



**GROWING AREA WK  
Quahog Bay  
Towns of Brunswick and Harpswell**

**ANNUAL REVIEW for 2008**

**Report Date: January 20, 2010**

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**APPROVAL**

Division Director:

\_\_\_\_\_ Date: \_\_\_\_\_  
Print name signature



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Figure 1. Growing Area WK, with Active Water Stations and OBDs

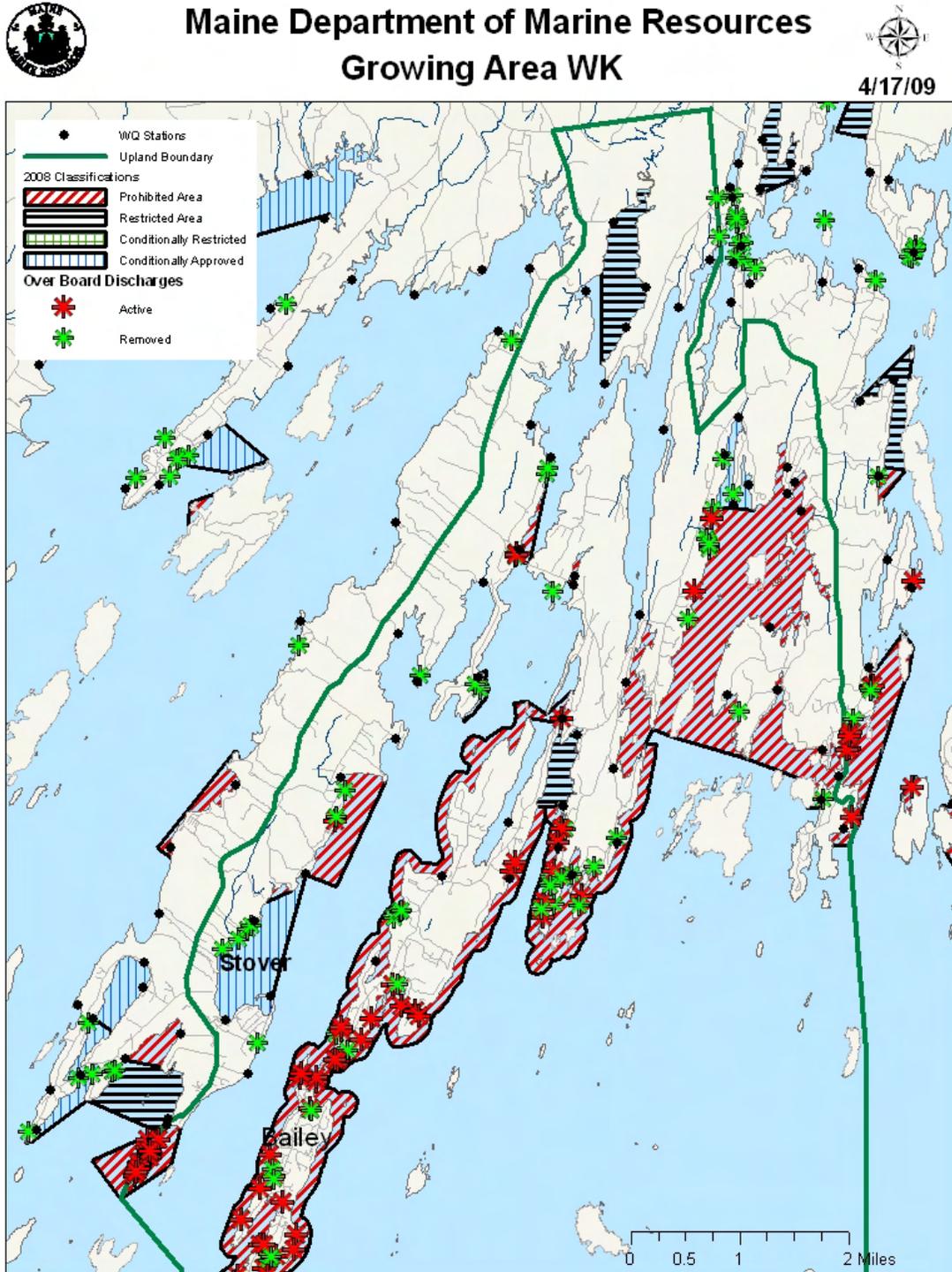




Figure 2. Area WK- Upper Portion Detail

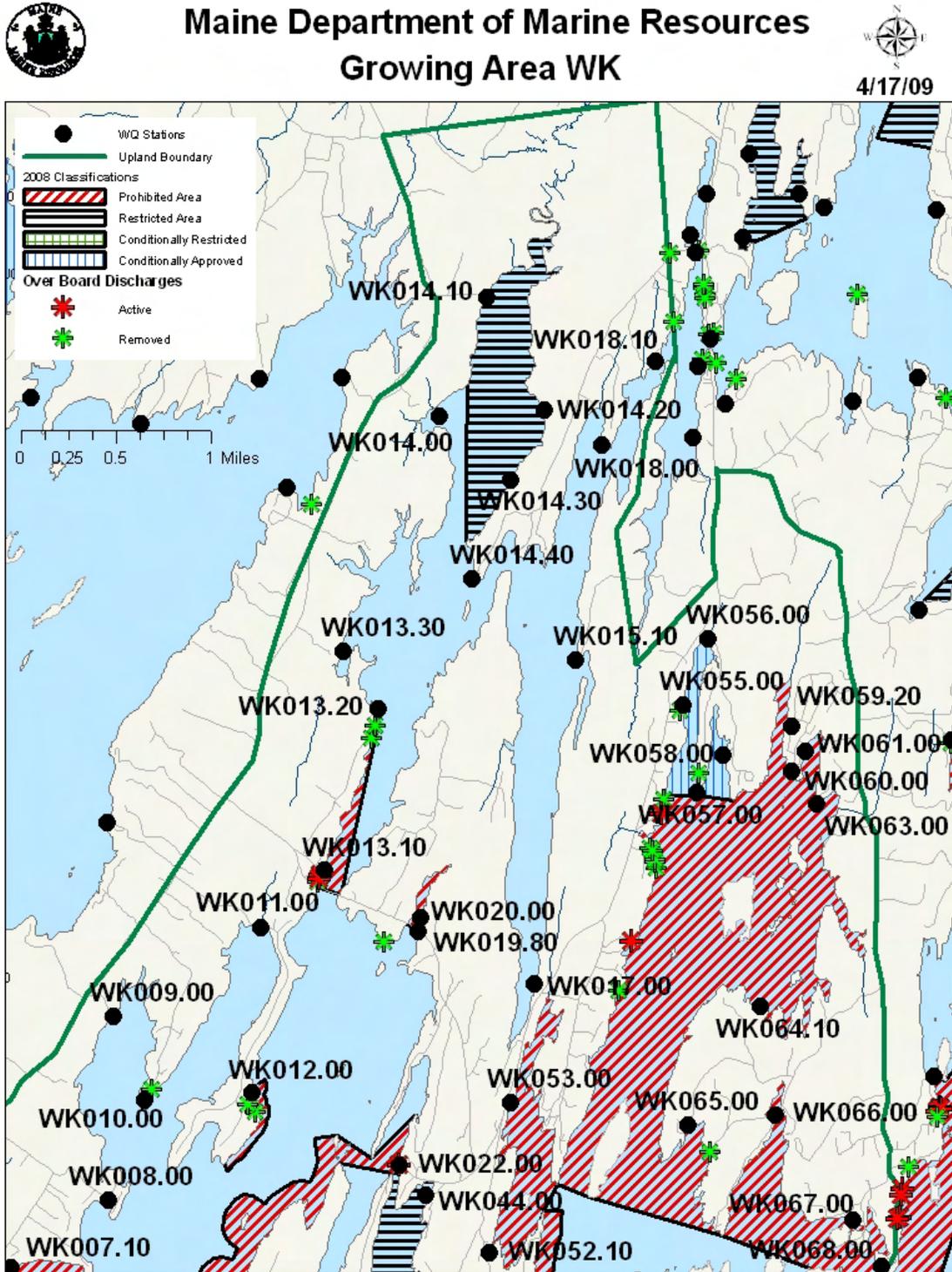
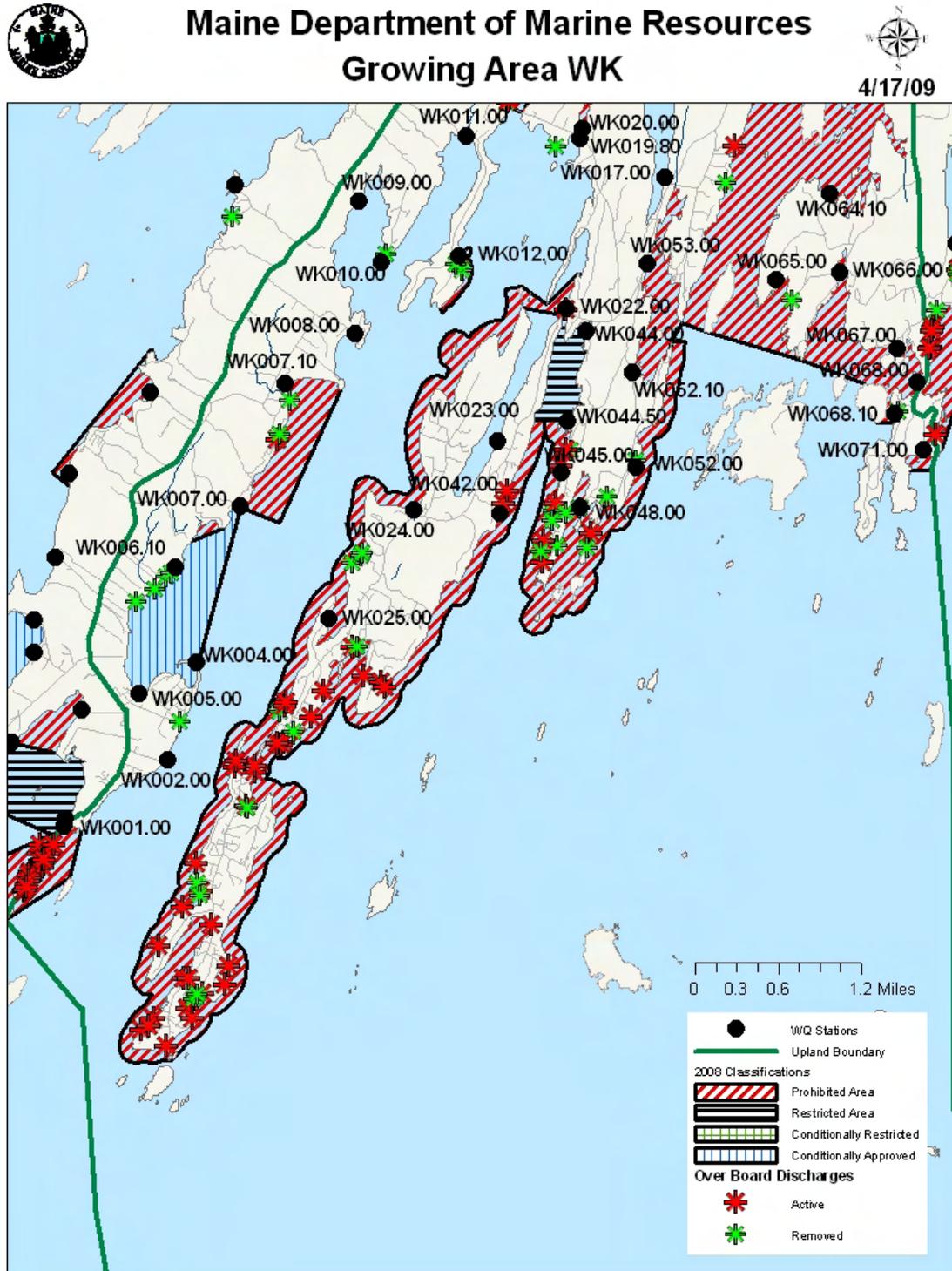




Figure 3. Area WK- Lower Portion Detail





## Executive Summary

This is an annual report for growing area WK written in compliance with the requirements of the 2007 Model Ordinance and the National Shellfish Sanitation Program.

The following changes occurred in area WK in 2008: station WK 59 was deactivated in March 2008, due to difficult access to the shore; a new station WK 59.2 was established two houses south of station WK 59. These two stations are within 300 ft of each other, and data from both stations should be used for classification. Stations WK 22 (Lumbos Hole, Harpswell) was reclassified from approved to prohibited, due to its proximity to an active over board discharge (OBD). Station WK 23 (Long Cove, Harpswell) was reclassified from prohibited to approved, due to water quality meeting the approved standard and a review of data after the remediation of a pollution source, on November 6, 2008. In 2008, six OBDs were removed in area WK; these pollution source removals have been confirmed by DEP.

At the end of 2008, all approved and restricted stations met their NSSP classifications. While all conditionally approved areas also met their NSSP classification standard, an assessment of data points collected in both the open and closed status at Stover Cove revealed that there were multiple elevated scores in this area during its open status. These high scores were associated with rainfall events. Based on the data and results presented in this report, Stover Cove/Harpswell Harbor area requires a downward classification from a seasonal conditionally approved classification to restricted. This classification change is a result of high water quality scores which occurred in the open status, and offer support that the non-point source pollution issues that impact Stover Cove do not have a summer seasonal component. The upper portion of Harpswell Harbor is being proposed for an upgrade in classification from conditionally approved based on season to approved. Based on a data review presented in this report, Long Cove, Harpswell, is being proposed for an upgrade in classification from prohibited to approved.

The next triennial report is due in 2010; the next sanitary survey report is due in 2019.

## Growing Area Description

Growing Area WK is located in the towns of Brunswick and Harpswell in the Mid-Coast area of Maine (Figure 1). There is a vast amount of shoreline on three major peninsulas protruding into Casco Bay as well as numerous islands. Harpswell Neck is the westernmost peninsula. The central peninsula is made up of the western side of Sebascodogan Island, Orrs Island and Bailey Island, with all of them connected to the mainland and each other by bridges. The eastern peninsula is the eastern side of Sebascodogan Island extending south to Cundys Harbor.

Major pollution sources in area WK include OBDs, malfunction of private, residential in-ground septic systems, and intermittent pollution from wildlife and domestic animals. There are no municipal treatment plants with discharges into the water of growing area WK. There are no farms on the shores of growing area WK. There are a total of 53 sampling stations that monitor water quality in growing area WK. Details on sample locations are in Figures 2 and 3.



## Current Classification(s)

At the end of 2008, shellfish growing area WK was classified as:

**Approved:** 12 Stations

### Conditionally Approved:

Stover Cove, Harpswell (4 Stations: WK 4, 5 and 6.1, 7 (Seasonal Variation in Water Quality)

Orrs Cove, Harpswell (2 Stations: WK 55 and 56) (Marina/Season)

Mill Cove, Quahog Bay, Harpswell (2 Stations: WK 58 and boundary station WK 57 (Seasonal Variation in Water Quality)

### Restricted:

Inner Gun Point Cove, Harpswell (1 Station, WK 44) (Non-Point Pollution)

Harpswell Cove, Brunswick (1 Station, WK 14.2) (Near remediated septic malfunction, currently on accelerated sample schedule to assess for upward classification change)

### Prohibited:

Harpswell Sound, Harpswell and Brunswick (10 Stations) (Overboard Discharges and identified malfunction; non-point source pollution)

Card Cove, Harpswell (2 Stations) (Malfunctioning Septic System)

Quahog Bay, Harpswell (11 Stations) (Non-Point Pollution and Malfunctioning Septic System, expired shoreline survey)

At the end of 2008, nine stations had less than 30 data points, and are considered "New" stations; these stations do not have a classification.

Please visit the DMR website to view Legal Notices:

Pollution Area 17A, Upper Harpswell Neck and Long Reach (Brunswick to Harpswell)

Pollution Area 17B, Harpswell Neck (Harpswell)

Pollution Area No. 17C, Bailey Island, Orrs Island and nearby southwest Sebascodogan Island (Harpswell)

Pollution Area No. 18, Quahog Bay, Hen Cove, Ridley Cove (Harpswell).

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

## Activity during Review Period

The following classification changes took place during the 2008 review year:

May 19, 2008: Closed Area No. 17-A, Upper Harpswell Neck and Long Reach (Brunswick to Harpswell)- this amendment classified a portion of Harpswell Cove (locally known as Skolfield Cove) as Restricted.



November 6, 2008: Area No. 17-C, Bailey Island, Orrs Island, and nearby southwest Sebascodegan Island (Harpwell)- this amendment reclassified Long Cove, Harpswell, from prohibited to approved, and expanded the prohibited area in Lumbos Hole due to a licensed overboard discharge.

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

There are three management plans for three conditional areas in growing area WK:

- Stover Cove Seasonal Conditional Area; closed May 1 through Sept 30
- Orrs Cove Seasonal Marina Conditional Area; closed May through Nov 30
- Mill Cove (Quahog Bay) Seasonal Conditional Area; closed May through Sept 30

Copies of the management plans can be found in the central files.

## **Current Annual Review of Management Plan(s)**

### Stover Cove Seasonal Conditionally Approved Area

In 2008, the seasonal conditional area closed on May 1 and reopened on October 1. The seasonal water quality was reviewed prior to reopening and water quality at stations WK 4, 5, 6.1 and 7 continued to meet approved standards for the open season. A complete management plan review can be found in Appendix A.

### Orrs Cove Seasonal Marina Conditionally Approved Area

In 2008, the seasonal marina conditionally approved area at Great Island Boatyard in Orrs Cove, Harpswell, closed on May 1 and reopened on December 1. The area was visited on November 10, 2008 to confirm there were fewer than 10 boats with heads remaining in the water, and a review of the water quality showed that the area continued to meet approved standards for the open season. A complete management plan review can be found in Appendix B.

### Mill Cove (Quahog Bay) Seasonal Conditionally Approved Area

In 2008, the seasonal conditional area closed on May 1 and reopened on October 1. The seasonal water quality was reviewed prior to reopening and water quality at Station WK 58 continued to meet approved standards for the open season. A complete management plan review can be found in Appendix C.

## **Water Quality Review and Discussion**

Table 1 lists all active approved, restricted and prohibited stations in Growing Area WK, with their respective Geomean and P90 calculations for 2008. Please refer to Appendix D 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 stations and restricted stations in growing area WK met their NSSP classification standard in 2008. Some stations classified as prohibited met the approved standard however, due to their proximity to active OBDs or identified pollution sources such as septic system malfunctions, they will retain their current classification

**Table 1. WK Geomean and P90 Scores, Year Round Data, 2003-2008**

STATION	CLASS	CNT	MFCNT	GM	SDV	MAX	P90	APPD_STD	RESTR_STD
WK001.00	P	30	14	3.9	0.49	600	16.3	40	226
WK002.00	A	30	14	3.1	0.29	23	7.2	40	226
WK007.10	P	30	14	5.2	0.56	220	27.6	40	226
WK008.00	A	30	14	3.5	0.46	180	13.8	40	226
WK009.00	A	30	15	3.3	0.38	90	10.1	39	221
WK010.00	A	30	15	3.3	0.40	280	10.6	39	221
WK011.00	A	30	16	3.7	0.55	800	18.4	38	217
WK012.00	P	30	14	2.8	0.15	6	4.3	40	226
WK013.10	P	30	14	3.1	0.28	42	7.0	40	226
WK013.20	P	30	14	3.2	0.36	82	9.2	40	226
WK013.30	A	30	15	3.5	0.36	43	10.1	39	221
WK014.00	A	30	15	4.8	0.52	200	22.4	39	221
WK014.10	New	21	17	5.6	0.64	240	36.9	34	183
WK014.20	R	30	18	8.6	0.86	1200	108.8	37	208
WK014.30	New	20	17	3.3	0.41	42	11.3	33	179
WK014.40	New	18	15	2.4	0.21	14	4.5	33	180
WK015.10	A	30	15	2.7	0.18	13	4.6	39	221
WK017.00	A	30	14	3.0	0.33	90	7.8	40	226
WK018.00	A	30	16	3.9	0.57	1200	21.0	38	217
WK018.10	A	30	14	3.9	0.44	150	14.3	40	226
WK019.80	New	18	15	2.9	0.34	42	8.2	33	180
WK020.00	P	30	15	6.7	0.63	240	42.9	39	221
WK022.00	P	30	15	2.9	0.25	23	6.0	39	221
WK023.00	A	30	21	4.7	0.48	240	19.3	36	196
WK024.00	P	30	14	7.4	0.68	920	54.9	40	226
WK025.00	P	30	14	7.4	0.66	460	51.8	40	226
WK042.00	P	30	14	7.0	0.78	1440	68.9	40	226
WK044.00	R	30	15	3.8	0.57	1200	20.6	39	221
WK044.50	New	19	14	3.2	0.38	33	9.8	35	191
WK045.00	P	30	14	3.7	0.54	1100	17.9	40	226
WK048.00	New	24	14	6.6	0.72	1200	55.9	38	210
WK052.00	New	18	14	6.5	0.69	420	50.2	34	187
WK052.10	P	30	18	7.9	0.75	1560	71.8	37	208



STATION	CLASS	CNT	MFCNT	GM	SDV	MAX	P90	APPD_STD	RESTR_STD
WK053.00	P	30	14	5.1	0.57	240	27.1	40	226
WK057.00	P	30	21	3.2	0.42	93	11.1	36	196
WK059.20	New	7	7	3.1	0.23	6	6.2		
WK060.00	New	7	7	1.9	0.01	2	2.0		
WK061.00	P	30	14	9.0	0.66	240	63.1	39	223
WK063.00	P	30	14	5.8	0.76	1700	54.0	40	226
WK064.10	P	30	14	3.7	0.51	240	16.9	40	226
WK065.00	P	30	14	9.3	0.82	1700	103.6	40	226
WK066.00	P	30	14	5.7	0.59	460	32.7	40	226
WK067.00	P	30	14	4.8	0.50	93	20.9	40	226
WK068.00	P	30	14	10.7	0.84	1100	128.7	40	226
WK068.10	P	30	14	3.4	0.38	93	10.1	40	226
WK071.00	P	30	14	5.2	0.52	76	24.3	40	226

Table 2 lists all conditionally approved stations in Stover Cove seasonal conditional area with their respective Geomean and P90 calculations for 2008. Data for conditionally approved stations reflects only the open status. All stations met the approved standard during open status.

**Table 2. Stover Cove Seasonal Conditional Area, Open Status Oct 1- April 30, 2002-2008**

STATION	CLASS	CNT	MFCNT	GM	SDV	MAX	P90	APPD_STD	RESTR_STD
WK004.00	CA	30	15	4.9	0.68	420	35.5	39	221
WK005.00	CA	30	15	4.7	0.52	160	21.5	39	221
WK006.10	CA	19	15	2.6	0.23	12	5.0	34	185
WK007.00	CA	22	11	2.5	0.10	4	3.5	39	221

Table 3 lists all conditionally approved stations in Orrs Cove seasonal/marina conditional area with their respective Geomean and P90 calculations for 2008. Data for conditionally approved stations reflects only the open status. All stations met the approved standard during open status.

**Table 3. Orrs Cove Seasonal Conditional Area, Open Status December 1 – April 30, 2002-2008**

STATION	CLASS	CNT	MFCNT	GM	SDV	MAX	P90	APPD_STD	RESTR_STD
WK055.00	CA	30	11	4.5	0.51	240	20.2	41	240
WK056.00	CA	30	11	4.4	0.53	743	20.9	41	240
WK057.00	P-boundary	30	9	3.3	0.33	93	8.7	43	250

Table 4 lists all conditionally approved stations in Mill Cove seasonal conditional area with their respective Geomean and P90 calculations for 2008. Data for conditionally approved stations reflects only the open status. All stations met the approved standard during open status.

**Table 4. Mill Cove Seasonal Conditional Area, Open Status October 1 - April 30, 2002-2008**

STATION	CLASS	CNT	MFCNT	GM	SDV	MAX	P90	APPD_STD	RESTR_STD
WK058.00	CA	30	14	2.8	0.30	76	6.8	40	226
WK057.00	P-boundary	30	14	3.1	0.35	93	8.7	40	226



All approved, restricted and prohibited stations that were active at the beginning of 2008 were sampled at least 6 times following the systematic random sampling (SRS) schedule (Table 5 and Appendix E). At some stations, additional samples were collected under adverse conditions. All conditionally approved stations, except WK 7 (Stover Cove), were sampled 6 times in the open status. Station WK 7 was sampled 5 times in the open status. Due to a scheduling error, this station was not scheduled to be sampled on the same dates as the remainder of Stover Cove stations. This station was sampled a total of 8 times following SRS (open and closed status); at the end of 2008, it met the NSSP standard for approved classification year round. Stover Cove is being proposed for a reclassification from conditionally approved to restricted (southern section) and approved (northern section). Please refer to the Appendix A for data assessment and results.

**Table 5. WK Sampling Effort for 2008**

Station	Class	Adverse	Extra		Random		Total	Comments
		Closed	Closed	Open	Closed	Open		
WK001.00	P				6		6	
WK002.00	A					6	6	
WK004.00	CA				3	6	9	
WK005.00	CA				2	6	8	
WK006.10	CA				3	6	9	
WK007.00	CA				3	5	8	
WK007.10	P				6		6	
WK008.00	A	15				6	21	Flood Station
WK009.00	A					6	6	
WK010.00	A					6	6	
WK011.00	A				1	6	7	
WK012.00	P				7		7	
WK013.10	P				7		7	
WK013.20	P				7		7	
WK013.30	A				1	6	7	
WK014.00	A					6	6	
WK014.10	P				2		9	Reclassified on 5/8/08; Extra samples due to accelerated sample schedule
	R		1	2		4		
WK014.20	P				2		9	Reclassified on 5/8/08; Extra samples due to accelerated sample schedule
	R		1	2		4		
WK014.30	P				2		9	Reclassified on 5/8/08; Extra samples due to accelerated sample schedule
	R		1	2		4		
WK014.40	A					6	6	
WK015.10	A				1	6	7	
WK017.00	A				1	6	7	
WK018.00	A	11				6	17	Flood Station
WK018.10	A					6	6	
WK019.80	A				1	6	7	



WK	Status	Adverse		Extra		Random		Total	Notes
		Count	Percentage	Count	Percentage	Count	Percentage		
WK020.00	P					7		7	
WK022.00	A					1	5	7	Reclassified from A to P on 11/6/08
	P					1			
WK023.00	A						1	13	Extra samples due to accelerated sampling; Reclassified from P to A on 11/6/08
	P			6		6			
WK024.00	P					7		7	
WK025.00	P					7		7	
WK042.00	P					7		7	
WK044.00	R					1	6	7	
WK044.50	R					1	6	7	
WK045.00	P					7		7	
WK048.00	P					7		7	
WK052.00	P					7		7	
WK052.10	P					7		7	
WK053.00	P	5				7		12	
WK055.00	CA					4	6	10	
WK056.00	CA					4	6	10	
WK057.00	P					9		9	
WK058.00	CA					3	6	9	
WK059.00	P					1		1	
WK059.20	P					6		6	
WK060.00	P					7		7	
WK061.00	P					7		7	
WK063.00	P					7		7	
WK064.10	P					7		7	
WK065.00	P					7		7	
WK066.00	P					7		7	
WK067.00	P					7		7	
WK068.00	P					7		7	
WK068.10	P					7		7	
WK071.00	P					7		7	

Figures 4, 5 and 6 show the P90 trends over the past three years, for all approved, restricted and conditionally approved stations in growing area WK, respectively; figure 6 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; any station showing the 2008 column on or above 100 percent does not meet the NSSP standard for classification.

At the end of 2008, all approved stations in WK were well below the approved standard (Figure 4). All stations, except WK 14, have shown declining trends, or no notable changes in water quality scores. Station WK 14 has shown a slight upward trend over the past three years.



Station WK 23 has shown a significant improvement in water quality over the past 3 years; this station was located near a known pollution source (fecal waste from domestic geese that were grazing in close proximity to this station). In 2007, this pollution source was removed and in 2008, station WK 23 was sampled on an accelerated schedule, showing a significant improvement in water quality. All restricted stations are well under the restricted standard; station WK 14.2 a slight increase in P90 scores over the past three years; this station was located in the vicinity of a septic system malfunction, which was remediated in 2008. Prior to the remediation, this station was classified as prohibited (Figure 5). Restricted stations WK 14.1, 14.3 and 44.5 are new stations and only show P90 scores for 2008.

All conditionally approved stations have met their classification standard for the past 3 years while in the open status, however, several stations have shown upwards trends. Stations WK 4, located in Stover Cove, has shown a steady increase in annual P90 scores and is currently within 10 percent of the standard. A comprehensive data analysis to determine whether the pollution affecting this station is seasonal (as suggested by its conditional area management plan), was completed as part of this report. The conclusion of this analysis showed that high scores in Stover Cove were independent of season, and were more related to precipitation events. Therefore, this area (WK 4 and 5) should be reclassified from conditionally approved based on season to restricted. Station WK 55 has also shown an increase in P90 scores over the past three years. This area is managed on a presence of a marina (10 or more boats with heads); the cause of the declining water quality in this area is unknown and a follow up survey should be conducted in this area in 2009. The remainder of the conditional stations in Orrs Cove (WK 56) and Mill Cove (WK 57 and 58) have shown a steady or slightly improving water quality.



Figure 4. Area WK P90 Scores for Approved Stations and Boundary Stations (expressed as the percent of the approved standard), 2006-2008

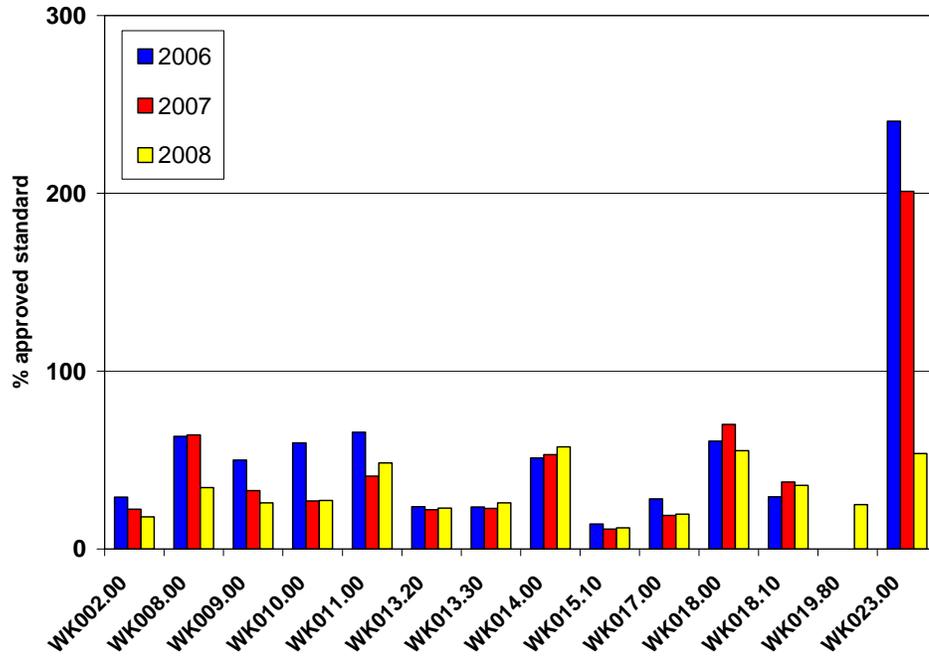


Figure 5. Area WK P90 Scores for Restricted Stations and Boundary Stations (expressed as the percent of the restricted standard), 2006-2008

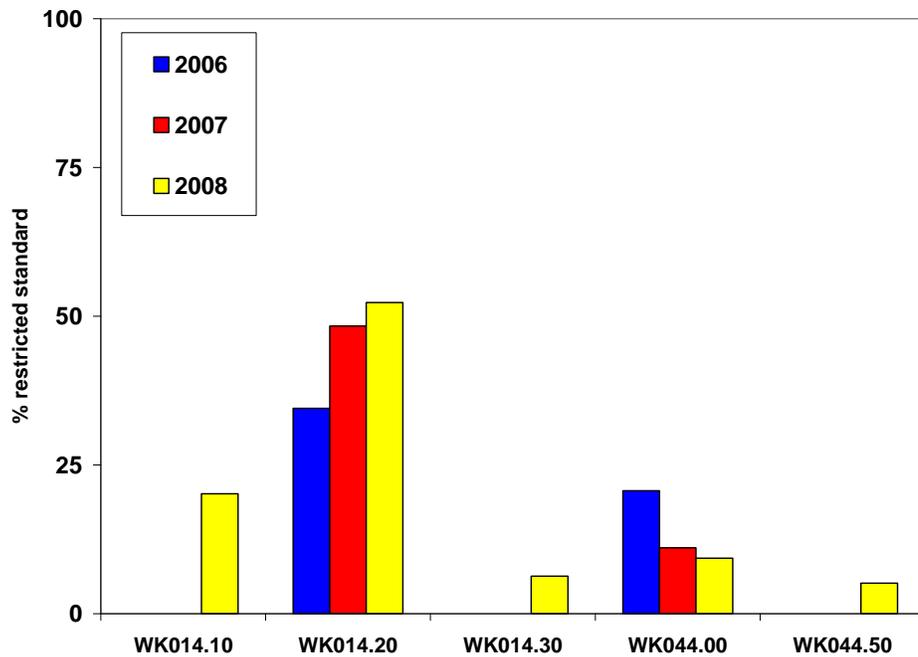
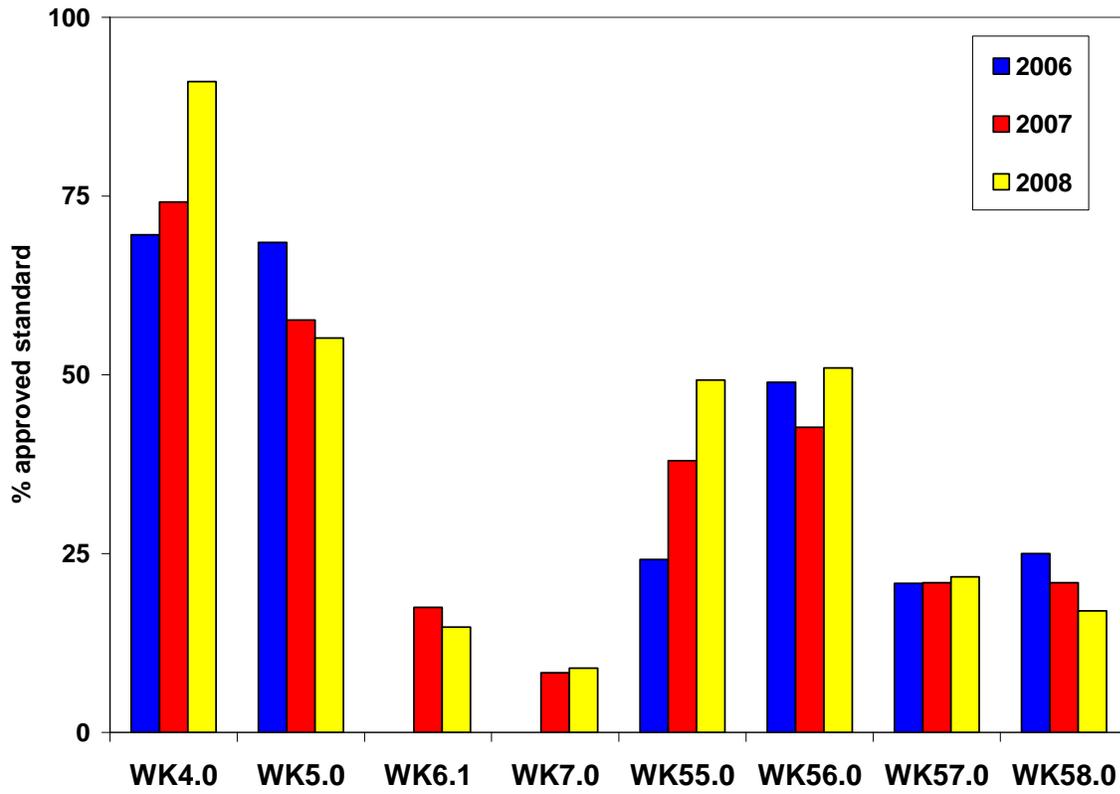




Figure 6. Area WK P90 Scores for Conditionally Approved Stations and Boundary Stations (expressed as the percent of the restricted standard), Open Status Data, 2006-2008





## Recommendations for Upward Classification

### Long Cove, Harpswell:

Long Cove, Harpswell, is monitored by station WK 23. The cove was reclassified from approved to prohibited in April 2006, after water quality no longer met the approved standard, based on data from 2000 through 2005. Following high scores, the cove was surveyed for potential and actual pollution sources. An actual pollution source was identified on the lot adjacent to the monitoring station. The property owner of the lot kept domestic geese and no best management practices had been in place to restrict the geese's access to shore. After learning of the negative impact that the geese can have on water quality, the owner agreed to remove them from his property. Since then, water quality has improved, and since 2005, there have been no scores greater than 40 colonies/100 ml. In 2008, station WK 23 was approved for accelerated sampling, and was placed on a two week sampling schedule. In November 2008, upon the request of the town of Harpswell, the data was reviewed. As of November 6, 2008, the P90 at station WK 23 was 19.3 an approved standard of 36; the geomean was 4.7, with standard deviation of 0.48. Based on this analysis, Long Cove, Harpswell was upgraded in classification from prohibited to approved. The classification for Long Cove, after the upward reclassification was implemented, is shown in Figure 7.

Figure 7. Long Cove, Harpswell, with Upward Classification

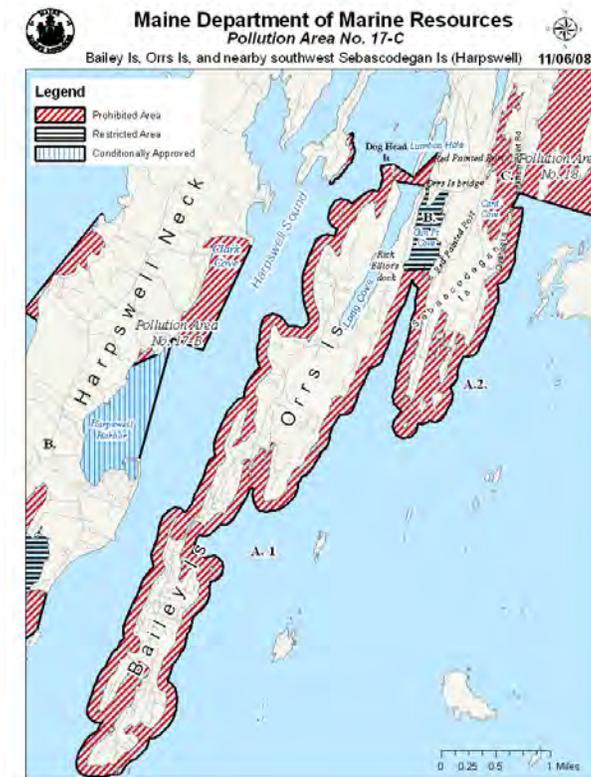




Table 6. Station WK 23, Long Cove, 2003- August 2009

Rain 3 Day	Rain 4 Day	Date	Strat	Salinity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.2	1.2	28-May-03	R	30					3.6							
1.09	1.09	25-Jun-03	R	30						43						
0	0	23-Jul-03	R	31							240					
0	0	10-Sep-03	R	32									2.9			
1.6	3.48	29-Oct-03	R	22										240		
0.64	1.37	17-Dec-03	R	31												2.9
0.09	0.09	20-May-04	R	31					43							
0.29	0.29	10-Jun-04	R	30						9.1						
0.15	0.15	22-Jul-04	R	30							43					
0.04	1.93	09-Sep-04	R	30									1100			
0.34	0.36	14-Oct-04	R	30										2.9		
0.16	0.16	12-May-05	R	28					2.9							
0.21	0.27	09-Jun-05	R	30						15						
0.72	0.72	28-Jul-05	R	30							240					
0.22	0.22	25-Aug-05	R	30								2.9				
0.73	1.16	29-Sep-05	R	31									2.9			
0.52	1.41	17-Nov-05	R	20											9.1	
1.57	1.57	07-Feb-06	R	28		2.9										
1.11	1.11	15-Mar-06	R	30			2.9									
0	0.01	12-Apr-06	R	31				2.9								
0	0.26	20-Jun-06	R	28						3.6						
0.05	0.05	09-Aug-06	R	29								2.9				
0	1.66	20-Sep-06	R	31									5.5			
2.63	2.63	15-Nov-06	R	28											6	
0.04	0.04	06-Feb-07	R	34		1.9										
0.53	1.06	04-Apr-07	R	30				1.9								
0.11	0.11	29-May-07	R	28					20							
0.52	0.52	24-Jul-07	R	30							14					
0.6	0.6	17-Sep-07	R	32									1.9			
0.02	0.08	10-Oct-07	E	32										10		



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Rain 3 Day	Rain 4 Day	Date	Strat	Salinity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0.52	26-Nov-07	R	31											1.9	
0.3	0.3	03-Mar-08	R	30			1.9									
0.06	0.14	01-Apr-08	E	30				2								
0.26	0.26	15-Apr-08	R	28				1.9								
0	0	21-May-08	E	30					1.9							
0	0.03	11-Jun-08	R	31						6						
0.23	0.23	25-Jun-08	E	26						8						
1.57	1.57	04-Aug-08	R	28							40					
0.1	0.1	20-Aug-08	E	28							6					
0	0	23-Sep-08	R	31								1.9				
0	0.03	14-Oct-08	E	32									12			
0.93	1.22	28-Oct-08	E	30									3.6			
0	0	24-Nov-08	R	30										1.9		
0	0	18-Mar-09	R	28			10									
0	0	15-Apr-09	R	30				1.9								
0	0.05	09-Jun-09	R	28						2						
0	0	04-Aug-09	R	28												



## Shoreline Survey Activity

In 2008, shoreline survey work was completed in the following areas of growing area WK by DMR staff and the town of Harpswell Marine Warden: middle of Harpswell Neck, the southern portion of Long Cove (Harpswell), Long Reach, Lumbos Hole (Harpswell) and the islands which fall into the boundaries of the town of Harpswell. Follow up work in areas where potential and actual problems were identified was completed by the town of Harpswell CEO. Additional follow up work was also completed in areas not formally surveyed in 2008, but where actual problems had been identified during shoreline survey efforts in previous years. These areas included: Stover Point, Shore Acres, Clark Shore Road, Gun Point Cove, Card Cove, Brickyard Cove, and Quahog Bay. This follow up work was completed on August 12, 2008. Follow up survey work was also completed in the Harpswell Cove area (Brunswick) where a septic malfunction was identified in 2007; this problem was remediated in Spring 2008.

## Aquaculture/Wet Storage Activity

At the end of 2008 review year, there were no active aquaculture lease sites or wet storage sites in shellfish growing area WK.

## Classification Changes Required and Requested

One downgrade in classification is required in Stover's Cove. Part of this area (Harpswell Harbor) should be reclassified from conditionally approved based on season to restricted. The northern part of the conditional area may be reclassified to approved.

Long Cove, Harpswell is being proposed for an upward classification, due to water quality meeting the approved standards after the removal of a pollution source.

## Summary

At the end of 2008, approved and restricted water quality monitoring stations in growing area WK continued to support their current NSSP classifications. As a result of this annual review, no approved and restricted stations need to be downgraded in their classification status. One station, WK 23 has shown a significant improvement in water quality after a removal of a pollution source and is being proposed for an upgrade to approved classification. Mill Cove and Orrs Cove conditional areas continue to support their current NSSP classification standard in the open status. Stover Cove conditional area met its classification standards in the open status, however it should be reclassified from conditionally approved based on season to restricted, due to multiple elevated scores in its open status dataset, which suggest that the pollution affecting water quality in Stover Cove is not seasonal.



The following work is being recommended for 2009: 1) accelerated and adverse condition sampling at the Card Cove stations (WK 52.1 and 53), in order to determine if this cove can be upgraded in classification; 2) extra sampling in the closed status for Mill Cove (WK 58), in order to determine if this area can be reclassified from conditionally approved based on season to approved year round; and 3) accelerated sampling in Brickyard Cove (WK 52.9) in order to determine if this area can be upgraded in classification from prohibited to approved; samples from a stream that drains into this cove should also be collected. Recommended future survey work in area WK should include Orrs and Mill Cove, Doughty Cove and Quahog Bay. Additional sample stations should be established in the following areas: Harpswell Harbor, east shore of Card Cove, east shore of Quahog Bay, and Dipper Cove.



## Appendix A. Annual Review of Management Plan - Stover Cove

### Scope

Stover Cove is classified conditionally approved due to seasonal variability of water quality, possibly due to an increase in shore usage. Stover Cove is monitored by stations WK 4, 5, 6.1 and 7. DMR evaluated the data in this area in December 1998, and made the assessment that there is greater variation in water quality during the summer months. Most of the homes along this shore are occupied year- round, however there are seasonal cottages, which increase shore usage in June, July and August. The area is open from October 1 through April 30.

### Compliance with management plan

In 2008 the seasonal conditional area closed on May 1 and reopened on October 1. The seasonal water quality was reviewed prior to reopening and water quality at Stations WK 4, 5, 6.1 and 7 continued to meet approved standards for the open season. The seasonal closure is enforced by the DMR Marine Patrol and the local Shellfish Warden. Cooperation between the involved parties has been excellent.

### Adequacy of reporting and cooperation of involved persons

This management plan does not require reporting.

### Compliance with approved growing area criteria

In Stover Cove, conditionally approved stations, WK 4, 5, 6.1 and 7, met approved standards during the open season, as documented below in Table 1.

**Table 1. Stover Cove Conditional Area Geomean and P90-Open Status Oct 1 – Apr 30, 2002-2008**

STATION	CLASS	CNT	MFCNT	GM	SDV	MAX	P90	APPD_STD	RESTR_STD
WK004.00	CA	30	15	4.9	0.68	420	35.5	39	221
WK005.00	CA	30	15	4.7	0.52	160	21.5	39	221
WK006.10	CA	19	15	2.6	0.23	12	5.0	34	185
WK007.00	CA	22	11	2.5	0.10	4	3.5	39	221

### Field inspection of critical pollution sources

The potential for pollution in growing area WK comes from increased shore usage (swimming, walking dogs, 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**

Stations WK 4, 5, and 6.1 were sampled six times in the open status. Station WK 7 was sampled 5 times in the open status.

**Analysis-Recommendation**

At the completion of the 2008 field season, the data collected at stations WK 4, 5, 6.1 and 7 over the past seven (2002-2008) was reviewed to determine whether a seasonal conditionally approved classification was the appropriate classification for this area. The data review (Tables 2-5) showed that multiple elevated scores had occurred at station WK 4 and 5 outside the seasonally closed status, while stations WK 6.1 and 7 had no elevated scores in their datasets (open or closed status). All of the elevated scores at station WK 4 and the majority of the elevated scores at station WK 5 occurred outside the closed status, suggesting that pollution in this area is not due to seasonal pollution insults. Year round data was used to calculate Geometric mean and P90 scores for Stover Cove; the results showed that station 4, 6.1 and 7 meet the approved standard year round, while station WK 5 does not (Table 6). Therefore, it is recommended that the classification for this area be modified as follows: the area between stations WK 4 and 6.1 should be reclassified from conditionally approved to restricted, with stations WK 4 and 6.1 serving as the boundary stations, and the area between station 6.1 and 7 be reclassified from conditionally approved to approved. Furthermore, it is recommended that a new station be established between station WK 5 and WK 6.1, in order to determine if in the future, the size of the restricted area can be reduced.

**Table 2. Stover Cove, WK 4 Data, 2002-2008**

Rain range	Rain (72 hr)	Date	TIDE	ADV	SAL %	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	4/16/03	HE	-	30				3.6								
	0	11/18/04	F	-	30											<3	
	0	3/23/05	H	-	32			<3									
	0	4/11/07	E	-	28				<2								
	0	9/24/07	E	-	32									<2			
	0	1/7/08	E	-	32	<2											
	0	6/10/08	F	-	29						<2						
	0	9/23/08	LF	-	31									<2			
	0	10/15/08	H	-	30										148		
	0	11/19/08	F	-	31												<2
0.001-0.25	0.001	12/3/03	H	-	32												3.6
	0.001	2/9/05	H	-	30		<3										
	0.003	1/7/04	F	-	32	3.6											
	0.01	12/7/05	H	-	29												23
	0.01	4/12/06	HF	-	31				<3								
	0.01	3/12/08	F	-	12			<2									
	0.02	4/24/02	HE	-	30				<3								
	0.02	3/3/04	F	-	30			3.6									
	0.02	2/12/07	LE	-	32		<2										



Rain range	Rain (72 hr)	Date	TIDE	ADV	SAL %	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	0.031	12/3/02	F	W	30												3.6
	0.04	11/19/03	HE	-	32											<3	
	0.05	10/22/02	HF	-	32										<3		
	0.05	8/9/06	HF	-	29								9.1				
	0.05	12/5/06	H	-	30												2
	0.08	10/10/07	LE	W	32										<2		
	0.08	2/12/08	HF	-	30		<2										
	0.1	9/29/04	F	-	30									9.1			
	0.231	3/26/03	HE	W	6			<3									
0.26-0.50	0.26	4/15/08	E	-	30				<2								
	0.261	6/20/06	LE	-	27						2.9						
	0.3	11/5/02	HF	P	30											<3	
	0.3	3/12/07	LE	-	32			<2									
	0.34	10/13/04	H	-	32										3.2		
	0.49	1/19/05	HE	-	31	<3											
	0.5	10/2/06	E	-	31										420		
	0.501	3/12/02	F	P	29			<3									
0.51-0.75	0.51	4/7/04	F	-	32				<3								
	0.52	11/16/05	E	P	20											43	
	0.54	2/4/04	HE	-	32		<3										
	0.59	6/20/07	L	-	32						<2						
	0.68	8/15/07	F	-	30								<2				
	0.69	9/24/03	H	P	30									23			
	0.75	1/10/07	F	P	30	<2											
0.76-1.00	0.78	12/5/07	E	-	30											<2	
1.01-1.50	1.111	3/15/06	F	-	31			23									
	1.261	12/8/04	E	P	30												3.6
	1.36	5/2/07	H	-	28					13							
	1.391	2/12/02	F	P	32		<3										
1.51-2.00	1.57	8/4/08	HF	P	28								11				
	1.571	2/7/06	E	W	30		3.6										
	1.66	9/20/06	H	P	30									<2			
	1.781	1/17/06	F	-	27	<3											
2.01-4.00	2.62	4/27/05	F	P	28				240								
	2.63	11/15/06	E	-	29											<2	
	3.48	10/29/03	F	P	30										43		

Table 3. Stover Cove, WK 5, 2002-2008

Rain Range	Rain 72 hr	Date	TIDE	ADV	SAL%	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	4/16/03	HE	N	28				<3								
	0	11/18/04	F	-	30											<3	
	0	1/31/05	HF	-	21	<3											
	0	3/23/05	H	-	22			3.6									



Rain Range	Rain 72 hr	Date	TIDE	ADV	SAL%	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	0	4/11/07	E	-	14				5.5									
	0	9/24/07	F	-	32									4				
	0	1/7/08	E	-	32	<2												
	0	10/15/08	F	-	30										12			
	0	11/19/08	F	-	30											6		
0.001-0.25	0.001	12/3/03	H	-	30												3.6	
	0.001	2/9/05	H	-	30		<3											
	0.003	1/7/04	HF	-	32	21												
	0.01	12/7/05	HF	-	28												7.3	
	0.01	4/12/06	HF	-	30				<3									
	0.01	3/12/08	F	-	25			<2										
	0.02	4/24/02	HE	-	24				150									
	0.02	3/3/04	F	-	30			3.6										
	0.02	2/12/07	F	-	32		2											
	0.031	12/3/02	F	W	30													<3
	0.04	11/19/03	HE	-	32												<3	
	0.05	10/22/02	H	-	32										3.6			
	0.05	8/9/06	HF	-	28								3.6					
	0.05	12/5/06	H	-	20												28	
	0.06	6/25/07	E	-	30							5.5						
	0.08	2/12/08	HF	-	28			<2										
	0.1	9/29/04	F	-	30										9.1			
0.11	6/16/08	HF	P	29							<2							
0.15	3/27/07	F	-	30			<2											
0.231	3/26/03	E	W	6			<3											
0.26-0.50	0.26	4/15/08	E	-	29				<2									
	0.3	11/5/02	HF	P	30											<3		
	0.34	10/13/04	H	-	32										3.6			
	0.5	10/2/06	E	-	14										160			
0.501	3/12/02	F	P	28			<3											
0.51-0.75	0.51	4/7/04	F	-	30				<3									
	0.52	11/16/05	E	P	7											93		
	0.6	9/17/07	HF	P	30									<2				
	0.68	8/15/07	F	-	30								<2					
	0.69	9/24/03	H	P	30									9.1				
0.75	1/10/07	F	P	18	11													
0.76-1.00	0.78	12/5/07	E	W	24												<2	
1.01-1.50	1.01	10/29/07	F	-	30										<2			
	1.111	3/15/06	HF	W	31			<3										
	1.261	12/8/04	E	P	23												43	
	1.36	5/2/07	H	W	28					<2								
1.391	2/12/02	F	P	32			<3											
1.51-2.00	1.57	8/4/08	HF	P	29								24					
	1.571	2/7/06	E	WN	20		3.6											
	1.66	9/20/06	H	P	25									1560				
	1.781	1/17/06	F	-	30											<3		
2.01-4.00	2.62	4/27/05	F	P	25				<3									



Rain Range	Rain 72 hr	Date	TIDE	ADV	SAL%	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	2.63	11/15/06	E	-	28											<2	
	3.48	10/29/03	F	P	30										23		

Table 4. Stover Cove, WK 6.1, 2002-2008

Rain Range	Rain 72 hr	Date	Tide	Adv	SAL %	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	04/11/07	LE	-	31				<2								
	0	09/24/07	F	-	32									2			
	0	01/07/08	E	-	32	2											
	0	06/10/08	F	-	30					8							
	0	09/23/08	LF	-	31									<2			
	0	10/15/08	H	-	31										2		
	0	11/19/08	F	-	31										<2		
0.01-0.25	0.01	04/12/06	HF	-	30				<3								
	0.01	03/12/08	F	-	30			<2									
	0.02	02/12/07	L	-	32		<2										
	0.05	08/09/06	HF	-	30								<3				
	0.05	12/05/06	H	-	30												2
	0.08	10/10/07	LE	-	32										6		
	0.08	02/12/08	HF	-	30		<2										
0.26-0.50	0.26	04/15/08	E	-	30				<2								
	0.261	06/20/06	LE	-	26						<3						
	0.3	03/12/07	LE	-	31			<2									
	0.5	10/02/06	E	-	31										12		
0.51-0.75	0.59	06/20/07	LF	-	30						2						
	0.68	08/15/07	F	-	30								6				
	0.75	01/10/07	F	P	31	<2											
0.76-1.00	0.78	12/05/07	E	-	30											<2	
1.01-1.50	1.111	03/15/06	HF	-	31			<3									
	1.36	05/02/07	H	-	28					<2							
1.5-2.00	1.57	08/04/08	HF	P	29								<2				
	1.571	02/07/06	E	-	30		<3										
	1.66	09/20/06	H	P	30									2			
	1.781	01/17/06	F	-	31	6.1											
2.00-4.00	2.63	11/15/06	E	-	28											2	

Table 5. Stover Cove, WK 7, 2002-2008

Rain Range	Rain 72 hr	Date	Tide	Adv	SAL%	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	10/06/04	L	-	31										<3		
	0	09/13/05	L	-	30									<3			
	0	11/03/05	F	-	30											<3	
	0	06/10/08	F	-	30							8					
	0	09/23/08	LF	-	31									<2			
	0	11/19/08	F	-	32											<2	
	0	12/10/08	E	-	32												4
	0	12/17/08	E	P	31												<2
0.001-0.25	0.001	06/16/04	F	-	30						<3						



Rain Range	Rain 72 hr	Date	Tide	Adv	SAL%	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	0.01	06/28/05	F	-	28						<3							
	0.01	04/12/06	HF	-	31				<3									
	0.04	09/08/04	E	-	30									3.6				
	0.05	08/09/06	HF	-	30								<3					
	0.06	04/15/03	HF	-	30				<3									
	0.08	10/10/07	LE	-	32										2.8			
	0.08	02/12/08	H	-	30		<2											
	0.12	11/12/03	F	-	31												<3	
	0.121	04/11/02	HF	N	30					<3								
	0.151	07/21/04	L	-	30								7.3					
	0.161	08/06/03	E	-	32									3				
0.17	07/08/03	H	-	31								<3						
0.19	07/11/02	F	-	30								<3						
0.26-0.50	0.26	04/15/08	E	-	30				<2									
	0.261	06/20/06	LE	-	26							<3						
	0.281	10/03/02	H	P	32										3.6			
	0.3	03/12/07	L	-	31			<2										
	0.33	08/11/04	F	-	30								<3					
	0.41	09/05/02	HF	-	32									<3				
0.48	07/06/05	E	-	30								<3						
0.51-0.75	0.51	04/28/04	HE	-	30				<3									
	0.59	06/20/07	LF	-	30						2							
	0.68	08/15/07	F	-	32								<2					
0.76-1.00	0.75	01/10/07	F	P	30	2												
	0.83	08/17/05	H	-	30								3.6					
1.01-1.50	0.98	06/06/02	E	P	30							<3						
	1.09	06/25/03	H	-	30							<3						
	1.111	03/15/06	HF	-	31			<3										
	1.14	11/28/07	HE	P	32											<2		
	1.24	08/08/02	F	-	32								<3					
1.51-2.00	1.36	05/02/07	HE	-	28					<2								
	1.511	10/01/03	E	-	30										3.6			
	1.57	08/04/08	H	P	30								<2					
	1.58	11/06/07	E	P	32											<2		
	1.66	09/20/06	H	P	30									8				
2.1-4.0	1.7	04/21/05	E	P	30				<3									
	2.63	11/15/06	E	-	28											2		

Table 6. Stover Cove Year Round Geometric Mean and P90 scores

Station	Class	Count	MFCCount	GM	SDV	MAX	P90	Appd_Std	Restr_Std
WK004.00	CA	30	23	3.9	0.59	420	22.8	34	187
WK005.00	CA	30	23	5.4	0.69	1560	42.1	34	187
WK006.10	CA	29	23	2.6	0.22	12	5	34	184
WK007.00	CA	30	18	2.6	0.16	8	4.3	37	208

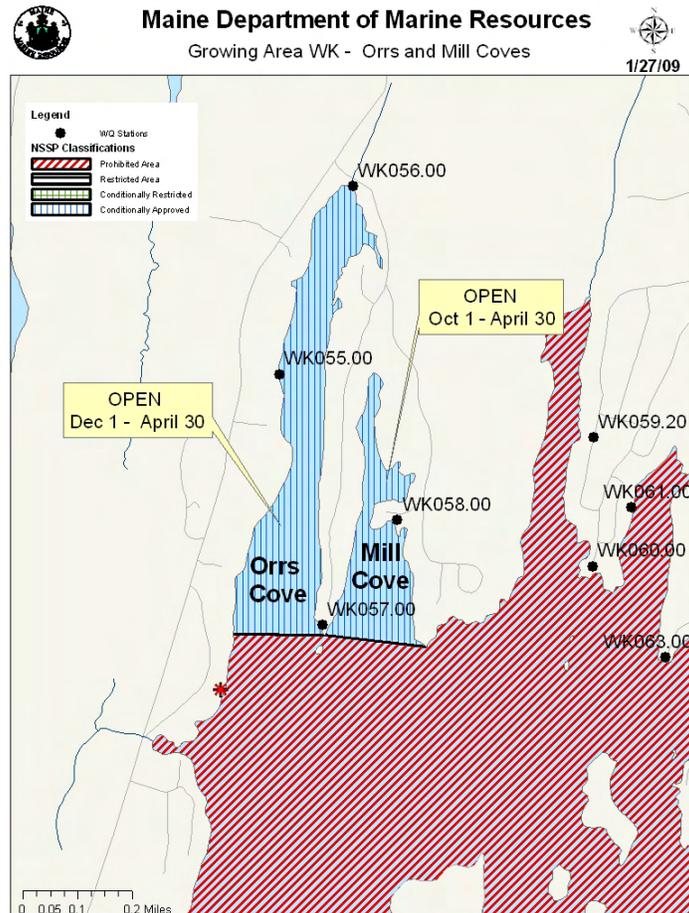


## Appendix B. Annual Review of Management Plan- Orrs Cove

### Scope

Orrs Cove is conditionally approved based on the presence or absence of 10 or more boats with heads at the Great Island Boatyard, which may discharge into Orrs Cove. Orrs Cove is monitored by stations WK 55 and 56 and was classified conditionally approved in August 2002, after DMR evaluated the Orrs Cove data, made observations of the marina, and interviewed the marina owner with regard to annual marina usage. The marina owner was re-interviewed in December 2008; all information regarding marina use was updated and a dilution area calculation based on the updated information was completed. Currently, the marina operates between May 1<sup>st</sup> and October 31<sup>st</sup>, with peak season July through September. The current open status for Orrs Cove Conditionally Approved area is from December 1 through April 30.

Figure 1. Orrs Cove, Harpswell, with sampling stations





In addition to updating the marina inspection information, a review of the data points in the open status was also completed. Tables 1 and 2 present fecal coliform data for conditionally approved stations WK 55 and 56, respectively; the data were sorted by month with the closed period highlighted in each table header. Station WK 55 received two elevated (>31 fc/ 100 ml) scores in the open status since 2003: 106 fc/100 ml on March 12, 2007, and 240 on December 8, 2004. No adversity was noted for the March 12, 2007 score, however, the sample's salinity value was very low (4), indicating an influence of a fresh water source. On the same date, station WK 56 had a score of 3.6, with a salinity value of 0. Within 72 hours of sampling, the area received 0.3 inches of rain, with 0.28 inches occurring on March 11, 2007. The second elevated score occurred on December 8, 2004, after 1.26 inches of rain were recorded within 72 hour period prior to sample collection date. The salinity of the elevated sample was 30%, and precipitation was occurring at the time of the sample collection. On the same date, station WK 56 had a score of 3.6, and a salinity of 30.

Station WK 56 had one elevated score (>31 fc/100 ml) in the open status, collected on December 13, 2005; no corresponding sample was collected at station WK 55 on the same date. The sample was collected at low ebbing tide, and had a salinity of 32; no adversity was recorded and no cumulative (day of collection plus three days preceding) precipitation was recorded. The current sanitary survey (completed in 2009) did not indicate any point source problem in the vicinity of the area.

**Table 1, Station WK 55, Seasonality, Rainfall and Adversity vs. Fecal Scores, 2003-2008**

Rain Range	Total Rain	Date	Adv	SAL%	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0.00	4/16/03	-	30				<3								
	0.00	11/18/04	-	30											<3	
	0.00	1/31/05	-	31	<3											
	0.00	8/20/07	M	31								<2				
	0.00	11/24/07	-	32											<2	
	0.00	1/7/08	-	18	4											
	0.00	4/16/08	-	26				<2								
	0.00	10/15/08	-	30										24		
	0.00	12/10/08	W	30												31
	0.00	4/11/07	-	24				<2								
	0.00	12/3/03	-	32												7.3
	0.00	2/9/05	-	30		<3										
	0.00	1/7/04	-	32	<3											
0.001-0.25	0.01	12/7/05	-	30												<3
	0.01	4/12/06	-	30				<3								
	0.01	3/12/08	-	23			<2									
	0.02	2/12/07	-	32		<2										
	0.02	3/26/08	-	30			<2									
	0.04	11/19/03	-	21											<3	
	0.05	8/9/06	-	29								3.9				
	0.05	12/5/06	-	20												4
0.06	6/25/07	-	30						<2							



Rain Range	Total Rain	Date	Adv	SAL%	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	0.10	9/29/04	-	31									3.6			
	0.11	6/16/08	P	29						<2						
	0.17	8/5/08	-	28								<2				
	0.23	3/26/03	T	30			<3									
0.25-0.50	0.26	6/20/06	-	26						7.3						
	0.30	3/12/07	-	4			106									
	0.34	10/13/04	-	32										9.1		
	0.42	4/26/06	-	32				<3								
0.51-0.75	0.51	4/7/04	-	30				<3								
	0.52	11/16/05	P	28											3.6	
	0.69	9/24/03	P	31									43			
0.75-1.00	0.78	12/5/07	W	28												31
	0.89	1/16/07	-	30	4											
1.01-1.50	1.02	10/22/07	M	30										<2		
	1.11	3/15/06	-	32			<3									
	1.26	12/8/04	P	30												240
1.51-2.00	1.57	5/1/07	-	22					2							
	1.57	2/7/06	P	15		3.6										
	1.59	12/19/05	-	18												<3
	1.66	9/20/06	P	30									64			
	1.78	1/17/06	N	30	<3											
2.00-4.00	2.62	4/27/05	P	24				<3								
	2.63	11/15/06	-	10											58	
	3.48	10/29/03	P	30										43		

Table 2. Station WK 56, Seasonality, Rainfall and Adversity vs. Fecal Scores, 2003-2008

Rain Range	Total Rain	Date	Adv	SAL%	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	4/16/03	N	20				<3								
	0	11/18/04	-	30											<3	
	0	1/31/05	-	0	<3											
	0	4/11/07	-	1				2								
	0	8/20/07	-	30								8				
	0	11/24/07	-	31											4	
	0	1/7/08	-	10	<2											
	0	4/16/08	-	28				<2								
	0	10/15/08	-	28										80		
	0	12/10/08	N	20												28
0.001-0.25	0.001	12/3/03	-	20												<3
	0.002	12/13/05	-	32												743
	0.003	1/7/04	-	13	<3											
	0.01	12/7/05	-	31												3.6
	0.01	4/12/06	-	13				<3								
	0.01	3/12/08	-	12			<2									
	0.02	3/26/08	-	24			<2									



Rain Range	Total Rain	Date	Adv	SAL%	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	0.04	11/19/03	-	21											3.6	
	0.05	8/9/06	-	29								43				
	0.05	12/5/06	-	30												4
	0.06	6/25/07	-	26						<2						
	0.1	9/29/04	-	31									3.6			
	0.11	6/16/08	P	24						130						
	0.15	3/27/07	-	26			<2									
	0.17	8/5/08	-	26								5.5				
	0.231	3/26/03	N	30			<3									
0.26-0.50	0.261	6/20/2006	-	7						75						
	0.3	3/12/07	-	0			3.6									
	0.34	10/13/04	-	30										9.1		
	0.42	4/26/06	-	28				23								
0.51-0.75	0.51	4/7/2004	-	8				<3								
	0.52	11/16/05	P	21											9.1	
	0.69	9/24/03	P	30								43				
0.75-1.00	0.78	12/5/07	-	8												7.3
	0.89	1/16/07	-	30	<2											
1.01-1.50	1.02	10/22/07	N	30										<2		
	1.111	3/15/06	-	14			9.1									
	1.261	12/8/04	P	30												3.6
1.51-2.00	1.57	5/1/07	-	20					2							
	1.571	2/7/06	P	9		3.6										
	1.591	12/19/05	-	8												23
	1.66	9/20/06	P	31								86				
	1.781	1/17/06	-	8	<3											
2.00-4.00	2.63	11/15/06	-	2											25	
	3.48	10/29/03	P	2										93		

**Compliance with management plan**

In 2008, the seasonal conditional area closed on May 1 and reopened on December 1. Prior to reopening, the area was visited on November 10, 2008 to confirm there were fewer than 10 boats with heads remaining in the water, and a review of the water quality showed that the area continued to meet approved standards for the open season. The seasonal closure is enforced by the DMR Marine Patrol and the local Shellfish Warden. Cooperation between the involved parties has been excellent.

**Adequacy of reporting and cooperation of involved persons**

An annual data review is required prior to the area’s seasonal reopening on December 1<sup>st</sup>. The area also required site visits prior to the area reopening and closing, to confirm that the number of boats with heads present in the marina is less than 10. In 2008, the marina was inspected for closed period on May 2, and for reopening period on November 10. Upon both inspections, there were less than 10 boats with heads present. In 2009, the closing inspection should be completed prior to May 1<sup>st</sup>.



**Compliance with approved growing area criteria**

The annual review of the water quality for all active stations meets approved standards during the open status time period as displayed in Table 1.

**Table 3. Orrs Cove Conditional Area Geomean and P90-Open Status Dec 1 – Apr 30**

STATION	CLASS	CNT	MFCNT	GM	SDV	MAX	P90	APPD_STD	RESTR_STD
WK055.00	CA	30	11	4.5	0.51	240	20.2	41	240
WK056.00	CA	30	11	4.4	0.53	743	20.9	41	240
WK057.00	P	30	9	3.3	0.33	93	8.7	43	250

**Field inspection of critical pollution sources**

The potential for pollution in Orrs Cove comes from boats with heads that are moored at the Great Island Boatyard. Visual observations are made of Orrs Cove at the end of April and in the middle of November to ensure that there are fewer than 10 boats with heads in the cove.

**Water sampling compliance history**

In 2008, this conditional area was sampled a total of 9 times, with 5 times in the open status. The open season for this area is 5 months in length, and under the requirements of the model ordinance, it is required to be sampled 5 times in the open status.

**Analysis-Recommendations**

Orrs Cove seasonal conditional area continues to meet the approved standard during open status of December 1 through April 30<sup>th</sup>. A recent interview with the operator of the Great Island Boatyard confirmed that the open status for this seasonal area is appropriate for adequate management of Orrs Cove based on marina boat activity.

In 2008, the marina was not inspected for boat activity prior to the area seasonal closing on May 1<sup>st</sup>; instead the marina was inspected on May 2<sup>nd</sup>, reporting that there were fewer than 10 boats with heads present. This violation was noted by DMR and to address this issue and to prevent further management plan violations in the future, the DMR adapted a policy of recording the opening and closing dates of marina seasonal areas on the sample schedule calendars. The calendar currently notes the dates when the areas open and close, as well as giving a one month and a one week reminder prior to such openings or closings.

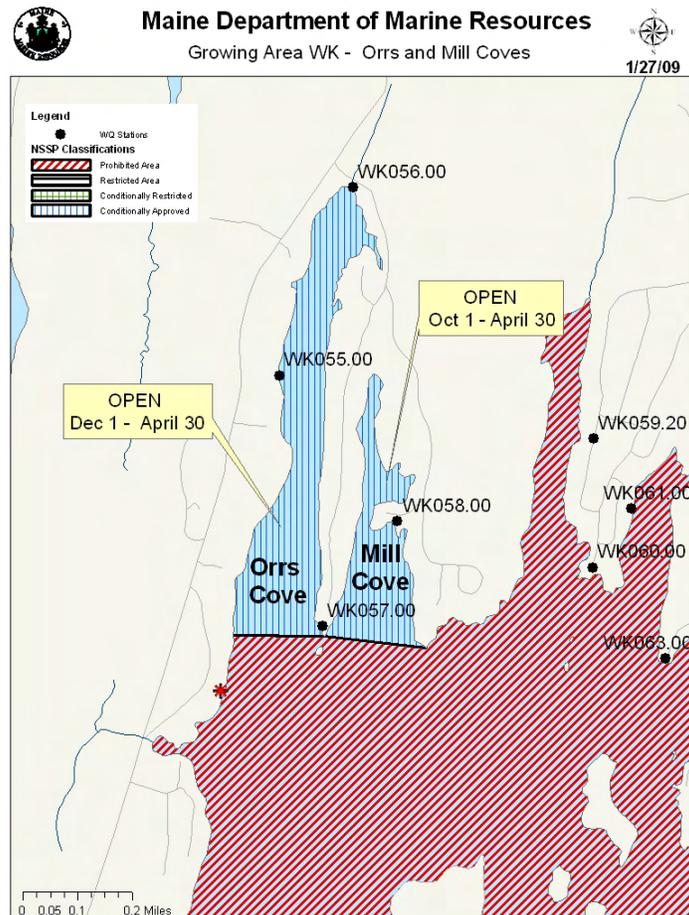


## Appendix C. Annual Review of Management Plan- Mill Cove, Quahog Bay

### Scope

Mill Cove in Quahog Bay is conditionally approved due to seasonal variability of water quality, possibly due to an increase in shore usage. Mill Cove is monitored by station WK 58 and was classified conditionally approved based on seasonal variation in water quality in 1998. DMR evaluated the data in these areas in December 1997, and made the assessment that there is greater variation in water quality during the summer months. The current open status for Mill Cove is October 1<sup>st</sup> through April 30<sup>th</sup>.

Figure 1. Mill Cove, Harpswell, with sampling stations



### Compliance with management plan

In 2008, the seasonal conditional area closed on May 1 and reopened on October 1. The seasonal water quality was reviewed prior to reopening and water quality at Station WK 58



continued to meet approved standards for the open season. The seasonal closures are enforced by the DMR Marine Patrol and the local Shellfish Warden. Cooperation between the involved parties has been excellent.

### **Adequacy of reporting and cooperation of involved persons**

This management plan does not require reporting. An annual data review is required prior to the area's seasonal reopening on October 1<sup>st</sup>.

### **Compliance with approved growing area criteria**

In Mill Cove, conditionally approved station, WK 58, and boundary station WK 57 met approved standards during the open season of October 1 through April 30 (Table 1).

**Table 1. Mill Cove Conditional Area Geomean and P90-Open Status Oct 1 – Apr 30, 2003-2008**

<b>STATION</b>	<b>CLASS</b>	<b>CNT</b>	<b>MFCNT</b>	<b>GM</b>	<b>SDV</b>	<b>MAX</b>	<b>P90</b>	<b>APPD_STD</b>	<b>RESTR_STD</b>
WK058.00	CA	30	14	2.8	0.30	76	6.8	40	226
WK057.00	P	30	14	3.1	0.35	93	8.7	40	226

### **Field inspection of critical pollution sources**

The potential for pollution in growing area WK 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 2008, station WK 58 was collected 6 times when in the open status; station WK 57 was collected 8 times.

### **Analysis-Recommendations**

As of the completion of 2008 sampling season, stations WK 57 and 58 met the approved standard using year round data. The current recommendation for Mill Cove for 2009 review year is to collect extra samples in the closed status, under a variety of meteorological events, to evaluate whether a year round approved classification may be appropriate for this area in the future.



## Appendix D. 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 E. Growing Area WK 2008 Data (SRS and Extra Samples)**

Station	Date	Collect	Tide	Temp	Sal	Strat	ADV	Stat	CL	MFCOL	WIND
WK001.00	02/12/08	GBR	HF	1	30	R	-	C	P	<2.0	CL
	04/15/08	SCF	E	6	30	R	-	C	P	<2.0	CL
	06/16/08	GBR	HF	14	28	R	P	C	P	2	-
	08/04/08	GBR	F	18	28	R	P	C	P	600	CL
	09/23/08	SCF	F	17	31	R	-	C	P	2	-
	11/19/08	SCF	F	6	32	R	-	C	P	<2.0	SW
WK002.00	02/12/08	GBR	HF	0	30	R	-	O	A	<2.0	CL
	04/15/08	SCF	E	7	30	R	-	O	A	<2.0	CL
	06/10/08	SCF	LF	19	28	R	-	O	A	8	NW
	08/04/08	GBR	F	17	29	R	P	O	A	<2.0	CL
	09/23/08	SCF	L	16	30	R	-	O	A	2	CL
	11/19/08	SCF	F	6	32	R	-	O	A	<2.0	SW
WK004.00	01/07/08	GBR	E	1	32	R	-	O	CA	<2.0	-
	02/12/08	GBR	HF	0	30	R	-	O	CA	<2.0	CL
	03/12/08	GBR	F	3	12	R	-	O	CA	<2.0	CL
	04/15/08	SCF	E	8	30	R	-	O	CA	<2.0	W
	06/10/08	SCF	F	15	29	R	-	C	CA	<2.0	NW
	08/04/08	GBR	HF	19	28	R	P	C	CA	11	CL
	09/23/08	SCF	L	16	31	R	-	C	CA	<2.0	NW
	10/15/08	SCF	H	11	30	R	-	O	CA	148	CL
	11/19/08	SCF	F	6	31	R	-	O	CA	<2.0	SW
WK005.00	01/07/08	GBR	E	1	32	R	-	O	CA	<2.0	-
	02/12/08	GBR	HF	-1	28	R	-	O	CA	<2.0	CL
	03/12/08	GBR	F	3	25	R	-	O	CA	<2.0	CL
	04/15/08	SCF	E	8	29	R	-	O	CA	<2.0	W
	06/16/08	GBR	HF	15	29	R	P	C	CA	<2.0	-
	08/04/08	GBR	HF	18	29	R	P	C	CA	24	CL
	10/15/08	SCF	F	10	30	R	-	O	CA	12	NW
	11/19/08	SCF	F	6	30	R	-	O	CA	6	SW
	WK006.10	01/07/08	GBR	E	1	32	R	-	O	CA	2
02/12/08		GBR	HF	0	30	R	-	O	CA	<2.0	CL
03/12/08		GBR	F	2	30	R	-	O	CA	<2.0	CL
04/15/08		SCF	E	7	30	R	-	O	CA	<2.0	W
06/10/08		SCF	F	15	30	R	-	C	CA	8	NW
08/04/08		GBR	HF	19	29	R	P	C	CA	<2.0	CL
09/23/08		SCF	L	16	31	R	-	C	CA	<2.0	NW
10/15/08		SCF	H	11	31	R	-	O	CA	2	CL
11/19/08		SCF	F	6	31	R	-	O	CA	<2.0	SW
WK007.00	02/12/08	GBR	H	1	30	R	-	O	CA	<2.0	CL
	04/15/08	SCF	E	7	30	R	-	O	CA	<2.0	CL
	06/10/08	SCF	F	15	30	R	-	C	CA	8	NW
	08/04/08	GBR	HF	18	30	R	P	C	CA	<2.0	CL



Station	Date	Collect	Tide	Temp	Sal	Strat	ADV	Stat	CL	MFCOL	WIND
	09/23/08	SCF	LF	16	31	R	-	C	CA	<2.0	NW
	11/19/08	SCF	F	6	32	R	-	O	CA	<2.0	SW
	12/10/08	SCF	E	7	32	R	-	O	CA	4	NW
	12/17/08	MLP	E	2	31	R	P	O	CA	<2.0	NW
WK007.10	02/12/08	GBR	H	0	30	R	-	C	P	<2.0	CL
	04/15/08	SCF	E	8	30	R	-	C	P	<2.0	CL
	06/10/08	SCF	F		30	R	-	C	P	18	NW
	08/04/08	GBR	HF	20	28	R	P	C	P	66	CL
	09/23/08	SCF	LF	20	31	R	-	C	P	<2.0	-
	11/19/08	SCF	F	6	32	R	-	C	P	<2.0	SW
WK008.00	02/12/08	GBR	H	0	30	R	-	O	A	<2.0	CL
	04/15/08	SCF	E	6	31	R	-	O	A	<2.0	CL
	06/10/08	SCF	F	23	30	R	-	O	A	<2.0	NW
	08/04/08	GBR	H	20	29	R	P	O	A	<2.0	CL
	09/23/08	SCF	F	19	31	R	-	O	A	<2.0	CL
	11/19/08	SCF	F	6	31	R	-	O	A	<2.0	CL
WK009.00	02/12/08	GBR	H	0	28	R	-	O	A	<2.0	CL
	04/15/08	SCF	E	9	30	R	-	O	A	<2.0	CL
	06/10/08	SCF	F	25	30	R	-	O	A	2	NW
	08/04/08	GBR	H	20	29	R	P	O	A	3.6	CL
	10/15/08	SCF	HF	10	31	R	-	O	A	<2.0	NW
	11/19/08	SCF	F	6	30	R	-	O	A	2	-
WK010.00	02/12/08	GBR	H	0	30	R	-	O	A	<2.0	CL
	04/15/08	SCF	E	10	30	R	-	O	A	<2.0	CL
	06/10/08	SCF	F	15	30	R	-	O	A	4	NW
	08/04/08	GBR	H	20	29	R	P	O	A	2	CL
	09/23/08	SCF	F	19	31	R	-	O	A	<2.0	CL
	11/19/08	SCF	F	6	32	R	-	O	A	<2.0	-
WK011.00	03/03/08	LL	E	-1	30	R	P	O	A	<2.0	CL
	04/15/08	AD	H	6	29	R	-	O	A	<2.0	CL
	06/11/08	AD	H	16	30	R	P	O	A	2	SW
	08/04/08	AD	HF	22	28	R	P	O	A	20	CL
	09/23/08	AB	HE	16	31	R	-	O	A	2	CL
	11/24/08	FP	E	1	31	R	-	O	A	<2.0	SW
WK012.00	03/03/08	LL	E	0	30	R	P	C	P	<2.0	CL
	04/15/08	AD	H	6	29	R	-	C	P	<2.0	CL
	06/11/08	AD	HE	15	31	R	P	C	P	<2.0	CL
	08/04/08	AD	HF	20	28	R	P	C	P	4	CL
	09/23/08	AB	HE	16	31	R	-	C	P	<2.0	CL
	11/24/08	FP	E		31	R	-	C	P	<2.0	CL
WK013.10	03/03/08	LL	E	1	30	R	P	C	P	<2.0	CL
	04/15/08	AD	H	6	30	R	-	C	P	<2.0	CL
	06/11/08	AD	LE	16	31	R	P	C	P	<2.0	SW
	08/04/08	AD	HF	19	29	R	P	C	P	6	SW



Station	Date	Collect	Tide	Temp	Sal	Strat	ADV	Stat	CL	MFCOL	WIND
	09/23/08	AB	HE	17	30	R	-	C	P	10	CL
	11/24/08	FP	E	4	30	R	-	C	P	<2.0	CL
WK013.20	03/03/08	LL	E	1	30	R	P	C	P	<2.0	CL
	04/15/08	AD	H	6	28	R	-	C	P	<2.0	NW
	06/11/08	AD	LE	17	32	R	P	C	P	2	CL
	08/04/08	AD	HF	20	28	R	P	C	P	4	SW
	09/23/08	AB	HE	16	31	R	-	C	P	<2.0	N
	11/24/08	FP	E	4	31	R	-	C	P	<2.0	CL
WK013.30	03/03/08	LL	E	-2	29	R	P	O	A	<2.0	CL
	04/15/08	AD	H	6	28	R	-	O	A	<2.0	CL
	06/11/08	AD	F	27	30	R	P	O	A	<2.0	CL
	08/04/08	AD	HF	21	28	R	P	O	A	11	CL
	09/23/08	AB	HE	16	30	R	-	O	A	<2.0	NW
	11/24/08	FP	E	2	26	R	-	O	A	2	CL
WK014.00	02/25/08	EXT	HE	2	30	R	-	O	A	<2.0	CL
	04/22/08	VLE	H	14	26	R	-	O	A	<2.0	CL
	06/16/08	DD	H	17	30	R	P	O	A	4	W
	08/05/08	DD	H	20	28	R	-	O	A	4	CL
	10/14/08	DD	H	11	30	R	P	O	A	2	SE
	11/17/08	DD	H	6	28	R	P	O	A	4	W
WK014.10	02/25/08	EXT	HE	3	30	R	-	C	P	<2.0	SW
	04/22/08	VLE	H	13	26	R	-	C	P	<2.0	S
	06/16/08	DD	H	15	30	R	P	O	R	9.1	W
	08/05/08	DD	H	22	28	R	-	O	R	<2.0	E
	10/14/08	DD	H	10	30	R	P	O	R	2	SE
	10/28/08	MCMU	HF	8	26	E	P	O	R	11	CL
	11/17/08	DD	H	6	26	R	P	O	R	10	W
	12/08/08	DD	E	-2	29	E	P	O	R	<2.0	CL
WK014.20	02/25/08	EXT	F	2	30	R	-	C	P	<2.0	CL
	04/22/08	VLE	H	14	24	R	-	C	P	<2.0	SE
	06/16/08	DD	E	17	30	R	P	O	R	8	W
	08/05/08	DD	H	19	28	R	-	O	R	<2.0	E
	10/14/08	DD	H	11	32	R	P	O	R	20	SE
	10/28/08	MCMU	H	9.5	28	E	P	O	R	<2.0	CL
	11/17/08	DD	H	6	22	R	P	O	R	16	W
	12/08/08	DD	E	-3	27	E	P	O	R	6	NW
WK014.30	02/25/08	EXT	F	1	32	R	-	C	P	<2.0	CL
	04/22/08	VLE	H	12	26	R	-	C	P	<2.0	SE
	06/16/08	DD	E	16	30	R	P	O	R	<2.0	W
	08/05/08	DD	H	19	30	R	-	O	R	2	E
	10/14/08	DD	H	12	32	R	P	O	R	2	SE
	10/28/08	MCMU	H	9	30	E	P	O	R	<2.0	CL
	11/17/08	DD	H	7	29	R	P	O	R	6	W
	12/08/08	DD	E	-4	27	E	P	O	R	12	NW



Station	Date	Collect	Tide	Temp	Sal	Strat	ADV	Stat	CL	MFCOL	WIND
WK014.40	02/25/08	EXT	F	2	32	R	-	O	A	<2.0	CL
	04/22/08	VLE	H	12	26	R	-	O	A	<2.0	SE
	06/16/08	DD	E	18	30	R	P	O	A	2	W
	08/05/08	DD	H	16	30	R	-	O	A	<2.0	E
	10/14/08	DD	H	10	32	R	P	O	A	<2.0	SE
	11/17/08	DD	H	8	30	R	P	O	A	2	SW
WK015.10	03/03/08	LL	H	-1	30	R	P	O	A	<2.0	CL
	04/15/08	AD	HE	7	28	R	-	O	A	<2.0	NW
	06/11/08	AD	E	17	31	R	P	O	A	<2.0	CL
	08/04/08	AD	F	21	28	R	P	O	A	4	CL
	09/23/08	AB	E	17	31	R	-	O	A	<2.0	CL
	11/24/08	FP	HF	2	31	R	-	O	A	<2.0	CL
WK017.00	03/03/08	LL	H	-3	26	R	P	O	A	<2.0	CL
	04/15/08	AD	HE	7	28	R	-	O	A	<2.0	NW
	06/11/08	AD	HE	18	31	R	P	O	A	<2.0	CL
	08/04/08	AD	F	23	28	R	P	O	A	2	SW
	09/23/08	AB	E	17	31	R	-	O	A	2	CL
	11/24/08	FP	H	-1	30	R	-	O	A	<2.0	CL
WK018.00	02/25/08	EXT	F	1	31	R	-	O	A	<2.0	CL
	04/22/08	VLE	HF	10	28	R	-	O	A	<2.0	S
	06/16/08	DD	E	15	30	R	P	O	A	13	CL
	08/05/08	DD	H	20	30	R	-	O	A	2	SE
	10/14/08	DD	HF	10	31	R	P	O	A	<2.0	S
	11/17/08	DD	H	8	28	R	P	O	A	6	SE
WK018.10	02/25/08	EXT	F	1	32	R	-	O	A	<2.0	CL
	04/22/08	VLE	HF	10	28	R	-	O	A	<2.0	SE
	06/16/08	DD	E	15	31	R	P	O	A	6	CL
	08/05/08	DD	H	18	30	R	-	O	A	2	CL
	10/14/08	DD	HF	11.5	32	R	P	O	A	2	S
	11/17/08	DD	H	8	28	R	P	O	A	<2.0	S
WK019.80	03/03/08	LL	HE	0	31	R	P	O	A	<2.0	CL
	04/15/08	AD	HE	6	28	R	-	O	A	<2.0	CL
	06/11/08	AD	HE	15	31	R	P	O	A	<2.0	SW
	08/04/08	AD	F	21	28	R	P	O	A	<2.0	SW
	09/23/08	AB	E	16	31	R	-	O	A	<2.0	CL
	11/24/08	FP	HE	3	30	R	-	O	A	<2.0	SW
WK020.00	03/03/08	LL	HE	-1	30	R	P	C	P	<2.0	CL
	04/15/08	AD	HE	6	28	R	-	C	P	<2.0	CL
	06/11/08	AD	HE	16	31	R	P	C	P	2	CL
	08/04/08	AD	F	20	28	R	P	C	P	2	SW
	09/23/08	AB	E	16	31	R	-	C	P	<2.0	NW
	11/24/08	FP	HE	2	32	R	-	C	P	<2.0	CL
WK022.00	03/03/08	LL	E	0	30	R	P	O	A	<2.0	SW
	04/15/08	AD	E	7	29	R	-	O	A	<2.0	NW



Station	Date	Collect	Tide	Temp	Sal	Strat	ADV	Stat	CL	MFCOL	WIND
	06/11/08	AD	E	15	30	R	P	O	A	<2.0	CL
	08/04/08	AD	LF	21	27	R	P	O	A	2	CL
	09/23/08	AB	E	16	31	R	-	O	A	2	CL
	11/24/08	FP	E	4	32	R	-	C	P	<2.0	CL
WK023.00	03/03/08	LL	E	-1	30	R	P	C	P	<2.0	SW
	04/01/08	DWI	HE	4	30	E	TP	C	P	2	CL
	04/15/08	AD	E	7	28	R	-	C	P	<2.0	NW
	05/21/08	DWI	E	13	30	E	-	C	P	<2.0	S
	06/11/08	AD	E	17	31	R	P	C	P	6	CL
	06/25/08	DWI	HF	21	26	E	P	C	P	8	NW
	08/04/08	AD	F	20	28	R	P	C	P	40	CL
	08/20/08	DWI	H	18	28	E	P	C	P	6	NW
	09/23/08	AB	E	17	31	R	-	C	P	<2.0	CL
	10/14/08	DWI	H	14	32	E	-	C	P	12	S
	10/28/08	DWI	HF	11	30	E	P	C	P	3.6	-
	11/24/08	FP	HE	4	30	R	-	O	A	<2.0	CL
WK024.00	03/03/08	LL	E	0	30	R	P	C	P	<2.0	SW
	04/15/08	AD	E	7	25	R	-	C	P	<2.0	NW
	06/11/08	AD	E	17	31	R	P	C	P	2	CL
	08/04/08	AD	F	20	22	R	P	C	P	44	CL
	09/23/08	AB	E	15	31	R	-	C	P	6	N
	11/24/08	FP	E	4	30	R	W	C	P	<2.0	CL
WK025.00	03/03/08	LL	E	0	30	R	P	C	P	<2.0	SW
	04/15/08	AD	E	9	28	R	-	C	P	<2.0	CL
	06/11/08	AD	E	16	31	R	P	C	P	<2.0	CL
	08/04/08	AD	F	19	28	R	P	C	P	16	CL
	09/23/08	AB	E	16	30	R	-	C	P	<2.0	NE
	11/24/08	FP	E	6	32	R	-	C	P	<2.0	SW
WK042.00	03/03/08	LL	E	0	30	R	P	C	P	<2.0	SW
	04/15/08	AD	E	7	30	R	-	C	P	<2.0	CL
	06/11/08	AD	E	18	30	R	P	C	P	<2.0	SW
	08/04/08	AD	F	21	27	R	P	C	P	2	CL
	09/23/08	AB	E	17	30	R	-	C	P	<2.0	CL
	11/24/08	FP	E		31	R	-	C	P	<2.0	CL
WK044.00	03/03/08	LL	E	0	30	R	P	O	R	<2.0	SW
	04/15/08	AD	E	7	30	R	-	O	R	<2.0	NW
	06/11/08	AD	E	17	30	R	P	O	R	<2.0	CL
	08/04/08	AD	F	22	27	R	P	O	R	<2.0	CL
	09/23/08	AB	E	16	30	R	-	O	R	<2.0	CL
	11/24/08	FP	HE	4	32	R	-	O	R	6	CL
WK044.50	03/03/08	LL	HE	0	30	R	P	O	R	<2.0	CL
	04/15/08	AD	E	5	30	R	-	O	R	2	NW
	06/11/08	AD	E	17	30	R	P	O	R	<2.0	CL
	08/04/08	AD	F	20	27	R	P	O	R	<2.0	CL



Station	Date	Collect	Tide	Temp	Sal	Strat	ADV	Stat	CL	MFCOL	WIND
	09/23/08	AB	E	16	30	R	-	O	R	<2.0	CL
	11/24/08	FP	HE	3	32	R	-	O	R	6	S
WK045.00	03/03/08	LL	HE	1	31	R	P	C	P	<2.0	CL
	04/15/08	AD	E	6	30	R	-	C	P	<2.0	NW
	06/11/08	AD	E	17	30	R	P	C	P	<2.0	SW
	08/04/08	AD	F	21	28	R	P	C	P	2	SW
	09/23/08	AB	E	16	30	R	-	C	P	<2.0	CL
	11/24/08	FP	HE	3	32	R	-	C	P	16	CL
WK048.00	03/03/08	LL	HE	0	30	R	P	C	P	<2.0	CL
	04/15/08	AD	E	7	30	R	W	C	P	<2.0	NW
	06/11/08	AD	E	16	30	R	P	C	P	<2.0	CL
	08/04/08	AD	F	22	28	R	P	C	P	6	CL
	09/23/08	AB	LE	17	30	R	-	C	P	<2.0	S
	11/24/08	FP	H	3	32	R	-	C	P	<2.0	CL
WK052.00	03/03/08	LL	HE	-1	28	R	P	C	P	<2.0	CL
	04/15/08	AD	E	7	26	R	-	C	P	<2.0	NW
	06/11/08	AD	E	16	29	R	P	C	P	24	CL
	08/04/08	AD	F	20	26	R	P	C	P	46	CL
	09/23/08	AB	E	17	30	R	-	C	P	<2.0	CL
	11/24/08	FP	H	6	32	R	-	C	P	<2.0	CL
WK052.10	03/03/08	LL	HE	0	30	R	P	C	P	<2.0	CL
	04/15/08	AD	E	7	28	R	-	C	P	<2.0	CL
	06/11/08	AD	E	16	31	R	P	C	P	3.6	CL
	08/04/08	AD	F	21	28	R	P	C	P	6	CL
	10/29/08	EXT	E	9	30	R	P	C	P	<2.0	W
	11/24/08	FP	H	5	32	R	-	C	P	10	CL
WK053.00	03/03/08	LL	H	1	31	R	P	C	P	<2.0	CL
	04/15/08	AD	HE	6	29	R	-	C	P	<2.0	NW
	06/11/08	AD	HE	16	31	R	P	C	P	52	CL
	08/04/08	AD	F	20	28	R	P	C	P	6	CL
	09/23/08	AB	E	17	31	R	-	C	P	<2.0	CL
	11/24/08	FP	H	7	32	R	-	C	P	<2.0	CL
WK055.00	01/07/08	GBR	E	-1	18	R	-	O	CA	4	-
	03/12/08	GBR	F	1	23	R	-	O	CA	<2.0	CL
	03/26/08	SCF	F	5	30	R	-	O	CA	<2.0	SE
	04/16/08	GBR	H	7	26	R	-	O	CA	<2.0	CL
	06/16/08	GBR	H	17	29	R	P	C	CA	<2.0	-
	08/05/08	GBR	F	23	28	R	-	C	CA	<2.0	CL
	10/15/08	GBR	F	14	30	R	-	C	CA	24	CL
	11/24/08	GBR	F	5	32	R	-	O	CA	<2.0	CL
	12/10/08	SCF	E	7	30	R	W	O	CA	31	NW
WK056.00	01/07/08	GBR	E	-1	10	R	-	O	CA	<2.0	-
	03/12/08	GBR	F	0	12	R	-	O	CA	<2.0	CL
	03/26/08	SCF	HE	6	24	R	-	O	CA	<2.0	SE



Station	Date	Collect	Tide	Temp	Sal	Strat	ADV	Stat	CL	MFCOL	WIND
	04/16/08	GBR	H	6	28	R	-	O	CA	<2.0	CL
	06/16/08	GBR	H	16	24	R	P	C	CA	130	-
	08/05/08	GBR	F	26	26	R	-	C	CA	5.5	CL
	10/15/08	GBR	HF	13	28	R	-	C	CA	80	CL
	11/24/08	GBR	F	5	31	R	-	O	CA	4	CL
	12/10/08	SCF	E	8	20	R	N	O	CA	28	NW
WK057.00	01/07/08	GBR	E	0	30	R	-	C	P	<2.0	-
	03/12/08	GBR	F	2	29	R	-	C	P	<2.0	CL
	03/26/08	SCF	HE	5	30	R	-	C	P	<2.0	SE
	04/16/08	GBR	H	6	28	R	-	C	P	<2.0	CL
	06/16/08	GBR	H	16	28	R	P	C	P	<2.0	-
	08/05/08	GBR	F	21	28	R	-	C	P	<2.0	CL
	10/15/08	GBR	HF	13	30	R	-	C	P	<2.0	CL
	11/24/08	GBR	F	6	31	R	-	C	P	<2.0	CL
WK058.00	01/07/08	GBR	E	0	32	R	-	O	CA	8	-
	03/12/08	GBR	F	2	28	R	-	O	CA	<2.0	CL
	03/26/08	SCF	F	6	30	R	-	O	CA	<2.0	SE
	04/16/08	GBR	H	7	29	R	-	O	CA	<2.0	CL
	06/16/08	GBR	H	16	28	R	P	C	CA	116	-
	08/05/08	GBR	F	22	28	R	-	C	CA	<2.0	CL
	10/15/08	GBR	HF	14	30	R	-	O	CA	<2.0	CL
	11/24/08	GBR	HF	6	31	R	-	O	CA	2	CL
WK059.20	03/26/08	SCF	F	4	30	R	-	C	P	<2.0	SE
	04/16/08	GBR	HE	6	28	R	-	C	P	<2.0	CL
	06/16/08	GBR	H	17	29	R	P	C	P	2.7	-
	08/05/08	GBR	F	20	29	R	-	C	P	4	CL
	10/15/08	GBR	HF	13	30	R	-	C	P	6	CL
	11/24/08	GBR	HF	5	30	R	-	C	P	6	CL
WK060.00	03/26/08	SCF	F	6	30	R	-	C	P	<2.0	SE
	04/16/08	GBR	HE	10	28	R	-	C	P	<2.0	CL
	06/16/08	GBR	H	16	28	R	P	C	P	<2.0	-
	08/05/08	GBR	F	20	28	R	-	C	P	<2.0	CL
	10/15/08	GBR	HF	15	30	R	-	C	P	<2.0	CL
	11/24/08	GBR	HF	7	31	R	-	C	P	<2.0	CL
WK061.00	03/26/08	SCF	F	5	30	R	-	C	P	<2.0	SE
	04/16/08	GBR	HE	9	28	R	-	C	P	<2.0	CL
	06/16/08	GBR	H	17	29	R	P	C	P	4	-
	08/05/08	GBR	F	23	28	R	-	C	P	16	CL
	10/15/08	GBR	HF	15	30	R	-	C	P	88	CL
	11/24/08	GBR	HF	5	30	R	-	C	P	<2.0	CL
WK063.00	03/26/08	SCF	F	5	28	R	-	C	P	<2.0	SE
	04/16/08	GBR	HE	9	28	R	-	C	P	2	CL
	06/16/08	GBR	H	16	29	R	P	C	P	<2.0	-
	08/05/08	GBR	F	24	28	R	-	C	P	<2.0	CL



Station	Date	Collect	Tide	Temp	Sal	Strat	ADV	Stat	CL	MFCOL	WIND
	10/15/08	GBR	HF	15	33	R	-	C	P	<2.0	CL
	11/24/08	GBR	HF	5	30	R	-	C	P	<2.0	CL
WK064.10	04/16/08	GBR	HE	8	28	R	-	C	P	<2.0	CL
	06/16/08	GBR	HE	15	30	R	P	C	P	<2.0	-
	08/05/08	GBR	F	23	28	R	-	C	P	2	CL
	10/15/08	GBR	H	13	32	R	-	C	P	<2.0	CL
	10/29/08	EXT	E	10	32	R	P	C	P	<2.0	NW
	11/24/08	GBR	HF	7	31	R	-	C	P	<2.0	CL
WK065.00	03/26/08	SCF	F	5	30	R	-	C	P	<2.0	SE
	04/16/08	GBR	E	8	26	R	-	C	P	<2.0	CL
	06/16/08	GBR	HE	15	28	R	P	C	P	35	-
	08/05/08	GBR	F	24	28	R	-	C	P	<2.0	CL
	10/15/08	GBR	H	15	30	R	-	C	P	>1600	CL
	11/24/08	GBR	H	5	28	R	-	C	P	2	CL
WK066.00	03/26/08	SCF	F	5	28	R	-	C	P	<2.0	SE
	04/16/08	GBR	E	10	26	R	-	C	P	<2.0	CL
	06/16/08	GBR	HE	16	28	R	P	C	P	<2.0	-
	08/05/08	GBR	F	23	28	R	-	C	P	2	CL
	10/15/08	GBR	H	15	30	R	-	C	P	46	CL
	11/24/08	GBR	H	5	31	R	-	C	P	<2.0	CL
WK067.00	03/26/08	SCF	F	5	30	R	-	C	P	<2.0	SE
	04/16/08	GBR	E	8	26	R	-	C	P	<2.0	CL
	06/16/08	GBR	HE	15	26	R	P	C	P	13	-
	08/05/08	GBR	F	23	28	R	-	C	P	<2.0	CL
	10/15/08	GBR	H	13	31	R	-	C	P	12	CL
	11/24/08	GBR	H	5	31	R	-	C	P	2	CL
WK068.00	03/26/08	SCF	F	5	29	R	-	C	P	<2.0	SE
	04/16/08	GBR	E	9	26	R	-	C	P	<2.0	CL
	06/16/08	GBR	HE	15	28	R	P	C	P	22	-
	08/05/08	GBR	F	22	28	R	-	C	P	2	CL
	10/15/08	GBR	H	16	30	R	-	C	P	<2.0	CL
	11/24/08	GBR	H	4	31	R	-	C	P	2	CL
WK068.10	03/26/08	SCF	F	5	30	R	-	C	P	<2.0	SE
	04/16/08	GBR	E	8	26	R	-	C	P	<2.0	CL
	06/16/08	GBR	HE	15	27	R	P	C	P	2	-
	08/05/08	GBR	F	20	28	R	-	C	P	<2.0	CL
	10/15/08	GBR	HE	13	30	R	-	C	P	2	CL
	11/24/08	GBR	H	6	31	R	-	C	P	<2.0	CL
WK071.00	03/26/08	SCF	F	5	28	R	-	C	P	<2.0	SE
	04/16/08	GBR	E	12	24	R	-	C	P	<2.0	CL
	06/16/08	GBR	HE	14	26	R	P	C	P	76	-
	08/05/08	GBR	F	18	30	R	-	C	P	<2.0	CL
	10/15/08	GBR	HE	16	30	R	-	C	P	20	CL
	11/24/08	GBR	H	9	31	R	-	C	P	<2.0	CL

