



# Yankee Lake Regional Wastewater Treatment Facility

## ABOUT THIS PROJECT:

**Market Segment:**  
Wastewater Collection  
& Treatment

**General Contractor:**  
Crom Corporation

**Products Used:**  
Xypex Patch'n Plug  
Xypex Concentrate  
Xypex Megamix II with  
Bio-San

**Location:**  
Sanford, Florida

**Engineers:**  
CDM Smith



2021

## PROBLEM

Located along the St. Johns River in Sanford, Florida, the Yankee Lake Regional Wastewater Treatment Facility is a state-of-the-art system featuring a 2.5-million-gallon anoxic wastewater treatment plant, which began operating in 1996.



Close-up shot of a deteriorated concrete element

In 2021, after 25 years of operation, many concrete areas suffered serious deterioration as the epoxy coating had previously failed. Sections of the facility such as maintenance holes, the headworks channel and the mud well, were severely deteriorated by Microbial Induced Corrosion (MIC) and contained numerous cracks.

## THE XYPEX SOLUTION

To start repair works, the general contractor, Crom Corporation, first blasted the old concrete surfaces with a 3,000-psi pressure washer to remove the old epoxy coating, then disinfected the substrate to remove bacteria present on the surface. After these steps, cracks and joints were repaired with Xypex Patch'n Plug and Concentrate.



To ensure the correct application and durability of the product in the elements, the thickness of the coating is continuously verified, ensuring its performance in the future.

The active chemicals in these Xypex products diffuse into the concrete substrate and react with moisture and the byproducts of hardened concrete to cause a catalytic reaction.

This reaction generates non-soluble crystals throughout the pores and capillary tracts of the concrete, as well as cracks, permanently sealing the concrete and preventing the penetration of water and other liquids. Following the sealing of cracks, CDM Smith, the engineering firm, selected Xypex Megamix II with Bio-San to restore and resurface the damaged areas.

To achieve this, the Crom Corporation team troweled Megamix II with Bio-San to a ½" (13mm) thickness. In some areas, the concrete had deteriorated so much that a thicker repair was required.

Megamix II with Bio-San is a high-performance resurfacing mortar for restoring deteriorated concrete surfaces caused by MIC, abrasion, and chemical attack. This product contains Xypex's proprietary crystalline technology and antimicrobial MIC inhibitor, Bio-San.

As a result, Megamix II with Bio-San, provides a high-strength surface which is permanently waterproof and resists microbial, acid and sulphate attack.



The maintenance pit was repaired with Megamix II with Bio San, thus extending the service life of the concrete structure.



The concrete shows severe damage in the maintenance pits caused by Microbial-Induced Corrosion (MIC), reducing the service life of the structure.

Project Manager, Mike Boggs from Utilities Engineering for Seminole County's Environmental Services Division stated, "The mud well has a specific lifecycle. Before reaching the end of that lifecycle, we like to address it. In the case of Yankee Lake, we're extending the concrete's life by repairing and recoating it."

By selecting Xypex products, the engineers ensured that the facility returned to service faster than it could have by using other waterproofing solutions. Xypex provides waterproofing and protection for the structure's entire service life and requires no additional installation or curing time, unlike epoxy liners.

## PROJECT BIO

The operation of the Yankee Lake Regional Wastewater Treatment Facility is critical to the preservation of a 3000-acre pristine wildlife area along the St. Johns River. The treated water from this facility is partially used by irrigation for farms and golf courses and discharged into these environmentally sensitive wetlands.

Due to the location of this facility, the quality of the treated water is held to the highest standards. The repairs to the facility ensure that the operation of the facility will be able to continue to operate for many more years.



View of the sludge tank undergoing repair with Xypex Megamix II with BioSan.