

Protecting Aquatic Life

Maine Companies Utilize Real-Time Systems for Data



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YSI Real-Time, Continuous DO Monitoring
Application Note A516-02

The Gulf Island Pond Oxygenation Project in Maine utilized a YSI environmental monitoring system to record real-time data for regulation and historical purposes.

The project was started when a Maine power company and several paper companies along the Androscoggin River formed a partnership to improve oxygen levels, thus benefiting aquatic life in the Gulf Island Pond.

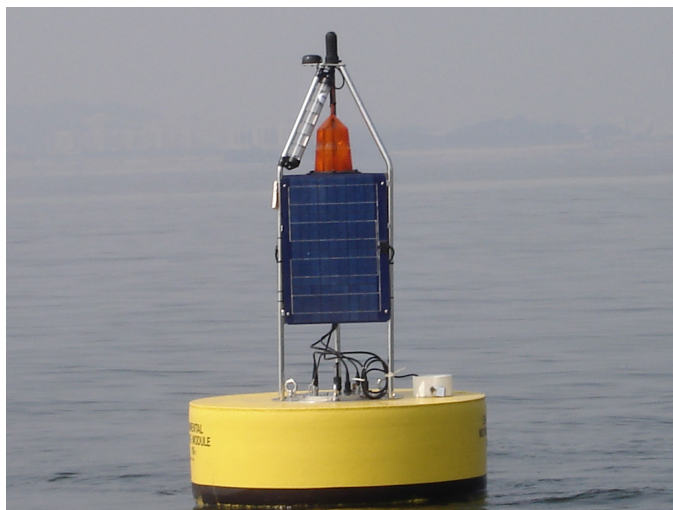
In the early part of the century, a hydropower dam was built on the river. The dam caused a significant impoundment to form, named Gulf Island Pond. Over the years, legal discharges, point and non-point sources of pollution, and the natural and physical conditions created by the existence of the impoundment caused dissolved oxygen (DO) levels to decline.

The partnership constructed the oxygenation facility to increase DO conditions, benefiting aquatic life and addressing the minimum requirements for Class C waters, as defined by the Maine Department of Environmental Protection. The Gulf Island Project was the only water oxygenation facility in Maine that used a diffuser system. When this project went on-line in 1992, it was the largest water oxygenation facility in the U.S.

Pure liquid oxygen was delivered and stored on-site in two 13,000-gallon tanks. The liquid oxygen passed through a bank of vaporizers that converted it into a gas. This gas then passed through an underground pipeline that extended from the oxygen storage area to an underground diffuser system in the river. The system was located approximately 30 feet below the water surface and extended approximately 560 feet from the riverbank. Since the project began in 1992, the DO levels consistently increased.

YSI Instruments Ensure Compliance

Since 1994, three YSI multiparameter sondes have been recording dissolved oxygen, temperature and specific conductance. The YSI sondes systems connectivity allows remote access of the real-time data via modem. In 1998, the project began to use YSI 600XL and 6920 sondes. The 6920 sonde was deployed in the deepest hole of the pond and recorded DO and temperature data that helped to understand how the diffuser system affected DO levels in the deepest part of the pond. The four sondes were deployed below a YSI EMM550 buoy at 5, 20, 35 and 50-foot depths, located 300 feet above the dam. These



YSI EMM550 buoy (or similar buoys from YSI Systems) provides powerful abilities to access data

sondes collected DO and temperature data that were used to verify the data collected by the other YSI multiparameter sondes and to validate water quality models used to manage operations of the oxygen diffuser system.

Calibration and maintenance of the sondes were simply done on-site. Before the sondes were retrieved, a YSI 600R sonde and YSI 650 were used to verify the data readings of each deployed sonde. Calibration was completed using a laptop computer and YSI software.

Data was retrieved daily by Water Monitoring Services, who then charted the data and checked it for quality assurance and quality control issues. Water Monitoring Services also operated and maintained the monitoring system.

By using a YSI environmental monitoring system the project was able to keep accurate records in order to comply with the Maine Department of Environmental Protection's permits and licensing agreements.

For additional information please contact:

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