Bend Addresses Current and Future Water Challenges

From Sagebrush to Championship Golf

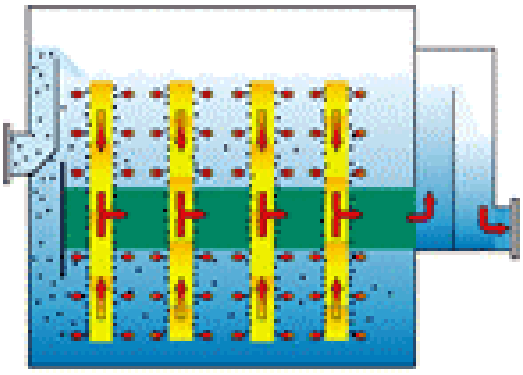
This summer, the City of Bend began supplying a new destination resort and championship golf course with up to 2.5 million gallons of reuse water per day. This innovative project got its start 3 years ago, when the city and the High Desert Development Company entered into an agreement that would link the city's wastewater treatment plant with the Resort at Pronghorn. The city agreed to construct a Reuse Facility and Pronghorn agreed to purchase the reuse water for landscaping and golf course irrigation.

Innovative Filter Technology a First in Oregon

Bend's wastewater treatment plant is well operated and achieves near Level IV performance with secondary treatment, the level required by Oregon law for irrigating golf courses with adjacent homes. For the new Reuse Facility, the city evaluated several types of filters:

- conventional gravity sand bed
- moving sand bed
- cloth media disk
- woven disk
- fiber sphere
- low-rate sand

The cloth media filter was selected based on its compact size and successful track record in reuse applications. The Bend plant is the first Level IV approved large-scale reuse facility in Oregon to use this type of filter.

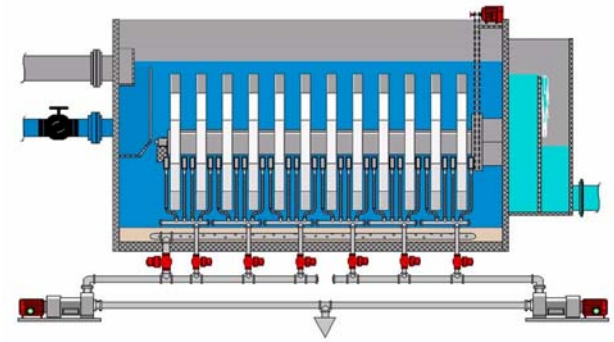


Solids accumulate on the surface of the cloth disk and a backwash pump periodically pumps the solids out while the filter remains in operation.

Reuse Facility Designed for Future Expansion

The Reuse Facility includes a filter feed pump station, two 12-disk filters in stainless steel tanks, chemical feed system, effluent reuse pumping, and plant water pumping. The equipment is located in a new 5,600-square-foot building, mainly because of Bend's cold winter conditions, and is designed to accommodate a third filter unit. A 2-million-gallon storage tank and high-head reuse pump station were designed and will be built in a future phase.

The filter systems were enclosed in a new building to protect them from Bend's cold winter weather.



Cloth media disk filters require about one-fourth the space because of the vertical orientation of the filter surface area.

Each 12-disk filter has an average flow capacity of 3 million gallons per day (mgd) and a peak capacity of 5 mgd. The build-out peak flow capacity of the Reuse Facility is 15 mgd. It is anticipated that the filters will be operated year-round and any filter effluent not reused will continue to flow to the evaporation/ infiltration ponds.

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A reuse pump station was designed with two variable speed pumps that can pump up to 2,100 gallons per minute of reuse water from the filter effluent wet well through a 5-mile-long pipeline to a storage lake at the golf course. The resort offers two championship golf courses designed by Jack Nicklaus and Tom Fazio, overnight accommodations, and 300 private home sites.

The pump station also includes a plant water pump to provide reuse and irrigation water on the wastewater treatment plant site.

Water Reuse Saves Natural Resources and Money

In many communities today, providing increasing water supplies for the needs of a growing population is a significant challenge. The opportunities to develop additional water supplies through traditional methods are becoming more and more limited. The costs associated with these new water supplies have accelerated to unprecedented levels, many times outpacing the abilities of water purveyors to capitalize water development. Conservation, although a key component of any water resources management plan, is often not enough to meet these increasing water demands.

At the same time, new awareness of the effects of pollution on the environment has led to an increased level of regulation associated with how we manage our municipal and industrial wastewater. Higher levels of treatment associated with discharge of wastewater to various receiving waters have resulted in increased costs in wastewater management.

It is with this backdrop that the role of reuse systems has achieved increased importance as a key link in overall water resources management plans. Reclaimed water can provide a solution to a wide range of water resource management problems, from water supply development to wastewater treatment.

The treated effluent is used to irrigate more than 300 acres of the Pronghorn Golf Course, reducing the dependency on Bend's critical water resources.

CH2M HILL a Leader in Reuse Technology

CH2M HILL's water reuse experts are industry leaders in addressing the many water issue and regulatory concerns facing our clients today. They provide a full range of services from studying the feasibility of implementing reuse in an area through the design and operation of a facility. Our staff also offers assistance in obtaining funding and public and regulatory approval for reuse projects. We offer our clients "one-stop shopping" in solving environmental problems at a much lower cost than conventional approaches. Our list of successful reuse projects proves our ability to provide technically superior and tested and reliable solutions.

CH2M HILL provided planning, design, and construction management services for this innovative reuse project in Oregon's high dessert.

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