

Constructed Wetlands Using Reclaimed Effluent

Wetlands provide a number of important functions including high plant productivity, temporary water storage, trapping of suspended material, nutrient cycling, toxin cycling and soil anchoring. In turn, wetlands are valued for the ecological services they render, such as food and habitat supply, food chain support, floodpeak reduction, groundwater recharge, water quality improvement and shoreline erosion control. Increasingly, wetlands are viewed as a cultural resource providing recreational opportunity and aesthetics.

The use of constructed wetlands for wastewater treatment has received much attention recently because they have the potential to provide low cost treatment and polishing of effluent while restoring natural wetland functions and values in areas where they have been depleted. Successful systems have been developed in a number of California cities including Mountain View (Demgen and Nute, 1979), Arcata (Allen et. al., 1987) and San Diego, (Gersberg et. al., 1988). The Environmental Protection Agency (EPA) encourages the use of constructed wetlands through the innovative and alternative technology provisions of its construction grants program (EPA, 1987).

Constructed wetlands can be designed primarily for wastewater treatment or environmental enhancement. Treatment wetlands are engineered to maximize the biological reactions that reduce levels of regulated pollutants. These wetlands offer wildlife habitat as a secondary, incidental function. Enhancement wetlands use treated effluent as the basis for wetland habitat development with the corollary function of effluent polishing. An important function of wastewater wetlands in the Laguna de Santa Rosa will be to establish the degree of removal of metal, organic toxins and viruses. This data would address regulatory concerns regarding rates and seasonality of discharge. It would also demonstrate the reliability, effectiveness and merit of wastewater marshes.

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