

Summary: In response to seaweed impacts recently observed throughout the Turks and Caicos in 2017 and 2018 coupled with the likelihood these events will continue to occur, a seaweed mitigation gate and water pump was designed to protect a swimming lagoon during periods of elevated seaweed impacts.

Key Project Elements:

- ◆ Wave Gauge Installation & Spectral Analysis
- ◆ Water Quality Testing & Analysis
- ◆ Numerical Modeling / Flushing Analysis
- ◆ Project Planning, Marine Structures Analysis & Design
- ◆ Hydrographic Survey
- ◆ Benthic Resource Mapping and Habitat Analysis
- ◆ Acquired All Government Permits
- ◆ Schedule of Quantities and Costs Estimates
- ◆ Environmental Impact Assessment
- ◆ Construction Plans and Specifications
- ◆ Construction Administration & Oversight
- ◆ Post-Construction Performance Monitoring

A seaweed attenuation study was implemented inclusive of time lapse photography, wave spectral analysis, water currents and metrologic data to determine the best solution. The sea gate was designed to be as large as is technically feasible, whilst being concealable within the existing break-water structure. Additionally, a water pump, sediment separator (filtration system), and two flushing pipes with outgoing check valves were incorporated into the design to further reduce the seaweed intrusion and promote flushing when the sea gate is closed.



Concrete Modules for Mitigation Gate



Sediment Separator Installation



Sargassum Seaweed Bypassing the Lagoon