

NUTE Case Study

Equalization Ponds Improvements

Sewerage Agency of Southern Marin (SASM)

Summer 2008



Figure 1: View of equalization pond berm before and after Nute Engineering Project in 2008 that more than doubled capacity of the ponds using a low-profile, HDPE-lined wood wall design. The tidal slough in the foreground was the location of sanitary sewer overflows in January 2008.

Problem: In January 2008, a series of intense storms caused sanitary sewer overflows from SASM's equalization ponds, 2.4 million gallons of raw sewage on one day and another 962,000 gallons of partially treated sewage six days later. The spills into the adjacent tidal slough and Richardson Bay created concerns in the local community and resulted in a large monetary fine from the Regional Water Quality Control Board. The equalization ponds at SASM are used to moderate the peaks of influent flow to be able to fully treat the storm-swollen flows to meet NPDES permit limits. If the ponds overflow, it is mostly raw sewage. The pond capacity at the time of the spills was about 1.7 million gallons. SASM had a goal of increasing the pond capacity by 1 million gallons within the year in order to have this additional equalization capacity by the following wet season.

Solution: Nute Engineering quickly began work on a design alternatives technical memorandum that evaluated various approaches to increasing capacity of the equalization ponds. The larger south pond is managed in the summer as wildlife habitat using final effluent, as part of a cooperative agreement with neighborhood advocacy groups. In order to meet the aggressive timeline of increasing capacity by 1 million gallons by the following wet season, Nute recommended a low-profile wood retaining wall lined

by HDPE sheeting, incorporating three high berm areas to allow continued vehicular access around the ponds for maintenance and emergency access, and raising a concrete wall adjacent to the administrative building. The overflow weir structure would be elevated along with the exterior wall elevation, and the north pond (dry in the summer) would be carefully excavated to increase capacity but not damage the effluent force main that runs beneath it. A water level sensor was incorporated into the weir structure to enable operations staff to monitor water levels from the command center in the administration building.

Results: The project was bid in September 2008 and completed by December 2008 meeting the timeline goals for under \$500,000 in design and construction costs. The project increased the overall equalization capacity from 1.7 million gallons to 3.3 million gallons and had no community opposition because it retained the pedestrian trail and the popular wildlife habitat without altering the visual character of the area. All CEQA and permit processes went smoothly because of Nute's expertise and ability to convey the urgency of the project need through these processes. This project, adjacent to endangered species and other sensitive habitat and busy public parks, was completed within a year of the sewage spills that necessitated its construction, a significant accomplishment.



Figure 2: View of North Pond retaining wall and high berm for vehicular access to ponds.



Figure 3: View of HDPE liner and wood wall next to the South Pond that provides wildlife viewing opportunities for local residents.



Figure 4: View of overflow weir box structure and water level sensor, showing welds on the steel structure that increased the elevation and capacity of the equalization ponds.