CASE STUDY

IMPROVING WATER QUALITY WHILE REDUCING COMPLAINTS USING CLEARITAS®

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INTRODUCTION

Over the years, manganese and iron deposits have been accumulating in Charlestown Indiana's water distribution system resulting in frustration for operators and discontent among residents. The system has been treated with polyphosphates for the previous 12 years with regular flushing. Despite these efforts, the water department has routinely received customer complaints for dirty water and has had challenges maintaining chlorine residuals as well. For example, one resident complained that it took five hours of running water for discoloration to cease, as she handed over a jar of dirty water with her complaint.

To combat these problems more effectively the municipality, engineer, and chemical distributor developed a plan to reduce manganese and iron fouling in the distribution system by injecting the Clearitas 101 deposit control product at 20 ppm along with some additional flushing and a polyphosphate reduction.

RESULTS

As a result, Charlestown observed a drop in dirty water complaints both initially and over the long term. The first six months saw in a 63% drop in complaints over the previous six months. This trend continued as the following two years saw a similar drop over the year prior to Clearitas treatment. During this same period, operators reported that flushing times, in difficult areas of the system, also improved dramatically. For example, it was

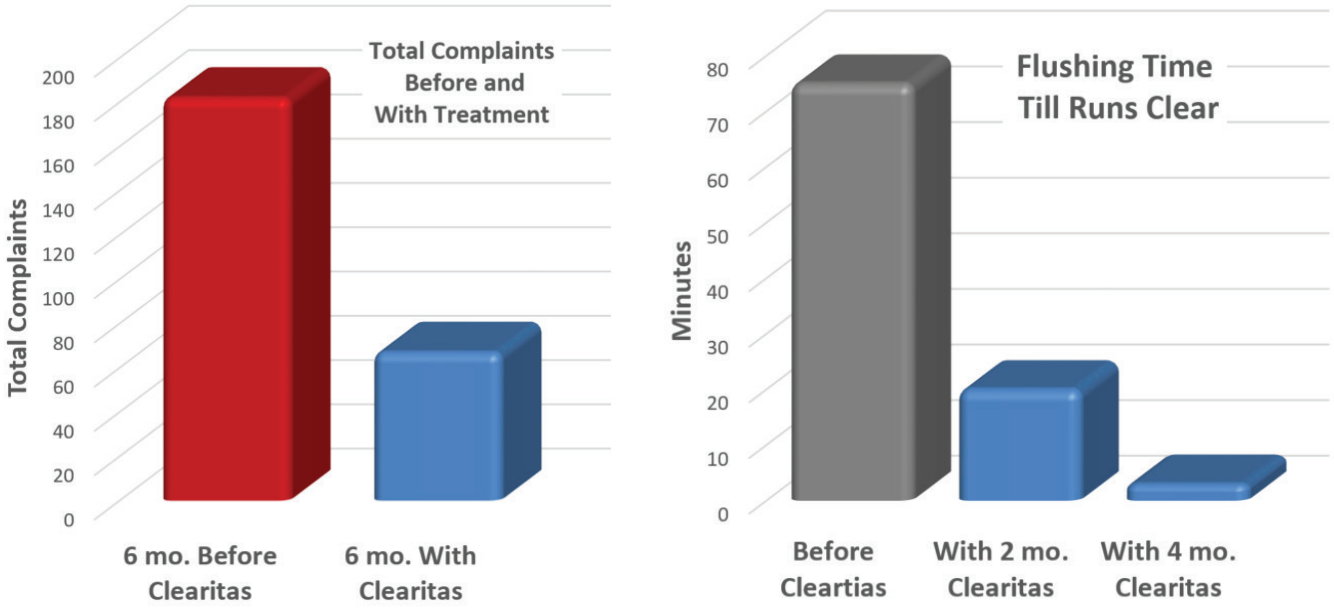

Figure 1 – Reduction in total complaints and flushing times before and with Clearitas. treatment

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reported that hydrants that needed over an hour of flushing prior to treatment, were clearing up in 20 min just a couple of months after treatment and later required only 2-3 min to clear after a few more months.

With consistent distribution system cleaning by Clearitas, the chlorine residuals have continued to improve along with the reduction in complaints. One key sampling site began to show a 0.25 mg/L residual after one month of treatment where prior to treatment, obtaining any residual was difficult. The post flushing data also provided insights into the improvements in chlorine residual stability within the distribution system. Beginning a month after treatment began and continuing for the following two years, a steady climb in distribution residuals was observed from an average of 0.38 mg/L to 0.99 mg/L across the 19 different sites. Additionally, the total feed rate of chlorine gas has been reduced from upwards of 13 pounds per day to an average of 8-9 pounds per day in just a few months.

DISCUSSION

Clearitas is successful at reducing complaints, sustaining disinfectant residuals and sustaining phosphate sequestration because it breaks down the biologically active films and organic binders that interfere with the proper operation of a water system. In this case, manganese and iron bacteria build surface debris by rapidly removing clear water iron and manganese from the bulk water resulting in dark grey flowing water. Clearitas works by breaking down the organics that bind these bacteria to pipe walls, allowing them to be killed and removed by the disinfectant. This reduces the continued piling up of insoluble manganese and iron in the pipe lines with the resulting customer complaints.

The collaboration of the municipality, engineer, and distributor resulted in solving an ongoing problem by using Clearitas 101 to effectively reduce complaints, clean the distribution system, and reduce chlorine demand across the entire distribution system.

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