MOLEAER
ADVANCING NANOBUBBLE TECHNOLOGY



RESTORING OXYGEN AND IMPROVING WATER QUALITY

HOW MOLEAER NANOBUBBLE OXYGENATION TECHNOLOGY IMPROVED OXYGEN LEVELS, SEDIMENT CONDITIONS AND WATER QUALITY IN A UTAH RESERVOIR

Client: Magleby Reservoir

Location:	Surface Area:	Median Depth:
Fishlake National Forest Utah, U.S.A.	17 acres	8 ft

Key Results:

- **Average daily low oxygen levels near the lakebed increased from 0.09 mg/L (2025, untreated) to 7.02 mg/L (2026, treated)**
- **Under treatment, 94% of days met Utah's cold-water fish oxygen benchmark of > 4 mg/L, up from 7% under no treatment**
- **~ 20% increase in lake-bottom sediment hardness under treatment, reflecting muck decomposition**

Addressing Oxygen Depletion and Water Quality Challenges

Magleby Reservoir is a privately owned, 17-acre mountain reservoir in Utah's Fishlake National Forest. Each summer, recurring excess algae growth raised concerns about water quality and the health of the reservoir's stocked fish population.

Dissolved oxygen recordings by PME miniDOT loggers in 2025 revealed that **oxygen near the lake bottom was severely depleted for much of the summer.** These conditions can cause sediments to release phosphorus back into the water, adding nutrients that fuel algal growth and further degrade water quality.

Moleaer's nanobubble oxygenation technology was deployed to restore oxygen near the lake bottom and improve water quality in the reservoir. The technology withdraws reservoir water, enriches it with oxygen nanobubbles and returns it to the reservoir, delivering up to 1,000 gallons per minute.

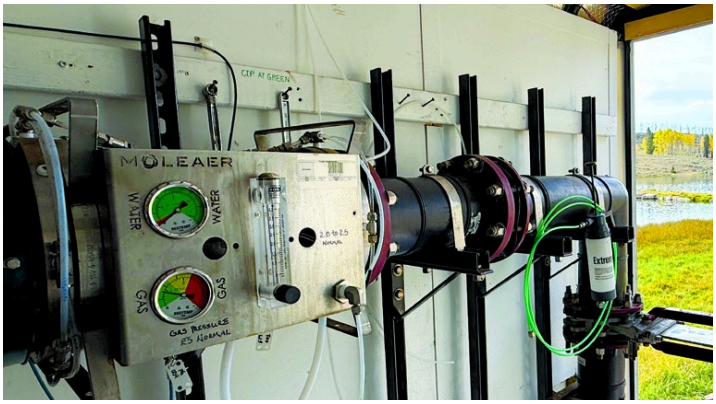
Treatment performance was monitored using PME miniDOT loggers which recorded dissolved oxygen and temperature at 10-minute intervals, grab water samples that were analyzed for water chemistry, acoustic sediment hardness mapping, and Secchi depth measurements (that measure water clarity).

Restoring Oxygen Near the Lake Bottom

During the first season of nanobubble treatment, monitoring showed substantial improvements in dissolved oxygen near the lake bottom. The monitoring results reveal:

- Median daily minimum dissolved oxygen **increased from 0.09 mg/L under no treatment to 7.02 mg/L** under treatment.
- The number of days characterized by anoxic conditions (dissolved oxygen levels below 1 mg/L) **fell from 53 under no treatment to zero** under treatment.
- The number of days when dissolved oxygen levels met Utah's 4.0 mg/L cold-water fish benchmark **increased from 7% under no treatment to 94%** under treatment.

The results demonstrate a significant shift from prolonged oxygen depletion to sustained oxygen availability near the lake bottom and occurred during a warmer, wetter year, when higher temperatures and increased runoff would have typically increased oxygen demand.



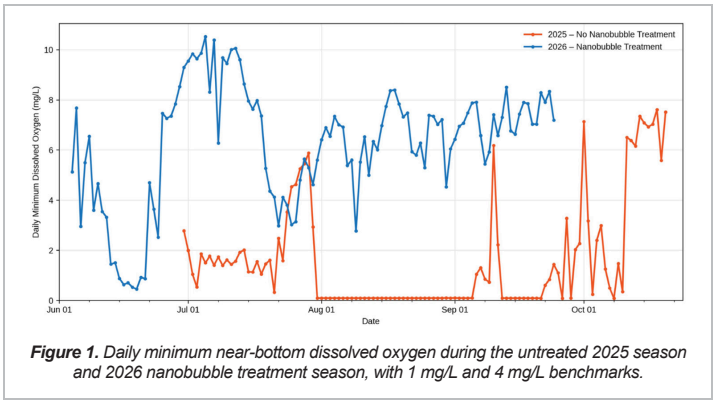


Figure 1. *Daily minimum near-bottom dissolved oxygen during the untreated 2025 season and 2026 nanobubble treatment season, with 1 mg/L and 4 mg/L benchmarks.*

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Improving Lake Bottom Conditions and Limiting Nutrient Release

When oxygen levels fall near the lake bottom, sediments often release phosphorus into the water, contributing to nutrient enrichment and excess algal growth.

During treatment, water chemistry monitoring showed no evidence of internal nutrient release, even after significant July storms introduced additional phosphorus and organic inputs from the surrounding watershed into the reservoir.

Monitoring also identified measurable improvements in lake-bottom conditions:

- **~ 20% increase** in sediment hardness
- **88% of mapped areas** became firmer
- **No significant change** in sediment hardness during the untreated 2025 season

These findings reflect improved sediment conditions alongside sustained oxygen availability at the reservoir bottom.

Maintaining Water Clarity

Water clarity remained high throughout the 2026 treatment season. The lake bottom was visible during every monitoring visit, including after significant summer storms.

By comparison, water clarity had declined to 1.1 meters by the final monitoring visit in October 2025 under no treatment.

> "There was a lot of algae growing around the perimeter of the reservoir, and I have not seen that at all this year. I want to spend the resources on the most efficient, the biggest return, the fastest return on the investment. Our observations are that the water quality has increased significantly."
>
> **— Paul Magleby, Reservoir Co-Owner**

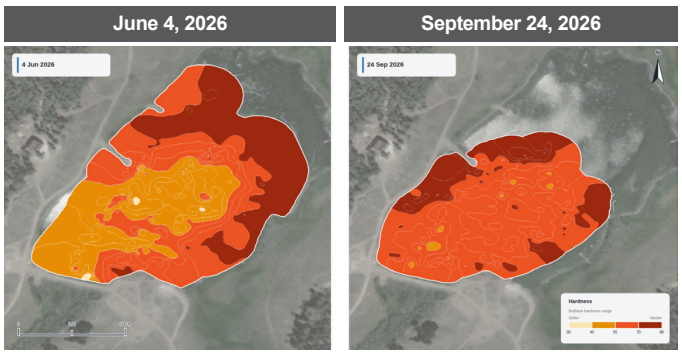


Figure 2. *BioBase bottom hardness maps from June 4 and September 24, 2026, showing changes in sediment firmness during treatment.*

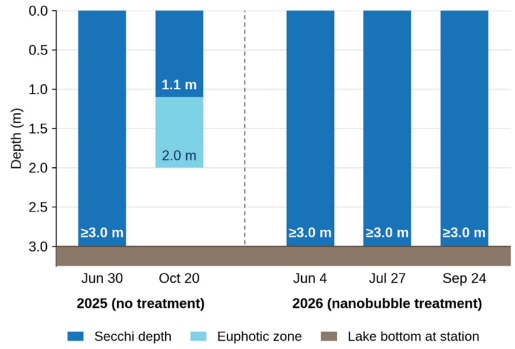


Figure 3. *Water clarity during the untreated 2025 and 2026 treatment seasons. The lake bottom remained visible during every 2026 monitoring visit.*

Supporting Long-Term Reservoir Health

After one season of Moleaer nanobubble treatment, Magleby Reservoir demonstrated substantial improvements in oxygen availability, lake-bottom conditions, and indicators of internal nutrient loading.

For the reservoir's owners, these improvements represent meaningful progress toward protecting water quality and maintaining conditions that support the stocked fish population.

The project demonstrates the potential of Moleaer nanobubble oxygenation, combined with in-house freshwater ecology expertise, to address oxygen depletion and support long-term water quality management in nutrient-impacted reservoirs.

Get Connected With A Moleaer Surface Water Expert

Learn how Moleaer nanobubble oxygenation technology can help restore dissolved oxygen, improve lake-bottom conditions and support healthier lakes and reservoirs.

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