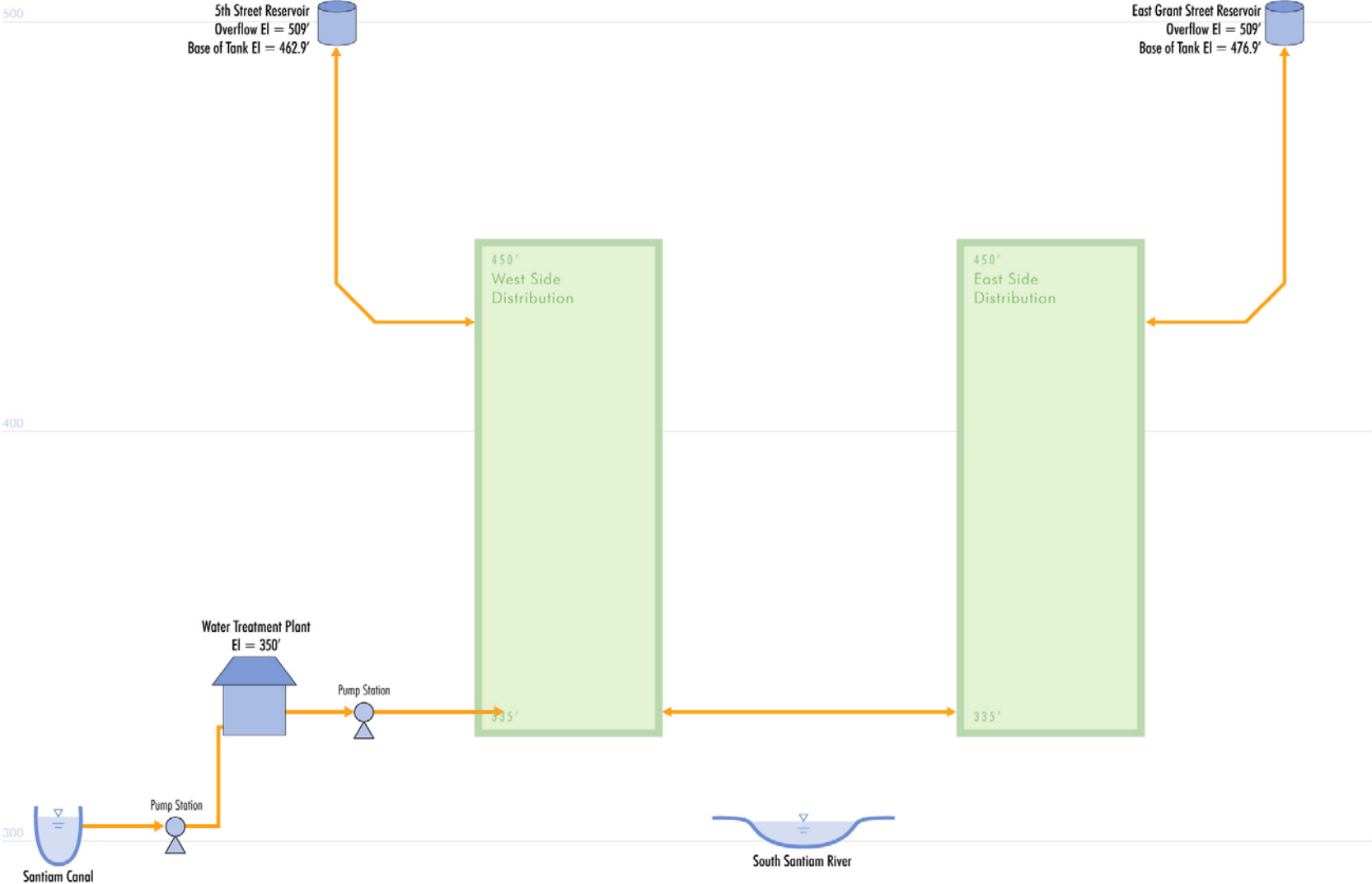


EXHIBIT 2-2  
Lebanon Water Master Plan System Schematic



The city holds three surface rights, all with diversion locations at the canal headworks. Two of the rights are senior (with dates of 1890 and 1900). These are for a total of 12.3 mgd [19 cubic feet per second (cfs)]. The third right is in permit status. It has a priority date of 1979 and is for 11.6 mgd (18 cfs).

The withdrawals from the river into the canal, controlled by Albany, vary from approximately 90 to 105 cfs during the summer months. The value of 105 cfs represents the combined total of water rights for Lebanon and Albany. Lebanon's peak summer demands of approximately 4 mgd (6 cfs) are therefore about 6 percent of the canal flow. Albany reduces the withdrawal rate during rainy periods to accommodate stormwater flows into the canal.

The city also owns a non-potable, fire suppression water system located at the Santiam Canal Industrial Park (SCIP) in a northeastern area of the city. The system is fed via a pond supplied from the Santiam Canal, and includes a 75,000-gallon water tower, two pumps with a total capacity of 850 gpm, and looped 8-inch piping that serves four fire hydrants. A water right associated with the system was transferred to the city in 1984.

## Water Treatment Plant

The Lebanon WTP was constructed in 1946. It originally consisted of one clarifier basin. In the early 1960s two multi-media filters were added and in 1981 two more filters were added. In 1985, the city purchased the WTP from Pacific Power & Light. In 1995, the city implemented a major plant upgrade that included chemical system and electrical upgrades, programmable logic controller (PLC) controls, clearwell baffling, construction of filter No. 5, and abandonment of filters No. 3 and 4 because of structural problems. Minor improvements have been implemented in the years since.

The maximum sustained production rate to date has been approximately 3.75 mgd. During a 1993 *Comprehensive Performance Evaluation [CPE]*, the state Drinking Water Program rated the WTP at 3.2 mgd. The CPE credited the plant with 2.5-log Giardia removal for flows up to 3.2 mgd. It stated that if the WTP flow rate was increased beyond 3.2 mgd, then the removal credit must be re-evaluated.

The *Water Facility Study* (1989) recommended upgrading and expanding the existing WTP and constructing two wells to provide the city with a back-up water source. Recommended upgrades included abandonment of the Santiam Canal in favor of pumping directly from the South Santiam River, adding a new clarifier (and ultimately replacing the existing Accelator<sup>®</sup> with a second new clarifier), and addition of a new backwash pond. The city has not implemented all of these recommendations. The city has not installed a river intake, has not added wells, and has not added a second clarifier. The backwash ponds were reconfigured and expanded in 1991. Significant improvements in electrical systems and control systems were completed in 1995, along with construction of a new filter and addition of baffles to the clearwell.

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## Distribution System

### Service Zones

Lebanon's distribution system has a single service zone. The current service area has flat enough topography to allow all customers to receive acceptable pressure from the finished water pump station at the WTP or from gravity flow from the two distribution reservoirs.

### Storage

Distribution storage is provided in two reservoirs: 5<sup>th</sup> Street Reservoir, and East Grant Street Reservoir. Both are sized at 2.0 million gallons and have the same overflow elevation of 508.6 feet.

### Pump Stations

The city's system uses only a single pump station, which is the high-service pump station that is located at the WTP. Its firm capacity, meaning the capacity with the largest pump out of service, is 6.5 mgd.

### Distribution Pipe

Lebanon has approximately 65 miles of pipeline in its water transmission and distribution system. Almost 30 percent of the system has been installed since 1990. Approximately two thirds of the system is constructed with asbestos cement (36.3 percent) and ductile iron (35 percent) pipe. The remaining pipes are made of cast iron, galvanized iron, polyvinyl chloride (PVC) and steel.