

CASE STUDY



World water demand is projected to grow from around 4,500 cubic kilometers in 2010 to about 6,350 cubic kilometers in 2030. Annual revenue from the US wastewater industry is about \$47 billion. According to a new report from Bluefield Research, wastewater reuse for municipal utilities will increase 61% by 2025, requiring \$11.0B of capital expenditures. Potable reuse - treating wastewater to drinking water quality - currently makes up 15% of the total capacity, but is forecast to rise to 19% of total water reuse by 2025.

Conventional wastewater treatment consists of a combination of physical, chemical, and biological processes and operations to remove solids, organic matter and, sometimes, nutrients from wastewater. This case study concerns the coating of a clarifier at a wastewater plant in the Rocky Mountains of Colorado.

Clarifiers comprise tanks or basins which hold water or wastewater long enough to allow the floc and other suspended materials to settle to the bottom. The clarification process makes the water clear by removing all kinds of particles, sediments, oil, natural organic matter and color.



Problem

The clarifier structure was in need of a protective coating that would add nothing to the contaminant burden of the wastewater stream. The coating would also need a high degree of chemical and abrasion resistance and extreme longevity.

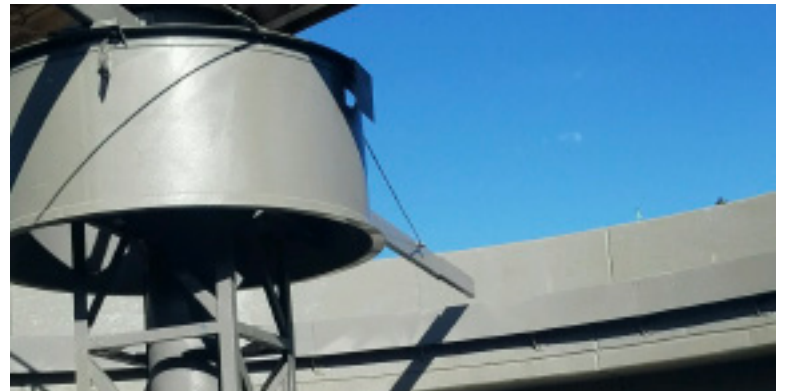
This area of Colorado is subject to cold winters which means a wide range of contraction and expansion for steelwork which generally quickly expose the inherent weaknesses of conventional epoxy coatings to stress

Solution

Few coatings are NSF/ANSI 61 rated for contact and use with potable water. Whilst this plant was not producing potable water, it means the coating is the best possible to use where there has to be zero potential for contamination from aging coatings. Castagra SG1 is completely non-toxic principally due to the fact its main ingredients are vegetable oil and a common occurring natural mineral called gypsum.

Wastewater can contain an almost infinite number of trace chemicals, some of which can degrade conventional coatings. Castagra SG1 has proven its to be highly robust in hundreds of oil and production water tanks, as well as in brine tests that have lasted two decades resulting in no measurable degradation.

Castagra SG1 is also ideal as it is free of Volatile Organic Compounds, and does not use toxic solvents either in content, application or clean-up. It has the further advantage of being able to re-bond to itself completely should repairs be required at any time during the lifetime of the coating because of its unique chemistry. Its retained flexibility and superior adhesion properties means it can take temperature and mechanically induced micro-movement of steel without losing protection integrity through micro-cracking, a common occurrence with many conventional coatings.



Application Results

Here at Elite Protective Coatings, we started with a standard preparation of the surface to a 3 to 3.5 mil profile. The completely dry surface was then sprayed with Castagra SG1 to a depth average of between 20-30 mils over a period when temperatures only reached 70 degrees F. All vertical surfaces took an even coat and the Castagra SG1 set up within the normal 30-minute window. Final inspection was at the 24-hour mark and the clarifier was released for full usage.