

# Two California Locations Save Space and Money with Engineered Stormwater Systems



## Hub City Treatment Train

**N**icknamed “Hub City,” Colton, Calif., is home to the Colton Crossing, which was built in 1833 and was one of the busiest at-grade railroad crossings in the United States. Today, and less than two miles south on the Santa Ana River bank, are two developing industrial buildings. Placed between the I-10 and I-215 freeways, these buildings offer direct access to San Diego and Los Angeles Counties. The proximity to one of the largest rivers in Southern California poses the need to treat stormwater from the 16-acre site, which will house more than 200,000 square feet of warehouse space.

### Challenge

Colton’s land premiums are a driving force to obtain proven stormwater solutions within a minimal footprint. Tricky soil conditions and the need to address pollutants of concern (e.g., oil, grease, total suspended solids (TSS), trash, debris, metals and pathogens)

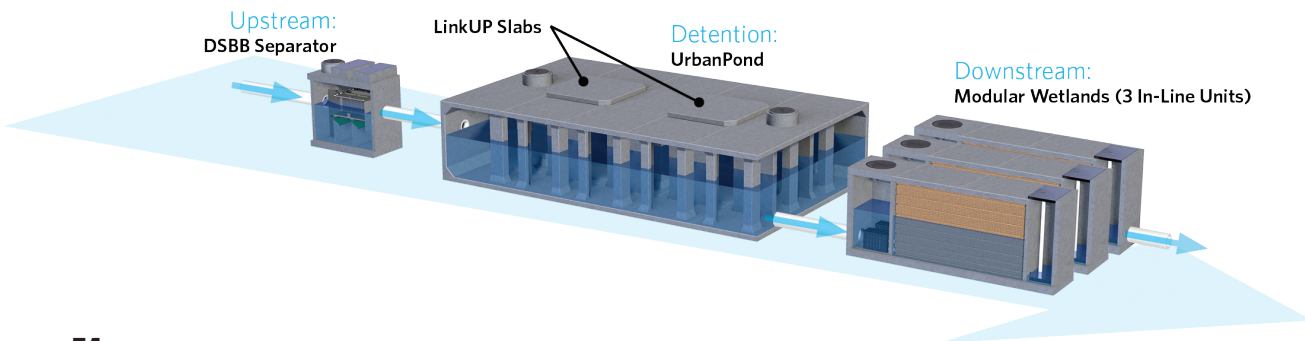
as well as meeting the regulations of the Santa Ana Regional Water Quality Board NPDES Permit and County of San Bernardino Water Quality Management Plan are not easy feats.

### Solution

Thienes Engineering elected to partner with Bio Clean to engineer stormwater management for the site and provide the most-efficient solutions. This involves a treatment train of three Bio Clean devices: the DSBB Separator (hydrodynamic separator), UrbanPond® stormwater storage system and Modular Wetlands® Linear.

### Conclusion

This stormwater project in Colton represents the ability to engineer a creative treatment train system that satisfies local regulations while meeting unique challenges and site constraints.



# Sushi, Stormwater and Sustainability

Overlooking one of California’s most-famous beaches, Nobu in Malibu, Calif., has become a model for contemporary restaurant design, service and cuisine that lives up to its demanding relationship with the sea. Although Nobu is now an operating success, the developers of Malibu’s marquee restaurant had some unique challenges to address.

## Challenge

Stormwater hazards impact all water bodies, and our coastlines are typically the last line of defense to prevent plastics, trash and other pollutants from contaminating these waters and harming wildlife, so there’s a significant opportunity to enhance stormwater treatment and protect the ocean.

On California’s coast, the densely populated county of Los Angeles produces many hazards that enter its storm drains every day. But the Nobu property is no different, and it’s pointedly positioned to help address these hazards and act as stewards of the very resource that provides Nobu with quality fish every day.

Beyond the environmental concerns, Nobu is set on some of the most-valuable square footage in the world. And maximizing space and efficiency was a top priority.

## Solution

The Malibu restaurant site integrated two Modular Wetlands Linear units. The Modular Wetlands is a stormwater biofilter uniquely designed to replicate natural processes to remove a variety of pollutants from stormwater runoff. Some of those pollutants include fine TSS, bacteria, oils and grease, plastics, trash, heavy metals, and harmful nutrients such as nitrate and phosphorus, which are known to overwhelm oxygen levels and devastate fish populations.

Given the value of the coastal real estate in Southern California, Nobu had an enormous incentive to maximize land usage and save space. A traditional “downward-flow” bioretention system is above ground, has a singular surface area and typically occupies an average of 1,795 square feet of space (per impervious acre). In comparison, the Modular Wetlands Linear is submerged, and this model took up a mere 63 square feet. When those estimates are applied to the Nobu site plan, the comparisons are impressive. The twin

Modular Wetlands saved an estimated 3,464 square feet, representing roughly \$3 million dollars of Malibu real estate value, plus returns on parking revenue.

## Conclusion

Today, Nobu continues to share the atmosphere it set out to protect. The Modular Wetlands Linear biofiltration systems are saving land, yet still beautifying the landscaped areas and actively contributing to the shared mission by addressing pollutants such as TSS, nitrates, phosphorus, oils, trash and plastics before they reach the Pacific Ocean.

