2019 Tampa Bay Water Quality Assessments

A Tampa Bay Estuary Program Initiative to Maintain and Restore the Bay's Seagrass Resources

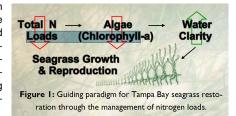


Historic results:

Historic results:								
	OTB	HB	MTB	LTB				
1975	red	red	yellow	yellow				
1976	red	red	yellow	yellow				
1977	red	red	red	red				
1978	red	red	red	yellow				
1979	red	red	red	red				
1980-	red	red	red	red				
1981	red	red	red	red				
1982	red	red	red	red				
1983	red	yellow	red	red				
1984	red	green	red	yellow				
1985	red	red	red	yellow				
1986	red	yellow	yellow	green				
1987	yellow	yellow	yellow	green				
1988	green	green	green	green				
1989	red	yellow	yellow	yellow				
1990	yellow	green	yellow	green				
1991	green	yellow	green	yellow				
1992	green	green	green	yellow				
1993	yellow	green	green	yellow				
1994	yellow	yellow	yellow	red				
1995	red	yellow	yellow	yellow				
1996	yellow	green	green	green				
1997	green	green	yellow	green				
1997 1998	green red	Ü	_	green red				
1997 1998 1999	green red yellow	green yellow green	yellow red green	green red yellow				
1997 1998 1999 2000	green red yellow green	green yellow green green	yellow red green green	green red yellow yellow				
1997 1998 1999 2000 2001	green red yellow green yellow	green yellow green green green	yellow red green green yellow	green red yellow yellow yellow				
1997 1998 1999 2000 2001 2002	green red yellow green yellow yellow	green yellow green green green green	yellow red green green yellow green	green red yellow yellow yellow green				
1997 1998 1999 2000 2001 2002 2003	green red yellow green yellow yellow red	green yellow green green green green green	yellow red green green yellow green green	green red yellow yellow yellow green green				
1997 1998 1999 2000 2001 2002 2003 2004	green red yellow green yellow yellow	green yellow green green green green	yellow red green green yellow green	green red yellow yellow yellow green green yellow				
1997 1998 1999 2000 2001 2002 2003 2004 2005	green red yellow green yellow yellow red yellow green	green yellow green green green green green green green green	yellow red green green yellow green green green green green	green red yellow yellow yellow green green yellow yellow				
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006	green red yellow green yellow yellow red yellow green green	green yellow green	yellow red green green yellow green green green green green green	green red yellow yellow green green yellow yellow green				
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007	green red yellow green yellow yellow red yellow green green green	green yellow green	yellow red green green yellow green green green green green green green green	green red yellow yellow yellow green green yellow yellow green green				
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008	green red yellow green yellow red yellow green green green green yellow	green yellow green	yellow red green green yellow green green green green green green green green green	green red yellow yellow yellow green green yellow yellow green yellow green green				
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009	green red yellow green yellow yellow red yellow green green green yellow yellow	green yellow green yellow	yellow red green green yellow green	green red yellow yellow green green yellow yellow green yellow yellow green green green green				
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010	green red yellow green yellow yellow red yellow green green green yellow yellow yellow	green yellow green	yellow red green green yellow green	green red yellow yellow yellow green green yellow green yellow green green green green green				
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011	green red yellow green yellow yellow red yellow green green green green green yellow yellow red	green yellow green	yellow red green green yellow green	green red yellow yellow yellow green green yellow green green green green green green green green green				
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012	green red yellow green yellow yellow red yellow green green green green yellow green green yellow green yellow	green yellow green	yellow red green green yellow green	green red yellow yellow yellow green green yellow green yellow green green green green green green green green				
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013	green red yellow green yellow yellow red yellow green green green green green yellow green green yellow green green	green yellow green	yellow red green green yellow green	green red yellow yellow yellow green green yellow green				
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014	green red yellow green yellow yellow green green green green green green green yellow green green green green green green green	green yellow green	yellow red green green yellow green	green red yellow yellow yellow green green yellow green				
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015	green red yellow green yellow yellow red yellow green green green green green yellow green yellow green yellow green green yellow green green green	green yellow green	yellow red green green yellow green yellow	green red yellow yellow yellow green green yellow green				
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016	green red yellow green yellow yellow red yellow green green green green green yellow green green yellow green green yellow yellow green green green green green	green yellow green	yellow red green green yellow green	green red yellow yellow yellow green green yellow yellow green				
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2010 2011 2012 2013 2014 2015 2016 2017	green red yellow green yellow yellow red yellow green green green green yellow yellow yellow yellow yellow green green yellow yellow yellow yellow yellow yellow	green yellow green	yellow red green green yellow green	green red yellow yellow yellow green green yellow green				
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016	green red yellow green yellow yellow red yellow green green green green green yellow green green yellow green green yellow yellow green green green green green	green yellow green	yellow red green green yellow green	green red yellow yellow yellow green green yellow yellow green				

Background

Light availability to seagrass is the guiding paradigm for TBEP's Nitrogen Management Strategy. Because excessive nitrogen loads to the bay generally lead to increased algae blooms (higher chlorophyll-a levels) (Figure 1) and reduce light penetration to seagrass, an evaluation method was developed to assess whether load reduction strategies are achieving desired water quality results (i.e. reduced chlorophyll-a concentrations and increased water clarity).



Decision Support Approach

Year to year algae abundance (measured as chlorophyll-a concentrations) and visible light penetration through the water column (depth of secchi disk visibility) have been identified as critical water quality indicators in Tampa Bay. Tracking the attainment of bay segment specific targets for these indicators provides the framework for developing and initiating bay management actions. TBEP management actions adopted in response to the annually-assessed decision support results are shown to the right.

Frojects. Report data via annual progress reports and Baywide Environmental Monitoring Report.

"Caution" Review monitoring data and nitrogen loading estimates. Begin/continue TAC and Management Board development of specific management recommendations.

"On Alert" Finalize development and implement appropriate management actions to get back on track.

"Stay the Course" Continue planned

2019 Decision Matrix Results

Water quality (chlorophyll-a and light penetration) remained supportive of seagrass in Hillsborough Bay (HB), Middle Tampa Bay (MTB), and Lower Tampa Bay (LTB)(Table 1, Figure 3). The nuisance alga, *Pyrodinium bahamense*, was again reported in Old Tampa Bay (OTB) during the Summer and Fall 2019, contributing to a large magnitude chlorophyll-a exceedance. In other bay segments, separate algal bloom events contributed to individual stations exceeding the bay segment chlorophyll-a targets (Figure 4). However, effective light penetration was supportive of seagrass in all bay segments (Table 1).

Table 1: Observed water quality indicators & recommended management outcomes for 2019.

Bay seg- ment	Chl-a (ug/L)		Light etration	Effective Light Penetration (m ⁻¹)	
	2019	target	2019	target	outcome
ОТВ	10.09	8.5	0.74	0.83	yellow
HB	11.10	13.2	0.94	1.58	green
MTB	5.87	7.4	0.57	0.83	green
LTB	4.02	4.6	0.60	0.63	green

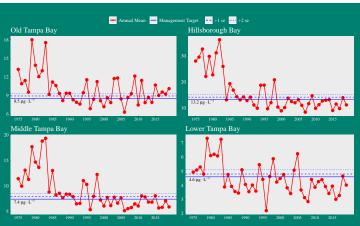


Figure 3: Historic chlorophyll-a annual averages for the four bay segments.

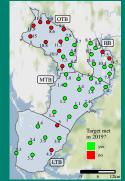


Figure 4: Chlorophyll attainment outcomes by site for 2019.

Acknowledgments: Continuing water quality monitoring support provided by the Environmental Protection Commission of Hillsborough County.

Consulting support provided by Janicki Environmental Inc. Full methods in Janicki A. Wade D. Pribble R. J. 2000. TREP Technical Report #040.

Figure 2: Decision matrix results for 1975 to 2019.