

2013-2014 MONTEREY COUNTY CIVIL GRAND JURY

INTERIM FINAL REPORT NO. 1

CHUALAR SEWER SYSTEM

Chualar Sewer System

SUMMARY

During a Civil Grand Jury (CGJ) interview with the Director of the Monterey County Public Works Department, the subject of the sewage system in Chualar came up. The CGJ decided to follow up by conducting an investigation of the sewage system. The CGJ conducted aerial surveillance of the treatment ponds and their proximity to the Salinas River, using a camera equipped unmanned model aircraft. The CGJ also conducted a site visit, along with members of the Monterey County Public Works Department, to determine how sewage is handled in Chualar. During the site visit, members of the CGJ were allowed free access to inspect the system, including the sewage pumps and the treatment ponds near the Salinas River.

The Chualar sewer system was put into place in 1963. It consists of two sewage pumps located in Chualar proper. The raw sewage is pumped through a pipeline under the Highway 101 overpass and two miles to one of five treatment ponds located near the Salinas River.

In the event of heavy rains, the Salinas River may overflow into the treatment ponds, causing raw sewage to flow back into the river and into the Monterey Bay Marine Sanctuary. Additionally, deterioration of the outdated Chualar sewage system has a high potential to cause major problems, including possible health issues. The system should be upgraded or replaced as soon as possible.

BACKGROUND

The town of Chualar was settled in 1914. Chualar is a rural farming community and currently has a population of 1,720, up from 1,190 in 2010. The racial makeup of the community is 96.72% Hispanic with 26.81% of the population between the ages of 5 and 17 and 58.99% of the population between 18 and 64. The population density of Chualar is 1,900.5 persons per square mile.

In about 1963, as part of the development of Chualar, County Service Area (CSA) 75 was formed to provide limited municipal infrastructure, including waste water disposal. A CSA is governed by the County Board of Supervisors and managed by the County Public Works Department. Revenues include service fees, property taxes, interest on pooled investments, and subvention payments from the State. Service fees are charged to each business and property owner within the CSA.

FACTS

Chualar has a basic sewage treatment plant, sometimes referred to as a primary waste water treatment plant (WWTP). All water from toilets, sinks, and showers in Chualar flows through underground gravity collection system pipes to a central pumping station. From there the untreated sewage is pumped through a two-mile force main to the WWTP. The WWTP is governed by the Regional Water Quality Control Board Waste Discharge Requirement (WDR 01-038). The WWTP consists of five sewage treatment ponds.

Two sewage pumps are installed in Chualar proper, at the corner of Grant and Main streets.

At no point in the process are any chemicals used to treat the raw sewage.

The pump station is designed to operate with one pump as a lead pump and one pump as a lag pump. When demand is low, only one pump is needed. When demand is high, the second pump, the lag pump, operates in conjunction with the lead pump to meet demand. The lead/lag responsibilities of each pump are alternated weekly so that there is even wear between the two pumps.

Even with only one pump in operation, sewage would not back-up into homes. There is sufficient surcharge capacity in the gravity system to buffer the short duration peak demands. While the system is capable of operating under single pump conditions, it is not a desirable management strategy.

The force main (sewer pipe) from the pump station travels under Grant Street and under the sidewalk of the Highway 101 overpass. The force main is a high-density polyethylene (HDPE) pipe that is both flexible and structurally rigid. This portion of the force main has never fractured or spilled sewage. Where the force main crosses under the Highway 101 overpass and railroad tracks, it goes through a larger diameter carrier pipe, an added measure of protection.

From immediately west of the Highway 101 overpass, the untreated waste water is pumped approximately two miles to one of five treatment ponds. Many portions of this sewage pipe are 50 years-old and made from Polyvinyl Chloride (PVC) or clay pipe. When a fracture occurs in this pipe it is patched with PVC.

The piping system from the force main pumps in Chualar is approximately two miles long. This two-mile pipe carries the raw sewage to one of five treatment ponds that are located within the 100-year flood plain of the Salinas River.

The force main was designed with six air relief valves (ARV) at the relative high points in the profile of the force main to release air that accumulates. This allows the force main and pumps to operate most efficiently. Recent events have shown that the force main will continue to operate without the ARVs, though the reduced efficiency allows for the accumulation of solids in the pipe over time, and can lead to a shutdown.

Recently, five of the six ARV locations were rehabilitated to restore the operational efficiency of the pump station/force main system. The encroachment permit for rehabilitation of the sixth location at the Highway 101 overpass has been issued by Caltrans and the work is to be completed in May 2014.

In 2013, the Housing and Urban Development Department awarded a \$200,000 community development block grant to CSA 75 to address deferred maintenance. The replacement of valves, installation of an emergency generator and improvements to wet-well covers is currently underway.

At the WWTP, sewage from the force main goes through a solids screening and flow monitoring system to remove large pieces of debris. From there it flows into Pond 2A, where solids settle out. Waste water from Pond 2A flows through a low-flow weir to Pond 2 where primary treatment is accomplished. From there, the treated flow goes into Pond 4 where discharge is accomplished by evaporation and percolation as designed. Ponds 1 and 3 provide reserve capacity, and generally are not in use.

The solar powered equipment in Pond 2A is a Solarbee aerater. It is designed to stir the sewage and increase the available dissolved oxygen in the water, which improves the biological treatment process and reduces the production of undesirable gasses. None of the other four ponds are equipped with a skimmer system.

The entire system has a permitted operating capacity of 100,000 gallons per day.

The earliest available plans that exist indicate that the sewage collection system was already in use by 1963. The treatment ponds were first put into use in 1965 along with the WWTP and the force main. The ponds have a design depth of approximately eight feet, though the depth varies from location to location.

The average annual revenues to operate the Chualar sewer system is \$70,000 per year, while the average annual maintenance cost for normal operation of the system is \$150,000. Insufficient revenue has led to deferred maintenance resulting in several expensive emergency responses in recent years that have skewed the normal cost of operating the system.

FINDINGS

- F1. The two sewage pumps in Chualar are two-three years old.
- F2. From just west of the Highway 101 overpass much of the remaining two miles of pipe is over 50 years old and made of clay pipe and in some instances PVC.
- F3. The clay and PVC pipe from west of the Highway 101 overpass to the treatment ponds are maintained through patching with PVC when there is a break in the line. These breaks in

in clay and PVC pipes happen frequently, as may be expected due to the 50-year-old materials used.

- F4. The treatment ponds are located within the 100-year flood plain of the Salinas River. Overflow of these ponds could cause major environmental contamination of the Salinas River and the Monterey Bay Sanctuary.
- F5. Since 1911 the Salinas River, due to heavy rains, has over-flowed its banks 23 times, the latest being February 1998. This has allowed the treatment ponds to be breached by the River eight times since their inception in 1965. This overflow of the river has caused raw sewage from the treatment ponds to flow into the river and northwest into the Monterey Bay Marine Sanctuary.
- F6. Standing water and the nutrients in the raw sewage in the treatment ponds provide an ideal place for cattails and reeds to grow in or along the banks of the pond. This in turn could provide an ideal place for disease carrying mosquitoes to lay their eggs.
- F7. The Chualar sewage treatment ponds are not within the boundaries of the Northern Salinas Valley Mosquito Abatement District as established by the Monterey County Board of Supervisors in the 1950s. Therefore, any mosquito abatement would have to be provided by the Monterey County Health Department.
- F8. Water recovered from a sewage treatment plant, built in or near the east side of Chualar, could provide a source of an agricultural water supply for the crops grown near Chualar, just as the sewage treatment plant near Marina provides agricultural water for the Castroville area.
- F9. Building the treatment plant on the east side of Chualar would prevent the need to pump raw sewage under the Highway 101 overpass and the train tracks on the west side of Chualar.
- F10. A sewage treatment plant on the east side of Chualar would eliminate the necessity for the pipeline and treatment ponds completely.
- F11. Reuse of this water would reduce the amount of water that is pumped from the underground aquifer for agricultural use. It may also help to possibly reduce salt-water intrusion into the aquifer.
- F12. To enhance CSA 75 revenue, soil removed from the treatment ponds when dredged, could be sanitized and sold for use as commercial fertilizer.
- F13. The deterioration of the Chualar sewage system has a high potential to cause major problems including possible health issues. The system should be replaced as soon as possible.

F14. Through interviews with the Monterey County Public Works Department and its own research the CGJ has determined that, if built today, the cost to build a sewage treatment plant at or near Chualar would be about four million dollars.

RECOMMENDATIONS

- R1. A sewage treatment plant should be built on the east side of Chualar.
- R2. The Monterey County Board of Supervisors should allocate or assist in the raising of the \$4 million it is estimated would be required to build a sewage treatment plant in or near Chualar.
- R3. The Monterey County Public Works Department, Monterey County Health Department and/or the Monterey County Board of Supervisors should request the Northern Salinas Valley Mosquito Abatement District to place mosquito traps in Chualar to determine if there is a necessity to treat the treatment ponds for mosquito larva.
- R4. At a minimum, the pipeline from the Highway 101 overpass to the treatment ponds should be completely replaced.

RESPONSES REQUIRED

Pursuant to Penal Code Section 933.05, the Grand Jury requests a response as indicated below from the following governing bodies:

- Monterey County Board of Supervisors:

All Findings and Recommendations

- Northern Salinas Valley Mosquito Abatement District:

Recommendation: R3