



**GROWING AREA WG**

**Towns of Biddeford, Saco, Old Orchard Beach and Scarborough**

**ANNUAL REVIEW for 2009**

**Report Date: July 23, 2010**

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**APPROVAL**

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Figure 1. Growing Area WG, with Active Water Stations – Lower Portion

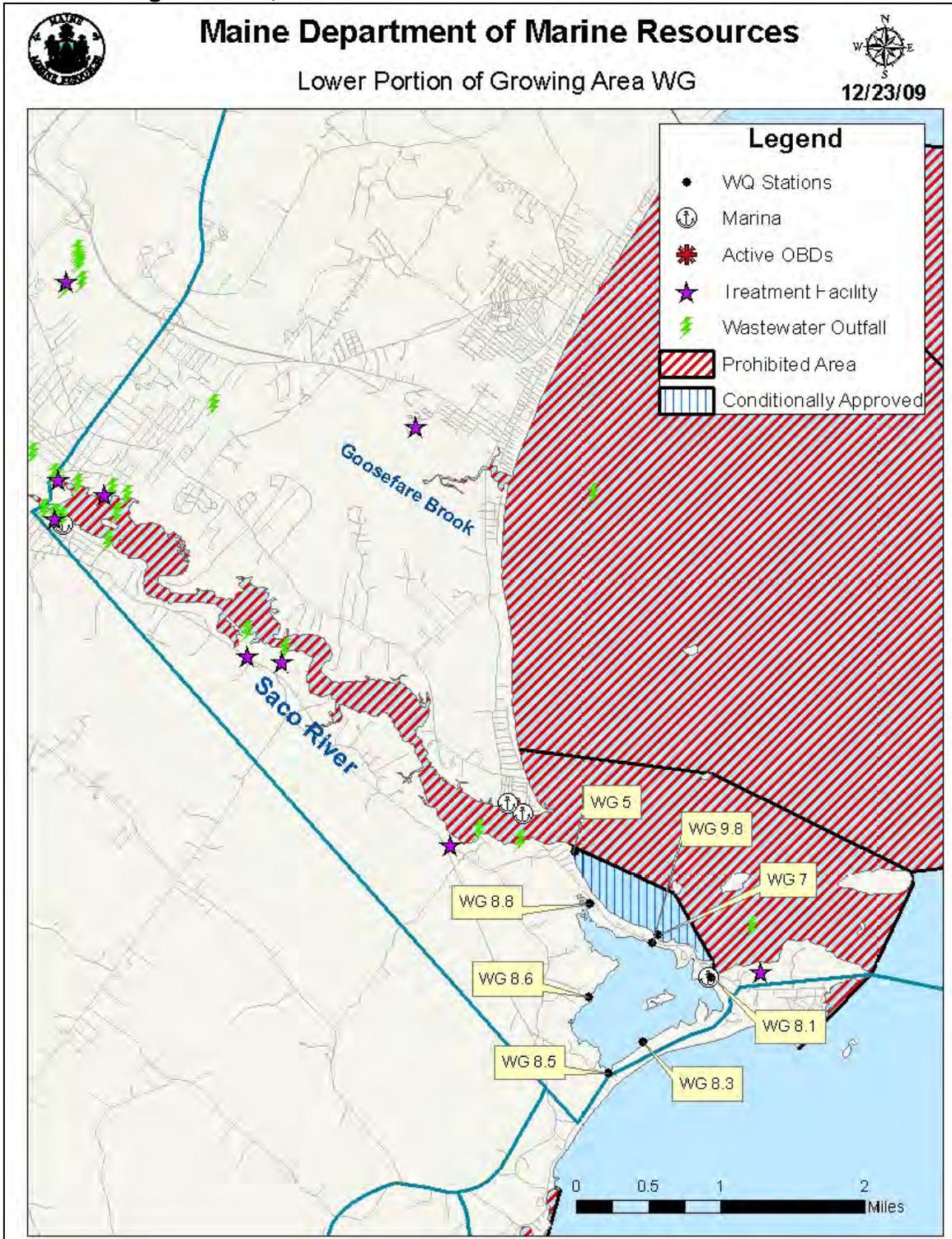
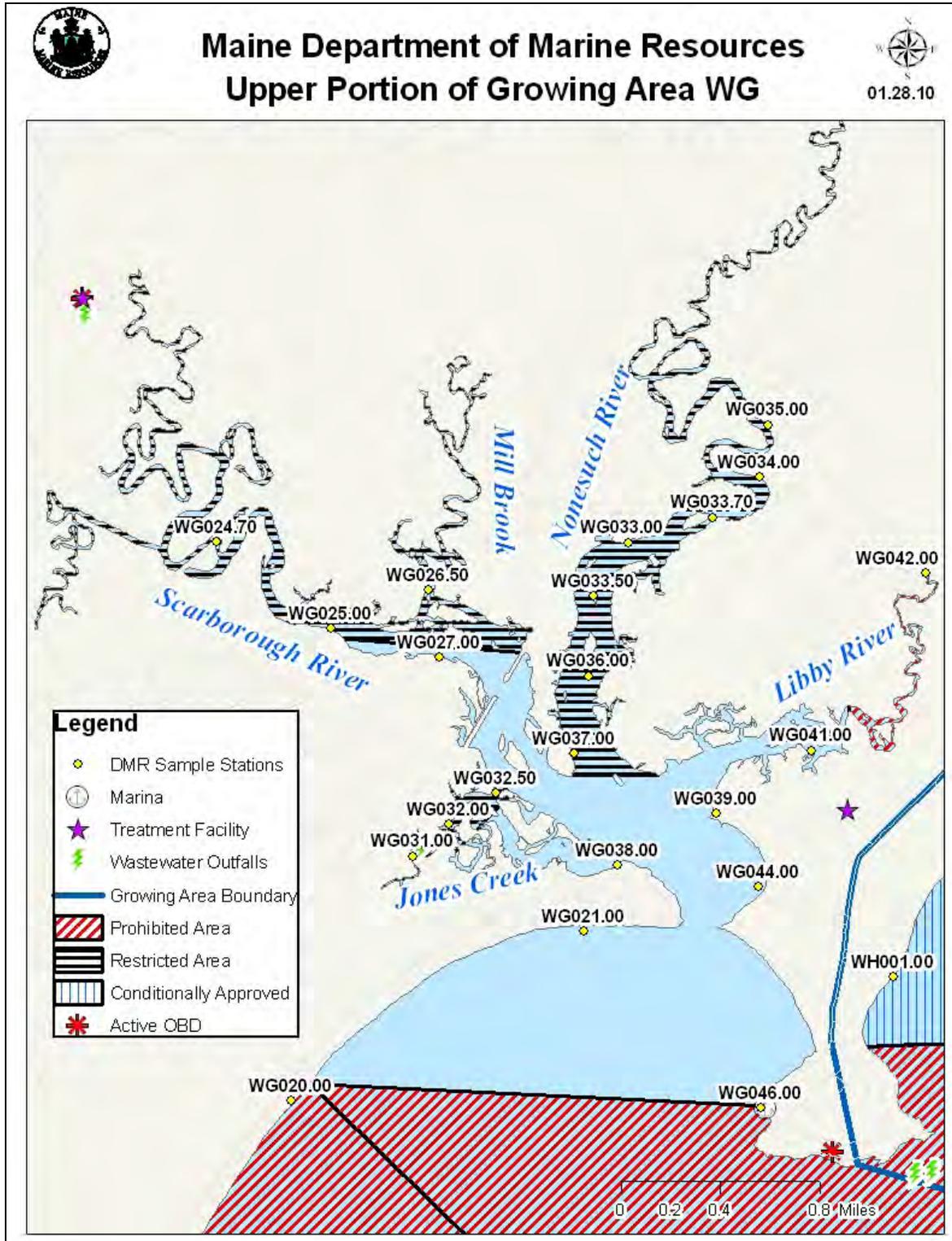




Figure 2. Growing Area WG, with Active Water Stations – Upper Portion





## Executive Summary

This is an annual report for growing area WG written in compliance with the requirements of the 2007 Model Ordinance and the National Shellfish Sanitation Program. The next sanitary survey report is due in 2013; the next triennial report is due in 2010. Growing Area WG is the area between East Point, Biddeford and Prouts Neck, Scarborough.

There were four classification changes in 2009 which are described in the Activity during Review Period section of this report. Six sample stations were deactivated (WG 4, 9, 10, 12, 15 and 19.5), one station was reactivated (WG 33.5) and two new stations were added (WG 33.7 and 36). No licensed overboard discharges were removed in 2009.

The DMR entered into a Memorandum of Understanding (MOU) with the Town of Scarborough Shellfish Committee in 2009. The purpose of this MOU is for the Town of Scarborough Shellfish Committee and the Town of Scarborough to supply volunteers for accelerated sampling of 7 water sample stations (WG 33, 33.5, 33.7, 34, 35, 36 and 37) towards possible reclassification of the Nonesuch River.

## Growing Area Description

Growing Area WG is the area between East Point, Biddeford and Prouts Neck, Scarborough (Figures 1 and 2); it includes the towns of Biddeford, Saco, Old Orchard Beach and Scarborough. A complete boundary description for this area can be found in the central files. The area includes Biddeford Pool, which is an embayment that drains out at low tide, and a number of expansive sandy beaches, including Hills Beach in Biddeford, Ferry Beach in Saco, Old Orchard Beach in the town of Old Orchard, Grand Beach and Western Beach in Scarborough. The area also includes the Scarborough River and its tributaries, Nonesuch River, Mill Brook, Cascade Brook and Libby River. The beaches are very popular with tourists and there is a significant increase in seasonal habitation and shore use during the summer months. The Scarborough River is a tidal marsh estuary with numerous grassy islands and spits, narrow and winding channels, attracting various waterfowl and deer. It is the largest salt marsh in the state, comprised of a tidal marsh, salt creeks, a freshwater marsh and uplands.

The major sources of pollution in area WG include the Biddeford Pool Waste Water Treatment Plant (WWTP), Biddeford Waste Water Treatment Plant, Saco Waste Water Treatment Plant, Old Orchard Beach Waste Water Treatment Plant, and the Old Orchard Beach storm water outfall. Other sources of pollution include boat moorings in Biddeford Pool (less than 10 with heads are moored at this area) and in the Scarborough River (monitored by station WG 38), non-point pollution in the tributaries of the Scarborough River, and a few remaining residential overboard discharges (OBDs). There is one limited purpose aquaculture license in growing area WG.



## Current Classification(s)

Shellfish growing area WG currently has areas classified as:

### Approved (15 stations)

- WG 8.1, 8.3, 8.5, 8.6, 8.8, 21, 25, 27, 32.5, 38, 39, 41, 44 and 46

### Conditionally Approved (2 stations)

- Area No. 10, Saco River and Saco Bay (Biddeford, Saco, Old Orchard Beach), seasonal conditional area; WG 5 and 7

### Restricted (11 stations)

- Area No. 11, Scarborough River, point and non-point pollution, WG 24.7, 26.5, 31, 32, 33, 33.5, 33.7, 34, 35, 36 and 37

### Prohibited (2 stations)

- Area No. 10, Saco River and Saco Bay (Biddeford, Saco, Old Orchard Beach (OOB)), boundary station for OOB WWTP closure (WG 20) and the Libby River (WG 42).

Please visit the DMR website to view legal notices for pollution areas 10, 11, and 12:

[http://www.maine.gov/dmr/rm/public\\_health/closures/closedarea.htm#G](http://www.maine.gov/dmr/rm/public_health/closures/closedarea.htm#G)

## Activity during Review Period

On October 6, 2009, the Department promulgated Area No. 1010 C, Limited-purpose Aquaculture (LPA) license PER2-09, Scarborough River (Scarborough) to close LPA PER2-09 to the harvest of shellfish due to shellfish relay.

On September 29, 2009, the Department modified Area No. 10 to reclassify Biddeford Pool from "conditionally approved" and "prohibited" to "approved", due to the replacement of malfunctioning septic systems and water quality meeting the approved standard.

On February 13, 2009, the Department amended Area No. 10 to enlarge the prohibited area for the Old Orchard Beach Sewage Treatment Plant and the treatment plants on the Saco River after a review of the prohibited area indicated that the size of the closure did not adequately protect public health.

On January 6, 2009, Area No. 12, Spurwink River, Prouts Neck, Cape Elizabeth (Saco, Scarborough, Cape Elizabeth) was amended to increase the size of the prohibited area around the Scarborough Sanitary District's outfall. This increase in size was due to a review of the prohibited area which indicated that the size of the closure did not adequately protect public health.



## Current Management Plan(s) for Conditional Area(s)

There is a management plan for the Hills Beach Seasonal Area. The Hills Beach seasonal conditionally approved area is closed to harvesting June 1 through September 30, per the management plan. A copy of the management plan can be found in the central files. The management plan was reviewed on October 1, 2009 and the plan was updated on that date.

## Current Annual Review of Management Plan(s)

Per the management plan, a review of the Hills Beach seasonal data was completed on October 1, 2009 to confirm that all conditional stations continued to meet the appropriate standard as defined in the DMR Shellfish Area Growing Area Classification SOP. All stations met the appropriate standard and the area reopened on October 1, 2009. The complete annual review can be found in Appendix A.

## Water Quality Review and Discussion

Table 1 lists all active approved, restricted and prohibited stations in Growing Area WG, with their respective Geomean and P90 calculations for 2009. Please refer to Appendix B for a key to interpreting the headers on the columns of Table 1. The approved and restricted standards for each station are also displayed in Table 1. These standards will fluctuate yearly as a result of the DMR transition from a most probable number (MPN) fecal coliform test method to a membrane filtration (MF) method and are dependent on the number of sample analyzed by MPN versus MF. The total number of data points used in the calculations is displayed in the Count column and includes both MPN and MF values. The number of data points analyzed by MF is displayed in the MFCNT column. This fluctuating standard will cease when all 30 data points have been analyzed by the MF method. A more detailed explanation of this transition can be found in central files.

All approved and boundary stations met their NSSP classification standard in 2009. All restricted stations met their NSSP classification standard in 2009. Five sample stations have less than the 30 data points required to establish classification and are labeled "new".

**Table 1. Geomean and P90 Scores, Growing Area WG, 2001-2009**

Station	Class	Count	MFCOUNT	GM	SDV	MAX	P90	Appd_Std	Restr_Std
WG008.10	A	30	28	3.8	0.44	110	14	31	169
WG008.30	A	30	30	2.9	0.37	36	9	31	163
WG008.50	A	30	30	4	0.44	46	14.9	31	163
WG008.60	A	30	30	3.8	0.46	52	14.8	31	163
WG008.80	A	30	28	4.8	0.4	56	15.8	31	169
WG008.90	A	30	28	3.9	0.43	106	14.3	31	169
WG020.00	P-boundary	30	20	5.5	0.55	240	28.4	36	199
WG021.00	A	30	20	5.3	0.56	240	28.4	36	199



Station	Class	Count	MFCCount	GM	SDV	MAX	P90	Appd_Std	Restr_Std
WG024.70	new	22	19	9.3	0.63	280	61.7	32	177
WG025.00	R	30	21	6.6	0.5	90	29.5	35	195
WG026.50	new	18	18	7.7	0.53	120	38.6	31	163
WG027.00	A	30	21	5	0.46	56	19.9	35	195
WG031.00	R	30	21	18.8	0.57	240	101.5	35	195
WG032.00	R	30	24	8	0.56	200	41.9	33	184
WG032.50	New-boundary	26	24	3.1	0.31	24	7.9	32	170
WG033.00	R	30	30	6.2	0.51	102	28.9	31	163
WG033.50	R	30	14	7.6	0.5	240	34.1	39	225
WG033.70	new	14	14	5.6	0.43	56	21	31	163
WG034.00	R	30	29	8.7	0.62	180	54.9	31	166
WG035.00	R	30	30	11	0.61	142	67	31	163
WG036.00	new	14	14	2.5	0.23	7.3	5.1	31	163
WG037.00	R	30	26	2.9	0.38	93	9.1	32	176
WG038.00	A	30	23	4.3	0.56	600	22.8	34	187
WG039.00	A	30	21	3.6	0.38	43	11.3	35	195
WG041.00	A	30	25	4.4	0.41	62	15.1	33	180
WG042.00	P	30	18	30.9	0.67	460	224.6	37	208
WG044.00	A	30	21	3.3	0.52	620	16	35	195
WG046.00	A	30	21	2.9	0.28	22	6.8	35	195

Table 2 lists the conditionally approved stations in Hills Beach seasonal conditional area, with their respective Geomean and P90 calculations for 2009. Data for conditionally approved stations reflects only the open status. Both stations met the approved standard during the open status.

**Table 2. Hills Beach, Seasonal Conditional Area, Open Status Oct. 1- May 31, 2004-2009**

Station	Class	Count	MFCCount	GM	SDV	MAX	P90	Appd_Std	Restr_Std
WG005.00	CA	30	20	5.1	0.47	84	20.6	36	199
WG007.00	CA	30	20	4.2	0.41	66	14.3	36	199

All approved, restricted and prohibited stations that were active at the beginning of 2009 were sampled at least 6 times following the systematic random sampling (SRS) schedule (Table 3 and Appendix C). At some stations, additional samples were collected under adverse conditions. Biddeford Pool/Hills Beach conditionally approved stations were sampled 6 times in the open status. Conditionally approved stations WG 8.3, 8.5 and 8.6 were sampled on an accelerated (extra) sampling regime (2 times per month, starting in July 2008), and they were sampled an additional 10 times each in 2009. The Nonesuch River restricted stations WG 33, 33.5, 33.7, 34, 35, 36 and 37 were sampled 6 times following the SRS schedule and an additional 9 times on an accelerated (extra) sampling regime (2 times per month, starting in May 2009).



Table 3. WG Samples Collected in 2009

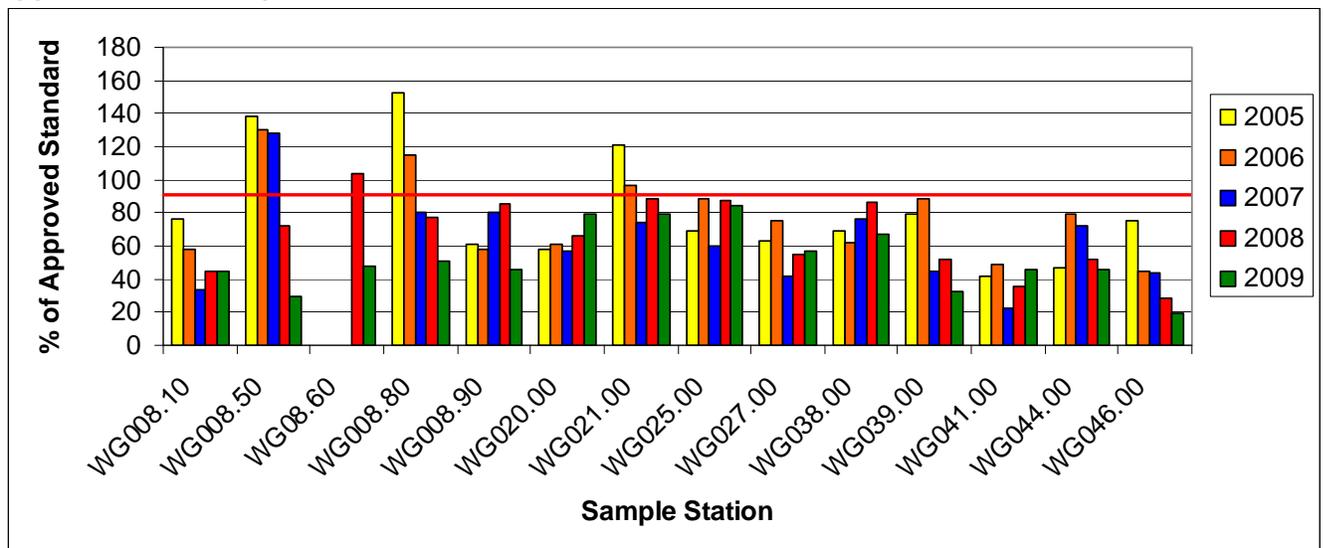
Station	Class	Adverse	Extra		Random		Total	Comments
		Closed	Closed	Open	Closed	Open		
WG005.00	CA	4			3	6	13	Flood station
WG007.00	CA				3	6	9	
WG008.10	A					1	1	Reclassified "CA" to "A" on 09.29.09
	CA				3	4	7	
WG008.30	A					1	1	Reclassified "CA" to "A" on 09.29.09
	CA		2	6	3	4	15	
WG008.50	A					1	1	Reclassified "P" to "A" on 09.29.09
	P		8		7		15	
WG008.60	A					1	1	Reclassified "CA" to "A" on 09.29.09
	CA		2	6	3	4	15	
WG008.80	A	3				1	4	Reclassified "CA" to "A" on 09.29.09 Flood Station
	CA				3	4	7	
WG008.90	A	3				1	4	Reclassified "CA" to "A" on 09.29.09 Flood Station
	CA				3	4	7	
WG020.00	P					6	6	Reclassified from "A" to "P" on 02.13.09
WG021.00	A					6	6	
WG024.70	R				1	6	7	
WG025.00	R				1	6	7	
WG026.50	R				1	6	7	
WG027.00	A	24			1	6	31	Flood station
WG031.00	R				1	6	7	
WG032.00	R				1	6	7	
WG032.50	A				1	6	7	
WG033.00	R			9		6	15	
WG033.50	R			9		6	15	Reactivated 03.05.09 last sampled 06.21.05
WG033.70	R			9		6	15	Activated 03.05.09
WG034.00	R			9		6	15	
WG035.00	R			9		6	15	
WG036.00	R			9		6	15	Activated



Station	Class	Adverse	Extra		Random		Total	Comments
		Closed	Closed	Open	Closed	Open		
								03.05.09
WG037.00	R			9		6	15	
WG038.00	A	23			1	6	30	Flood station
WG039.00	A	19				6	25	Flood station
WG041.00	A					6	6	
WG042.00	P				6		6	
WG044.00	A					6	6	
WG046.00	A	19				6	25	Flood station

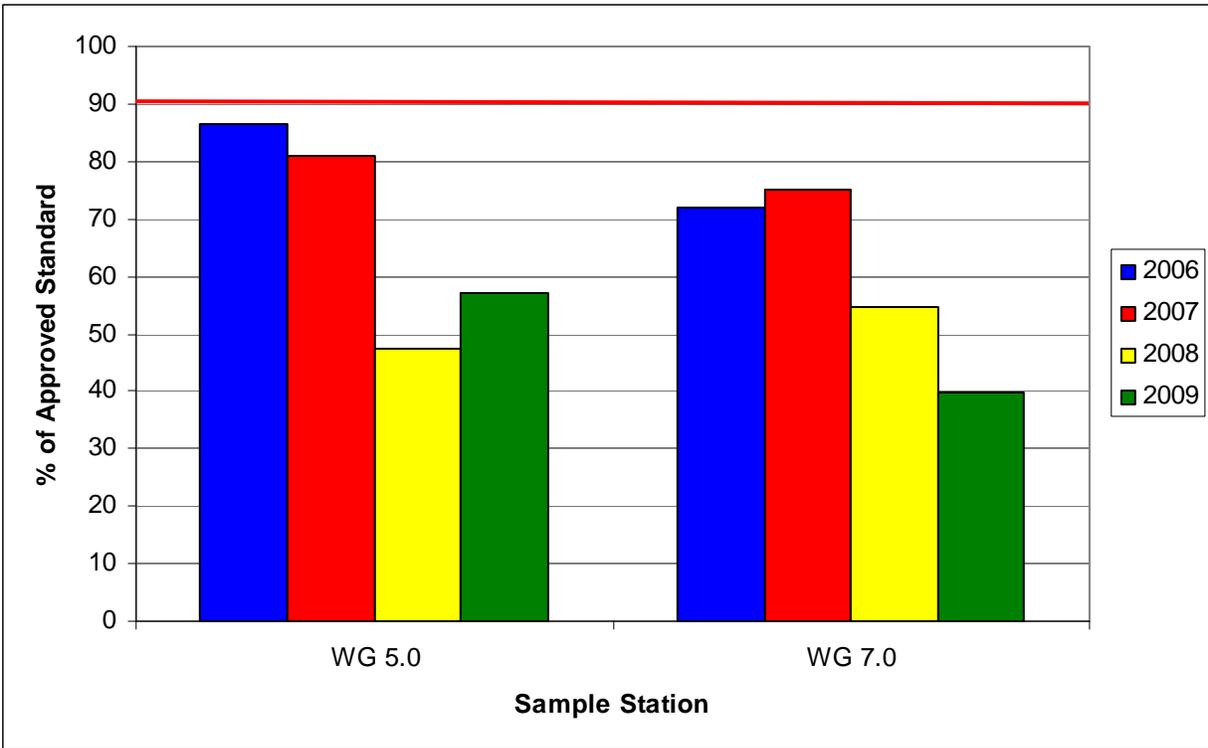
Figures 3, 4 and 5 show the P90 trends over the past five years, for all approved, restricted and conditionally approved stations in growing area WG; Figure 4 shows data collected during the open status only. During the transition from MPN to MF analysis method, the approved standard will decrease every year, until all samples have been analyzed by the MF method. In order to show the trend of the P90 value over the years, the calculated P90 scores are expressed as a percentage of the approved standard (or restricted standard for restricted stations); any station showing the 2009 column at or above 100 percent does not meet the standard for its classification. Stations 8.1 and 27 have shown no notable trends over the past three years; stations 8.5, 8.6, 8.8, 8.9, 21, 38, 39, 44 and 46 have shown an improvement in water quality (decreasing P90 scores), and stations WG 5, 20, 31, 32 and 41 have shown an upward trend in 2009. All approved and conditionally approved stations are below 90% of the approved standard which is illustrated by the red line in Figures 3 and 4. All restricted stations are well under the limit of their classification standard.

**Figure 3. Area WG P90 Scores for Approved Stations (expressed as the percent of the approved standard), 2005-2009**

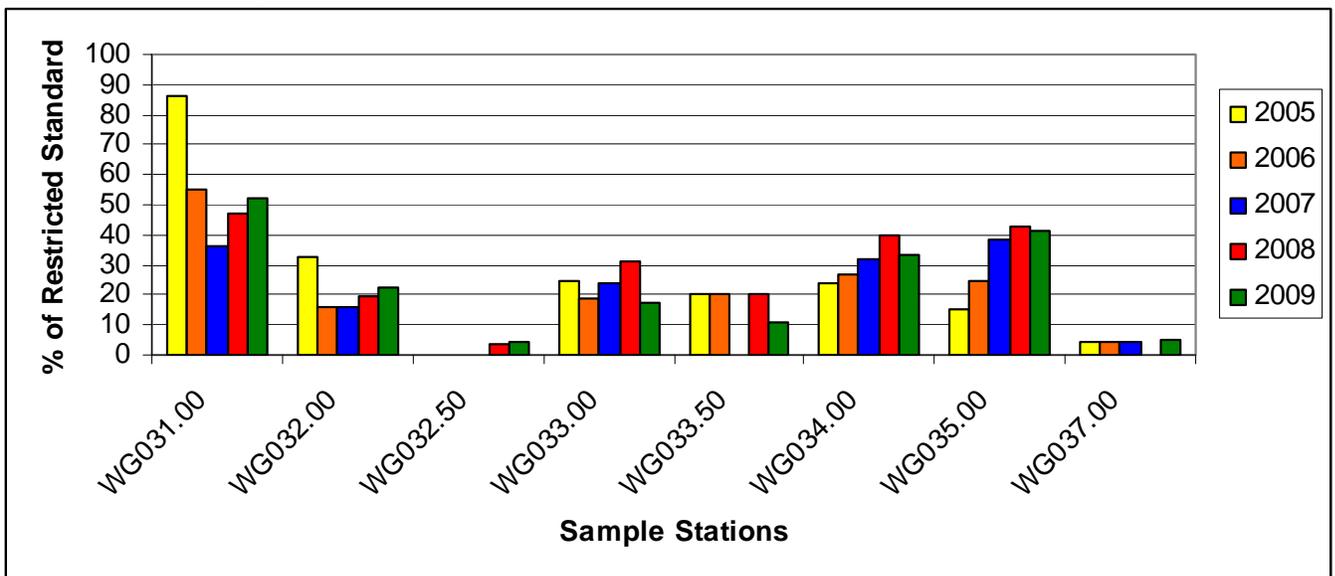




**Figure 4. Area WG 90 Scores for Conditionally Approved Stations (expressed as the percent of the approved standard), Open Status 2005-2009**



**Figure 5. Area WG P90 Scores for Restricted Stations (expressed as the percent of the restricted standard), 2006-2009**





## Shoreline Survey Activity

On September 23, 2009 the Department conducted shoreline survey activities in the Scarborough River and Nonesuch River area. Thirteen properties with septic systems were visited and evaluated on Woodside Road, Roundabout Drive, Saltmarsh Circle, High Point Road, Sandy Point Road and Ledgewood Circle. The remaining properties in the area are on sewer as confirmed by the Scarborough Sanitary District, but were subject to a drive through survey. No problems were noted during the survey however, one property was referred to the codes enforcement office because the septic system for the property could not be located.

The shoreline survey continued on September 24, 2009 for Winnocks Neck Road, Gravel Road, Indian Hill Lane, Black Rock Road and Roundabout Drive when 47 properties were evaluated. The codes enforcement office reported a malfunctioning septic system on Winnocks Neck Road that is 100ft from the Nonesuch River; the homeowner had already pulled a permit to fix or replace the system at the time of the survey. A second actual/direct pollution source was located at the landing on Winnocks Neck Road; an outhouse that is used seasonally and is flooded at high tides. Four properties reported dumping their sink water/grey water outside on the ground. There are several holding tanks with no alarms along the shore of the Nonesuch River on Winnock's Neck Road. There were four properties where the septic system could not be located. All of these actual and potential pollution sources were referred to the codes enforcement office for follow up.

A drive through survey was conducted in the Biddeford Pool section of growing area WG on July 30, 2009. The survey started at the boundary of growing area WF/WG on Biddeford Pool. The survey included all of the roads on Biddeford Pool. Boat counts were conducted at Biddeford Pool (38 boats; 7 boats with heads) and Wood Island Harbor (33 boats; 14 with heads). Wood Island Harbor is a prohibited area. There were an additional 12 boats that were beached at low tide in front of their respective owner's homes in Biddeford Pool. Channel Cove subdivision road (Channel Cove Rd) has five storm drains in the road as does the Days Landing Road. The storm drains will need to be assessed prior to the next triennial report. The storm drain outfall is monitored by sample station WG 8.6. There is a new single family home being built on Old Pool Road. The septic tank is >300 ft from the edge of the wetland and the leach field is >500ft from the edge of the wetland.

The prohibited area portion of WG was not surveyed including the Saco River and Old Orchard Beach. The survey will continue with Parcher Avenue which is the boundary for the approved area on Pine Point Beach, Scarborough. There was a new subdivision noted at the corner of East Grand Ave and Pine Point Road. There are currently 4 houses with another 2 lots for sale on a new road; Claudia's Way. These homes are connected to be public sewer.

A drive through survey was conducted in portions of WG on April 21, 2009. The survey started on Route 207/Black Point Road (Scarborough) after turning off Route 1 (north). There is a new development called Eastern Village off Eastern Road which has had some of the roads built. The Eastern Village Development is on the northeast boundary of the headwaters of the Scarborough River. The increased impervious surfaces and additional stormwater to the Nonesuch River system may be a future concern for water quality in the area.



The Prouts Neck Country Club Golf Course abuts both Western Beach and Ferry Beach along the Libby River (Scarborough). For the next sanitary survey report (due after 2013) an analysis of pesticide, herbicide and fertilizer application must be completed.

There are corn fields on the Libby River north of the Scarborough Sanitary District. For the next sanitary survey report (2013) it must be determined whether or not there is manure spread on the fields and when, also to determine about any pesticide, herbicide and other fertilizer applications.

### **Aquaculture/Wet Storage Activity**

There are no wet storage permits in Growing Area WG. There is one limited purpose aquaculture (LPA) license holder in the Scarborough River. The LPA is for tray racks and overwintering cages for American and European oysters.

Please visit the DMR website to view details on this LPA:

<http://www.maine.gov/dmr/aquaculture/leaseinventory/documents/per209.pdf>

### **Classification Changes**

There are no changes in classification required or proposed at this time.

### **Summary**

Overall, water quality in growing area WG supports its current classifications under the NSSP. No classification changes are proposed in this report. At the end of 2009, all stations were meeting their NSSP classifications, and no downgrades were required. Generally, most approved stations have shown improving water quality, or no notable changes over the past year.

### **Recommendation for Future Work**

The following work is recommended for the 2010 review year (triennial report) and for the next sanitary survey report (2013):

- 1) updating the sanitary survey on the remaining shoreline in Scarborough by the end of 2010;
- 2) continue monitoring streams throughout growing area WG, and record flow rates under a variety of environmental conditions;
- 3) continue the pilot project on the Nonesuch River with the Town of Scarborough, and
- 4) schedule drive through surveys in WG annually to maintain compliance with the NSSP.

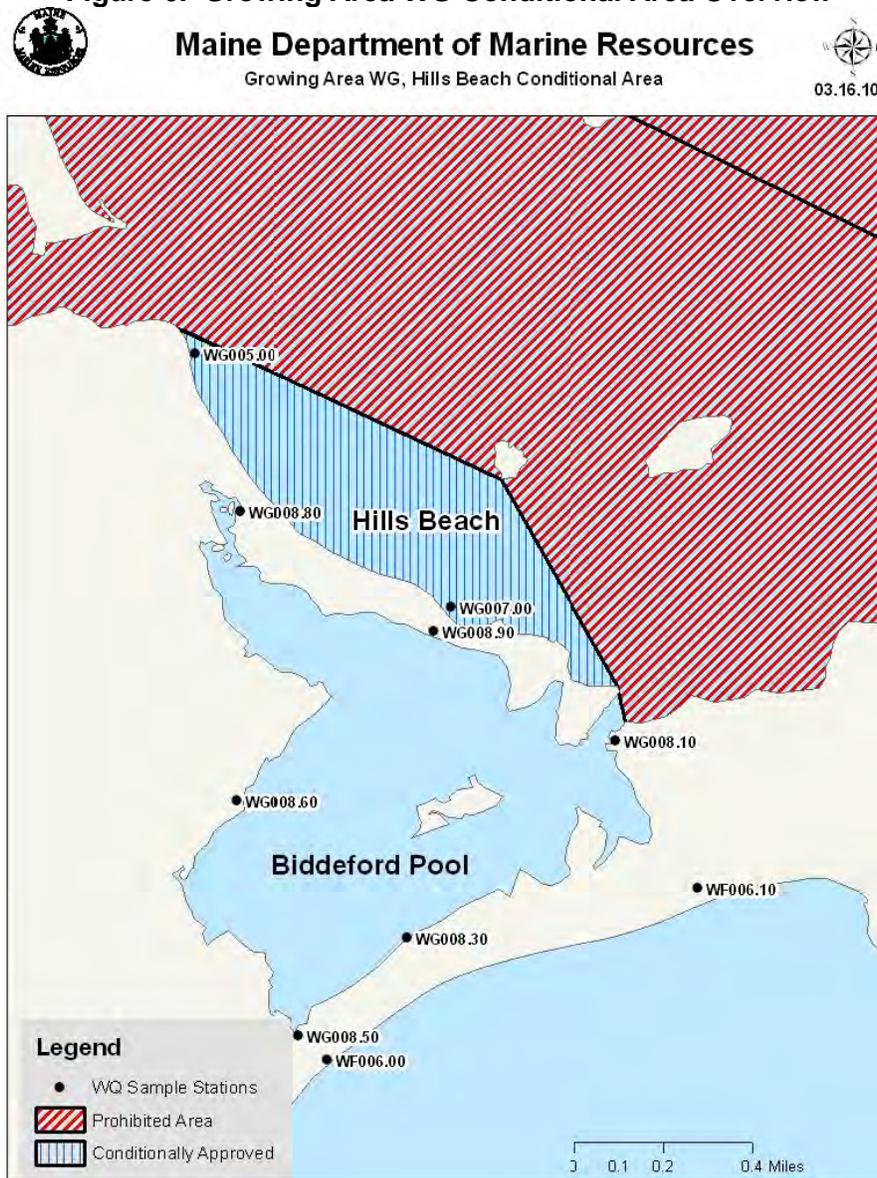


## Appendix A. Annual Review of Management Plan- Hills Beach

### Scope

On November 14, 2006, Hills Beach (Stations WG 5 and 7) was reclassified from restricted to conditionally approved with an open status from November 1 through May 31, due to the replacement of malfunctioning septic systems on Basket Island and water quality meeting the approved standard during the open status. Hills Beach is a conditionally approved area due to seasonal variation in water quality, due to non-point source pollution. After a review of the data in July 2007, the Hills Beach open status was changed to September 30 to May 31.

Figure 6. Growing Area WG Conditional Area Overview





### Compliance with management plan

In 2009, the conditional area closed on June 1st and reopened on October 1st. A review of the water quality was completed on October 1, 2009, to assure that water quality continued to meet approved standards during the area's open season.

### Adequacy of reporting and cooperation of involved persons

This management plan does not require reporting. A water quality data review is required prior to the area's reopening, to verify that the approved standard is being met.

### Compliance with approved growing area criteria

The annual review of seasonal data shows that the conditionally approved stations at Hill's Beach met approved standards during the open season (Table 1).

**Table 4. Hills Beach, Seasonal Conditional Area, Open Status Oct. 1- May 31, 2004-2009**

Station	Class	Count	MFCCount	GM	SDV	MAX	P90	Appd_Std	Restr_Std
WG005.00	CA	30	20	5.1	0.47	84	20.6	36	199
WG007.00	CA	30	20	4.2	0.41	66	14.3	36	199

### Field inspection of critical pollution sources

The potential for seasonal pollution at Hills Beach comes from increased shore usage (swimming, walking pets, etc.) and the influx of summer residents to their seasonal homes. Visual observations are made throughout the year during the course of random sampling and shoreline surveying.

### Water sampling compliance history

In 2009, all stations were collected six times in the open status.

### Analysis-Recommendations

It is DMR policy to evaluate the seasonal data each year, prior to the reopening, to ensure that the conditionally approved classification continues to be appropriate. The Hills Beach data will be reviewed in September 2010, prior to the area's reopening date. No changes to the management plan for this area are recommended at this time.



## Appendix B. Key to Water Quality Table Headers

Station = water quality monitoring station

Class = classification assigned to the station; prohibited (P), restricted (R), conditionally restricted (CR), conditionally approved (CA) and approved (A).

Count = the number of samples evaluated for classification, must be a minimum of 30.

MFCNT = the number of samples evaluated with the MTec method (included in the total Count column)

Geo\_Mean = means the antilog (base 10) of the arithmetic mean of the sample result logarithm (base 10).

SDV = standard deviation

Max = maximum score of the 30 data points in the count column

P90 = 90<sup>th</sup> percentile

APPD\_STD = the 90<sup>th</sup> percentile, at or below which the station would meet approved criteria in the absence of pollution sources or poisonous and deleterious substances.

RESTR\_STD = the 90<sup>th</sup> percentile, at or below which the station would meet restricted criteria.



**Appendix C. Growing Area WG 2009 Data**

Station	Date	Collector	Tide	Wind	Temp	Salin	Strat	Adv	Status	Class	MFCOL
WG005.00	1/12/2009	EXT	H	CL	-1	28	R		O	CA	<2
	2/10/2009	CLV	HF	CL	1	26	R		O	CA	<2
	3/11/2009	AB	F	SE	3	19	R	P	O	CA	9.1
	4/22/2009	MLP	H	SW	9	8	R	P	O	CA	84
	6/16/2009	LSM	F	SE	22	2	R		C	CA	52
	8/11/2009	LSM	E	SW		12	R		C	CA	34
	9/28/2009	MLP	HF	CL	15	26	R		C	CA	16
	10/13/2009	FP	F	N	10	18	R	P	O	CA	2
	11/4/2009	LSM	HE	NW	11	30	R		O	CA	<2
WG007.00	1/12/2009	EXT	H	CL	-1	16	R		O	CA	2
	2/10/2009	CLV	HF	CL	1	28	R		O	CA	<2
	3/11/2009	AB	HF	SE	4	30	R	P	O	CA	6
	4/22/2009	MLP	H	SW	9	16	R	P	O	CA	66
	6/16/2009	LSM	F	SE	25	10	R		C	CA	100
	8/11/2009	LSM	E	CL	20	14	R	P	C	CA	2
	9/28/2009	MLP	HF	CL	15	27	R		C	CA	25
	10/13/2009	FP	F	N	10	26	R	P	O	CA	<2
	11/4/2009	LSM	HE	NW	11	24	R		O	CA	4
WG008.10	1/12/2009	EXT	H	CL	0	25	R		O	CA	2
	2/10/2009	CLV	HE	S	2	30	R		O	CA	<2
	3/11/2009	AB	H	SW	4	31	R	P	O	CA	<2
	4/22/2009	MLP	HE	CL	8	28	R	P	O	CA	<2
	6/16/2009	LSM	F	SE	16	20	R		C	CA	11
	8/11/2009	LSM	HE	CL	20	25	R		C	CA	2
	9/28/2009	MLP	H	CL	15	32	R	W	C	CA	4
	11/4/2009	LSM	H	NW	11	26	R		O	A	<2
WG008.30	1/12/2009	EXT	HE	N	-2	24	R		O	CA	4
	1/27/2009	DMT	HF	NW	-3	30	E		O	CA	<2
	2/10/2009	CLV	HE	S	1	30	R		O	CA	<2
	2/25/2009	DMT	H	SW	1	30	E		O	CA	<2
	3/11/2009	AB	H	S	4	29	R	P	O	CA	<2
	3/25/2009	DMT	E	NW	4	24	E		O	CA	<2
	4/8/2009	DMT	HE	W	3	28	E		O	CA	<2
	4/22/2009	MLP	HE	SW	7	28	R	P	O	CA	<2
	5/5/2009	DMT	HE	E	7	25	E		O	CA	2
	5/19/2009	DMT	HE	S	9	28	E		O	CA	<2
	6/2/2009	DMT	HE	W	13	30	E		C	CA	<2
	6/16/2009	LSM	F	CL	16	24	R		C	CA	10
	8/11/2009	LSM	HE	CL	22	26	R		C	CA	12
8/25/2009	CLV	HF	CL	22	27	E		C	CA	2	



Station	Date	Collector	Tide	Wind	Temp	Salin	Strat	Adv	Status	Class	MFCOL
	9/28/2009	MLP	H	NW	15	30	R		C	CA	2
	11/4/2009	LSM	H	NW	10	30	R		O	A	<2
WG008.50	1/12/2009	EXT	HE	N	1	25	R		C	P	<2
	1/27/2009	DMT	F	CL	-2	30	E		C	P	4
	2/10/2009	CLV	E	S	1	28	R		C	P	<2
	2/25/2009	DMT	H	SW	-1	29	E		C	P	<2
	3/11/2009	AB	HF	SW	4	31	R	P	C	P	4
	3/25/2009	DMT	E	NW	4	23	E		C	P	<2
	4/8/2009	DMT	H	W	3	26	E		C	P	<2
	4/22/2009	MLP	HE	CL	9	24	R	P	C	P	2
	5/5/2009	DMT	H	E	7	25	E		C	P	4
	5/19/2009	DMT	HE	S	8	25	E		C	P	2
	6/2/2009	DMT	HE	W	12	28	E		C	P	2
	6/16/2009	LSM	F	CL	23	18	R		C	P	2
	8/11/2009	LSM	HE	CL	20	26	R		C	P	40
	8/25/2009	CLV	HF	CL	22	26	E		C	P	12
	9/28/2009	MLP	H	CL	15	30	R		C	P	16
11/4/2009	LSM	H	NW	11	28	R		O	A	2	
WG008.60	1/12/2009	EXT	H	CL	1	26	R		O	CA	2
	1/27/2009	DMT	F	CL	-1	30	E	WN	O	CA	2
	2/10/2009	CLV	H	CL	2	30	R	W	O	CA	<2
	2/25/2009	DMT	H	SW	-1	29	E	N	O	CA	<2
	3/11/2009	AB	HF	S	4	30	R	P	O	CA	<2
	3/25/2009	DMT	HE	NW	4	25	E	N	O	CA	<2
	4/8/2009	DMT	H	W	3	26	E	N	O	CA	<2
	4/22/2009	MLP	HE	SW	8	27	R	P	O	CA	<2
	5/5/2009	DMT	H	E	7	25	E	N	O	CA	<2
	5/19/2009	DMT	HE	S	10	28	E	N	O	CA	<2
	6/2/2009	DMT	H	W	13	30	E	N	C	CA	<2
	6/16/2009	LSM	F	CL	22	18	R		C	CA	2
	8/11/2009	LSM	HE	CL	19	26	R		C	CA	13
	8/25/2009	CLV	H	CL	21	27	E		C	CA	6
9/28/2009	MLP	H	CL	15	31	R	W	C	CA	2	
11/4/2009	LSM	HE	NW	11	30	R		O	A	2	
WG008.80	1/12/2009	EXT	H	CL	-1	26	R		O	CA	2
	2/10/2009	CLV	HF	CL	0	28	R		O	CA	2
	3/11/2009	AB	HF	CL	4	28	R	P	O	CA	18
	4/22/2009	MLP	H	CL	8	20	R	P	O	CA	2
	6/16/2009	LSM	F	CL	25	19	R		C	CA	5.5
	8/11/2009	LSM	HE	CL	19	26	R	P	C	CA	12
	9/28/2009	MLP	HF	CL	15	29	R		C	CA	15
11/4/2009	LSM	HE	NW	12	30	R		O	A	2	



Station	Date	Collector	Tide	Wind	Temp	Salin	Strat	Adv	Status	Class	MFCOL
WG008.90	1/12/2009	EXT	H	N	-2	26	R	W	O	CA	<2
	2/10/2009	CLV	HF	CL	1	28	R		O	CA	<2
	3/11/2009	AB	HF	SE	4	31	R	P	O	CA	2
	4/22/2009	MLP	H	SW	8	23	R	P	O	CA	2
	6/16/2009	LSM	F	SE	18	23	R		C	CA	6
	8/11/2009	LSM	HE	CL	20	16	R	P	C	CA	6
	9/28/2009	MLP	HF	NW	15	31	R		C	CA	2
	11/4/2009	LSM	HE	NW	11	30	R		O	A	2.8
WG020.00	3/4/2009	MLP	F	NW	3	31	R		O	P	<2
	4/21/2009	EXT	H	E	7	26	R	P	O	P	2
	6/16/2009	AB	F	SE	18	22	R		O	P	29
	8/11/2009	EXT	F	CL	24	28	R		O	P	16
	9/28/2009	EXT	E	SW	15	30	R		O	P	<2
	11/1/2009	LSM	HE	CL	12	31	R		O	P	<2
WG021.00	3/4/2009	DEC	F	CL	4	32	R		O	A	<2
	4/28/2009	DEC	LF	SE	12	28	R		O	A	2
	7/21/2009	DEC	F	CL	16	26	R	P	O	A	<2
	8/4/2009	DEC	F	W	17	26	R		O	A	4
	9/29/2009	DEC	E	S	15	30	R	P	O	A	<2
	10/27/2009	DEC	L	SE	8	30	R	P	O	A	6
WG024.70	3/4/2009	DEC	LF	CL	3	4	R		O	R	4
	4/28/2009	DEC	LF	SE	14	14	R		O	R	2
	7/21/2009	DEC	HF	CL	19	15	R	P	O	R	106
	8/18/2009	DEC	E		21	29	R		O	R	13
	9/29/2009	DEC	E	S	16	22	R	P	O	R	100
	10/27/2009	DEC	LE	CL	9	16	R	P	O	R	22
WG025.00	3/4/2009	DEC	F	N	3	8	R		O	R	24
	4/28/2009	DEC	F	SE	14	14	R		O	R	9.1
	7/21/2009	DEC	E	CL	19	26	R	P	O	R	6
	8/18/2009	DEC	HE		20	30	R		O	R	2
	9/29/2009	DEC	E	S	16	30	R	P	O	R	<2
	10/27/2009	DEC	E	CL	9	24	R	PW	O	R	24
WG026.50	3/4/2009	DEC	F	N	2	10	R		O	R	18
	4/28/2009	DEC	F	SE	14	16	R		O	R	12
	7/21/2009	DEC	E	E	19	26	R	P	O	R	6
	8/18/2009	DEC	HE		21	28	R		O	R	27
	9/29/2009	DEC	HE	S	17	22	R	P	O	R	120
	10/27/2009	DEC	E	CL	9	21	R	PW	O	R	20
WG027.00	3/4/2009	DEC	F	N	3	11	R		O	A	12
	4/28/2009	DEC	F	SE	13	16	R		O	A	12
	7/21/2009	DEC	F	CL	19	26	R	P	O	A	2
	8/18/2009	DEC	E		19	30	R		O	A	8



Station	Date	Collector	Tide	Wind	Temp	Salin	Strat	Adv	Status	Class	MFCOL
	9/29/2009	DEC	E	S	16	30	R	P	O	A	<2
	10/27/2009	DEC	LE	CL	9	23	R	PW	O	A	24
WG031.00	3/4/2009	DEC	F	CL	3	0	R		O	R	3.6
	4/28/2009	DEC	LF	SE	14	16	R		O	R	16
	7/21/2009	DEC	F	E	19	22	R	P	O	R	54
	8/18/2009	DEC	E		21	21	R		O	R	6
	9/29/2009	DEC	E	S	16	22	R	P	O	R	100
	10/27/2009	DEC	L	SE	9	14	R	P	O	R	22
WG032.00	3/4/2009	DEC	F	N	4	2	R		O	R	2
	4/28/2009	DEC	F	SE	14	18	R		O	R	6
	7/21/2009	DEC	HE	CL	19	12	R	P	O	R	118
	8/18/2009	DEC	HE		20	29	R		O	R	8
	9/29/2009	DEC	HE	S	16	18	R	P	O	R	200
10/27/2009	DEC	E	CL	9	15	R	P	O	R	24	
WG032.50	3/4/2009	DEC	F	N	4	10	R		O	A	2
	4/28/2009	DEC	HF	S	13	28	R		O	A	2
	7/21/2009	DEC	HE	CL	17	26	R	P	O	A	12
	8/18/2009	DEC	HE		19	29	R		O	A	6
	9/29/2009	DEC	HE	S	16	30	R	P	O	A	2
10/27/2009	DEC	HE	SE	9	28	R	P	O	A	15	
WG033.00	3/4/2009	DEC	F	N	3	3	R		O	R	2
	4/28/2009	DEC	F	S	13	28	R		O	R	<2
	5/12/2009	DEC	H	SE	16	29	E	P	O	R	<2
	5/26/2009	DEC	F	S	11	29	E		O	R	<2
	6/9/2009	DEC	HF	CL	13	29	E	P	O	R	6
	7/21/2009	DEC	E	CL	18	26	R	P	O	R	7.3
	8/4/2009	DEC	HF	CL	19	25	R		O	R	<2
	8/18/2009	DEC	H		20	29	E		O	R	16
	9/15/2009	DEC	E	N	15	30	E		O	R	10
	9/29/2009	DEC	H	S	16	30	R	P	O	R	4
	10/13/2009	DEC	F		9	28	E	P	O	R	3.6
	10/27/2009	DEC	E	CL	9	19	R	PW	O	R	20
12/1/2009	DEC	H	E	11	26	E	P	O	R	8	
12/15/2009	DEC	HE	CL	11	24	E	P	O	R	14	
WG033.50	3/4/2009	DEC	F	N	3	4	R		O	R	10
	4/28/2009	DEC	F	S	13	28	R		O	R	<2
	5/12/2009	DEC	H	SE	14	29	E	P	O	R	<2
	5/26/2009	DEC	F	SE	11	30	E		O	R	<2
	6/9/2009	DEC	HF	CL	12	29	E	P	O	R	4
	7/21/2009	DEC	E	CL	18	26	R	P	O	R	10
	8/4/2009	DEC	H	CL	19	24	R		O	R	20
	8/18/2009	DEC	H		20	29	E		O	R	12



Station	Date	Collector	Tide	Wind	Temp	Salin	Strat	Adv	Status	Class	MFCOL
	9/15/2009	DEC	E	N	15	30	E		O	R	6
	9/29/2009	DEC	H	S	16	30	R	P	O	R	6
	10/13/2009	DEC	F	N	9	28	E	P	O	R	4
	10/27/2009	DEC	E	CL	9	20	R	PW	O	R	36
	12/1/2009	DEC	H	E	11	31	E	P	O	R	4
	12/15/2009	DEC	H	CL	11	30	E	P	O	R	<2
WG033.70	3/4/2009	DEC	F	N	3	0	R		O	R	3.6
	4/28/2009	DEC	F	S	13	25	R		O	R	2
	5/12/2009	DEC	H	SE	16	26	E	P	O	R	2
	5/26/2009	DEC	F	S	11	29	E		O	R	4
	6/9/2009	DEC	H	E	13	29	E	P	O	R	<2
	7/21/2009	DEC	E	CL	18	25	R	P	O	R	18
	8/4/2009	DEC	H	CL	19	24	R		O	R	4
	8/18/2009	DEC	H		21	28	E		O	R	9.1
	9/15/2009	DEC	HE	N	16	30	E	W	O	R	4
	9/29/2009	DEC	H	S	16	28	R	P	O	R	5.5
	10/13/2009	DEC	F		9	28	E	P	O	R	2
	10/27/2009	DEC	E	CL	9	11	R	PW	O	R	56
	12/1/2009	DEC	H	E	11	24	E	P	O	R	14
12/15/2009	DEC	H	CL	10	26	E	P	O	R	13	
WG034.00	3/4/2009	DEC	F	N	3	0	R		O	R	4
	4/28/2009	DEC	HF	S	13	25	R		O	R	<2
	5/12/2009	DEC	H	SE	16	20	E	P	O	R	2
	5/26/2009	DEC	HF	S	11	28	E	W	O	R	6
	6/9/2009	DEC	H	CL	13	29	E	P	O	R	6
	7/21/2009	DEC	E	CL	19	24	R	PW	O	R	36
	8/4/2009	DEC	F	CL	20	20	R		O	R	4
	8/18/2009	DEC	H		21	28	E	W	O	R	15
	9/15/2009	DEC	HE	N	16	29	E	W	O	R	4
	9/29/2009	DEC	H	S	16	28	R	P	O	R	6
	10/13/2009	DEC	F		9	29	E	P	O	R	2
	10/27/2009	DEC	E	CL	9	12	R	PW	O	R	80
	12/1/2009	DEC	H		11	25	E	P	O	R	10
12/15/2009	DEC	HE	CL	10	24	E	P	O	R	16	
WG035.00	3/4/2009	DEC	HF	N		2	R		O	R	2
	4/28/2009	DEC	HF	S	14	20	R		O	R	2
	5/12/2009	DEC	HF	SE	15	16	E	P	O	R	<2
	5/26/2009	DEC	HF	S	11	28	E		O	R	10
	6/9/2009	DEC	H	CL	13	28	E	P	O	R	<2
	7/21/2009	DEC	E	CL	19	22	R	PW	O	R	46
	8/4/2009	DEC	F	CL	20	22	R		O	R	12
	8/18/2009	DEC	H		21	29	E	W	O	R	22



Station	Date	Collector	Tide	Wind	Temp	Salin	Strat	Adv	Status	Class	MFCOL
	9/15/2009	DEC	HE	N	16	30	E	W	O	R	4
	9/29/2009	DEC	H	S	16	28	R	P	O	R	4
	10/13/2009	DEC	F		9	29	E	P	O	R	<2
	10/27/2009	DEC	E	CL	9	15	R	PW	O	R	24
	12/1/2009	DEC	HE		12	25	E	P	O	R	20
	12/15/2009	DEC	HE	S	10	25	E	P	O	R	10
WG036.00	3/4/2009	DEC	F	N	3	22	R		O	R	<2
	4/28/2009	DEC	HF	S	13	28	R		O	R	<2
	5/12/2009	DEC	H	SE	14	30	E	P	O	R	<2
	5/26/2009	DEC	F	SE	10	29	E		O	R	<2
	6/9/2009	DEC	HF	E	11	30	E	P	O	R	<2
	7/21/2009	DEC	E	CL	18	26	R	P	O	R	7.3
	8/4/2009	DEC	H	CL	18	29	R	W	O	R	<2
	8/18/2009	DEC	HF	S	20	30	E		O	R	2
	9/15/2009	DEC	E	N	15	31	E	W	O	R	2
	9/29/2009	DEC	H	S	15	30	R	PW	O	R	2
	10/13/2009	DEC	F	N	10	28	E	P	O	R	2
	10/27/2009	DEC	E	CL	8	26	R	PW	O	R	7.3
	12/1/2009	DEC	H	E	11	30	E	P	O	R	<2
12/15/2009	DEC	HF	S	11	30	E	P	O	R	6	
WG037.00	3/4/2009	DEC	F	N	3	30	R		O	R	<2
	4/28/2009	DEC	F	S	13	28	R		O	R	<2
	5/12/2009	DEC	H	S	14	30	E	P	O	R	<2
	5/26/2009	DEC	F	S	10	30	E		O	R	<2
	6/9/2009	DEC	HF	E	11	30	E	P	O	R	<2
	7/21/2009	DEC	E	CL	18	26	R	P	O	R	5.5
	8/4/2009	DEC	H	CL	18	28	R	W	O	R	<2
	8/18/2009	DEC	HF	S	20	30	E	W	O	R	2
	9/15/2009	DEC	E	N	15	31	E	W	O	R	2
	9/29/2009	DEC	H	S	15	30	R	PW	O	R	<2
	10/13/2009	DEC	F	N	10	28	E	P	O	R	8
	10/27/2009	DEC	E	CL	8	26	R	PW	O	R	18
	12/1/2009	DEC	H	E	11	31	E	P	O	R	<2
12/15/2009	DEC	HF	S	11	30	E	P	O	R	<2	
WG038.00	3/4/2009	DEC	F	N	4	16	R		O	A	<2
	4/28/2009	DEC	F	SE	13	28	R	W	O	A	<2
	7/21/2009	DEC	F	E	16	26	R	P	O	A	<2
	8/18/2009	DEC	E	S	19	30	R	W	O	A	2
	9/29/2009	DEC	E	S	15	30	R	P	O	A	<2
	10/27/2009	DEC	L	CL	9	23	R	P	O	A	12
WG039.00	3/4/2009	DEC	F	N	3	30	R		O	A	2
	4/28/2009	DEC	HF	SE	13	29	R	W	O	A	<2



Station	Date	Collector	Tide	Wind	Temp	Salin	Strat	Adv	Status	Class	MFCOL
	7/21/2009	DEC	E	CL	18	26	R	P	O	A	2
	8/4/2009	DEC	H	CL	17	28	R		O	A	<2
	9/29/2009	DEC	HE	S	15	31	R	P	O	A	<2
	10/27/2009	DEC	E	SE	8	31	R	PW	O	A	2
WG041.00	3/4/2009	DEC	F	N	3	22	R		O	A	2
	4/28/2009	DEC	HF	SE	13	26	R	W	O	A	<2
	7/21/2009	DEC	E	CL	18	26	R	P	O	A	36
	8/4/2009	DEC	HF	CL	19	26	R		O	A	6
	9/29/2009	DEC	HE	S	15	30	R	P	O	A	<2
	10/27/2009	DEC	E	SE	8	28	R	P	O	A	12
WG042.00	3/4/2009	DEC	L	CL	2	0	R		C	P	33
	4/28/2009	DEC	L	SE	14	20	R		C	P	4
	7/21/2009	DEC	HF	E	19	28	R	P	C	P	8
	8/4/2009	DEC	F	CL	21	5	R		C	P	50
	9/29/2009	DEC	E	S	16	30	R	P	C	P	4
	10/27/2009	DEC	E	SE	8	26	R	P	C	P	6
WG044.00	3/4/2009	DEC	LF	CL	3	24	R		O	A	<2
	4/28/2009	DEC	L	SE	13	30	R	W	O	A	<2
	7/21/2009	DEC	H	E	17	27	R	P	O	A	<2
	8/4/2009	DEC	F	W	19	28	R		O	A	<2
	9/29/2009	DEC	E	S	15	30	R	P	O	A	4
	10/27/2009	DEC	LE	SE	8	30	R	P	O	A	<2
WG046.00	3/4/2009	DEC	F	N	3	32	R		O	A	<2
	4/28/2009	DEC	L	SE	13	28	R		O	A	<2
	7/21/2009	DEC	H	E	16	26	R	P	O	A	2
	8/4/2009	DEC	F	W	18	26	R		O	A	<2
	9/29/2009	DEC	E	S	14	30	R	P	O	A	6
	10/27/2009	DEC	LE	SE	8	31	R	P	O	A	<2