

12TH U.S. SYMPOSIUM ON HARMFUL ALGAE

MANAGING WATER QUALITY IN AN URBAN LAKE: EVALUATION OF THE LARGEST NANOBUBBLE TECHNOLOGY DEPLOYMENT IN THE U.S. AT LAKE ELSINORE, CA

SESSION: POSTER SESSION, TUESDAY

ABSTRACT: Because it does not involve the use of artificial chemicals, nanobubble technology is increasingly being used as a novel, sustainable tool for algae control and environmental remediation in lakes and ponds. Recently, nanobubble treatment was applied to Lake Elsinore in the City of Lake Elsinore, CA, representing the largest demonstration to date of the technology in the U.S. Lake Elsinore is a 3,000-acre natural, freshwater lake that is a popular recreation destination. Historically, the lake has been plagued by moderate to severe harmful cyanobacterial blooms that have resulted in repeated lake closures and unpleasant odors impacting nearby communities. In response, the City of Lake Elsinore implemented a multi-faceted approach to remediate water quality in the lake, including treatment of the Elm Grove Beach Lake area with nanobubble technology. This treatment, installed and commissioned on February 8th, 2024, consists of a barge-mounted, containerized oxygen and ozone nanobubble injection system. The equipment recirculates water at 2,400 GPM. To determine treatment effectiveness, multi-parameter sondes were deployed in seven locations in the treatment area to continuously monitor water quality. Periodic sediment hardness mapping was also conducted. As of this abstract submission, only the first month of operational data has been analyzed. Lake clarity (i.e. Secchi depth) increased by over 200%, from a historical average of 0.2m-0.3m to 0.8m. Oxidation-reduction potential (ORP) also more than doubled, while relative Chl a fluorescence was approximately eight times lower than at the start of treatment (ORP: 263 vs. 119 mV; Chl a: 0.38 vs. 3.20 RFU). This presentation will cover deployment of the nanobubble treatment, the contribution of this treatment to the City's overall lake management plan, and water quality results from the first six months of operation.

SPEAKER: Denise Devotta, denise@moleaer.com | denise@moleaer.com

SPEAKER BIO: Dr. Denise Devotta Moleaer's dedicated limnologist. In this role, she develops and refines ways to apply Moleaer's nanobubble technology to freshwater ecosystems across the U.S. and worldwide. Also, she conducts research regarding the impacts of Moleaer's technology on freshwater ecosystems. Dr. Devotta holds PhD and Masters in Environmental Sciences, with a focus on Ecology, Evolution, and Conservation Biology from the University of Illinois at Urbana-Champaign. With over 15 years' expertise, she has led groundbreaking research and applied freshwater science to tackle global water quality challenges with remarkable success. Known for her collaborative spirit, Dr. Devotta has partnered with organizations such as the United Nations Environment Programme, U.S. Congress, governments of both the U.S. and Singapore, as well as various private industries, and NGOs, addressing a spectrum of water-related issues.

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