

# TWO-STAGE ULTRAFILTRATION SYSTEM ACHIEVES >99.7% RECOVERY

WESTECH SYSTEM ENHANCES PROCESS EFFICIENCY WITH MINIMIZED WASTE



## Overview

The City of Big Timber, Montana, and Great West Engineering installed a WesTech two-stage ultrafiltration system to consistently produce high-quality drinking water with > 4.0 log pathogen removal while also minimizing wastewater discharge volume. In this process, the filtrate from the second-stage skid is returned to the first-stage feed for compliance with regulatory provisions. This has the added benefit of further reducing total suspended solids and organic loading on the primary UF.

The primary UF consists of two 1.37 MGD membrane filtration units, which receive raw water from a well source that is gravity fed directly to the membrane system from an existing infiltration gallery. The system is designed with N+1 redundancy to maintain overall treated water capacity with one unit offline. The secondary backwash waste recovery UF consists of a single skid-mounted AltaPac™ packaged UF system. Both the primary and secondary units are designed with the ability to expand treated flow rate by 20 percent solely through the installation of additional modules. ■

## RESULTS

> 99.7%  
Recovery

20%  
Spare Capacity for Expansion

N+1  
Redundant Design

## Project Summary

### Big Timber Water Treatment System

**Location:**

Big Timber, Montana, USA

**Application:**

Potable Water

**Process:**

Ultrafiltration ▶ AltaPac™  
Backwash Recovery

**Capacity:**

950 gpm/1.37 MGD

**Design Flux:**

74.27 gfd

## Highlights

- **Primary Direct Ultrafiltration with Secondary Backwash Recovery Ultrafiltration**
- **Maximum Feed-Water Use with Minimized Waste**
- **Gravity Feed for Reduced Pumping / Energy Demand**
- **Compliance with Montana Department of Environmental Quality Regulations**