

### Restorers as a Solution:

A five hundred meter linear Restorer was installed along the canal in the summer of 2002. The floating Restorer supports over 12,000 plants of 20 species native to the region. While the plants' root zone provides biophysically diverse surface areas necessary for robust treatment, a fabric media hanging below the Restorers provides the additional quantity of surface area required for complete treatment. A recycle line fixed to the underside of the Restorer prevents short-circuiting of wastewater entering the canal near the dam and recycles bacteria to the head of the canal to re-seed the processes upstream. An anoxic zone at the top of the canal allows for denitrification. The fine bubble aeration system distributes air along the canal from blowers located on a central floating barge. This low-intensity, uniform distribution both aerates the water and forces it to roll past the biologically active zone surrounding the plant roots as well as the artificial media. Beneficial bacteria are automatically dosed into the canal at the mid-point and at the recycle line. Bacteria species were selected specifically for their ability to aid in sludge and grease digestion as well as nitrogen removal processes.



Design Treatment Standards and Preliminary Results for Restorer				
	Influent	Effluent Design	Preliminary Results (Effluent Month 1)	Reduction
COD (mg/l)	480	<50	40	92%
BOD (mg/l)	240	<30	19	92%
NH3 (mg/l)	40	<15	no data	N/A
TSS (mg/l)	-	-	20	-

Estimated Flow: 750,000 gallons per day

### Performance and Results:

The Restorer system is still in its initial stages of treatment. Thus far, the Restorer has successfully reduced odors, eliminated floating solids, and drastically improved the aesthetics of the neighborhood. The clarity of the canal's water has increased from less than 6 inches to several feet. Water has already reached secondary effluent standards for several parameters. We expect the system to be operating at full treatment capacity by April 2003. Design and preliminary water chemistry data is summarized in the table above. The high quality effluent from the Restorer canal reduces negative impacts on downstream aquatic ecosystems.



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