

WATER REUSE - WATER QUALITY AND WATER RIGHTS CONSIDERATIONS

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ABSTRACT

In the western United States most of the available surface and groundwater has been appropriated. Additional supplies of fresh water for new or increased municipal demands may not be available. Because new water sources may be prohibitively expensive or unavailable, alternative water sources such as treated wastewater should be considered.

Large volumes of treated wastewater are available for reuse after discharge from municipally-owned sewage treatment plants. Treated wastewater can provide water supplies for a wide range of municipal, industrial, agricultural, and recreational purposes. The sale of wastewater can produce additional revenue, as well as jobs in the industries using the effluent. Wastewater can also be used for artificial aquifer recharge through stream beds or slow percolation through sand filters.

INTRODUCTION

The efficient use of water and the reuse of large volumes of treated municipal wastewater can provide water supplies for a wide range of municipal, industrial, agricultural, and recreational purposes. In the past, most treated effluent was simply disposed of by discharging it to the nearest stream bed where it created perennial streams in ephemeral channels or mixed with natural stream flows. If it is reused, effluent from sewage treatment plants can generate revenue for the municipality which treats the water and also conserve the diminishing water resources of the western United States.

Land application of secondary-treated sewage effluent is the most common method of wastewater reuse. Land application can affect groundwater quality if concentrations of contaminants such as nitrates or heavy metals in the effluent exceed the nitrogen uptake of the irrigated crop or the sorptive capacity of the underlying soils. If the effluent quality is such that the irrigated crop completely removes contained contaminants from the wastewater, a percentage of the water recharges the aquifer with clean water.

WATER RIGHTS AND WATER QUALITY

The law governing usage and ownership of water in the western United States is the law of prior appropriation. The right to take the water is owned by he who makes the first appropriation. In some states there is no preference among the different kinds of water users, except on the basis of the antiquity of their water right. A farmer who first irrigated his land in 1900 established his date of first appropriation at that time. The farmer who began irrigating in 1900 has priority over a city whose water right was established in 1930. If drought or other factors cause a water shortage, the farmer who started irrigating in 1900 has the right to use available water before the city with the later appropriation date. In order to acquire the farmer's water right, the city must pay the farmer an agreed-upon purchase price.

In this system, one must distinguish between the water and the water right. The physical water is owned by the State government, and the administrative entity responsible for administering waters of the State grants to the user the legal/administrative right to appropriate the water for beneficial use. A water right is generally held to be part of the land on which the right is put to beneficial use. Beneficial use of water includes but is not limited to municipal, domestic, industrial, agricultural, and recreational uses (New Mexico State Engineer, 1966).

