

Case Study: Big Sky

NITROGEN & PHOSPHORUS REMOVAL BIG SKY, MONTANA (POPULATION 2,300)

Informed Process Control Provides Effective Nutrient Removal
Cost: \$10,000 for Lab Testing Equipment

Nitrogen Removal

Operational Cost Savings: Reduced Electrical Consumption



A greater focus on process control reduced total-nitrogen by 75% at the 0.75 MGD sequencing batch reactor (SBR) that serves the resort community of Big Sky. Plant staff purchased a portable ORP meter and vials for the benchtop spectrophotometer in dialing in nitrogen removal.

New target settings were established: an end of aeration ORP of +100 to +150 mV and an end of mixed fill ORP value of -100 mV. During the summer of 2017, effluent total-N was less than 5 mg/L. Prior to optimization, total-N averaged more than 25 mg/L

Three of the four aeration blowers were manually shut down so that only one would operate at any one time and the air on/air off settings were changed to increase the air off time.

Some 90% of the influent phosphorus is removed chemically by the alum contained in the drinking water treatment facility's backwash water. Effluent total-P averages less than 1.0 mg/L, even though the influent total-P is generally more than 10 mg/L.

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