

AquaticEngineering

Working Above Water, On Water & Under Water

Case Study : Farmoor Reservoir – Living Filter



Client: Thames Water

Contractor: AquaticEngineering

Duration: 6yrs

Engineering Peer Reviewed: MWH

R&D Project

AquaticEngineering has been working in partnership with Thames Water for a number of years to bring the 'Living Filter' project to reality. It was finally installed during the summer of 2012 and a PhD student was selected in October who is being supervised by the University of Oxford (Dept. Engineering Science) and Thames Water for 3yrs.



Due to the complicated profiles under water, around the offtake pumping station on Farmoor 11 Reservoir, the AquaticEngineering dive team were deployed in depths of 13m to undertake a full bed survey and identify submerged anomalies which could interfere with this reasonably large installation having a footprint of over 1000m².



The divers removed accumulated debris including lost anchors, chains, ropes, an outboard engine and concrete slabs. They then drilled anchor bolts into the concrete bed to attach the many tonnes of steel dead weights required to hold the system in place, the anchor bolts were required to hold the steel weights in place and prevent them sliding due to the steepness of the profiles and the accumulated biofilm which covered the reservoirs concrete apron around the pumping station. The substantial anchors are required to hold the many components in place which total over 10 tonnes in accumulated weight. All components had to be DWI compliant due to the size and surface area of each material used in fabrication.





Although each component was fabricated either in the AquaticEngineering factory on the Isle of Wight or adjacent to the reservoir, assembly on water of the many components took several weeks to complete.



Almost 2000m² of baffles and curtains, along with almost 10,000m² of accretion materials for biological attachment were fabricated and installed within and below the 210m² floating system.



Once the engineering side of the installation was complete, the 'living' component was added in the form of 210m² of pre-grown coir pallets of several aquatic species selected for specific purposes. It is vital to use established coir products in any project, however this is especially the case in exposed environments – ideally the product should be established for at least 6 months during the growing season to produce the essential root biomass and associated rhizomes.





Within weeks of installation algae became entrapped within the system as designed, although a little too early to determine the effectiveness of the system it will be monitored continuously for the next 3 yrs – one of the many sampling points amid the algae 'soup' can be seen below.





Updates to this project case study will appear regularly through the website of AquaticEngineering and via press releases from Thames Water.

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