

# SIERRA LAKES COUNTY WATER DISTRICT

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## Utility Infrastructure Upgrade Summary

October 6, 2010

Beginning the summer of 2007 and ending the fall of 2010, the District has spent more than \$3.4 million dollars to replace, rehabilitate and/or improve the water and sewer infrastructure to meet the District's goal of providing reliable utility service to your home. A summary of the projects is given below:

- **Water System Improvements:**

- Over two miles of watermain pipe has been installed replacing portions of the original distribution system constructed in the mid-1960's. The selected mainlines were replaced for one of two reasons: an observed and/or predicted reduction in pipe wall strength in low-lying areas due to groundwater chemistry and/or to improve the fire flow capacity of the distribution system. The new pipe material is PVC which is not subject to corrosion and the diameter is eight inches as compared to the original four inches.
- Where mainlines were replaced, replacement valves and/or additional system valves were installed that allow the Operators to shut down portions of the system, when necessary, more effectively while minimizing the number of homes affected.
- Along with replacement of portions of the mainline, 275 service laterals between the main and the property's point of connection at the street were replaced. The original pipe material was galvanized steel that has been susceptible to significant leakage due to corrosion. The replacement lateral material is high-density polyethylene which does not corrode and has a slightly larger diameter than the steel to minimize the pressure loss to homes when multiple faucets are turned on at one time.
- Water meter pits, but not meters, were installed at each parcel (vacant or occupied) where a new service lateral was installed but that did not already have the provisions for metering. The pit allows the temporary installation of a meter to test for leakage of the pipe leading to or within the house (about 10%), provides a more functional and accessible method of turning off the water in the case of a leak at the house, and ultimately will help the District meet the 2025 State mandate for metering of all homes.
- Throughout the District a total of 42 fire hydrants were replaced. The manufacturer of the original hydrants has gone out of business so replacement parts to repair leaks were no longer available. A more important reason for the replacement was the increased flow capacity of the new hydrants and uniformity (three outlets instead of two) with Truckee Fire Protection District standards.

The total amount of money spent to improve the water distribution system during the last four years is \$2.5 million including design, permitting, construction and inspection costs.

- **Sanitary Sewer System Improvements:**

- Replacement or in-place lining/rehabilitation of 2,850 feet of mainline
- Rehabilitation of the channels in 27 manholes and complete interior coating of another 21 manholes to counteract the degradation of the concrete due to hydrogen sulfide, and to correct groundwater infiltration at joints and inflow at the street level
- Coating of the interiors of the wetwells (where the sewage is collected before being pumped) at two pump stations. In addition to the rehabilitation of the concrete and control of Inflow and Infiltration (I&I), the coating allows the Operators to more effectively remove grease and other debris from the wetwell during routine maintenance
- Construction of seven new manholes allowing access to and cleaning of “cross-country” mains
- Installation of valves on the pipelines that carry the wastewater out of the District to allow more efficient use of the two existing export pipes from Pump Station 1 to the top of the hill (near the junction of Pahatsi and Soda Springs Roads)
- Replacement of one of the pumps (25,000 + hours of use) at the primary export Pump Station 1
- Installation of new electric service to two of the pump stations replacing conductors installed more than 30 years ago that have experienced failures
- Installation of emergency electrical connections and switch gear at three stations to allow the use of portable generator(s) in the event the on-site generator(s) do not operate correctly.
- During the four-year period almost 11 miles of the District’s 15 miles of gravity sewer pipeline have been inspected with a video camera to determine the pipe condition and locate areas of failure and potential sources of I&I. In 17 locations a repair sleeve has been inserted to repair the compromised mainline pipe.

The to-date cost of these repairs, upgrades and improvements is about \$750,000 including design, permitting, construction and inspection costs.

- **Adjustment of sewer manholes and water valve boxes.** Fifty-one sewer manholes, 45 water valve boxes and 16 air-relief valve boxes that were lower than the surrounding street pavement have been adjusted to within ½-inch of the surrounding asphalt. In many instances the top of the manhole or valvebox required reconstruction due to alignment problems caused by vehicle wheel impacts and/or frost heaving. This effort will continue in future years as the work has been prioritized based on condition; there are a total of 238 manholes and 115 water valve boxes in the system, although not all require adjustment. To date, \$160,000 has been spent on this task including design, permitting, construction and inspection costs.

Staff believes the water distribution system is now in a condition that will allow many years of continued use. Since January 2010, the average amount of water used has been reduced by approximately 15,000 gallons/day as compared to the previous four year period. As the population has not changed appreciably, the reduction in water delivered to the system each day can be attributed to reduced system leakage.

Attention to the sanitary sewer system will continue each year to locate and correct sources of Inflow and Infiltration. During the peak spring snowmelt period, the amount of sewer flow can be more than double the amount of domestic water used by the District’s customers. The television inspections routinely show that the source of most of the I&I is residential laterals, and a significant portion of the District Staff’s time will be spent investigating and correcting these problems.

On behalf of the Board of Directors and the Operators, thank you for your patience during construction and your financial commitment to making these much-needed improvements to the water and sewer infrastructure.