Passive Post Aeration Basin Cover System:

Concept:
The existing carbon filtration system incorporates a solid cover over the Post Aeration Basin ("PAB") with a few openings for allowing air intrusion into the vapor space of the basin. A ductwork header and suction inlets are created with corrugated plastic piping which then feeds a blower fan. The blower fan pushes the vapors from the PAB through an activated carbon filter and then exhausts through a discharge pipe to ambient atmosphere. This current system is an "active" system because it includes a blower fan.

The alternate "passive" system simply utilizes the existing air movement actions of the induction aerators to bring air into the basin which then dissipates through the liquid effluent and discharges by natural convection upwards into the vapor space and then out of the basin. To filter these vapors, a cover will be installed which uses this natural convection process to capture any odorous compounds and have them flow through activated carbon "patches" which are both replaceable and built into the cover of this PAB filtration system. No fan is required, hence the "passive" nature of the system. The initial intent is to replace the carbon patches at twice the frequency recommended by the vendor.

Description:
Anue Water Technologies' Engineered Odor Control System technology is a patented, custom designed Geomembrane system with integrated odor control filters to reduce odor emissions. The membrane is supported by a cable grid and batten bars above the surface, making it unaffected by aeration, changing water levels, foaming, bacteria and other common issues. Custom access and viewing ports allow for uninterrupted maintenance. The engineered specialty filter inserts are designed to last 9 to 18 months, but they may be changed more often as needed depending on ambient monitoring emissions levels.

The mill has requested a proposal from Anue Water Technologies for an EOCS Geomembrane system for the PAB. The objective of the project is to reduce the odors emanating from the PAB. The PAB has the dimensions of 40' x 61', 2440ft2 (12.2m x 18.6m, 226.9m2) (Fig. 1).

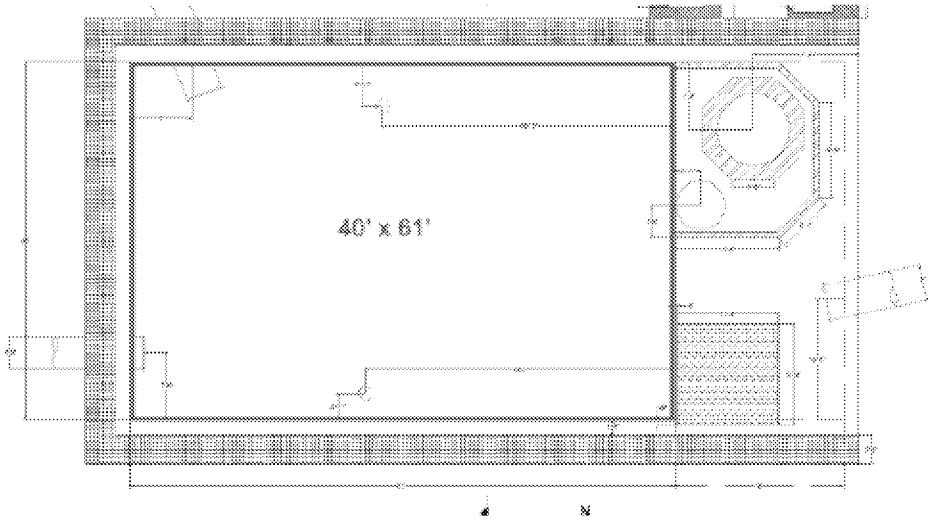

Fig. 1

The EOCS Geomembrane will have 99 filter pockets and one access port. The preliminary design of the membrane is in Fig. 2. The support of the membrane will consist of steel cables across the PAB in both directions. The PAB has pre-existing cables installed at an interval of 48" which will be left in place and additional cables will be installed in between. Because of the extensive size of the membrane, double cables will be used in the middle of the Basin.

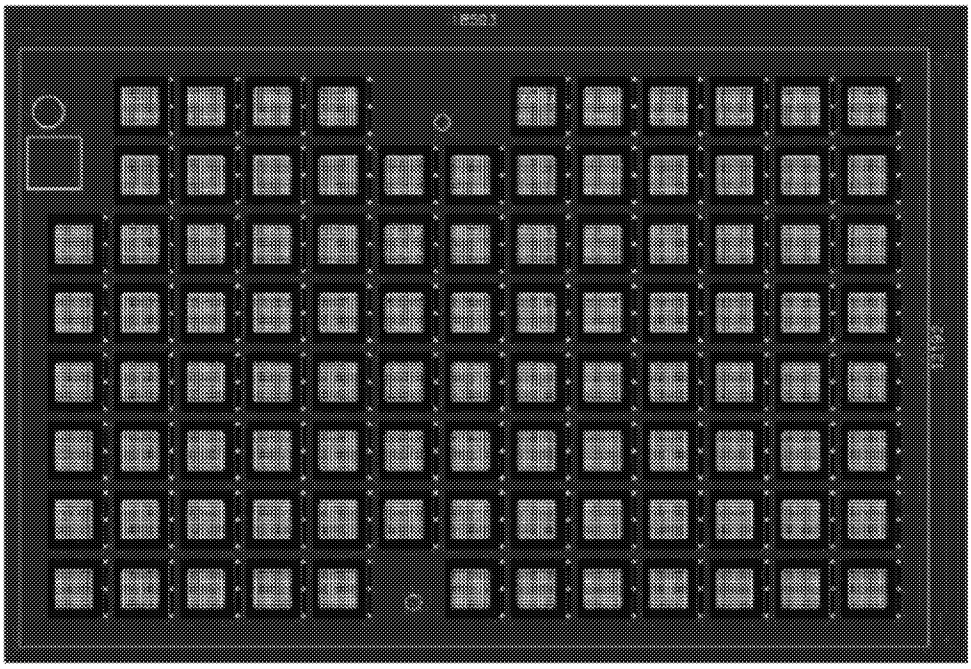

Fig. 2

The EOCS Geomembrane consists of a highly resistant, non-porous membrane with activated carbon filters enclosed inside pockets (Fig. 3). The hook and loop (aka Velcro) pockets allow for easy access to change the filters (Fig. 4). The membrane is rested on top of the support cables crossing the PAB. The EOCS Geomembrane fastening system consists of batten bars that are fitted and anchored with expansion bolts on the side of the edges of PAB (Fig. 5). The membrane is placed between two batten bars. The batten bars are installed in the horizontal or vertical part of the Basin wall depending on the circumstances of potential obstructions in the PAB. The design of the cover, along with the size and placement of the filters, may vary and depend on the circumstances of each individual project. Anue Water Technologies has customized the placement of the filters based upon the design and specifications of the PAB.

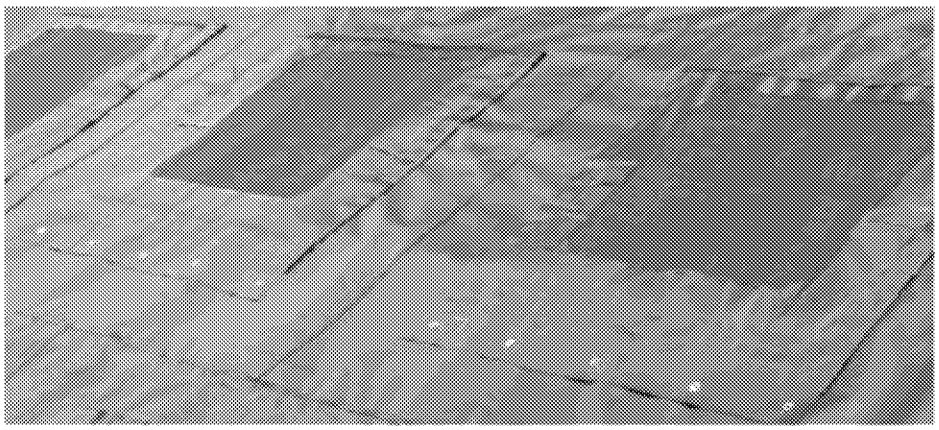

Fig. 3

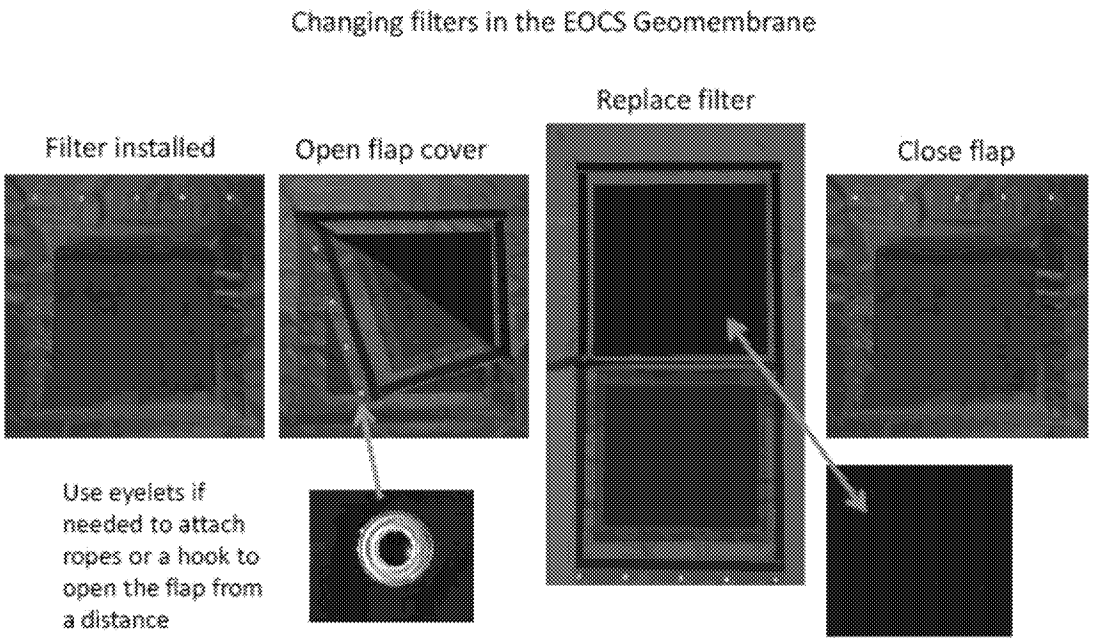

Fig. 4

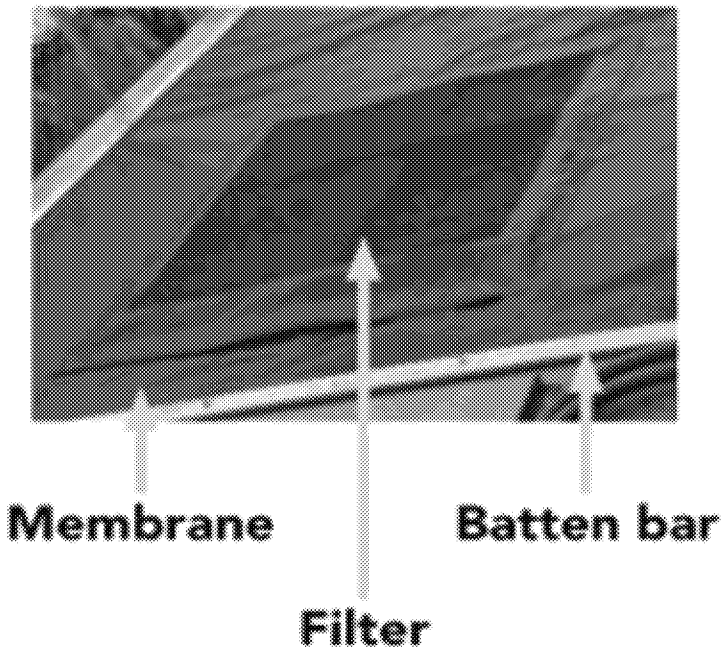

Fig. 5