WATER TREATMENT PLANT
OPERATION AND MAINTENANCE MANUAL

Prepared for:
City of Monroe, Oregon

JANUARY 2009

Primary Author:
Ron Staehlin, P.E.
City Engineer

Prepared by:
Southwood Engineering Corp.
3301 Southwood Drive
Philomath, OR 97370
(541) 929-2533

CHAPTER 1 – INTRODUCTION

BACKGROUND

The City of Monroe water supply system began in 1924 when the City received a water right on Kyle Spring. As the City grew a second water right was obtained on Belnap Creek with a priority date of 1949.

For many years the City relied on the Belnap and Kyle Springs for its water supply. The springs are located about 3 miles southwest of the City. The Belnap Spring was never properly developed and EPA directed the City to discontinue its use in 1983. The Kyle Spring's supply line was taken off line in 1998 due to decreased production, leaking of the pipe, and source water protection issues raised by Oregon Health Division (OHD). The spring was supplying approximately 20 percent of the City's summer demand.

In 1967 the City received a water right permit on the Long Tom River and constructed an infiltration gallery along the Long Tom River. The City was experiencing siltation and turbidity problems with the infiltration gallery and could not consistently meet EPA standards. Therefore, the City installed a packaged water treatment plant using the infiltration gallery as its source of supply.

The infiltration gallery had clogging problems and its yield declined to where it was unusable from June through November. The City had to temporarily divert the treatment plant intake to a stagnant slough and temporarily place the improperly developed Belnap Spring into service.

In 1986, the City constructed Well No. 1 and abandoned the infiltration gallery. The well provided about 100 gpm and along with the supply of 20 gpm from Kyle Spring was able to meet the City's water demand. The well water was high in iron and manganese and required treatment in the City's treatment plant.

In 1987, the City authorized cancellation of its Water Right permit on the Long Tom River.

In 1998 the City constructed Well No. 2. The well yielded only 13 gpm and the water was of poor quality. The well was used only when Well No. 1 could not keep up with demand. In 2008 it was discovered that the Well No. 2 pump was wired backwards. After the wiring was corrected, a pump test resulted in an average flow rate of 27 gpm.

In 1998 the City was issued a Mutual Agreement and Order (MAO) from OHD requiring upgrades to the drinking water system to achieve compliance with drinking water requirements. In 1999 the City completed an update to its Water System Master Plan. The Plan recommended that the City provided a water supply of 350 gpm to meet the demand for the next 20 years.

In 2001 the City completed Phase I of its water system improvements which included a 1.0 MG storage tank, modifications to the existing water treatment plant, and water line improvements.

In 2002 the City constructed Well No. 3. No water right permit application has been submitted for Well No. 3 to date. Although the well produced about 100 gpm, the water contained over 2,000 ppm of total dissolved solids and would require reverse osmosis for treatment. Therefore, the well has not been developed.

In 2006 the City received a water right permit for 350 gpm from the Long Tom River. In 2007 and 2008 the City constructed a raw water intake in the Long Tom River and a membrane filtration water treatment plant. This O & M Manual pertains to these new facilities.

LOCATION

The water treatment plant is located on the east side of the Long Tom River across from the City and north of Highway 99W.

PURPOSE OF THIS MANUAL

This operation and maintenance manual is developed as a source of readily available information pertaining to the operation of the Monroe Water Treatment Plant, owned and operated by the City of Monroe. The intent of this manual is to explain how the system was designed to operate. Equipment suppliers have assembled equipment literature for each specific piece of equipment, which is compiled in separate volumes and is incorporated herein by reference. For questions and detailed procedures about different items, refer to the specific manual.

MANUAL USER GUIDE

This manual is organized into eight chapters, each providing descriptions and instructions for a specific process, function, or service.

Chapter 2 contains a water system overview. The major components and subsystems are described briefly. More detailed information is available in Chapters 3, 4, and 5.

Chapter 3 describes the raw water supply system.

Chapter 4 discusses the membrane filtration system.

Chapter 5 discusses the disinfection system.

Chapter 6 describes plant utilities.