



Maryland Port Administration Demonstration Project

Innovative Technology Algal Turf Scrubber

ATS™





Maryland Port Administration

Innovative Technology Algal Turf Scrubber

ATS™



WHY?



The Chesapeake Bay is a national treasure!

Presidential Executive Order 13508

Chesapeake Bay Protection & Restoration

“Fishable & Swimmable” Goals



State Regulators



Wonder what we do now?

WIPS ?

Storm Water Fees?

Urban Storm Water?

TMDLs for Nutrients and Sediment

NPDES Permits?

General Discharge & MS4



MPA's Reaction



OH! No!
We have 1000s of acres
of impervious surfaces
and will have to treat
or restore 100s.
What can we do???

WIPS ?

Storm Water Fees?

Urban Storm Water Run off?

Nutrients and Sediment

NPDES Permits?
General Discharge & MS4



WHO? Brains & Brawn of ATS™



Dr. May, UMD

Jamie Smith, MPA

Bill Tittle, MPA

Bill Richardson,
Env. MGR. MPA

Bryce Selby, MPA



Scientific WHO?

Scientists & Engineers

University of Maryland

HydroMentia, Inc. ATS™

Biohabitats, Inc.

Publications

Adey, W., Kangas, P., Mulbry lii, W.W. 2011. Algal turf scrubbing: cleaning surface waters with solar energy while producing a biofuel. Bioscience. 61:434-441.

Or Google Scientific Papers for Algal Turf Scrubbers



Where? Dundalk Marine Terminal



ATS™



What is an ATS™?

ATS™ Components

- 2*4s
- PVC pipes
- PVC elbows
- Stainless Steel pans
- Electric Pump
- Screen
- Hoses
- Corrugated Pipes
- Flow Meter





What is an ATS™?

Purpose of
Stainless
Steel Pans:

To simulate
wave action





What is an ATS™?



Specifications:

300' * 6' =
1800 Sq. Ft. or
0.045 acre

100 gpm or
144,000 gpd

Slope 1%



What is a ATS™?

Discharges Cleaner Water to Impaired River





How Does an ATS™ Work?

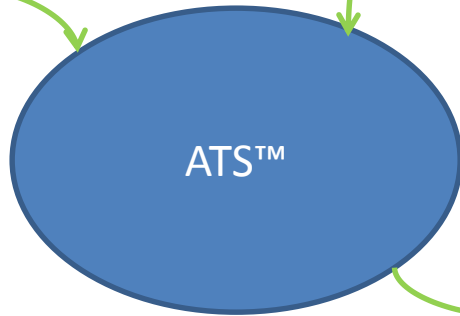
Solar



Wave Action



Algae



River Water



Cleaner Water

More Detail – Next Slide



How Does an ATS™ Work?

Raceway



Biomass



Harvesting Algae



“Turf “ algae grows on screen of raceway

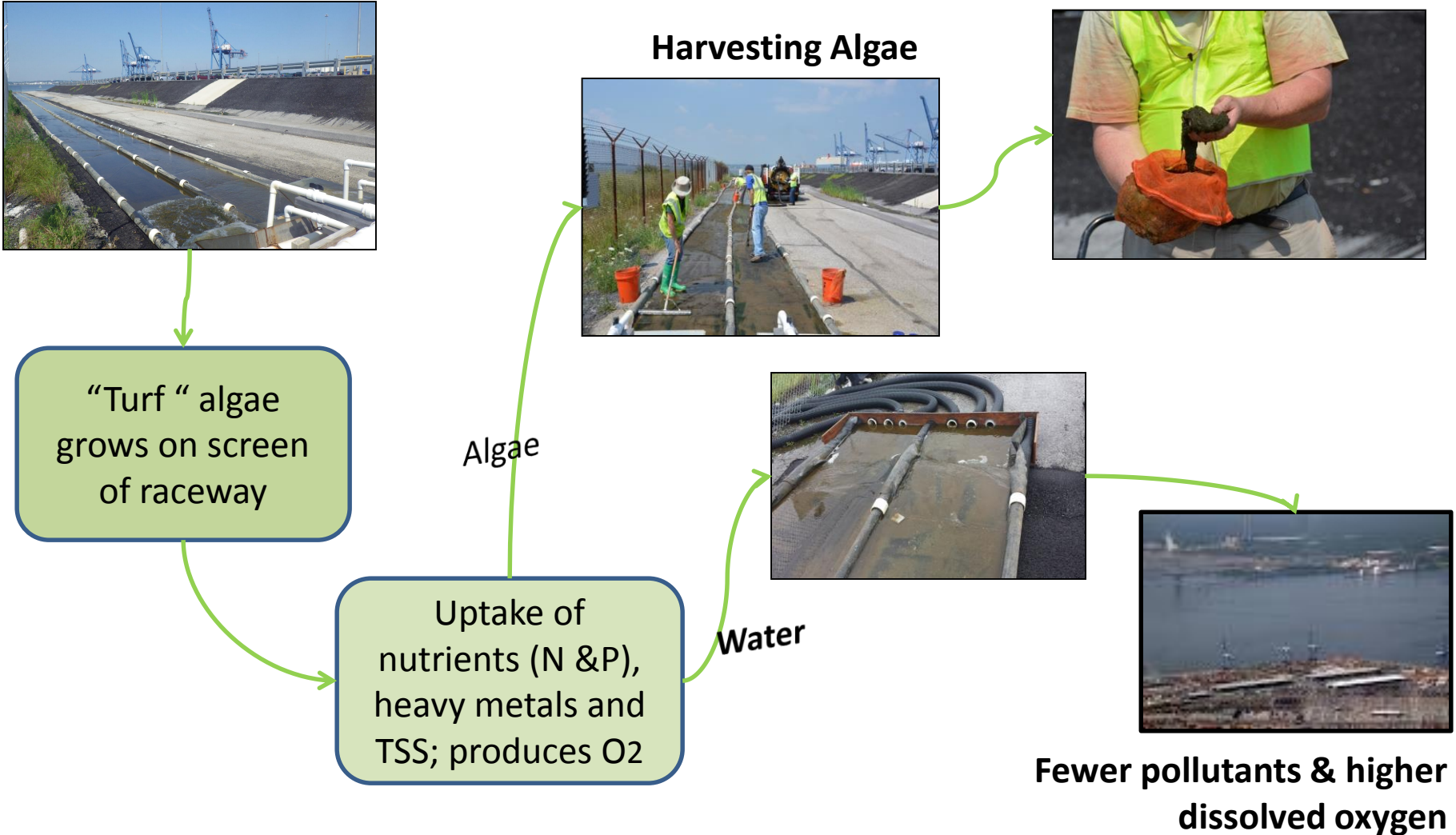
Uptake of nutrients (N &P), heavy metals and TSS; produces O₂



Fewer pollutants & higher dissolved oxygen

Algae

Water





Benefits of an ATS™

Testing Results for 2013

Removal Efficiencies of ATS™:

228 Lbs./Nitrogen/Year

22.8 Lbs./Phosphorous/Year

Average of ATS™ Removal Rate for MPA's

0.045 acre treats 16 impervious acres

Final Stages of Approval Chesapeake Bay Program



Almost.



Demonstration Project for ATS™ Energy Generation Capstone Project UMD

Biomass



Anaerobic Digestion



Biogas

**Energy for
ATS™ Pump**





ATS™ Next for MPA

0.5 Acre Location for ATS™
Expected >100 Acres of Treatment of
Impervious Surfaces

Concerns:

- Loss of Use of Terminal Space
- Labor Intensive (Weekly Harvesting)



The BUBBA for Innovative Urban BMP for Stormwater Improvement



Congratulations, on
winning the BUBBA
award.



The End

