CASE STUDY: PBEC Pilot Study for Sediment COD Reduction and Eutrophication Mitigation

High nutrient loading and high organic input have caused eutrophication of the Hezhou Lake in China. Elevated ammonia along elevated COD and BOD were observed in the surface water. The eutrophication generates high algae bloom and a lack of benthic and fish populations in the lake. PBCE was tested for over one year at an area of 10 x 10 meters (Figure 5). The current level was maintained at less than 10 mA to ensure no detrimental impact on microorganisms and microorganisms. The test area was not isolated to allow water exchange with the surroundings. Water quality was monitored inside and outside of the test area (Figure 6). Sediment samples were collected to evaluate the treatment efficiency.

Figure 5: A- Left the treatment layout; B – Right water appearance inside and outside of treatment area

Figure 6: A- Left water samples during non-algal bloom season; B – Right water samples during algal bloom season

Results: During both the non-algal bloom and algal-bloom seasons, the surface water quality improved greatly and algae growth was under control during the latter period, as shown in Figure 6. In general, DO levels increased 20%, COD decreased 60%, total nitrogen levels decreased 80%, and ortho-phosphate decreased 60%. The sediment TOC decreased by more than 50%.