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Flow characterization in vegetated marsh environments JENAHVIVE MORGAN, ALINE COTEL, PAUL WEBB, University of Michigan — The evaluation of wake flows due to aquatic vegetation is necessary to understand the response of the environment to flow through a marsh. Considering the influence of vegetation on the turbulent characteristics of the flow is important in understanding its effect on the surrounding environment and can be applied to the design and creation of artificial marsh environments for restoration projects. Vegetative environments, due to their structure, create turbulence in the flow which in turn affects the response of the native fish species, as well as contaminant and sediment transport. In an effort to model an aquatic vegetative environment, arrays of vertically aligned cylinders of diameter equal to 1/4" were set-up in staggered positions to create a variety of flow configurations in a re-circulating water tunnel. Particle Image Velocimetry (PIV) was used to determine flow characteristics at different velocities for each geometry. In particular, turbulence downstream of the cylinders was examined for different arrangements of the marsh model. The data reveal a strong relationship between the arrangement of the cylinder arrays and the wake turbulence downstream of the cylinders. These results have implications for fish responses to aquatic environment and the design of artificial wetlands.

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