How Water Works

ILLUSTRATED PROCESSES, EQUIPMENT, AND TECHNOLOGY

Water Reuse Augments Sustainable Water Resources

roperly treated wastewater effluent, also known as "reclaimed water," has been used for decades to meet nonpotable water needs in many parts of the United States. Specific requirements for implementing reclaimed water are being planned. As communities continue to stress current systems vary from state to state, but, generally, reclaimed water use for nonpotable water demand is an accepted practice.

More recently, interest has increased in the use of highly treated reclaimed water to augment potable water resources. A few projects have been implemented, and several others water supplies, water reclamation and reuse will play a greater role in water resource management.

- 1. Reclaimed water pipelines must be identified clearly when they are manufactured and installed. The most common method is to use purple-colored pipe.
- 2. Water-guality requirements for reclaimed water used to augment potable water resources may include limits to levels of pathogens, nutrients, trace organics, trace metals, total dissolved solids, and microconstituents. Following conventional preliminary, primary, and secondary treatment, processes typically used for producing reusable water include advanced treatment, natural treatment systems, disinfection, and solids management.

WATER TABLE

- 5. Landscape irrigation is the second-largest use of reclaimed water in the United States, involving golf courses, parks, residential areas, roadside plantings, and others. Because public contact with the applied water is perceived as a potential health hazard, reclaimed water has to meet higher quality levels for suspended solids and microbial concentrations compared with some agricultural applications.
- 6. Major industrial users of reclaimed water are power plants, oil refineries, and manufacturing facilities where water is required principally for cooling purposes. Additional treatment may be necessary at the point of use, depending on water quality requirements for the specific industrial process.

Some illustration elements exaggerated for emphasis.

WATER TREATMENT

PLANT

PIPELINE KEY

UNTREATED WATER

TREATED WATER

WATER TARLE

WASTE WATER

RECYCLED WATER

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1

- 3. Several groundwater recharge methods can be used to add reclaimed water to a groundwater aquifer, including injection wells, recharge basins, and alluvial infiltration. Reclaimed water also may be introduced to potable water supplies via natural systems or surface water augmentation, in which reclaimed water is added directly to surface water supplies.
- 4. Agricultural irrigation accounts for the largest use of reclaimed water in the United States and the world. For most irrigation applications in the United States, a minimum of secondary treatment is required.



7. Urban nonirrigation uses cover a wide variety of applications, including fire protection, toilet and urinal flushing, and road care and maintenance.

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Editor's Note: For more information on water reuse, these resources are available from the AWWA Bookstore (www.awwa. org/bookstore);

Using Reclaimed Water to Augment Potable Water Resources

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- Water Reuse: Issues, Technologies, and Applications
- Water Reuse for a Sustainable Future (DVD)

ILLUSTRATION: RON KNOWLTON