



**GROWING AREA WD
Towns of Ogunquit, Wells and Kennebunk**

ANNUAL REVIEW for 2006

Final Report Date: 6/23/08

LAURA LIVINGSTON

APPROVAL

Division Director:

_____ Date: _____
Print name signature

DISTRIBUTION:

- () Habitat/Aquaculture Division..... By:_____ Date:_____
- () Bureau of Resource Management Director.....By:_____ Date:_____
- () Office of the Commissioner.....By:_____ Date:_____



DRAFT APPROVAL ROUTING FORM

Date in Process:

Operation Title:

Revision No.:

Originator's Name: Laura Livingston _____
Print name Signature

The attached draft is for your evaluation and comment. Suggested changes should be concise and reasons specific. Return to sender.

PEER reviewer:

Mercuria Cumbo _____ Date: _____
print name signature

Supervisor:

Anna Bourakovsky _____ Date: _____
print name signature

Division Director:

Amy M. Fitzpatrick _____ Date: _____
print name signature



TABLE OF CONTENTS

Executive Summary	5
Boundary Description.....	5
Current Classification(s).....	5
Activity During Review Period	6
Current Management Plan(s).....	8
Current Annual Review of Management Plan	8
Review of Water Quality.....	8
Shoreline Survey Activity	10
Aquaculture/Wet Storage Activity.....	11
Classification Changes Required	11
Discussion & Summary	11
Bibliography	13
Appendix A. Annual Review of Management Plan-Ogunquit River	14
Appendix B. Annual Review of Management Plan-Webhannet River.....	16
Appendix C. Key to water quality table headers.	18
Appendix D. Water quality data for growing area WD, 2006.....	19

LIST OF TABLES

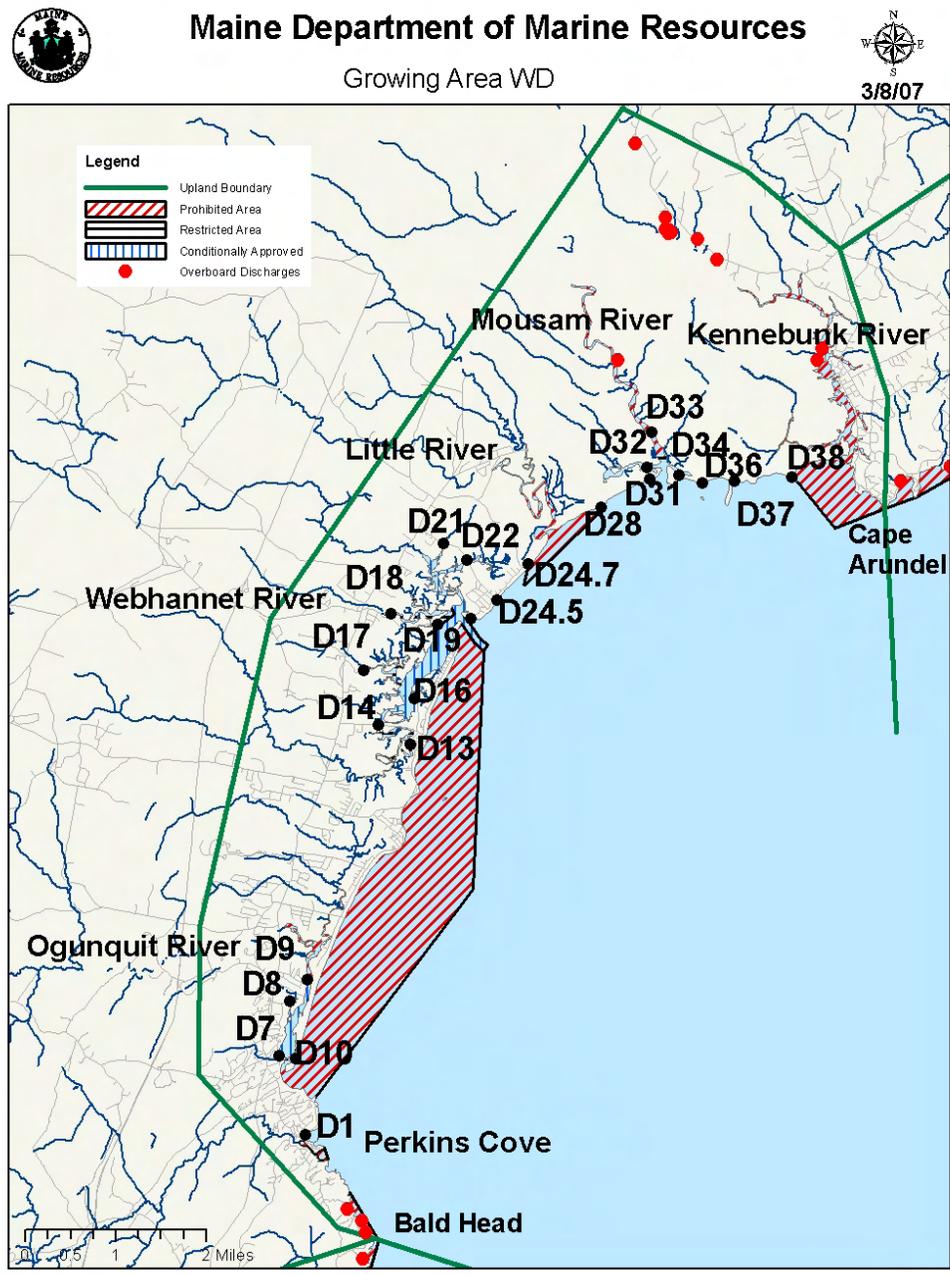
Table 1. Geomean and P90 Scores, Growing Area WD.....	9
Table 2. Ogunquit Conditional Area Geomean and P90 Scores-Open Status	10
Table 3. Wells Conditional Area Geomean and P90 Scores-Open Status	10
Table 4. Fecal coliform scores from stream samples located in growing area WB.....	11
Table 5. P90 score trend in the Ogunquit River	12
Table 6. ANOVA Data Groupings	12

LIST OF FIGURES

Figure 1. Growing Area WD with Sampling Station Locations	4
Figure 2. Ogunquit WWTP Pump Stations and Overflows.....	7



Figure 1. Growing Area WD with Sampling Station Locations





Executive Summary

Growing Area WD is the area between Bald Head, Ogunquit and Cape Arundel, Kennebunkport. Major pollution sources in area WD include three waste water treatment plants, multiple over board discharges (OBDs) and a marina. No overboard discharges were removed in 2006. No sampling stations were created or deactivated new stations were created. Based on the current year water quality review, two reclassification changes are recommended.

Boundary Description

Growing Area WD lies inside a line from Bald Head, Ogunquit, extending due east offshore, and also, extending west to the intersection of Shore Road and Pebble Cove Road, then north to the intersection of Berwick Road and Meadow Lane, then north to the intersection of Tatnic Road and Emerson Drive, then north to the intersection of Sanford Road and Chapel Road, then north to the intersection of Walker's Lane and Portland Road, then east to the intersection of Macchipkay Road and Sinnott Road, then southeast to the intersection of Barter Lane and North Street, then south to the intersection of Wildes District Road and Cornbrook Lane, then south to Cape Arundel, Kennebunkport, and then due south offshore.

Current Classification(s)

Shellfish growing area WD currently has areas classified as:

Approved

- Oarweed Cove (1 Station)
- Drakes Island Beach (2 Stations)
- Kennebunk Beaches and Mousam River (6 Stations)

Conditionally Approved

- Ogunquit River (2 Stations)
- Webhannet River (5 Stations)

Restricted

- Webhannet River (4 Stations)

Prohibited

- Perkins Cove
- Ogunquit River, Ogunquit Beach and Wells Beach (2 Stations)
- Little River and Mousam River
- Kennebunk River

For area WE legal notices, please Visit the DMR website:

MDMR Regulation 95.10 D, Area No. 4-A, Perkins Cove, Ogunquit,
MDMR Regulation 95.10 W, Area No. 6, Ogunquit River to Webhannet River (Ogunquit and Wells)



MDMR Regulation 95.10 X, Area No. 7, Little River and Mousam River (Wells and Kennebunk)
MDMR Regulation 95.10 Y, Area No. 8, Kennebunk River to Cape Porpoise (Kennebunk and Kennebunkport)

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

Activity During Review Period

The samples collected in December 2006, at stations WD 17, Pope Creek, and WD 18, Depot Brook, for the reopening the Webhannet River conditional season, did not meet approved standards. These areas were reclassified as restricted at the end of December.

The following report was submitted by A. Fitzpatrick, MDMR, Director of Public Health (please refer to Figure 2 for pump station locations):

The DMR met with the Ogunquit Sewer District (OSD) and other town officials on November 27, 2006 to discuss the pump stations on the Ogunquit River. It was related by the OSD Superintendent that pump stations #1 and #6 can be capped with confidence. Pump station #2 had a recent upgrade to double the capacity, had upgraded the float switches and all of the flow is now going to directly to the plant and not to pump station #1. All of the force mains have been upgraded or replaced.¹

In the fall and winter of 2006, the forced main pipe from the Shore Road pumping station #2 to the treatment plant near Footbridge Beach, a distance of approximately 6,000 feet will be replaced. The line from pump station #2 conveys about 80 percent of the wastewater generated in Ogunquit. Essentially, the district will create the new line that will cross the Ogunquit River and go to the treatment plant and also increase the size of the existing line that runs from River Road to the intersection with Hoyts Lane. In each case, a ten-inch main made of high density polyethylene will be installed.²

All pump stations are monitored by a computer for 16 conditions. There is telemetry at all pump stations with direct access to on-call staff. There are duplicate systems at each pump station and teledialer systems to page all on-call staff. The OSD has 4 staff to cycle through being on-call 24 hours a day each for one week a month. All staff carries 2 way radios and beepers.³

The following activity was reported by the OSD Superintendent on November 22, 2006:

2002: The district did have one overflow from pumping station #6 (Norsemen Hotel) on September 29, 2002 due to power outage and no alarm notification. This pump station has since been completely replaced with an upgraded radio alarm and increased capacity and a larger volume wet well.

2003: No activity

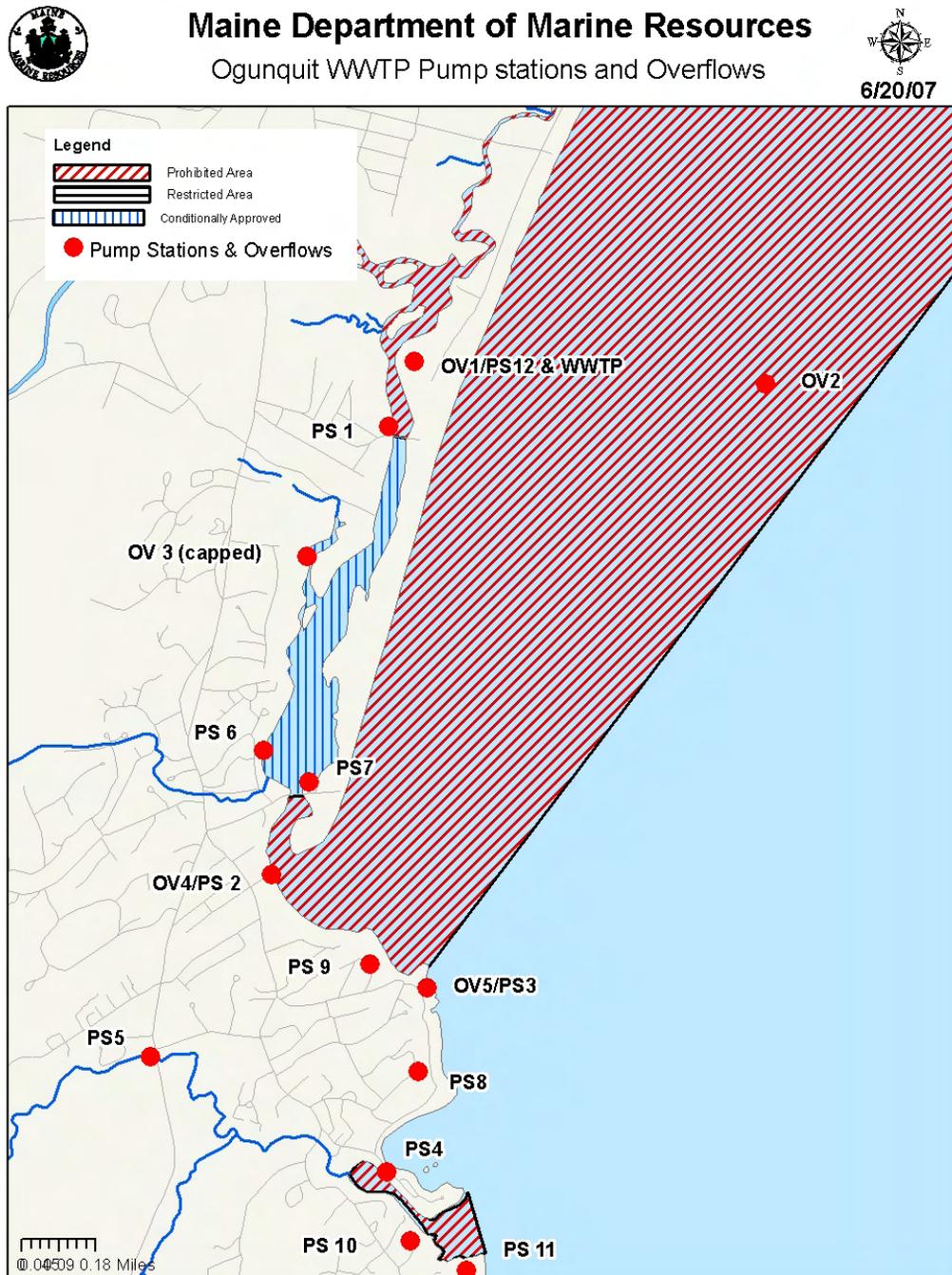
2004: The district did have two events reported. An electrical malfunction at pumping station #2 on May 3, 2004. This has since undergone a complete new electrical control system in 2005. Pumping station #1 had a power outage on July 24, 2004. This was a very small overflow of 50



to 200 gallons and has been corrected by installing an automatic transfer switch which will provide back-up power within 1 minute of a power outage.⁴

Note: The forced main from Shore Road to the treatment plant had not been replaced per conservation with Phil Pickering on 6/21/07.

Figure 2. Ogunquit WWTP Pump Stations and Overflows





Current Management Plan(s)

There are management plans for two conditional areas in growing area WD, the Ogunquit River Seasonal Conditional Area and the Webhannet River Seasonal Conditional Area. The Ogunquit River seasonal conditionally approved area closes to shellfish harvesting on June 1 and reopens on November 1, following satisfactory water quality sample results. The Webhannet River seasonal conditionally approved area closes to harvesting on May 1 and reopens on January 1 following satisfactory water quality sample results. Copies of the management plans for each area can be found in the DMR central files. The requirement of meeting reopening criteria before opening a seasonal conditional area is a new policy that was instituted in October 2006 in order to keep Maine in compliance with the NSSP.

Current Annual Review of Management Plan

Per management plan, the Ogunquit River seasonal conditional area closed on June 1st and reopened on November 1st. The Webhannet River seasonal conditional area opened on January 1st, 2006 and closed on May 1st. As of October 24, 2006, before a seasonal area can reopen, water samples must be collected and the samples must meet Conditional Area Re-opening Criteria as defined in the Maine DMR Shellfish Growing Area Classification Standard Operating Procedures (SOP), Fecal Coliform Levels for Re-opening. The complete annual reviews can be found in appendices A and B.

Review of Water Quality

Transitioning to Membrane Filtration for Seawater and Pollution Source Samples

The Maine Department of Marine Resources has chosen to switch to a fecal coliform method that was approved for use in the National Shellfish Sanitation Program (NSSP) at the Interstate Shellfish Sanitation Conference in 2003. This method is the Membrane Filtration (MF) for Fecal Coliforms using mTEC agar with a two hour resuscitation step. The geometric mean and the 90th percentile are calculated on 30 data points extending over a five year period.

During the transition from MPN to MF, we will be accumulating MF data points. The statistical calculations will be a combination of MPN and MF data points. The FDA has determined that the best way to handle the data is to perform the calculations as always for the data set, but to compare the data set to a hybrid weighted 90th percentile. This hybrid standard is calculated by weighting the relative contributions of each method to the database. This will mean that as the number of MPN data points reduce and the number of MF data points increase the 90th percentile standard that the sample site is compared to will change over time.

Once all 30 data points are analyzed using MF, the 90th percentile for approved classification will be 31 and for restricted (for depuration) will be 163. The geomean approved standard of 14 fecal coliforms per 100 ml and geomean restricted standard of 88 fecal coliforms per 100 ml will remain the same for both methods.



Reports that display 90th percentiles will show the number of data points derived from MF analysis and will show the appropriate 90th percentile standard for that MPN/MF combination for approved and restricted classifications. It must be remembered that this weighted standard is only used for data sets encompassing data from the two different test methods, MF and MPN (3 tube/3 dilution). If decisions are to be made on a single test result analyzed by the MF method or a multiple number of test results all exclusively analyzed by the MF method, the 90th percentile standard is 31 fecal coliforms per 100 ml.

This was the first year the water quality program documented in the database the inability to collect a sample based on the following parameters: if the tide stage was too low to collect the sample, there was a safety issue with collecting the sample, the location was inaccessible and “other” which usually was accompanied by a comment on the data sheet. Stations that were unable to be sampled due to any of these parameters show 999 in the salinity column and have no data recorded in any of the columns but the time is recorded so the actual tide stage can be computed. Stations that were missed due to the above parameters were required to be made up to assure that each station would receive the required six samples during the sampling season.

Review of Water Quality Data

Table 1 displays the geomean and P90 scores for all the active stations in growing area WD. The data represents the evaluation of the 30 most recent data points collected between 2001 and 2006 throughout the year. A key to the water quality table headers can be found in appendix C. Approved stations, WD 1, 24.5, 24.7, 31, 32, 34, 36, 37 and 38, met approved standards. Restricted stations, WD 13 and 14 met restricted standards.

Table 1. Geomean and P90 Scores, Growing Area WD

Station	Class	CNT	MFCNT	GM	SDV	MAX	P90	APPD_STD	RESTR_STD
WD001.00	A	30	2	3.3	0.14	9.1	4.9	48	288
WD009.00	P	30	3	10.0	0.55	149	50.7	47	282
WD010.00	P	30	2	4.0	0.36	93	11.7	48	288
WD013.00	R	30	2	13.3	0.57	460	70.5	48	288
WD014.00	R	30	2	10.3	0.61	240	62.6	48	288
WD024.50	A	30	2	5.3	0.53	460	25.0	48	288
WD024.70	New	6	2	2.5	0.10	3	3.4	42	245
WD028.00	P	30	3	3.2	0.17	9.1	5.2	47	282
WD031.00	A	30	3	4.5	0.50	1100	19.3	47	282
WD032.00	A	30	3	4.9	0.32	43	12.6	47	282
WD033.00	P	30	3	4.6	0.39	240	14.7	47	282
WD034.00	A	30	3	4.0	0.25	20	8.4	47	282
WD036.00	A	30	3	4.3	0.28	23	9.8	47	282
WD037.00	A	30	3	6.6	0.52	93	30.5	47	282
WD038.00	A	30	3	3.0	0.12	9.1	4.2	47	282

Ogunquit conditional stations met approved standards during the open season (Table 2). Station WD 9.0 is a boundary station for this conditionally approved area; it is classified as prohibited, but meets the approved standard during the Ogunquit conditional area open season.



It is recommended that station WD 9.0 be reclassified from prohibited to restricted, as the station meets restricted standards and has no known points of pollution.

Table 2. Ogunquit Conditional Area Geomean and P90 Scores-Open Status

STATION	CLASS	CNT	MFCNT	GM	SDV	MAX	P90	APPD_STD	RESTR_STD
WD007.00	CA	30	3	6.9	0.55	150	35.0	47	282
WD008.00	CA	30	2	7.1	0.42	90	24.3	48	288
WD009.00	P	30	1	7.2	0.46	93	28.2	48	294

Wells conditional stations met approved standards during the open season, except in Depot Brook at Station WD 18 (highlighted in yellow). This station has repeatedly failed to meet approved standards and should be reclassified from conditionally approved to restricted.

Table 3. Wells Conditional Area Geomean and P90 Scores-Open Status

STATION	CLASS	CNT	MFCNT	GM	SDV	MAX	P90	APPD_STD	RESTR_STD
WD016.00	CA	23	0	6.4	0.43	43	22.6	49	300
WD017.00	CA	23	0	7.5	0.41	93	25.4	49	300
WD018.00	CA	23	0	12.0	0.68	460	89.4	49	300
WD019.00	CA	28	0	4.7	0.38	43	14.5	49	300
WD021.00	CA	25	0	6.2	0.55	240	32.0	49	300
WD022.00	CA	27	0	5.2	0.38	43	15.9	49	300
WD024.00	CA	27	0	5.6	0.54	460	27.3	49	300

All approved, restricted and prohibited stations that were active at the beginning of the year were sampled six times in 2006 (Table 4). The Ogunquit River seasonal conditional area was sampled 5 times (WD 8) and 6 times (WD 7) during the 7 month open season. Station WD 8 was only sampled 5 times, because on three occasions the tide was too low to collect a sample. The Webhannet River seasonal conditional area was sampled 4 times during the 4 month open season.

Shoreline Survey Activity

The Ogunquit River was surveyed in 1996, Perkins Cove was surveyed in 2001, and all of the Ogunquit sewer connections were documented in 2002. A drive through survey of Ogunquit, was done on 10/30/06 during a random sampling run. No septic changes, new housing developments or drainage alterations were observed.

The Wells sewer connections were documented in 1995 and reconfirmed in 2004. The few properties not connected to the sewage collection system were revisited in 2004. A drive through survey of Wells was done on 12/12/06 during a random sampling. No changes in the shoreline were identified, except that the property located at Station WD 17. This station is located on land that is owned by an excavator and has frequently had piles of soil, gravel and metal scraps present on the premises. There is a small manmade pond in the middle of the lot, which drains to the shore. The area around the pond is currently being cleared and the piles of building materials are being moved to other locations on the property. The owner of the lot has approval from the Maine DEP to prepare the pond area for construction of new homes.



Stream samples were collected in the town of Wells on April 4th, 2006, following 1.5 inches of rain within 24 hours of collection. The second stream sample, below, was collected at the pond drainage. One station, WD 22, yielded high fecal coliform scores and should be investigated further.

Table 4. Fecal coliform scores from stream samples located in growing area WB

Stream Name and Location	A1 fecal coliform score	Salinity
Depot Brook, above falls, upstream of station WD 18, by campground entrance	15	0
Pope Creek, upstream of station WD 17, at convergence of Route 1 stream and small pond drainage	23	0
Drakes Island Road, marsh runoff at low tide, at station WD 21	9.1	0
Drakes Island Road, marsh pond, above tide gate at station WD 22	150	2

Kennebunk was surveyed in 2000 and the sewer connections were confirmed in 2004. A drive through survey was done on 10/3/06 during a random sampling. No septic changes in the shoreline were observed, no new housing developments or drainage alterations.

Aquaculture/Wet Storage Activity

There currently are no active aquaculture lease sites or wet storage activity in shellfish growing area WD.

Classification Changes Required

The prohibited area at the head of the Ogunquit River, station WD 9, has no known point sources of pollution and can be reclassified as restricted; water quality meets restricted standards. The reopening samples collected in December from station WD 17 and 18 did not meet approved standards and should be reclassified as restricted

Discussion & Summary

Growing Area WD has had no observed changes in pollution sources during the review period. Stations WD 17 and WD 18 were reclassified as restricted at the end of December 2006, when the reopening samples repeatedly did not meet approved standards.

The head of the Ogunquit River, monitored by station WD 9, meets restricted standards year round and there are no known point sources of pollution. This area should be reclassified from prohibited to restricted. An old station, WD 9.1, located at the base of the falls behind the Plantation Motel, should be reactivated to better monitor water quality at the head of the river.



Based on the review of water quality data for the Ogunquit river, it was determined that there are not enough water quality data points collected during the summer months to justify a year round approved classification. A data query using all data points from 1991 to 2006 observed that during the May thru October period, the river had poor water quality. Therefore, it is a recommendation of this report, that for the triennial review year of 2007, additional samples should be collected during the present closed period to determine if water quality during the summer months has improved in recent years.

The trend in P90 scores over the past three years indicates a rising P90 score for station WD7 and 8 (Table 5). Analysis of variance was done on a query of data from 1991 to 2006. Statistically similar months are grouped as noted in Table 7. For WD 7 the statistically similar months and months with better water quality are January through May and December. For WD 8, the water quality in May is more similar to the months with poorer water quality.

Table 5. P90 score trend in the Ogunquit River

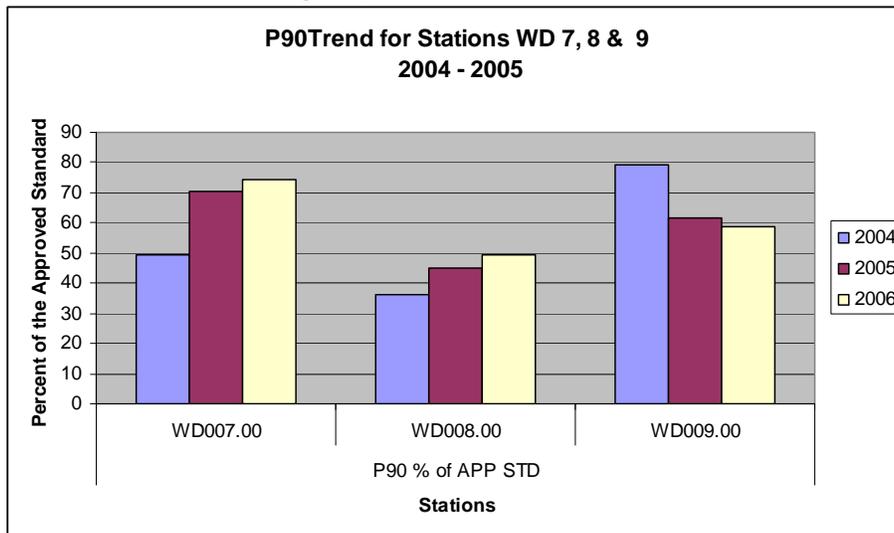


Table 6. ANOVA Data Groupings

Optimum Grouping Months												
WD 7	January	February	March	April	May	June	July	August	September	October	November	December
WD 8	January	February	March	April	May	June	July	August	September	October	November	December
WD 9	January	February	March	April	May	June	July	August	September	October	November	December

The following recommendations are made for Growing Area WD:

- Since the geomean and P90 scores are within the NSSP classification criteria, it is recommended that for this year the Ogunquit River seasonal conditional area remain conditionally approved from November 1 to May 31. For 2007, the conditional area is scheduled for sampling to reopen October 23. It will not re-open until all three stations, WG 7, 8 and 9 are sampled within two weeks of re-opening and meet DMR re-opening criteria.
- Sample should be collected in the Ogunquit River from June through October so a determination of water quality and classification potential can be made for this time period.



- The Ogunquit Emergency Response Plan from 2002 needs to be updated and signed to deal with potential pump station problems.

The OSD Superintendent related that the area is monitored under the Maine Healthy Beaches program during the summer season for enterococcus. The superintendent has noticed a rainfall impact at 1" or greater if samples are collected in the initial slug. If samples are collected the day after, the samples do not indicate a problem. The superintendent also related that the worst case sampling is at 'dead low tide'.⁵ His report agrees with the 2000 FDA Review of the Ogunquit River which noted that since the Ogunquit River has a relatively small watershed the effects of runoff from rainfall would be expected to be rapid. The FDA report recommends special emphasis should be given to monitoring water quality following rainfall events of 0.5 inches or greater and at low or near low tides. The area is presently open to harvest from November 1 to May 31. Presently there are minimal data points collected within 24 hours of rainfall for this timeframe at DMR sample collection stations.

(Note: Stations WD 7 and WD 9 can be collected at all tides; Station WD 8 can only be collected at higher tides, because the river channel veers more than 300 feet way from the sampling station.)

Bibliography

¹Pickering, P. 27 November 2006 [personal interview] cited 5 June 2007.

²Seacoast Online.com [Internet]. [place unknown]; Seacoast Media Group., c.2006. [cited 5 June 2007]: <http://archive.seacoastonline.com/news/yorkstar/10122006/mainenews-a-sewer1012.html>

³ Pickering, P. 27 November 2006 [personal interview] cited 5 June 2007.

⁴Pickering, P. 22 November 2006. Follow up information [personal email]. Accessed 5 June 2007.

⁵ Pickering, P. 27 November 2006 [personal interview] cited 5 June 2007.



Appendix A. Annual Review of Management Plan-Ogunquit River

2006 Annual Review Ogunquit River Conditional Area C6 Growing Area WD

Scope

The Ogunquit River is a conditionally approved area due to seasonal variation in water quality, possibly due to an increase in shore usage. The Ogunquit River, monitored by stations WD 7.0, 8.0 and 9.0, was classified conditionally approved based on seasonal variation in water quality in 2001. DMR evaluated the Ogunquit River data in December 2001, 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, but many others nearby are seasonal cottages. There are designated parking areas for summer residents, and there is an increase in shore usage during June, July, August and September. The area met approved standards from November through May.

Compliance with management plan

In 2006, the conditional area closed on June 1 and reopened on November 1.

Adequacy of reporting and cooperation of involved persons

This management plan does not require reporting.

Compliance with approved growing area criteria

The annual review of seasonal data shows that the conditionally approved stations in the Ogunquit River met approved standards during the open season.

Table 1. Geomean and P90 Score for Ogunquit River Conditional Area, Open Status

STATION	CLASS	CNT	MFCNT	GM	SDV	MAX	P90	APPD_STD	RESTR_STD
WD007.00	CA	30	3	6.9	0.55	150	35.0	47	282
WD008.00	CA	30	2	7.1	0.42	90	24.3	48	288
WD009.00	P	30	1	7.2	0.46	93	28.2	48	294

Field inspection of critical pollution sources

The potential for pollution, in the Ogunquit River, 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

All stations were collected 6 times when in the open status.

Analysis-Recommendations

A new policy was established at the end of October 2006 and will be put into effect for the reopening of the Ogunquit River in 2007. The policy will be to sample conditional area stations two weeks before opening a seasonal area to ensure compliance with approved standards.



Appendix B. Annual Review of Management Plan-Webhannet River

2006 Annual Review Webhannet River Conditional Area C6 Area WD

Scope

The Webhannet River is a conditionally approved area based on the presence or absence of 10 or more boats with heads, which may discharge into the Webhannet River, and seasonal non-point pollution, possibly due to an increase in shore usage. The Webhannet River, monitored by stations WD 16.0 through 24.0, was classified conditionally approved based on seasonal variation in water quality in 2000. Maine DMR evaluated the Webhannet River data in December 2000, and made the assessment that there is greater variation in water quality during the summer and fall months.

While many of the homes along this shore are occupied year round, there is also a significant presence of seasonal cottages. There is an increase in shore usage from June through November due to seasonal population increase. From past observations and interviews with the harbormaster, it was determined that there were fewer than 10 boats with heads being used in the conditional area from November 15 through May 15. In 2006, the area was visited on April 19, and there were fewer than 10 boats with heads in the area. It was also visited on December 12, and there were fewer than 10 boats with heads in the area. The area met approved standards during the open status, from January through April.

Compliance with management plan

In 2006, the conditional area opened on January 1st and closed on May 1. A new management policy introduced in October 2006, established that this area must be sampled prior to reopening each year. The conditional stations were sampled on 12/12/06 and 12/18/06 and failed to meet approved standards. The conditional area did not reopen on January 1st, 2007.

Adequacy of reporting and cooperation of involved persons

This management plan does not require reporting.

Compliance with approved growing area criteria

The annual review seasonal data analysis, as seen in Table 1 below, shows that the conditionally approved stations in the Webhannett River met approved standards during the open season, except in Depot Brook at Station WD 18, which was reclassified as restricted.

Table 1 Geomean and P90 Scores for Webhannett River Conditional Area, Open Status

STATION	CLASS	CNT	MFCNT	GM	SDV	MAX	P90	APPD_STD	RESTR_STD
WD016.00	CA	23	0	6.4	0.43	43	22.6	49	300
WD017.00	CA	23	0	7.5	0.41	93	25.4	49	300
WD018.00	CA	23	0	12.0	0.68	460	89.4	49	300
WD019.00	CA	28	0	4.7	0.38	43	14.5	49	300



WD021.00	CA	25	0	6.2	0.55	240	32.0	49	300
WD022.00	CA	27	0	5.2	0.38	43	15.9	49	300
WD024.00	CA	27	0	5.6	0.54	460	27.3	49	300

Field inspection of critical pollution sources

The potential for pollution, in the Webhannet River, 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

Not all stations were collected 6 times in the open status, due to human error in the new random sampling schedule. The area was only open for 4 months and only sampled monthly, leading to four sampled collected during the open status. This issue has been noted and the area will be scheduled to be sampled 6 times during the open status in 2007.

Analysis-Recommendations

A new policy was established at the end of October 2006 and will be put into effect on January 1st, 2007, for the reopening of the Webhannet River. The policy will be to sample conditional area stations two weeks before opening a seasonal area to ensure compliance with approved standards.



Appendix C. 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.



Appendix D. Water quality data for growing area WD, 2006

Station	Date	Collect	Tide	Temp	Sal	Strat	Adv	Stat	CL	A1COL	MFCOL
1.00	01/10/06	JB	E	-1	30	R	-	O	A	<3.0	-
	02/13/06	FP	HE	5	30	R	-	O	A	<3.0	-
	04/19/06	FP	F	10	31	R	-	O	A	<3.0	-
	07/05/06	SXR	LF	13	32	R	-	O	A	<3.0	-
	09/19/06	JXK	E	17	31	R	-	O	A	-	6
	12/12/06	JB	F	5	31	R	-	O	A	-	<2.0
	7.00	01/10/06	JB	E	0	22	R	N	O	CA	<3.0
02/13/06		FP	E	5	26	R	W	O	CA	3.6	-
04/19/06		FP	F	12	16	R	NW	O	CA	3.6	-
07/05/06		SXR	LF	20	23	R	-	C	CA	23	-
09/19/06		JXK	E	19	30	R	-	C	CA	-	18
10/30/06		LL	F	9	0	R	P	C	CA	-	124
11/07/06		LL	HE	9	26	R	-	O	CA	-	11
11/29/06		LL	F	7	10	R	-	O	CA	-	8
12/12/06	JB	F	4	20	R	W	O	CA	-	10	
8.00	01/10/06	JB	E	1	25	R	N	O	CA	<3.0	-
	02/13/06	FP	E	5	28	R	W	O	CA	<3.0	-
	04/19/06	LL	HF	12	30	R	-	O	CA	<3.0	-
	09/19/06	JXK	E	21	30	R	-	C	CA	-	10
	11/07/06	LL	E	9	19	R	-	O	CA	-	90
	12/12/06	JB	F	4	10	R	W	O	CA	-	8
9.00	01/10/06	JB	E	-1	12	R	-	C	P	3.6	-
	02/13/06	FP	E	5	26	R	-	C	P	10	-
	04/19/06	FP	F	12	15	R	-	C	P	43	-
	07/05/06	SXR	LF	20	19	R	-	C	P	149	-
	09/19/06	JXK	E	17	31	R	-	C	P	-	7.3
	10/30/06	LL	F	9	0	R	P	C	P	-	128
	12/12/06	JB	F	4	8	R	-	C	P	-	2
10.00	01/10/06	JB	E	0	30	R	-	C	P	<3.0	-
	02/13/06	FP	E	5	30	R	-	C	P	<3.0	-
	04/19/06	FP	F	12	31	R	-	C	P	<3.0	-
	07/05/06	SXR	LF	13	31	R	-	C	P	9.1	-
	09/19/06	JXK	E	16	31	R	-	C	P	-	<2.0
12/12/06	JB	F	5	32	R	-	C	P	-	<2.0	
13.00	01/10/06	FP	HE	2	20	R	W	O	R	43	-
	02/13/06	LL	F	0	25	R	-	O	R	14	-
	04/19/06	TS	L	12	24	R	-	O	R	<3.0	-
	07/05/06	TS	E	19	24	R	-	O	R	23	-
	09/19/06	AJS	H	18	30	R	-	O	R	-	40
	12/18/06	LL	E	6	23	R	-	O	R	-	11
14.00	01/10/06	FP	HE	4	29	R	-	O	R	3.6	-
	02/13/06	LL	F	1	30	R	-	O	R	3.6	-
	03/07/06	HTRU	E	1.5	28	R	-	O	R	<3.0	-
	04/19/06	TS	LF	9	17	R	-	O	R	23	-
	07/05/06	TS	E	15	29	R	-	O	R	11	-
	09/19/06	AJS	H	18	31	R	-	O	R	-	12
	12/12/06	LL	L	3	18	R	-	O	R	-	38
16.00	01/10/06	FP	HE	3	28	R	W	O	CA	7.3	-
	02/13/06	LL	F	0	30	R	-	O	CA	3.6	-



Station	Date	Collect	Tide	Temp	Sal	Strat	Adv	Stat	CL	A1COL	MFCOL
	03/07/06	HTRU	E	1.5	30	R	-	O	CA	<3.0	-
	04/19/06	TS	LF	8	23	R	-	O	CA	43	-
	07/05/06	TS	E	15.5	29	R	-	C	CA	23	-
	09/19/06	AJS	H	18	30	R	-	C	CA	-	40
	12/12/06	LL	L	3	24	R	-	C	CA	-	52
17.00	01/10/06	FP	HE	2	6	R	-	O	CA	9.1	-
	02/13/06	LL	F	0	4	R	-	O	CA	3	-
	04/18/06	LL	H	11	18	R	-	O	CA	<3.0	-
	04/19/06	TS	LF	10	2	R	-	O	CA	9.1	-
	07/05/06	TS	E	17	26	R	N	C	CA	9.1	-
	09/19/06	AJS	HE	17	28	R	-	C	CA	-	114
	12/18/06	LL	E	6	24	R	-	C	CA	-	34
18.00	01/10/06	FP	HE	2	0	R	N	O	CA	9.1	-
	02/13/06	LL	HF	0	0	R	-	O	CA	3.6	-
	04/18/06	LL	H	10	8	R	-	O	CA	43	-
	04/19/06	TS	LF	9	2	R	-	O	CA	75	-
	07/05/06	TS	E	15.5	28	R	-	C	CA	75	-
	09/19/06	AJS	HE	17	29	R	-	C	CA	-	144
	12/18/06	LL	E	6	15	R	-	C	CA	-	13
19.00	01/10/06	FP	E	4	30	R	-	O	CA	<3.0	-
	02/13/06	LL	HF	2	30	R	-	O	CA	9.1	-
	03/07/06	HTRU	E	2	30	R	-	O	CA	<3.0	-
	04/19/06	TS	LF	10	28	R	-	O	CA	3.6	-
	07/05/06	TS	E	13	30	R	M	C	CA	93	-
	09/19/06	AJS	HE	15	31	R	-	C	CA	-	6
	12/12/06	LL	L	4	28	R	-	C	CA	-	29
21.00	01/10/06	FP	E	4	23	R	-	O	CA	9.1	-
	02/13/06	LL	HF	0	18	R	-	O	CA	<3.0	-
	03/07/06	HTRU	LE	1.5	5	R	-	O	CA	<3.0	-
	04/19/06	TS	LF	10	4	R	-	O	CA	<3.0	-
	07/05/06	TS	E	17	18	R	-	C	CA	93	-
	09/19/06	AJS	HE	18	30	R	-	C	CA	-	16
	12/18/06	LL	HE	6	25	R	-	C	CA	-	8
22.00	01/10/06	FP	E	2	24	R	-	O	CA	<3.0	-
	02/13/06	LL	HF	0	26	R	-	O	CA	3.6	-
	03/07/06	HTRU	LE	1.5	30	R	-	O	CA	<3.0	-
	04/19/06	TS	LF	10	27	R	-	O	CA	3.6	-
	07/05/06	TS	E	15.5	29	R	-	C	CA	23	-
	09/19/06	AJS	HE	18	29	R	-	C	CA	-	36
	12/12/06	LL	LF		999	R	-	C	CA	-	-
24.00	01/10/06	FP	E	5	30	R	-	O	CA	<3.0	-
	02/13/06	LL	HF	2	30	R	-	O	CA	23	-
	03/07/06	HTRU	LE	2	30	R	-	O	CA	<3.0	-
	04/19/06	TS	LF	8	28	R	-	O	CA	<3.0	-
	07/05/06	TS	E	13	30	R	-	C	CA	3.6	-
	09/19/06	AJS	HE	17	31	R	-	C	CA	-	<2.0
	12/12/06	LL	LF	4	29	R	-	C	CA	-	60
24.50	01/10/06	FP	E	5	30	R	-	O	A	<3.0	-
	02/13/06	LL	HF	2	32	R	-	O	A	<3.0	-
	04/19/06	TS	F	7	30	R	-	O	A	<3.0	-



Station	Date	Collect	Tide	Temp	Sal	Strat	Adv	Stat	CL	A1COL	MFCOL
	07/05/06	TS	E	14.5	31	R	-	O	A	<3.0	-
	09/19/06	AJS	HE	17	31	R	-	O	A	-	20
	12/12/06	LL	LF	4	32	R	-	O	A	-	<2.0
24.70	01/10/06	FP	E	5	30	R	-	O	A	<3.0	-
	02/13/06	LL	HF	2	30	R	-	O	A	<3.0	-
	04/19/06	TS	F	7	30	R	-	O	A	<3.0	-
	07/05/06	TS	E	14	31	R	-	O	A	3	-
	09/19/06	AJS	E	17	31	R	-	O	A	-	<2.0
	12/12/06	LL	LF	4	30	R	-	O	A	-	<2.0
28.00	01/10/06	FP	E	5	30	R	-	C	P	<3.0	-
	02/13/06	LL	H	2	30	R	-	C	P	<3.0	-
	04/19/06	JW	LF	6	32	R	-	C	P	<3.0	-
	09/19/06	JW	E	17.4	32	R	-	C	P	-	<2.0
	10/03/06	LL	E	14	30	R	-	C	P	-	2
	12/12/06	JW	L	7.3	30	R	-	C	P	-	2
31.00	01/10/06	FP	E	6	26	R	-	O	A	<3.0	-
	02/13/06	LL	H	2	30	R	-	O	A	<3.0	-
	04/19/06	JW	F	6	30	R	-	O	A	<3.0	-
	09/19/06	JW	E	19.2	30	R	-	O	A	-	6
	10/03/06	LL	E	14	30	R	-	O	A	-	<2.0
	12/12/06	JW	L	4.2	8	R	-	O	A	-	11
32.00	01/10/06	FP	E	4	26	R	W	O	A	<3.0	-
	02/13/06	LL	H	2	30	R	-	O	A	<3.0	-
	04/19/06	JW	F	8	24	R	-	O	A	3.6	-
	09/19/06	JW	E	19.1	29	R	-	O	A	-	6
	10/03/06	LL	E	14	30	R	-	O	A	-	6
	12/12/06	JW	L	6	20	R	-	O	A	-	12
33.00	01/10/06	FP	E	2	12	R	W	C	P	<3.0	-
	02/13/06	LL	H	1	15	R	-	C	P	<3.0	-
	04/19/06	JW	F	9	10	R	-	C	P	3.6	-
	09/19/06	JW	E	19.5	30	R	-	C	P	-	7.3
	10/03/06	LL	E	14	20	R	-	C	P	-	18
	12/12/06	JW	LF	2.6	0	R	-	C	P	-	8
34.00	01/10/06	FP	E	4	10	R	-	O	A	<3.0	-
	02/13/06	LL	H	0	24	R	-	O	A	3.6	-
	04/19/06	JW	F	14	27	R	-	O	A	9.1	-
	09/19/06	JW	E	19.7	29	R	-	O	A	-	18
	10/03/06	LL	E	14	31	R	-	O	A	-	20
	12/12/06	LL	F		999	R	-	O	A	-	-
	12/12/06	JW	LF		999	R	-	O	A	-	-
	12/18/06	LL	HE	6	30	R	-	O	A	-	<2.0
36.00	01/10/06	FP	E	5	30	R	-	O	A	<3.0	-
	02/13/06	LL	H	2	30	R	-	O	A	9.1	-
	04/19/06	JW	F	8	31	R	-	O	A	<3.0	-
	09/19/06	JW	E	20	30	R	-	O	A	-	14
	10/03/06	LL	E	14	30	R	-	O	A	-	<2.0
	12/12/06	JW	LF	6.6	30	R	-	O	A	-	<2.0
37.00	01/10/06	FP	E	5	31	R	-	O	A	<3.0	-
	02/13/06	LL	H	2	31	R	-	O	A	9.1	-
	04/19/06	JW	F	7	31	R	-	O	A	<3.0	-
	09/19/06	JW	E	19.2	30	R	W	O	A	-	<2.0



Station	Date	Collect	Tide	Temp	Sal	Strat	Adv	Stat	CL	A1COL	MFCOL
	10/03/06	LL	E	14	30	R	-	O	A	-	<2.0
	12/12/06	JW	LF	7.7	30	R	W	O	A	-	<2.0
38.00	01/10/06	FP	E	6	30	R	-	O	A	<3.0	-
	02/13/06	LL	H	2	30	R	-	O	A	<3.0	-
	04/19/06	JW	F	7	31	R	-	O	A	<3.0	-
	09/19/06	JW	E	18.8	30	R	-	O	A	-	<2.0
	10/03/06	LL	E	14	30	R	-	O	A	-	<2.0
	12/12/06	JW	LF	8.2	30	R	-	O	A	-	<2.0