

## Modular Wetland Teams Up with City of Chula Vista for Infrastructure Project

### Advanced LID Technology Successful Following Southern California Record Breaking Storm Events

#### Situation

Chula Vista, CA, has been recognized for its efforts in improving the community's environment sustainability over the years. It has won numerous awards for its "Green" accomplishments. This 230,000 plus populated city has committed to sustaining a clean, healthy environment, and thus hoping to land the title "Greenest City" in America. Located just seven miles from downtown San Diego, this culturally diverse city has become a role model for others to follow.

Leading the state in its stormwater program, Chula Vista has educated along with set standards for new development and redevelopment in its city that complies with the requirements set forth by the National Pollutant Discharge Elimination System (NPDES) Municipal Permit issued by the Regional Water Quality Control Board. As the city's growth and urbanization increases so does its needs for better infrastructure. This includes storm drains.

In mid 2008, City of Chula Vista's Stormwater and Engineering Department contacted Modular Wetlands Stormwater Engineer, Zach Kent, to figure out how to best configure a 22' Modular Wetlands System for a infrastructure project they were working on along Broadway. The North Broadway Basin Project would include installation of curb gutters, sidewalks, and 2000 linear feet of reinforced concrete pipe (RCP) storm drain system. Designing a configuration to capture, remove and reduce a variety of pollutants would be essential to the success of the project.

#### Challenge

Stormwater runoff from public roadways is one of the leading contributors of stormwater pollution to our nations' waterways, lakes, streams and oceans. The lack of infrastructure on Broadway caused more than one concern for the City of Chula Vista. Not only was the stormwater runoff from this area draining into a 303(d) impaired body of water, the Sweetwater Watershed, but flooding along this street caused potentially dangerous situations.

With these site concerns in mind, the City needed to address these issues while working with space constraints. Like any retrofit project, space is always limited. Due to this limited space along Broadway, large scale capture devices could not be applied. An alternative LID option would need to be explored. The City would need to find a cost effective LID solution to reduce and treat the runoff.



#### About Modular Wetlands

A new and revolutionizing product from Bio Clean is the Modular Wetland System (MWS). This system is the industry's first hybrid stormwater treatment system. While most systems utilize a single treatment method, the MWS incorporates a combination of many. It removes trash, floatables, oil and grease, sediments, heavy metals, nutrients and bacteria. Perfect for GREEN design and sustainable projects. For more information on MWS visit [www.modularwetlands.com](http://www.modularwetlands.com).



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Pollutant Accumulation in Pretreatment Chamber

**Solution**

The bid was awarded in the Fall of 2008 to MJC Construction in the amount of \$1,672,975. The work to be done included full street improvements and installation of a storm drain system. The City and Modular Wetland Systems engineers worked together to achieve an optimum design configuration to address all of the above challenges. Within no time, the parties of interest decided on the MWS – Linear 22' Underground Curb Type.

The first system was installed on North Broadway and D Street, while the second system was installed on North Broadway just 150 ft. North of C Street. Each unit was placed in a small landscape area between the sidewalk and street just upstream of an existing catch basin to intercept the 24-hour 85th percent storm event, low flows. The incoming water is treated through a series of stages: screening, filtering, settlement and bioretention or otherwise know as the “treatment train” approach.

The outflow from the MWS – Linear then enters the existing catch basin via pipe. High flows either pass the system and enter the existing catch basin or enter the system and travel through the internal bypass. This design will alleviate the seasonal flooding concerns.

The city decided it wanted to do away with landscape maintenance thus the MWS – Underground Type was a perfect solution. These particular units have a solid concrete lid, eliminating the plant bed as seen in other MWS – Linear Systems. A special blend of biofiltration media that works without the assistance of plants was used. The beneficial bacteria and microflora within the media removes various pollutants of concern.

**Result**

The City of Chula Vista has worked vigorously to increase water quality through strategic planning and collaboration. The systems have been in ground since February of 2010. The Modular Wetland Systems allow the City to meet the permit requirements for pollutant removal. Choosing this system has minimized seasonal flooding which is an important aspect in treating stormwater. The MWS – Linear is designed to treat stormwater runoff while also protecting the surrounding property.

A recent site visit demonstrated the importance of the MWS – Linear treatment systems. In October, 2010, a Bio Clean cleaning and maintenance crew along with the city of Chula Vista’s Public Works got a first hand look at the systems’ performance. “In less than eight months the systems captured a variety of pollutants that would have otherwise entered the impaired Sweetwater Watershed. It was visible that the first chamber was close to two-thirds full of sediment, trash and other oxygen demanding substances. Upon examining the BioMediaGREEN™ Filter Cartridges we found high amounts of oil and grease covering the surface of the filter media,” commented Aaron Kent, Modular Wetlands’ Project Manager. Each of the two filter cartridges contains 35 square feet of surface area and a loading rate of less than 1 gpm per square foot. This large amount of surface area makes the cartridge highly efficient and long lasting.



Cleaning of Pretreatment Chamber



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