



River Islands Sewage Pump Station

Lathrop, California, USA



Completion Date
OCTOBER 2018

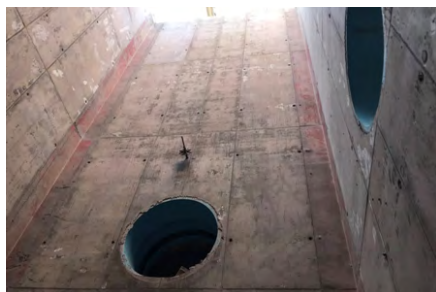
Owner
**CITY OF LATHROP,
CALIFORNIA**

Engineer
**PACE ADVANCED
ENGINEERING**

Contractor
MOUNTAIN CASCADE

Products
**BIO-SAN C500, MEGAMIX II
WITH BIO-SAN**

Project Type
SEWAGE PUMP/LIFT STATION



All 530 cubic yards of concrete used to pour the three-chamber pumping station and its lid were treated with Xypex Bio-San C500 Admix. Joints around pipes, tie holes, and other imperfections were sealed using Xypex Megamix II with Bio-San.



The River Islands Sewage Pump Station faced two major challenges: as a sewage pump station the concrete required protection from microbial induced corrosion (MIC); and 9 m (30 ft) of the 12 m (40 ft) deep structure would be immersed in the surrounding water table. The original design specified an epoxy coating as the inner liner of the concrete walls as well as an exterior waterproofing coating to protect the interior lining from negative side hydrostatic pressure “push off”.

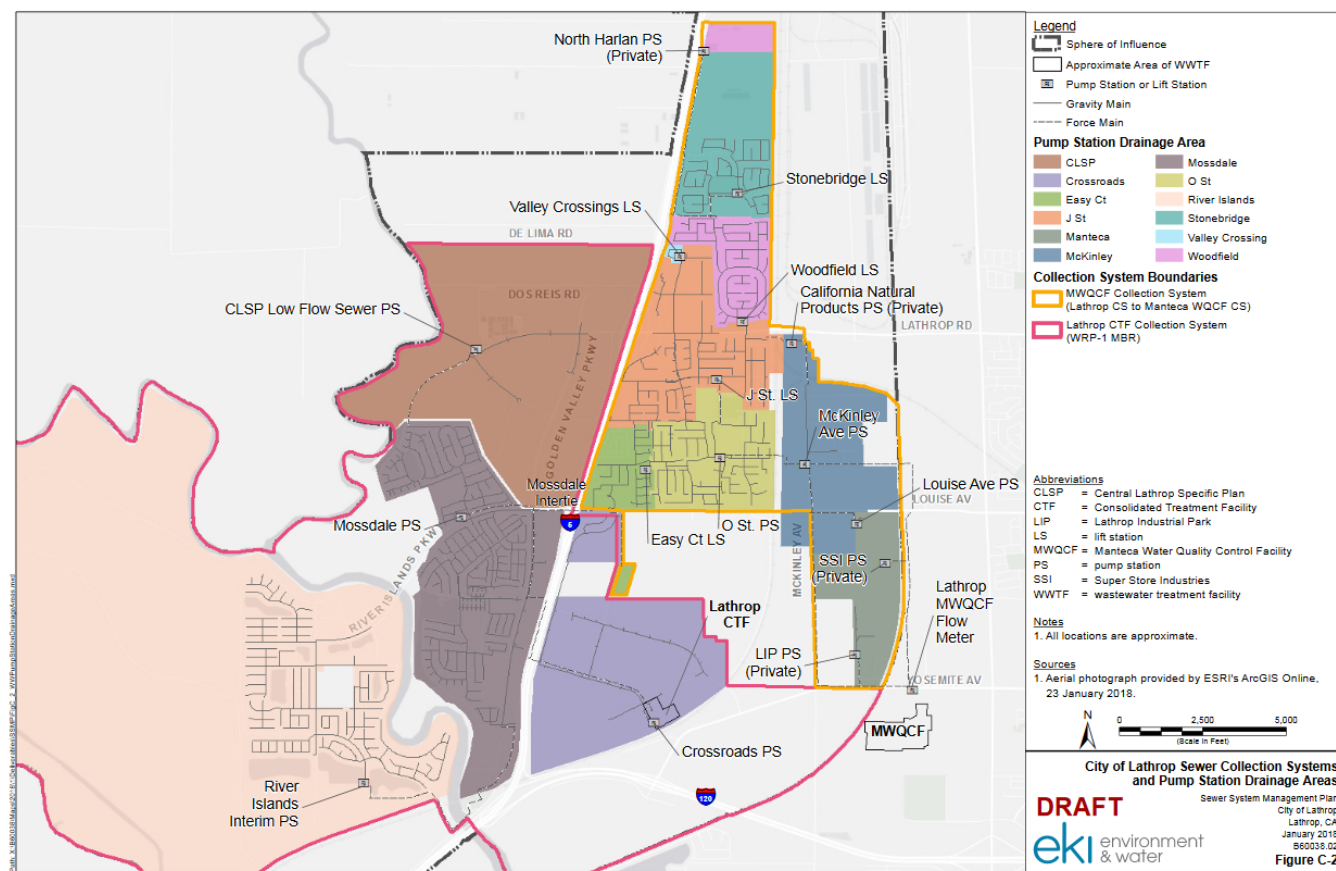
This combined system would have cost the city approximately \$225,000 and required about two months of installation time, including a month of concrete curing time and a month of epoxy application time. In addition, the work required to maintain the integrity of the epoxy liner around the multiple penetrations of the lift station walls would have added additional cost. Long-term, the epoxy liner would have required renewal or replacement in 10 - 15 years.

Xypex **Bio-San C500** admixture was proposed by PACE Advanced Engineering and then chosen by the City of Lathrop as an alternative to

the specified system. Bio-San C500 is a dual-protection product that prevents ground water intrusion and sewage exfiltration with **Xypex crystalline waterproofing technology** and also provides a mineral-based antimicrobial that kills the Thiobacillus bacteria responsible for microbial induced corrosion.

Bio-San antimicrobial components are fixed in a mineral matrix that becomes an integral part of the concrete. The antimicrobial ingredients work indefinitely to destroy harmful bacteria at a cellular level and cannot be washed off or wear out.

Xypex Bio-San C500 was added to the 530 cubic yards of concrete used in the River Islands pumping station at the time of ready-mix batching. The addition of Bio-San required no additional time or effort on the part of crews working on the pumping station. By eliminating the time and cost of applying an epoxy interior coating and an exterior membrane, the city saved an estimated \$135,000 by using Xypex Bio-San C500 and **Megamix II with Bio San**.



City of Lathrop sewer collection systems and pump station drainage areas as of January 2018.

The new River Islands pumping station has been built directly adjacent to the interim pumping station shown on the map above.

Because approximately 30 feet of the new pumping station is located below the local water table, it was also critical that features such as 600 concrete form tie holes and minor imperfections be filled with same waterproof and MIC resistant material as the rest of the structure. Xypex Megamix II with Bio-San repair mortar was used for this purpose. Because it combines the same crystalline waterproofing with bioactive mineral solids as Bio-Scan C500, the product can be used to resurface and waterproof deteriorated concrete, providing resistance to acids, sulfates and chlorides, as well as limit MIC development.

According to Colter Jones, the Xypex technical representative for central California, the decision by Lathrop's senior engineer to use Xypex versus the "traditional" epoxy liner took careful consideration and research. "This was a highly critical part of the overall sewage conveyance system. Xypex Bio-San C500 was quite new at the time, so the city and its consultants studied our 10 years of product research and test results. They also consulted with their colleagues in the industry. I believe our reputation and 50 years of industry leadership also played an important part in their decision. Customers know that they can count on our products to deliver the performance and value they expect."



The newly poured pumping station measures 40 feet tall x 36 long x 12 feet wide. Concrete treated with Xypex Bio-San C500 Admix provides complete protection from water ingress, sewage exfiltration, and microbial induced corrosion.