



**GROWING AREA WF
Town of Biddeford**

Triennial Report for 2008-2010

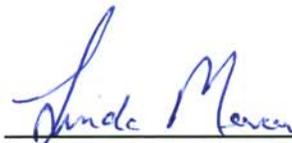
Report Date: August 4, 2011

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APPROVAL

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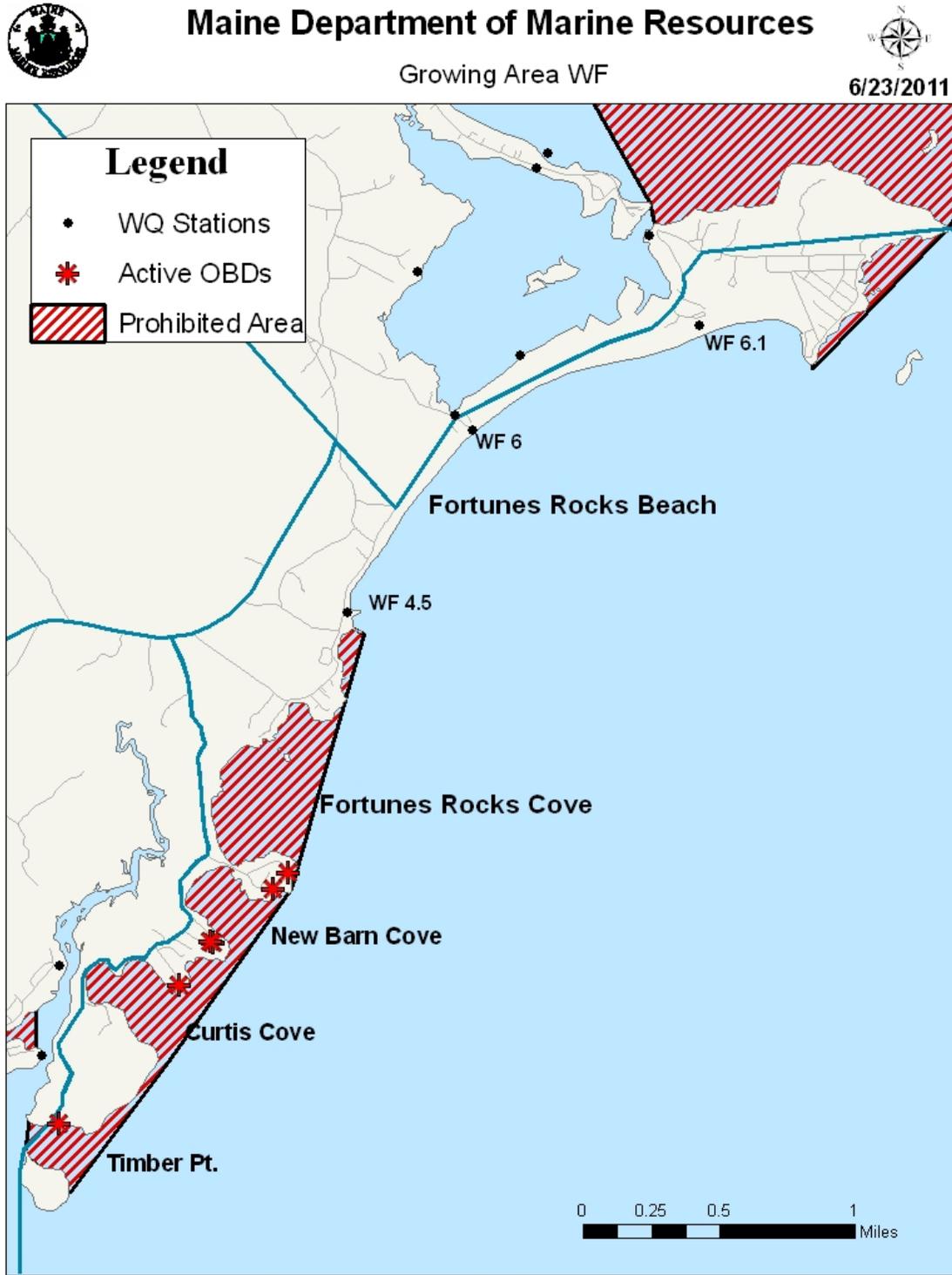
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Figure 1. Growing Area WF, with Active Water Stations





Executive Summary

This is a triennial report for growing area WF written in compliance with the requirements of the 2007 Model Ordinance and the National Shellfish Sanitation Program.

Growing area WF is located in the city of Biddeford and monitors the shores of Fortunes Rocks Beach, Fortunes Rock Cove, New Barn Cove, Curtis Cove, and Timber Point. Over the triennial review period, there has been 1 classification change in area WF; the overboard discharge (OBD) at Timber Point was evaluated and a closure was put around the outfall on May 27, 2009. Four stations were deactivated (WF 1, 2, 3, and 4) due to lack of resource and the presence of OBDs. There were no new actual or potential pollutions sources identified and no licensed overboard discharges were removed during the review period.

On August 4, 2009 the upland boundary between growing areas WE and WF was adjusted so that the eastern boundary line no longer went through the middle of Little River (Kennebunkport, Biddeford). No sample stations or shoreline survey database entries had to be changed as a result of the boundary update.

Annual reports will be written for growing area WF in 2011 and 2012, followed by a sanitary survey report in 2013 and a triennial report in 2016.

Growing Area Description

Growing area WF is located in the city of Biddeford, and includes the area between Timber Island and East Point (Figure 1). The area consists of four coves; New Barn, Curtis, Horseshoe and Fortunes Rocks Coves and two public beaches Fortunes Rocks (0.8 miles) and Middle (1.2 miles) Beaches. A complete boundary description for this area can be found in the DMR central files.

Major sources of pollution in this area include private septic systems and licensed overboard discharges (OBDs); there are no municipal waste water facilities in this area. There is a pond outlet along Fortunes Rocks Beach which spills over through a culvert pipe during wet weather.

Current Classification(s)

At the end of the 2010 review year, shellfish growing area WF had areas classified as:

Approved

- Fortunes Rocks Beach (3 stations, WF 4.5, 6.0 and 6.1)

Prohibited

- Fortunes Rocks Cove
- New Barn Cove
- Curtis Cove
- Timber Point



Please visit the DMR website to view legal notices:

http://www.maine.gov/dmr/rm/public_health/closures/closedarea.htm#

Activity during Review Period (2008-2010)

On August 4, 2009; The upland boundary between growing area WE and WF was adjusted so that the eastern boundary line no longer went through the middle of Little River (Kennebunkport, Biddeford). No sample stations or shoreline survey database entries had to be changed as a result of the update.

July 30, 2009; A drive through survey of area WF was conducted. The survey started at the boundary of WE and WF at Little River (Kennebunkport/Biddeford) and continued to the boundary of WF and WG. There was a new 3 story house going in on Bayberry Road, Biddeford on the west side of the street; Bayberry Road is on the southwestern shore of New Barn Cove. The survey continued down Fortune's Rocks Road, Old King's Highway, Seal Lane, Neptune Lane, Fortunes Rocks Road out to Mile Stretch Road in Biddeford Pool.

On May 27, 2009; Area No. 9, Batson River to Fortunes Rocks (Kennebunkport and Biddeford) was amended to change the title of the rule, and move the Sampson Cove (Kennebunkport) vicinity from Area No. 8 to Area No. 9. The amendment also reclassified Little River and Goosefare Bay from conditionally approved to prohibited due to the lack of a recent shoreline survey and the presence of a licensed overboard discharge at Timber Point (Biddeford). In addition, the amendment reclassified Smith Brook and Batson River from restricted to prohibited also due to the lack of a recent shoreline survey.

January 25, 2010; DMR conducted a telephone interview with the Biddeford Municipal Shellfish Warden regarding shellfish resources and accessibility in Curtis Cove, New Barn Cove, Horseshoe Cove and Fortunes Rocks Cove. The Shellfish Warden reported that there is very little, if any resource in the coves and that there was no public access to the coves

Conditionally Managed Area(s)

There are currently no conditional areas in growing area WF.

Documentation of Pollution Sources

The following sections include information on pollution sources which do or may impact water quality in growing area WF. Pollution sources that are reviewed in this section include domestic waste (both private, in-ground systems and over board discharges), marinas and mooring fields, non-point source pollution (streams and storm-water runoff), agricultural activities, domestic animals, wildlife areas, and recreational areas.



Evaluation of New Pollution Sources

There were no new actual pollution sources documented during the triennial review period.

Re-Evaluation of Existing Pollution Sources

The following sections are a review of existing pollution sources in growing area WF. Pollution problems are associated with domestic waste, including OBDs, which were identified prior to the last sanitary survey in 2002.

Domestic Waste (IG Systems and OBDs)

There were no actual pollution sources associated with private in-ground systems documented during the last sanitary survey in 2002.

There are six active overboard discharges (OBDs) that release their treated effluent into the waters of Fortunes Rock Cove, New Barn Cove, Curtis Cove, and Timber Point (Figure 2). An overboard discharge (OBD) is the discharge of wastewater from residential, commercial, and publicly owned facilities to Maine's streams, rivers, lakes, and the ocean. Commercial and residential discharges of sanitary waste have been regulated since the mid-1970's when most direct discharges of untreated waste were banned. Between 1974 and 1987 most of the "straight pipes" were connected to publicly-owned treatment works or replaced with standard septic systems. Overboard discharge treatment systems were installed for those facilities that were unable to connect to publicly-owned treatment works or unable to install a septic system because of poor soil conditions or small lot sizes.

All overboard discharge systems include a process to clarify the wastewater and disinfect it prior to discharge. There are two general types of treatment systems; mechanical package plants and sand filters. Sand filter systems consist of a septic tank and a sand filter. In such systems, the wastewater is first directed to a holding tank where the wastewater solids are settled out and undergo partial microbial digestion. The partially treated wastewater then flows from the tank into a sand filter, consisting of distribution pipes, layers of stone and filter sand, and collection pipes within a plastic liner. The wastewater is biologically treated as it filters down through the sand, and is then collected and discharged to a disinfection unit. Mechanical package plants consist of a tank, where waste is mechanically broken up, mixed and aerated; mechanical systems require electric power, and must have an operating alarm on a separate electrical circuit that will activate if the treatment unit malfunctions due to a power failure. The aerated treated wastewater is held in a calm condition for a time, allowing for solids to settle and for the waste to be partially digested by naturally occurring bacteria. The clarified water from the tank is then pumped off the top into a disinfection unit. There are two types of disinfection units, UV and chlorinators (most common). In a chlorinator, the treated water contacts chlorine tablets and remains in a tank for at least 20 minutes where bacteria and other pathogens are killed. The treated and disinfected water is discharged from the disinfection unit to below the low water mark of the receiving waterbody (the ocean, a river, or a stream) via an outfall pipe.



OBDs are licensed and inspected by the Maine Department of Environmental Protection. At each inspection, DEP looks for tags on each treatment unit identifying the service contractor and the last date of service. If an OBD is not properly maintained, or if the OBD malfunctions, it has the potential to directly discharge untreated wastewater to the shore; therefore, preventative closures are implemented surrounding every OBD located in growing area WF (Table 1). The size of each closure is determined based on a dilution, using on the permitted flow rate of the OBD (in gallons per day, GPD), and the depth of the receiving water that each OBD discharges to; the fecal concentration used for this dilution calculation is 1.4×10^5 FC /100 ml. All current closures are of adequate size to protect public health.



Figure 2 Growing Area WF OBDs



Maine Department of Marine Resources



Growing Area WF

8/4/2011

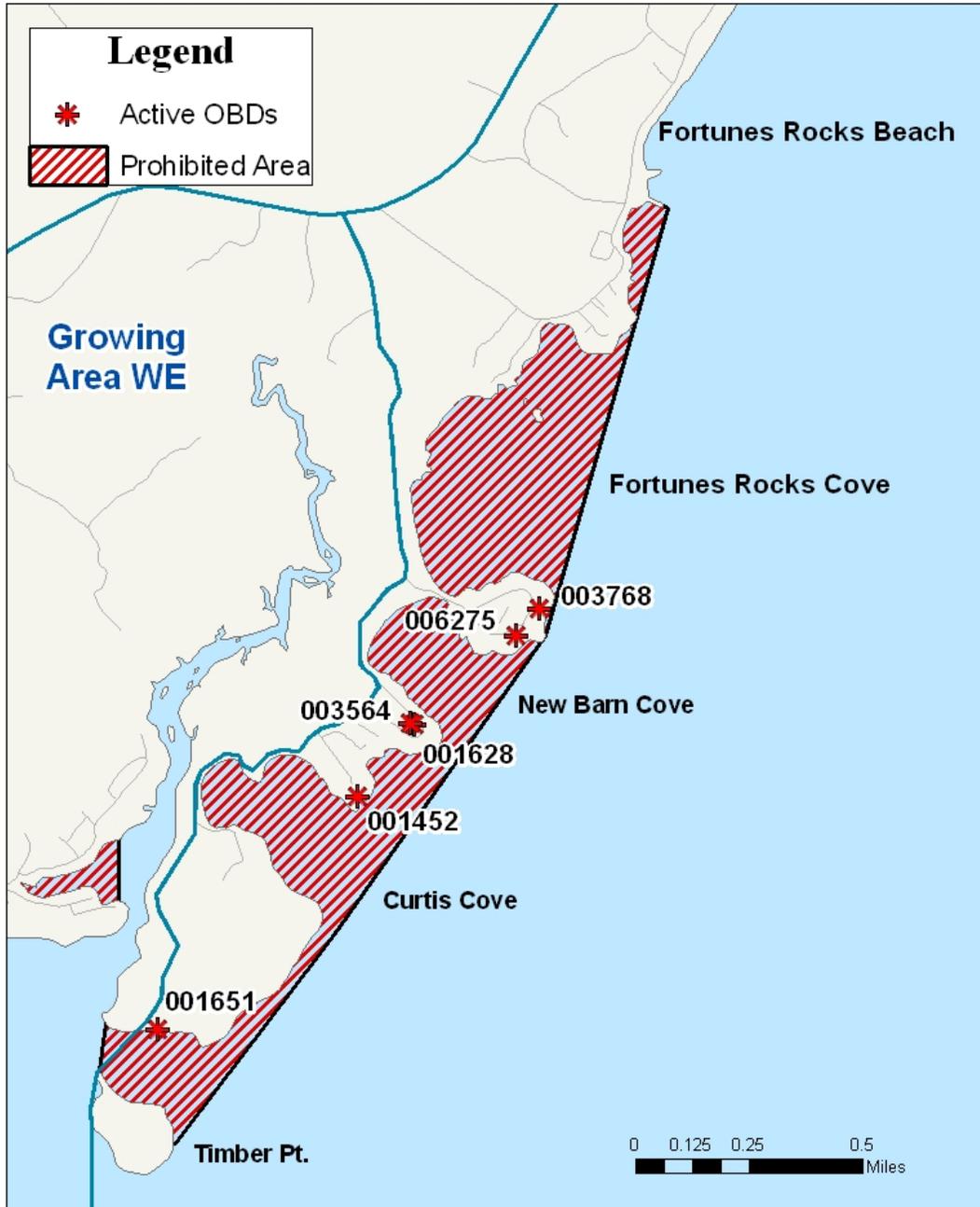




Table 1. Growing Area WF Licensed OBDs

DEP_ID	Town	Receiving Water	Depth Receiving Water	Licensed Flow (GPD)	Type*	Required Closure Acres	Acres Closed
001651	Biddeford	Goosefare Bay	16	680	S	1.304	Entire Shore ≥284 acres
001452	Biddeford	Atlantic Ocean	16	360	M	0.690	
003564	Biddeford	New Barn Cove	16	300	S	0.575	
001628	Biddeford	New Barn Cove	16	300	S	0.575	
006275	Biddeford	Dinahs Cove	16	300	S	0.575	
003768	Biddeford	Atlantic Ocean	16	300	S	0.575	

*S= sand filter; M=mechanical

Municipal WWTP

There are no municipal sewage treatment plants in this growing area.

Industrial Pollution

There are no permitted industrial discharges into growing area WF.

Marinas and Moorings

There are no marinas or concentrations of moorings in this growing area.

Stormwater

Stormwater runoff is generated when precipitation from rain and snowmelt events flows over land or impervious surfaces and does not percolate into the ground. As the runoff flows over the land or impervious surfaces (paved streets, parking lots, and building rooftops), it accumulates debris, chemicals, sediment or other pollutants that could adversely affect water quality if the runoff is discharged untreated (US EPA 2009). Thus, stormwater pollution is caused by the daily activities of people within the watershed. Currently, polluted stormwater is the largest source of water quality problems in the United States.

The primary method to control stormwater discharges is the use of best management practices (BMPs). In addition, most major stormwater discharges are considered point sources and require coverage under an NPDES permit. In 1990, under authority of the Clean Water Act, the U.S. EPA promulgated Phase I of its stormwater management program, requiring permitting through the National Pollution Discharge Elimination System (NPDES). The Phase I program covered three categories of discharges: (1) "medium" and "large" Municipal Separate Storm Sewer Systems (MS4s) generally serving populations over 100,000, (2) construction activity disturbing 5 acres of land or greater, and (3) ten categories of industrial activity. In 1999, US EPA issued Phase II of the stormwater management program, expanding the Phase I program to include all urbanized areas and smaller construction sites.



Although it is a federal program, in the state of Maine, the Phase II Stormwater permit is issued and regulated by the Maine DEP (Chapter 500 and 502). Under the MS4 regulations, each municipality must implement the following six Minimum Control Measures: (1) Public education and outreach, (2) Public participation, (3) Illicit discharge detection and elimination, (4) Construction site storm water runoff control, (5) Post-construction stormwater management, and (6) Pollution prevention/good housekeeping. The permit required each city or town to develop a draft Stormwater Management Plan by September 3, 2003 that will establish measurable goals for each of the Minimum Control Measures. The Town must document the implementation of the Plan, and provide annual reports to the Maine DEP. Currently the discharge of stormwater from 28 Maine municipalities is regulated under the Phase II permit requirements, however, no municipalities located within the boundaries of growing area WF fall under these regulations. Additionally, the Maine Stormwater Management Law provides stormwater standards for projects located in organized areas that include one acre of more of disturbed area (Maine DEP 2009).

Pond runoff from Etherington Pond is a potential pollution source on Fortunes Rocks Beach. During wet weather, the pond overflows through a road culvert onto the beach. Station WF 4.5 is collected in the vicinity of the culvert. During the 2010 review year, station WF 4.5 has shown a significant increase in its geomean from 2008 and 2009 (Figure 3). Additional sampling of the culvert will be done in 2011 to determine the ponds potential impact on water quality.

Non-Point Pollution Sources (streams, etc)

There are no streams in growing area WF that have the potential to impact water quality.

Agricultural Activities, Domestic Animals and Wildlife Activity

There are no farming operations in the vicinity of the shoreline of growing area WF. There are no significant concentrations of animals anywhere in the study area over the past three review years.

Water Quality Review and Discussion

Table 2 lists all active approved stations in Growing Area WF, with their respective Geomean and P90 calculations for 2010. Please refer to Appendix A for a key to interpreting the field names of Table 2. The approved standards for each station are also displayed in Table 2. 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 samples analyzed by MPN verses 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 the DMR central files.

All stations met the approved NSSP classification standard in 2010.



Table 2. Geomean and P90 Scores, Growing Area WF, 2006-2010

Station	Class	Count	MFCCount	GM	SDV	MAX	P90	Appd Std	Restr Std
WF004.50	A	30	27	3.7	0.62	1700	23.5	32	173
WF006.00	A	30	26	2.5	0.28	50	5.8	32	176
WF006.10	A	30	26	2.1	0.1	5.5	2.8	32	176

All approved stations that were active at the beginning of 2010 were sampled 6 times following the systematic random sampling (SRS) schedule (Table 3).

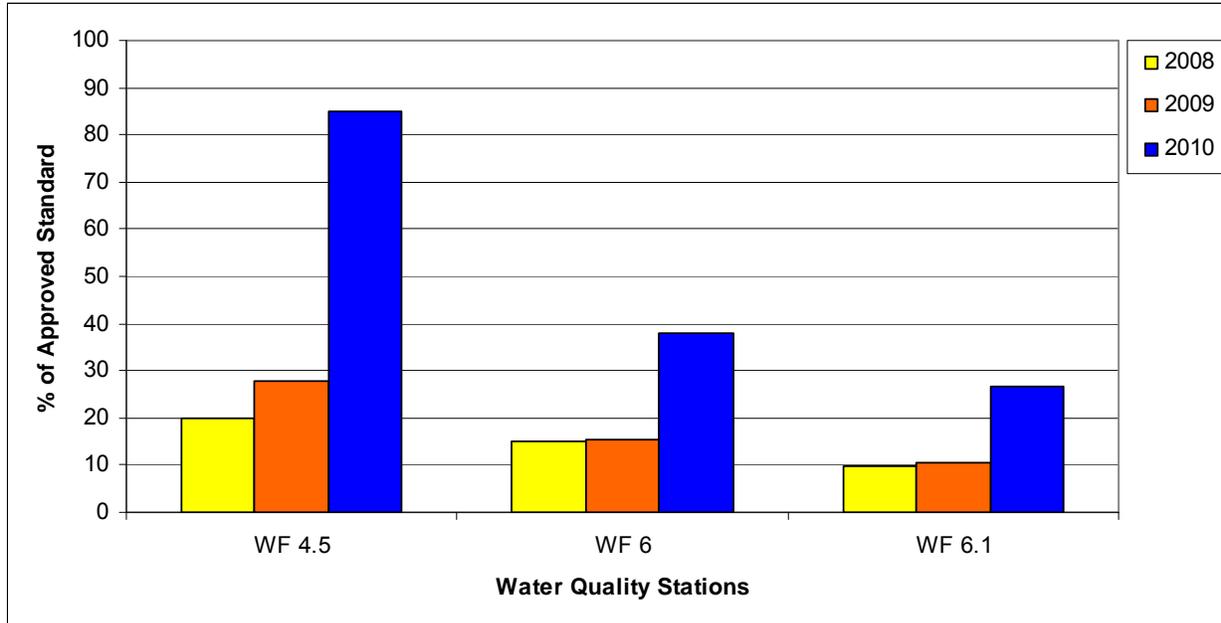
Table 3. WF Samples Collected in 2010

Station	Class	Random	Total	Comments
		Open		
WF004.50	A	6	6	
WF006.00	A	6	6	
WF006.10	A	6	6	

Figure 3 shows the P90 trends over the past three years, for all active stations in growing area WF. 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 2010 column on or above 100 percent does not meet the standard for its classification. Station WF 4.5 still meets the approved NSSP standard; however this station has shown a significant increase in its P90 score in 2010, and is currently within 15 percent of the standard. Stations WF 6 and 6.1 continue to maintain good water quality and currently meet the NSSP approved standard.



Figure 3. Area WF P90 Scores for Active Stations (expressed as the percent of the approved standard), 2008-2010



Recommendations for Upward Classification

No areas are being proposed for an upward classification change.

Shoreline Survey Activity

On January 25, 2010, DMR conducted a telephone interview with the Biddeford Municipal Shellfish Warden (David Morissette) regarding shellfish resources and accessibility in Curtis Cove, New Barn Cove, Horseshoe Cove and Fortunes Rocks Cove. The Shellfish Warden reported that there is very little, if any resource in the coves and that there was no public access to the coves.

Aquaculture/Wet Storage Activity

There is no aquaculture or wet storage activities in growing area WF.

Recommendation for Future Work

The following work is recommended to be completed prior to the next sanitary survey evaluation:

1. Conduct a sanitary shoreline survey of growing area WF in 2012



2. Additional sampling of the culvert outfall that drains Etherington Pond onto Fortunes Rock Beach to determine the ponds impact on water quality and possible impact on station WF 4.5



Appendix A. 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 = 90th percentile

APPD_STD = the 90th 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 90th percentile, at or below which the station would meet restricted criteria.