

## Decision Matrix for Multiple Shallow Water Simulation Site – Chester River

**Watershed Area:** 263,660 acres (see Figure)

**Tidal Area:** 34,141 acres

**Shoreline length:** 337 miles

**Shallow Water Stations:** There are 22 monitoring stations in total in the Chester River including those in the Corsica River and 8 stations have CMON (continuous monitoring) data. Most of the data were collected after 2006, but 2 CMON stations were occupied only from 2003 to 2006, when most of the Dflo data were collected as well.

#N	Name	Description	Type	Collection period
1	COR0056	At bridge below boat ramp, Burrisville Rd bridge	Data flow (Dflo)	2006-2013
2	XHH3851	Sycamore Point	CMON+Dflo	2005-2013
3	XHH4528	100 yds from mouth of Tilghman Cove, depth 2 ft	Dflo	2006-2013
4	XHH4742	Trib project	Tributaries	
5	XHH4822	700 YDS E OF R N"2" 16 FT DEPTH, Corsica R.	Dflo	2003-2005
6	XHH4916	The Sill (cm sondes at 2 depths)	CMON+Dflo	2006-2011,2006-2013
7	XHH4931	Possum Point (cm sondes at 2 depths)	CMON+Dflo	2006-2013
8	XHH5046	Emory Creek	CMON	2005-2006;2006-2013
9	XGG8359	Kent Narrows Inside	CMON	2007-2009
10	XGG8458	Kent Narrows Outside	CMON	2007-2009
11	XIH0077	Rolphs Wharf	CMON	2003-2006
12	CHE0348	Deep Landing	CMON	2003-2006
13	ET4.2	Chester River	Dflo	2003-2006
14	GYI0001	Gray's Inn Creek	Dflo	2003-2006
15	XGG9992	Chester River	Dflo	2003-2006
16	XHG0859	Chester River	Dflo	2003-2006
17	XHG1579	Chester River	Dflo	2003-2006
18	XHG6496	Langford Creek	Dflo	2003-2006
18	XHH6419	Chester River	Dflo	2003-2006
19	CHE0348	Chester River	Dflo	2003-2006
20	ET4.1	Chester River	Dflo	2003-2006
21	XIH0077	Chester River	Dflo	2003-2006
22	XIH3581	Chester River	Dflo	2003-2006

**Proposed WQSTM Simulation Period:** 2003-2013 with 2006-2009 having the most abundant data.

**Proposed WQSTM Boundary:** Just beyond the CB-segment boundary of the Chester Mesohaline (CHSMH) and the mainstem segment of CB3MH so as to have a good representation of the CB segment CHSMH and to include regions with some SAV area.

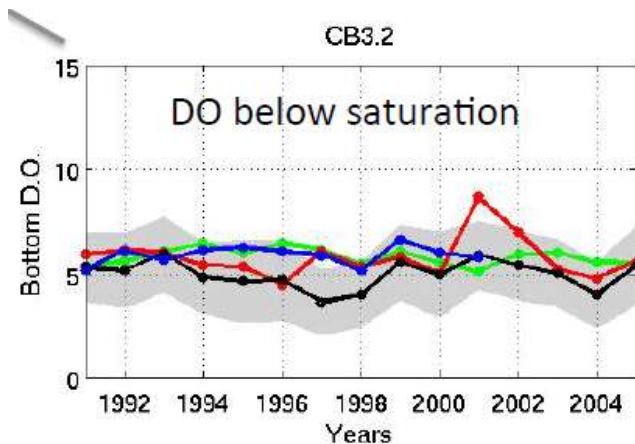
**Proposed Wind Forcing:** Thomas Point Light with BWI fill-in for significant data gaps.

**Salinity (TF, OH, MH, PH):** Salinity ranges from tidal fresh to Mesohaline.

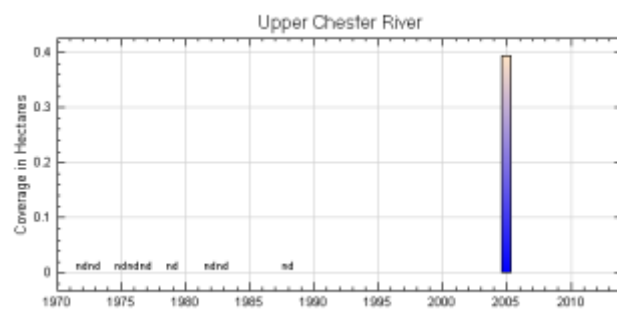
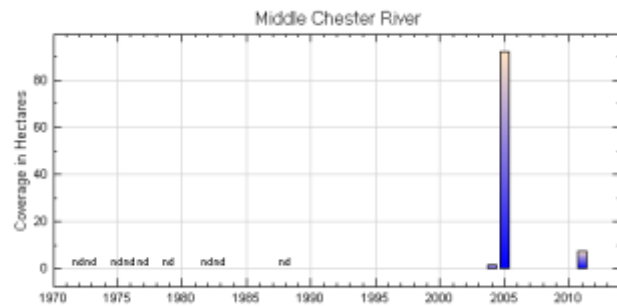
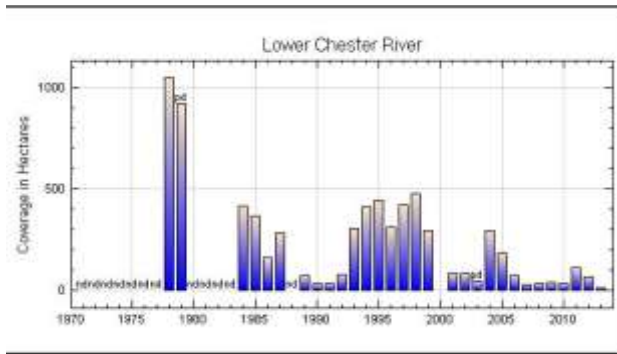
**CB Segments Covered:** Chester Tidal Fresh (CHSTF), Chester Oligohaline (CHSOH), Chester Mesohaline (CHSMH).

**WQSTM Stations of Observed Data:** CB3.2, ET4.1, ET4.2,

**WQSTM Station Simulated vs. Observed Data:** The following figure depicts the comparison between model simulation and observation at the bottom layer of the CB3.2 Station located near the mouth of the Chester River. **Black line and dots are data and red line and dots are the prediction of the Bay Model CH3D-ICM**, whereas other colors indicate predictions from other models. It can be seen that the Bay Model reproduced relatively well the observed data except for the year 2001 when the model significantly overestimated bottom DO. (Note that the 2001 year falls out of our period of interest due to the lack of shallow-water monitoring data.)



**Average SAV Area:** SAV acreage in the Chester River showed a declining trend from the later 60s with episodic good years and recovery. In 2004, SAV acreage was about 300 hectares, but decreased to 280 hectares in 2005 and 70 hectare in 2006. In the oligohaline and tidal fresh reaches, SAV appeared only in 2005. The fluctuation in SAV acreage could provide an opportunity to study the mechanisms controlling SAV growth in this area.



**Management Area of Interest:** Corsica River high intensity implementation program

## Decision Matrix for Multiple Shallow Water Simulation Site – Corsica River

**Watershed Area:** 23,976 acres (see Figure)

**Tidal Area:** 1,358 acres

**Shoreline length:** 23miles

**Shallow Water Stations:** There are 8 monitoring stations in the Corsica River and 4 of them are CMON stations. Most of the stations were occupied from 2006 onward.

Name:		Station Type:	Data Collection Period:	
#N	Name	Description	Type	Collection period
1	COR0056	At bridge below boat ramp, Burrisville Rd bridge	Data flow (Dflo)	2006-2013
2	XHH3851	Sycamore Point	CMON+Dflo	2005-2013
3	XHH4528	100 yds from mouth of Tilghman Cove, depth 2 ft	Dflo	2006-2013
4	XHH4742	Trib project	Tributaries	
5	XHH4822	700 YDS E OF R N"2" 16 FT DEPTH, Corsica R.	Dflo	2003-2005
6	XHH4916	The Sill (cm sondes at 2 depths)	CMON+Dflo	2006-2011,2006-2013
7	XHH4931	Possum Point (cm sondes at 2 depths)	CMON+Dflo	2006-2013
8	XHH5046	Emory Creek	CMON	2005-2006;2006-2013

**Proposed WQSTM Simulation Period: 2005-2013**

**Proposed WQSTM Boundary:** At the mouth of the Corsica River.

**Proposed Wing Forcing:** Thomas Point Light with BWI fill-in for significant data gaps.

**Salinity (TF, OH, MH, PH):** Varies throughout the Corsica from tidal fresh to mesohaline.

**CB Segments Covered:** An embayment of CHSMH.

**Average SAV Area:** Corsica River is a part of the mesohaline zone of the Chester River. SAV was observed in the lower portion of the river, which is counted in the Chester River SAV acreages (see the Chester River Section below).

**Management Area of Interest:** Corsica River high intensity implementation program

## Decision Matrix for Multiple Shallow Water Simulation Site – Bush River

**Watershed Area:** 82,982 acres (see Figure)

**Tidal Area:** 7,547 acres

**Shoreline length:** 65 miles

**Shallow Water Stations:** There are 9 monitoring station in total in the Bush River and 3 of them are CMON stations. Most of the data were collected after 2003, whereas data flow cruises were conducted between 2003 and 2005.

#N	Name	Description	Type	Collection period
1	XJG7461	Church Point	CMON	2008-2010
2	XJG4337	Lauderick Creek	CMON	2003-2007
3	XJG7035	Otter Point Creek	CMON	2003-2011
4	WT1.1	Bush River	Dflo	2003-2005
5	XJG2340	Bush River	Dflo	2003-2005
6	XJG4337	Bush River	Dflo	2003-2005
7	XJG4451	Bush River	Dflo	2003-2005
8	XJG7035	Bush River	Dflo	2003-2005
9	XJG7856	Bush River	Dflo	2003-2005

**Proposed WQSTM Simulation Period:** 2003-2005

**Proposed WQSTM Boundary:** Just beyond the CB-segment boundaries of Bush Oligohaline (BSHOH) and the mainstem segment of CB2OH so as to have a good representation of the BSHOH CB segment.

**Proposed Wind Forcing:** Thomas Point Light with BWI fill-in for significant data gaps.

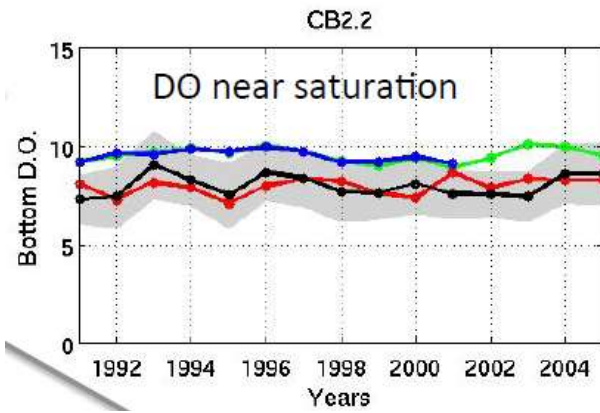
**Salinity (TF, OH, MH, PH):** Salinity ranges from tidal fresh to oligohaline.

**CB Segments Covered:** Bush Oligohaline (CHSOH).

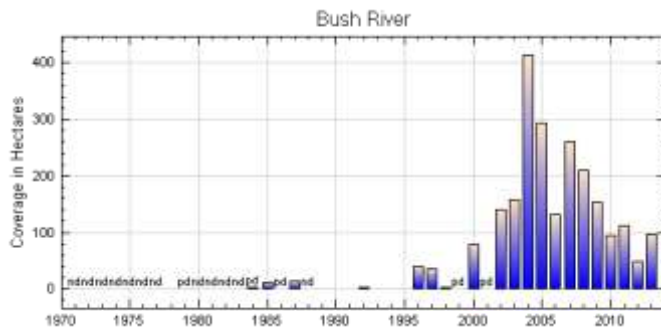
**WQSTM Station of Observed Data:** CB2.2.

**WQSTM Station Simulated vs. Observed Data:** The following figure depicts the comparison between model simulation and observation at the bottom layer of the CB2.2 Station located near the month of the Bush River. **Black line and dots are data and red line and dots are the prediction of the Bay Model**

CH3D-ICM, whereas other colors indicate other model predictions.



**Average SAV Area:** SAV started to colonize the Bush River in 1996 and reached to a maximum of 415 hectares in 2004 with a declining trend since then.



**Management Area of Interest:** A CB-segment with relatively high levels of SAV coverage and density.

## Decision Matrix for Multiple Shallow Water Simulation Site – Choptank River

**Watershed Area:** 379,859 acres (see Figure)

**Tidal Area:** 24,252 acres

**Shoreline length:** 309miles

**Shallow Water Stations:** There are 18 monitoring stations in total in the Choptank River and 3 of them are CMON stations. All the data were collected between 2006 and 2008.

#N	Name	Description	Type	Collection period
1	Mulberry Pt.	Choptank River	CMON	2006-2008
2	Jamaica Pt	Choptank River	CMON	2006-2008
3	Horn Point	Choptank River	CMON	2006-2008
4	EE2.1	Choptank River	Dflo	2006-2008
5	XEG6966	Choptank River	Dflo	2006-2008
6	XEG7539	Choptank River	Dflo	2006-2008
7	XEG8519	Choptank River	Dflo	2006-2008
8	XEG8593	Choptank River	Dflo	2006-2008
9	XFG0809	Choptank River	Dflo	2006-2008
10	XFG0965	Choptank River	Dflo	2006-2008
11	ET5.2	Choptank River	Dflo	2006-2008
12	XEH5622	Choptank River	Dflo	2006-2008
13	XEH7912	Choptank River	Dflo	2006-2008
14	XEI7405	Choptank River	Dflo	2006-2008
15	CHO0367	Choptank River	Dflo	2006-2008
16	CHO0417	Choptank River	Dflo	2006-2008
17	XFI1515	Choptank River	Dflo	2006-2008
18	CHO0490	Choptank River	Dflo	2006-2008

**Proposed WQSTM Simulation Period:** 2006-2008

**Proposed WQSTM Boundary:** At the CB-segment boundaries of Choptank Mesohaline2 (CHOMH2) and Choptank Mesohaline1 (CHOMH) or between Choptank Mesohaline1 (CHOMH1) and the mainstem segment of CB4MH.

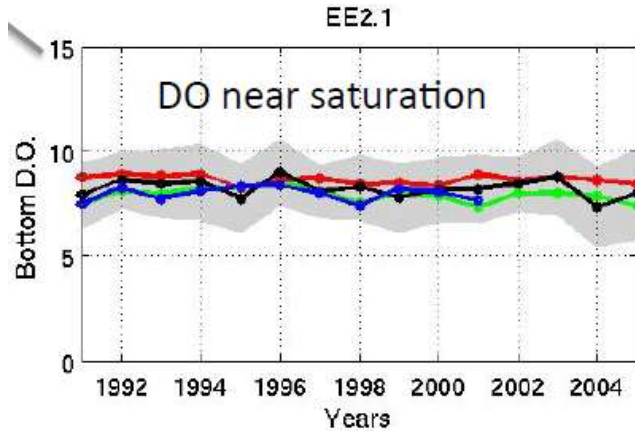
**Proposed Wind Forcing:** Thomas Point Light with BWI fill-in for significant data gaps.

**Salinity (TF, OH, MH, PH):** Salinity ranges from tidal fresh to mesohaline.

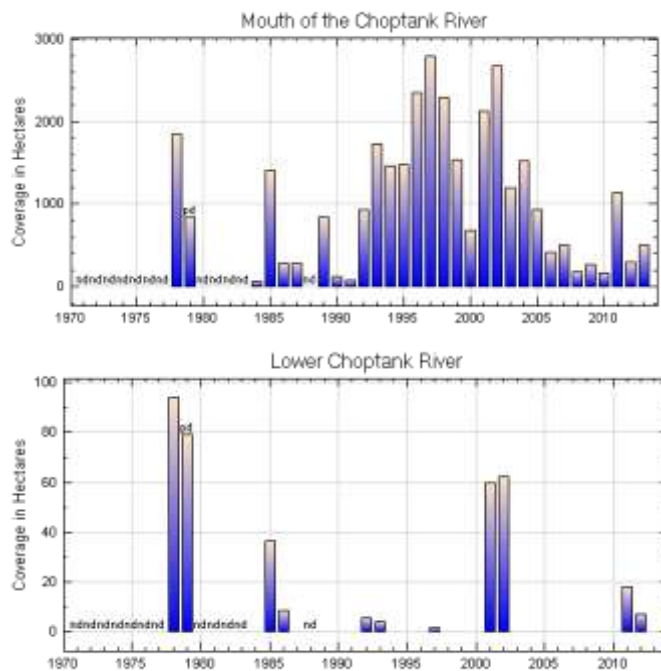
**CB Segments Covered :** Choptank Tidal Fresh (CHOTF), Choptank Oligohaline (CHOOH), Choptank Mesohaline2 (CHOMH2) and perhaps ), Choptank Mesohaline1 (CHOMH1).

**WQSTM Station of Observed Data:** ET2.1, ET5.2, ET5.1, ET5.0

**WQSTM Station Simulated vs. Observed Data:** The following figure depicts the comparison between model simulation and observation at the bottom layer of the ET2.1 Station located near the mouth of the Choptank River. **Black line and dots are data and red line and dots are the prediction of the Bay Model CH3D-ICM,** whereas other colors indicate other model predictions.



**Average SAV Area:** There were about 1,200 hectares SAV in the lower Choptank in 2003 reaching 1,500 hectares in 2004. Since then, SAV has seen a decline 2011. During the years when CMON data were available (2006-2008), SAV account to 422, 508 and 286 hectares, respectively. SAV was not observed in the upper Choptank from 2003 to 2010 and accounted for 18 and 7 hectares in 2011 and 2012, respectively.



**Management Area of Interest:** Harris Creek oyster restoration site.