

Onondaga Lake Long-Term Cap Monitoring Program

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Background/Objectives. The cleanup of Onondaga Lake, a 4.6-square-mile lake located in Syracuse, New York, began in 2012 and successfully concluded in 2016 following three years of dredging and five years of capping. The cap, amended with granular activated carbon and covering over 450 acres, requires implementation of a comprehensive long-term monitoring program to assess physical and chemical performance with respect to cap performance criteria.

Approach/Activities. Given the varied cap designs and various chemicals of interest, a wide variety of sampling methods was required, including multiple innovative methods. In cap areas composed entirely of sand, cap material cores were utilized for sample collection. In these areas, solid phase samples were collected manually, and porewater samples were collected via direct extraction from collected cores using large syringe-type extractors. In cap areas containing gravel or cobble, collection of cap cores was not possible, therefore custom 8-ft. long 4-in. diameter stainless steel porewater peepers with multiple sampling depth ports were utilized to collect porewater samples. These peepers proved effective in penetrating over 2 feet of coarse gravel and cobble, allowing sample collection throughout the cap profile.

Physical monitoring combined single-beam bathymetric survey, traditional pole survey, physical substrate probing, core thickness measurements, and shoreline inspections to verify that the chemical isolation and habitat/erosion protection layers remain in place. Bathymetric survey utilized a remotely controlled Z-Boat 1800, which allowed for rapid and accurate coverage of up to 40 acres/day. Shoreline inspections utilized photo documentation, including aerial drone photography, to verify the shoreline cap integrity.

Results/Lessons Learned. Results from the 2017 comprehensive monitoring program are consistent with expectations and verify that the cap remains physically stable, with no significant loss of cap material detected. Results of the chemical monitoring program, which included over 7000 chemical analysis from over 150 sampling locations, verify that there is no evidence of significant chemical migration through any of the capped areas and that the cap remains protective of human health and the environment.