

**SELECTMEN'S MEETING AGENDA\***

*Donn B. Griffin Room, Town Hall*

*732 Main Street, Harwich, MA*

*Regular Meeting 6:30 P.M.*

*Monday, May 21, 2018*

*\*As required by Open Meeting Law, you are hereby informed that the Town will be video and audio taping as well as live broadcasting this public meeting. In addition, anyone in the audience who plans to video or audio tape this meeting must notify the Chairman prior to the start of the meeting.*

**I. CALL TO ORDER**

**II. PLEDGE OF ALLEGIANCE**

**III. SWEARING IN OF ELECTED OFFICIALS**

**IV. WEEKLY BRIEFING**

**V. PUBLIC COMMENTS/ANNOUNCEMENTS**

**VI. CONSENT AGENDA**

- A. Approve application for 2018 renewal of Lodging House License for The Grey Gull – five units in rear of building only
- B. Vote to sign proclamation for re-dedication of the square at Chase Street and Route 28
- C. Approve Chapter 90 requests for chip sealing various roads

**VII. PUBLIC HEARINGS/PRESENTATIONS (Not earlier than 6:30 P.M.)**

- A. Town of Harwich certification as a National Wildlife Federation (NFW) Community Wildlife Habitat

**VIII. NEW BUSINESS**

- A. Approve new application by The Commodore Inn for Weekday Entertainment from 5:00 p.m. to 8:00 p.m. Thursday, Friday and Saturday
- B. Cell Tower Revenue/Affordable Housing Fund Balance – vote to fund new Affordable Housing Trust
- C. Recommendation for Site Plan Review filing fee for Cape Cod Tech
- D. Selectmen's Summer Meeting Schedule
- E. Amend the Personnel By-Law Plan for FY19 in keeping with union increases

**IX. OLD BUSINESS**

- A. Pleasant Bay IMA
- B. Town Administrator Performance Evaluation
- C. Ownership of fields behind Cultural Center

**X. TOWN ADMINISTRATOR'S REPORT**

- A. CDM Smith brochure costs
- B. Chamber of Commerce proposal for additional parking in Harwich Port
- C. Town Meeting/Election results
- D. Departmental Reports

**XI. SELECTMEN'S REPORT**

**XII. ADJOURNMENT**

*\*Per the Attorney General's Office: The Board of Selectmen may hold an open session for topics not reasonably anticipated by the Chair 48 hours in advance of the meeting following "New Business." If you are deaf or hard of hearing or a person with a disability who requires an accommodation contact the Selectmen's Office at 508-430-7513.*

**Authorized Posting Officer:**

**Posted by:** \_\_\_\_\_  
Town Clerk

\_\_\_\_\_  
Ann Steidel, Admin. Secretary

**Date:** \_\_\_\_\_  
May 17, 2018



OFFICE OF THE SELECTMEN  
732 MAIN ST., HARWICH, MA 02645  
508-430-7513

**APPLICATION FOR LODGING HOUSE OR INNOLDERS LICENSE**

LICENSE APPLIED FOR: Lodging House X Innholders     

Fee: \$50 New application      Annual      # of rooms   13    
Renewal   X   Seasonal   X   Opening date     

Business Name   Gary & Lisa Sawin   Phone   432-0222  

Doing Business As (d/b/a)   Grey Gull  

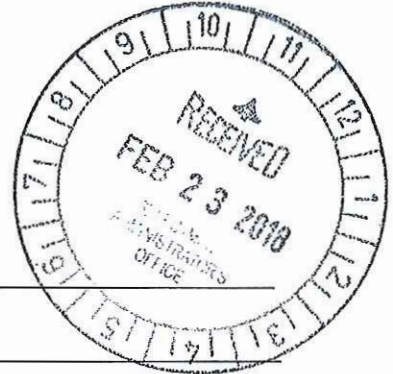
Business Address   547 Route 28, Harwich Port  

Mailing Address   9 Pond St., Dover, MA 02030  

Winter Address & Phone   "  "  

Email Address   gsawin3437@aol.com  

Name of Owner   GARY & LISA SAWIN  



~~(If corporation or partnership, list name, title and address of officers)~~

  5 Units in Rear of Building Only  

  Gary Sawin    
Signature of applicant & title Federal I.D. #

**INNOLDERS ONLY** – List total number of seats in dining/lounge area.     

Pursuant to MGL Ch. 62c, Sec. 49A, I certify under the penalties of perjury that to the best of my knowledge and belief I have filed all state tax returns and paid all state taxes required under law.

  Gary Sawin   By       
Signature of individual or corporate name Corporate officer (if applicable)

**REGULATORY COMPLIANCE FORM**

The premises to be licensed as described herein have been inspected and found to be in compliance with applicable local codes and regulations, including zoning ordinances, health regulations and building and fire codes.

  [Signature]   Building Commissioner  
  Myran Dedege   Board of Health  
  [Signature]   Fire Department

Required signatures to be obtained by the applicant prior to submission of new applications.

## Ann Steidel

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**From:** David LeBlanc  
**Sent:** Tuesday, May 15, 2018 3:04 PM  
**To:** Ann Steidel; Sandy Robinson  
**Cc:** bridgesforthe fallen@gmail.com; tom@petersonrealty.com  
**Subject:** Agenda Item for May 21  
**Attachments:** Proclamation.docx

Good afternoon,

Will you please add an item for the agenda regarding a proclamation for the re-dedication of the square at Chase St and Route 28.

I spoke with Michael about this morning. There will be a ceremony on May 26 at 9:30. It will be either/all of the following:

Tom Peterson, Rob Mador and myself presenting at the meeting.

I have attached some language for the proclamation.

Thank you,

Dave LeBlanc



**Deputy Fire Chief David LeBlanc**

*Harwich Fire Department  
175 Sisson Road  
Harwich, MA 02645*

[d.leblanc@harwichfire.com](mailto:d.leblanc@harwichfire.com)

Office - 508.430.7546 Ext 4800 Cell -508.364.4432



**Whereas**

Richard Rogers grew up and attended school in Harwich and;

**Whereas**

Richard Rogers enlisted in the United States Army after graduating from high school and;

**Whereas**

Richard Rogers served two tours in Vietnam with honor and distinction, saving the lives of fellow soldiers and being decorated for his service and;

**Whereas**

Richard Rogers was killed in action in Vietnam on December 14, 1968 in the province of Binh Long and;

**Whereas**

The Town of Harwich has a long history of remembering its veterans and recognizing their service to their country in support of our freedom and;

**Whereas**

The intersection of Chase Street and Route 28 was named in honor of Richard Rogers, 1st Lieutenant United States Army in recognition of his sacrifice and that the marker was subsequently damaged;

**Let it be known that,**

On this day, May 26, 2018 the Town of Harwich re-dedicates the intersection of Chase Street and Route 28 as **1st Lieutenant Richard Roger Square**.

\_\_\_\_\_  
\_\_\_\_\_



# TOWN OF HARWICH

## DEPARTMENT OF PUBLIC WORKS


273 Queen Anne Road • P.O. Box 1543 • Harwich, MA 02645

Telephone (508) 430-7555

Fax (508) 430-7598

### MEMORANDUM

**TO:** Board of Selectmen

**FROM:** Lincoln S. Hooper, Director 

**DATE:** May 16, 2018

**RE:** Chapter 90 Project Request – Chipsealing Various Roads

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Attached for your review and signatures is a Chapter 90 Project Request for Chipsealing various roads in the amount of \$203,580. Currently, we have \$969,674 available in uncommitted Chapter 90 funds, which includes our FY 19 apportionment of \$680,868.

Please sign all three copies of the Project Request form and return them to me so that I may submit them for State approval. If you have any questions regarding this project, please contact me.

Thank you for your consideration.

Cc: Chris Clark, Town Administrator

**CHAPTER 90 PROJECT REQUEST**

CONTRACT ID # 50829

CLASSIFICATION:  Primary Road  Local Road

PROJECT # \_\_\_\_\_

Ch. # MA # \$

CITY/TOWN HARWICH

Ch. # MA # \$

PROJECT: CHIPSEALING VARIOUS ROADS

LOCATION: VARIOUS LOCATIONS SEE ATTACHED LENGTH \_\_\_\_\_ WIDTH: \_\_\_\_\_

PROJECT TYPE:  Construction  Reconstruction  Resurfacing  Improvement

Other: \_\_\_\_\_

TYPICAL SECTION DETAILS: State depths, special treatments, etc...

Include sketch for Construction/Improvement Projects and Resurfacing/Rehabilitation Schedule

Surface:

Base Course:

Foundation:

Shoulders/Sidewalks:

Scope of Work: (Attach additional sheets if necessary to completely describe project)

**TO CHIPSEAL VARIOUS ROADS THROUGHOUT TOWN, PROVIDING A NEW WEAR SURFACE AND EXTENDING THE LIFE OF THE ROADS.**

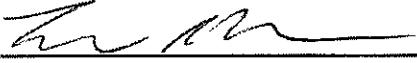
Work to be done: Force Account  Advertised Contract  Other: COUNTY BID

Estimated Cost (Attach estimate and list funding sources) \$ 203,580.92

**CERTIFICATION**

The design, engineering, construction, and future performance of the project, including maintenance, is the responsibility of the Municipality. The proposed work will conform to recognized engineering practices and construction methods.

I/We certify to the following: that the project is on a public way, and has a recorded layout; that all materials will comply with approved established specifications; that all weights and quantities will be accurate; that equipment rental rates are those established by the M.H.D. or the advertised low bid; that all documentation for expenditures will be for items incorporated into this project; that the documentation will be checked for accuracy, and will be endorsed in accordance with municipal procedures for accountability.

Prepared by:   
(Highway Official)

Signed: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
(Duly Authorized Municipal Official(s))

Reviewed by: \_\_\_\_\_  
(State Aid Engineer)

Approved by: \_\_\_\_\_  
(District Highway Director)

Approved for: \_\_\_\_\_ @ \_\_\_\_\_

Date: \_\_\_\_\_

# CHAPTER 90 ENVIRONMENTAL PUNCH LIST

City/Town HARWICH  
MassHighway District # 5

Proposed Work      Construction     Resurfacing     Improvement       Other: \_\_\_\_\_

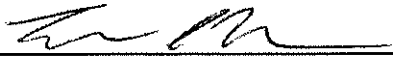
**NOTE: ALL ENVIRONMENTAL PERMITS / APPROVALS MUST BE OBTAINED PRIOR TO CONSTRUCTION.**

1. Will the pavement width increase 4 ft. or more for an aggregate length of 1000 ft. or more?      Yes     No
2. Will the bank or terrain (other than alteration required for installation of equipment or structures) be altered at a distance exceeding 10 ft. from the pavement?      Yes     No
3. Will the removal of 5 or more trees with diameters of 14 inches or more be required?      Yes     No
4. Will more than 300 ft. of stone wall be removed or altered?      Yes     No
5. Will the project involve construction of a parking lot with capacity of 50 cars or more?      Yes     No
6. Are any other MEPA review thresholds exceeded (see 301 CMR 11.00)?      Yes     No   
    If your answer is YES to any of questions 1-6, you must file an Environmental Notification Form (ENF).\*
7. Will the project be on a "Scenic Road" (Acts of 1973, C. 67)?      Yes     No   
    If your answer is YES, your Planning Board or Selectmen / City Council must give written consent for cutting / removal of trees or changes to stone walls.
8. Have all necessary takings, easements, rights of entry, etc. been completed?      Yes     No   
    If a County Hearing is required, it must be held prior to starting work.
9. Are archaeological, anthropological, historical, etc. problems / impacts anticipated? \*      Yes     No
10. Is any work proposed in or within 100 ft. of a wetland (stream, pond, swamp, etc.)? \*      Yes     No   
    If your answer is YES, you must file the project with your local Conservation Commission prior to starting work.
11. If work is proposed in a wetland or water resource, a permit may be required from the Department of Environmental Protection, Corps of Engineers, etc.. Verify with agencies. \*      Yes     No

\* See Appendix K for a List of Environmental Agencies.

## Validation

It is recognized that the purpose of this information is to assist the Massachusetts Highway Department in approving the Chapter 90 Project Request Form (of which this is a part). Accordingly, the information provided here is intended to be complete and correct with no intentional errors or material omissions. Any action taken by Mass. Highway on the basis of this information shall not legally or financially obligate Mass. Highway to support or defend the municipality, and the municipality shall save harmless Mass. Highway for any action.

Prepared by:   
(Highway Official)

Signed: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date: 5/10/18

(Duly Authorized Municipal Official(s))





## FY17 CHIPSEALING

	LENGTH	WIDTH	SQ. YD.	CUL-DE-SAC DIAMETER	CUL-DE-SAC SQ. YD.	TOTAL SQ. YD.	BID PRICE	AMOUNT
BLUE HERON LANDING	1,600	25	4,444.44			4,444.44	\$3.70	\$16,444.44
MALLARD LANE	360	24	960.00			960.00	\$3.70	\$3,552.00
OSPREY LANE	545	24	1,453.33			1,453.33	\$3.70	\$5,377.33
HARDEN LANE	445	22	1,087.78	100	872.22	1,960.00	\$3.70	\$7,252.00
CANNON HILL DRIVE	775	25	2,152.78			2,152.78	\$3.70	\$7,965.28
MARY BETH LANE	1,190	25	3,305.56	100	872.22	4,177.78	\$3.70	\$15,457.78
HASKELL LANE	875	25	2,430.56			2,430.56	\$3.70	\$8,993.06
ARGYLE WAY	1,375	25	3,819.44			3,819.44	\$3.70	\$14,131.94
DRIFTWOOD CIRCLE	1,305	22	3,190.00			3,190.00	\$3.70	\$11,803.00
DRIFTWOOD LANE	2,105	23	5,379.44			5,379.44	\$3.70	\$19,903.94
HEATHER ROAD	825	22	2,016.67			2,016.67	\$3.70	\$7,461.67
KENT ROAD	480	21	1,120.00			1,120.00	\$3.70	\$4,144.00
STORER LANE	660	21	1,540.00			1,540.00	\$3.70	\$5,698.00
GLENDALE LANE	360	21	840.00			840.00	\$3.70	\$3,108.00
INTERVALE LANE	500	20	1,111.11	60	314.00	1,425.11	\$3.70	\$5,272.91
HOLLOW LANE	440	21	1,026.67	60	314.00	1,340.67	\$3.70	\$4,960.47
SANDALE LANE	430	21	1,003.33	60	314.00	1,317.33	\$3.70	\$4,874.13
VALLEY LANE	295	21	688.33	60	314.00	1,002.33	\$3.70	\$3,708.63
RIDGEVALE ROAD	1,185	21	2,765.00			2,765.00	\$3.70	\$10,230.50
CHARLES ROAD	1,115	24	2,973.33			2,973.33	\$3.70	\$11,001.33
ROBERT ROAD	840	23	2,146.67			2,146.67	\$3.70	\$7,942.67
HILLSIDE ROAD	1,335	24	3,560.00	100	872.22	4,432.22	\$3.70	\$16,399.22
FEDERAL LANE	535	25	1,486.11			1,486.11	\$3.70	\$5,498.61
						54,373.22		\$201,180.92

**TOTAL 10% RUBBER CHIP SEAL**

**\$201,180.92**



The Garden Club of Harwich, P.O. Box 301, Harwich Port, Massachusetts 02646  
gardenclubofharwich.org

To: The Harwich Board of Selectmen

May 2, 2018

The Garden Club of Harwich (GCOH) has initiated a project to certify the Town of Harwich as a National Wildlife Federation (NFW) Community Wildlife Habitat. In order to achieve certification through this NFW program, a town must create, maintain and restore wildlife habitats and engage in education and outreach activities. The town and many of its residents have demonstrated their commitment to protecting our environment through the purchase and stewardship of both public and private land.

To get started, a certain number of homes, schools and common areas must become wildlife habitats by providing food, a freshwater source, cover and places to raise young. The program also requires sustained gardening practices such as conserving water, removing invasive plants, using native plants which will grow in this ecoregion, and eliminating pesticides.

To qualify for NFW status for Harwich we plan to contact other town departments and private groups in hopes that they will join us in this exciting challenge. It is not costly and requires minimal effort initially. Subsequent involvement involves maintaining the principles set forth by the NFW guidelines and using its guidelines for future legislation, education, landscaping, planning, etc. Harwich already meets many of the requirements needed for certification, so it is well on its way to becoming the first town on the Cape to have this distinction. Qualified town and common areas must be registered in order to amass the number of points needed to have official NFW Community Wildlife Habitat status. The garden club committee will provide assistance throughout the process.

For further information about the program, please contact one of the co-chairs of the GCOH Conservation and Birds Committee and a representative from this committee would be happy to meet with you to answer your questions and discuss how you can participate in this timely venture. We look forward to hearing from you soon.

Sincerely,

*Diane DiGennaro*

*Joanne Duros*

Diane DiGennaro (riodd@comcast.net) and Joanne Duros (jlduros@gmail.com), Co-Chairs of the Conservation & Birds Committee, GCOH

*Sharon Oudemool* *Kathy Cole*  
*Gerie Schumann* *Maura Costa*

Kathleen Cole, Maura Costa, Pam Latimer, Sharon Oudemool, Gerie Schumann, Kathleen Welch, Committee Members

Cc: Rita Bock, President

*Pam Latimer*  
*Kathleen Welch*





**GARDEN  
FOR WILDLIFE™**

# Garden for Wildlife™

Attracting birds, butterflies and other wildlife is a wonderful way to make a difference right outside your door. It all starts with the things you plant.

When you create a wildlife-friendly garden, you'll be rewarded by knowing you're doing your part to help restore habitat. Imagine looking out the window into a landscape teeming with singing birds, colorful butterflies and beautiful plants and water features that attract wildlife.

**It's easier than you might think.**

National Wildlife Federation has been helping people restore wildlife habitat where they live, learn, work, play, and worship since 1973. Just provide the basic components of habitat and the birds and other wildlife will show up! It's that simple!

**Visit our website for more expert tips on creating a wildlife habitat garden at [nwf.org/garden](http://nwf.org/garden).**

## 5 SIMPLE TIPS TO GET STARTED

1. Plant a shrub that flowers for pollinators and produces berries for birds and other animals.
2. Put out a birdbath. Even small water features will be used by wildlife.
3. Provide cover with dense shrubs, wildflower gardens, rock walls and evergreens.
4. Mount a nesting box for birds, plant host plants for butterfly caterpillars or install a frog pond as places to raise young.
5. Put away the chemicals. Natural gardens are better for you and your family as well as the wildlife.

# Get Certified!

Any place where you can create a wildlife-friendly garden can be recognized as a **Certified Wildlife Habitat®** by National Wildlife Federation. Your yard, a local park, a container garden, urban rooftop, a schoolyard or corporate landscape, regardless of size, can serve as important wildlife habitat.

Certifying is as simple as providing the four habitat components—food, water, cover, and places to raise young—and practicing **sustainable gardening techniques** such as eliminating pesticides, conserving water and planting native species.

## Why Certify?

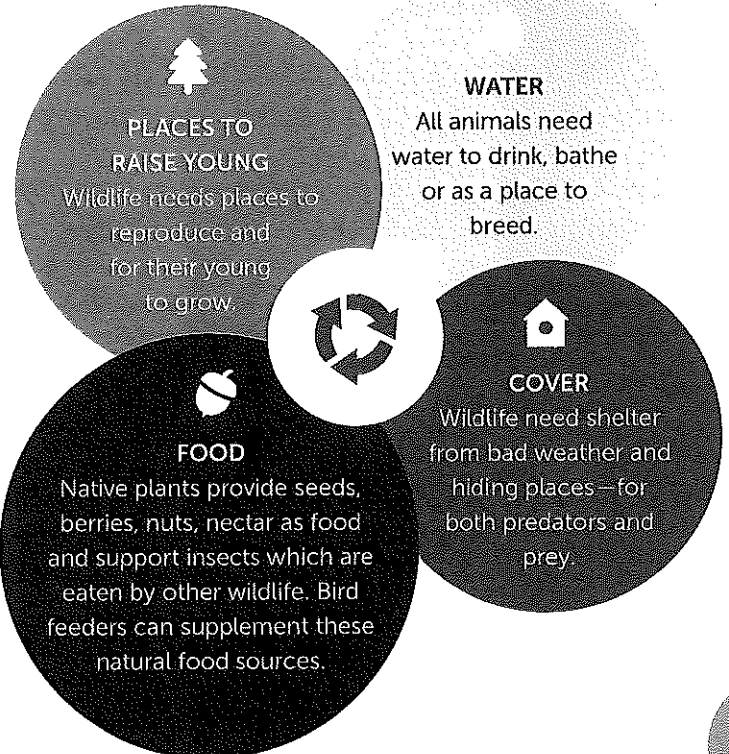
Aside from the rewards of offering wildlife a place to thrive, when you certify you get the following benefits:

- Inclusion in the National Wildlife Federation's **Certified Wildlife Habitat® national network**
- A **personalized certificate** for your wildlife habitat
- An optional **press release** to share with your local media about your achievement
- A subscription to the National Wildlife Federation's **Garden for Wildlife™ newsletter**
- A free one-year membership to the National Wildlife Federation which includes a subscription to **National Wildlife® magazine**
- A 10% discount on nesting boxes, feeders, birdbaths and other products from **National Wildlife® catalog**
- Eligibility to purchase and post an **attractive yard sign** to display your commitment to wildlife and the environment

PHOTO CREDIT (from left to right):  
Certified Courtyard by Sally Vance (pg 1)  
Ruby Throated Hummingbird by George Brehm (pg 1)  
Monarch Butterfly by Marie Serrazina (pg 1)  
Carpenter Bee by Robin Lee-Thorp (pg 1)

## Create a Sustainable Garden That Helps Wildlife

All wildlife need the following four things to survive:



## Ready to Start?

Certify now with our new mobile friendly online application at [nwf.org/garden](http://nwf.org/garden).

There you'll find expert advice, tips, projects, videos, books and more that will tell you everything you need to know to create an amazing wildlife-friendly garden habitat and to get it certified.

## Already Certified?

You're eligible to post one of our yard signs to share your accomplishment. To log in and purchase a sign, please visit [nwf.org/yardsign](http://nwf.org/yardsign).



**GARDEN  
FOR WILDLIFE™**





# Certified Wildlife Habitat® Application

Use this form to certify your wildlife-friendly habitat garden in your yard, school grounds, place of worship, or anywhere in your community. If the habitat meets the basic requirements, you'll join the growing movement of Wildlife Gardeners and receive a personalized certificate suitable for framing, a National Wildlife Federation membership, a subscription to the award-winning National Wildlife® magazine, a 10% discount on National Wildlife Federation catalog products, and opportunity to display a yard sign. You can also submit this application online at [nwf.org/garden](http://nwf.org/garden).

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**Property owner or organization** \_\_\_\_\_

If you are filling out this application for someone else, please write their name in the space provided above.

**If organization, contact person** \_\_\_\_\_

**Name(s) to Appear on Certificate** \_\_\_\_\_

Maximum 30 characters, spaces included. (Personalized certificates are final, all future change requests will result in a \$5 change order fee. Please apply online to preview your personalized certificate)

**Address of Habitat** \_\_\_\_\_

**City** \_\_\_\_\_ **State/Province** \_\_\_\_\_ **Zip Code** \_\_\_\_\_

**Telephone** \_\_\_\_\_ **Email Address** \_\_\_\_\_

**Mailing Address** (if different from above) \_\_\_\_\_

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**Check the option that best describes your habitat.**

Home

Pre-K-12 School

Organization / Institute (Choose type below)

Business / Corporation

College / University

Farm

Roadside / Right-of-Way

Community Garden

Government Building / Property

Place of Worship

Museum

Nature Center / Educational Setting

Park / Forest / Refuge

Other

## Food Sources

Plants provide the basic foods for wildlife. Feeders can be used as a supplemental source of food. Remember that some creatures will become food for others in a balanced habitat. Encourage a natural diversity of wildlife in your yard to ensure a healthy ecosystem. How do you provide food for wildlife? (Minimum requirement: 3)

### PLANT FOODS:

- Seeds
- Nuts
- Pollen
- Berries
- Fruits
- Foliage/Twigs
- Nectar
- Sap

### SUPPLEMENTAL FEEDERS:

- Seed
- Suet
- Squirrel
- Butterfly
- Hummingbird

## Water Sources

Wildlife need a clean water source for drinking and bathing. How do you provide water for wildlife? (Minimum requirement: 1)

- Birdbath
- Water Garden/Pond
- Shallow Dish
- Butterfly Puddling Area
- Lake
- Rain Garden
- Stream/River
- Spring
- Seasonal Pool
- Ocean

## Places for Cover

Wildlife need shelter from bad weather and hiding places—for both predators and prey. How do you provide cover for wildlife? (Minimum requirement: 2)

- Wooded Area
- Dense Shrubs/Thicket
- Bramble Patch
- Evergreens
- Ground Cover
- Brush/Log Pile
- Rock Pile/Wall
- Burrow
- Cave
- Meadow/Prairie
- Roosting Box
- Water Garden/Pond

## Places to Raise Young

In order to provide complete habitat, you must provide places for wildlife to engage in courtship behavior and to mate, and then to bear and raise their young. How do you provide places to raise young for wildlife? (Minimum requirement: 2)

- Mature Trees
- Dead Trees/Snags
- Meadow/Prairie
- Dense Shrubs/Thicket
- Nesting Box
- Water Garden/Pond
- Wetland
- Burrow
- Host Plants for Caterpillars
- Cave

## Sustainable Gardening Practices

How you manage your garden or landscape can have an effect on the health of the soil, air, water and habitat for wildlife—as well as for the people. Some practices are more environmentally-friendly and sustainable. How do you garden sustainably?

(You need to employ practices from at least two of the three categories below to help manage your habitat in a sustainable way—to better help wildlife, we advocate employing one or more practices from each category.)

### SOIL AND WATER CONSERVATION

- Limit Water Use
- Collect Rain Water
- Rain Garden
- Plant Buffer Around Bodies of Water
- Xeriscape (water-wise landscaping)
- Drip or Soaker Hose for Irrigation
- Use Mulch or Ground Cover to Retain Soil Moisture and Limit Erosion
- Reduce or Eliminate Lawn

### CONTROLLING EXOTIC SPECIES

- Practice Integrated Pest Management
- Remove Invasive Exotic Species
- Keep Cats Indoors
- Use Native Plants

### ORGANIC PRACTICES

- Eliminate Chemical Pesticides
- Eliminate Chemical Fertilizers
- Create Compost Pile



## To apply, please send:

- This Completed Application - REQUIRED
  - \$20 Application Fee\* (non-refundable) - REQUIRED
- \*Applications Fee Waived for Pre-K-12 School Habitats

National Wildlife Federation • P.O. Box 1583 • Merrifield, VA 22116-1583

Allow 4-6 weeks for processing. Please keep a copy of this application for your records.



OFFICE OF THE SELECTMEN  
 732 MAIN STREET  
 HARWICH, MA 02645  
 508-430-7513

**APPLICATION FOR ENTERTAINMENT LICENSE**

- Weekday Entertainment (\$75)     1 day (\$25)    New application   
 Batters Box (\$50)    Renewal   
 Go Carts (\$50)    Annual   
 Miniature Golf (\$50)    Seasonal   
 Trampolines (\$25)    Opening Date \_\_\_\_\_  
 Theater (\$150 per cinema)  
 Automatic Amusement:  
 Juke Box (\$100 each)  
 Video Games (\$100 each)    Other \_\_\_\_\_

Business Name **30 Earle Road LLC/The Commodore Inn** Phone **508-432-1180**

Business Address **30 Earle Road, West Harwich, MA 02671**

Mailing Address **Same**

Owners Name & Address **Kelley & Dan McNamara, 25703 Creekside Cove, Boerne TX 78006**

Email Address **kelley@thecommodoreinn.com**

Managers Name & Address **Barbara-Anne & John Foley, 30 Earle Rd W Harwich 02671**

**TIMES AND DAYS OF WEEK FOR ENTERTAINMENT (Please note this application does not cover Sundays.**

**5:00-8:00 p.m. Thurs.'s, Friday's or Saturdays**

**ENTERTAINMENT TYPE: (Check all appropriate boxes)**

- Concert     Dance     Exhibition     Cabaret     Public Show     Other  
 Dancing by Patrons  
 Dancing by Entertainers or Performers  
 Recorded or Live Music  
 Use of Amplification System (**speakers**)  
 Theatrical Exhibit, Play or Moving Picture Show  
 A Floor Show of Any Description  
 A Light Show of Any Description  
 Any Other Dynamic Audio or Visual Show, Whether Live or Recorded

*paid \$75 @s  
 5-11-18*

Selectman/Administrator's Office  
 Harwich Town Hall  
 732 Main St.  
 Harwich, MA 02645

At any time during this concert, dance exhibition, cabaret or public show, will any person(s) be permitted to appear on the premises in any manner or attire as to expose to the public view any portion of the body as described in Mass. General Laws Chapter 140, Section 183A, Para. 3.

\_\_\_ Yes      X No

If Yes, answer questions 1 through 4 below. Attach a separate sheet and/or exhibits if necessary:

1. Describe in complete detail the extent of exposure during the performance and the nature of the entertainment: \_\_\_\_\_  
\_\_\_\_\_
2. Furnish additional information concerning the condition of the premises and how they are suitable for the proposed entertainment: \_\_\_\_\_  
\_\_\_\_\_
3. Fully describe the actions you will take to prevent any adverse effects on public safety, health, or order: \_\_\_\_\_  
\_\_\_\_\_
4. Identify whether and how you will regulate access by minors to the premises: \_\_\_\_\_  
\_\_\_\_\_

Days/Hours of Business Operation **7 days a week 7:30 a.m.-9:30 p.m.**

Pursuant to MGL, Chapter 62C, Section 49A, I certify under the penalties of perjury that I, to the best of my knowledge and belief, have filed all State tax returns, and have paid all State taxes under the law.

John Wolf  
Signature of applicant & title

82-1825729  
Federal I.D. #

\_\_\_\_\_  
Signature of individual or corporate name

\_\_\_\_\_  
Federal I.D. #

\_\_\_\_\_  
Signature of Manager

\_\_\_\_\_  
Federal I.D. #

\_\_\_\_\_  
Signature of Partner

\_\_\_\_\_  
Federal I.D. #

**REGULATORY COMPLIANCE FORM**

The premises to be licensed as described herein have been inspected and found to be in compliance with applicable local codes & regulations, including zoning ordinances, health regulations & building & fire codes.

\_\_\_\_\_  
Building Commissioner

\_\_\_\_\_  
Board of Health

\_\_\_\_\_  
Fire Department

\_\_\_\_\_  
Police Department

comments:

*Required signatures to be obtained by the applicant prior to submission of new applications.*



**Affordable Housing Fund**

Balance per General Ledger (07/01/2017) 239,938

FY 18 Revenue 52,526

HECH 18,068

Habitat and HECH 240,000

Remaining Balance 34,396

Note: Assumes all other Affordable Housing commitments have been fully expended.

**TOWN PLANNER • 732 Main Street, Harwich, MA 02645**

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508-430-7511 fax: 508-430-4703



May 16, 2018

To: Christopher Clark, Town Administrator  
From: Charleen Greenhalgh, Town Planner *CGH*  
Re: Recommendation for Site Plan Review Filing Fee for Cape Cod Tech

As you are aware, nonprofit educational corporation fall under MGL Ch.40A §3, also known as the Dover Amendment. Under this provision, educational use are exempt from zoning, *“provided, however, that such land or structures may be subject to reasonable regulations concerning the bulk and height of structures and determining yard sizes, lot area, setbacks, open space, parking and building coverage requirements.”* Do to the provisions of MGL the local review under Site Plan Review and Use Special for structures over 7,500 square feet will be minimal compared to other types of reviews for commercial developments.

Based on the above it would be my recommendation that a filing fee of \$4,000 would be adequate to cover the time, and corresponding benefits, for each town department that will be reviewing this application.

If you have any questions, please do not hesitate to contact this office.

X = no meeting

Proposed Summer Schedule

# 2018

JANUARY							FEBRUARY							MARCH						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6					1	2	3					1	2	3
7	8	9	10	11	12	13	4	5	6	7	8	9	10	4	5	6	7	8	9	10
14	15	16	17	18	19	20	11	12	13	14	15	16	17	11	12	13	14	15	16	17
21	22	23	24	25	26	27	18	19	20	21	22	23	24	18	19	20	21	22	23	24
28	29	30	31				25	26	27	28				25	26	27	28	29	30	31
APRIL							MAY							JUNE						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7			1	2	3	4	5						1	2
8	9	10	11	12	13	14	6	7	8	9	10	11	12	3	4	5	6	7	8	9
15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16
22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	<del>18</del>	19	20	21	22	23
29	30						27	28	29	30	31			24	25	26	27	28	29	30
JULY							AUGUST							SEPTEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	<del>2</del>	3	4	5	6	7				1	2	3	4							1
8	9	10	11	12	13	14	5	6	7	8	9	10	11	2	3	4	5	6	7	8
15	<del>16</del>	17	18	19	20	21	12	<del>13</del>	14	15	16	17	18	9	10	11	12	13	14	15
22	<del>23</del>	24	25	26	27	28	19	20	21	22	23	24	25	16	17	18	19	20	21	22
29	<del>30</del>	31					26	<del>27</del>	28	29	30	31	23/30	24	25	26	27	28	29	
OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6					1	2	3							1
7	8	9	10	11	12	13	4	5	6	7	8	9	10	2	3	4	5	6	7	8
14	15	16	17	18	19	20	11	12	13	14	15	16	17	9	10	11	12	13	14	15
21	22	23	24	25	26	27	18	19	20	21	22	23	24	16	17	18	19	20	21	22
28	29	30	31				25	26	27	28	29	30	23/30	24/31	25	26	27	28	29	

no meetings:

- June 18
- July 2
- July 16
- July 30
- Aug. 13
- Aug. 27



PLEASANT BAY  
ALLIANCE

Memorandum

To: Board of Selectmen, Town of Harwich  
Chris Clark, Town Administrator  
Fr: Carole Ridley  
Date: May 10, 2018  
Re: Watershed Permit Pilot Project and Pleasant Bay Resource Management Plan

The documents listed below are provided for the Board's signature following Annual Town Meeting Action. Each of these documents must also be signed by the Select Boards in Brewster, Chatham, and Orleans.

- 1) The Memorandum of Agreement Extending the Pleasant Bay Alliance;
- 2) Three documents related to the Pleasant Bay Watershed Permit:
  - Intermunicipal Agreement among the four watershed towns for a Pleasant Bay Watershed Permit;
  - Letter to Cape Cod Commission requesting a 208 Consistency Determination for the Pleasant Bay Targeted Watershed Management Plan;
  - Application letter to MassDEP seeking a Watershed Permit;

If additional Board action is needed to execute the above listed documents, I would respectfully request that these items be put on the next available agenda following Town Meeting.

The current schedule for the Watershed Permit is as follows:

- Submit the request for a consistency determination to Cape Cod Commission by May 23<sup>rd</sup>. This request must officially come from the Towns as Waste Management Agencies (WMAs) under the 208 Plan Update. A consistency determination must be obtained from the Commission before the application for a watershed permit can be submitted to MassDEP.
- Upon receipt of the consistency determination, and hopefully by June 1, the Watershed Permit application package will be sent to MassDEP. This package consists of the application letter referred to above, the IMA, TWMP, correspondence with MEPA, and 208 Consistency Determination. With the exception of the consistency determination, each of these items is attached to this memo.
- Upon notification from MassDEP, we will seek to arrange a combined meeting of the four town Select Boards, and officials from MassDEP, EPA, Cape Cod Commission among others, to mark the issuance of the permit.

MEMORANDUM OF AGREEMENT  
Between the Towns of Orleans, Chatham, Harwich and Brewster  
TO EXTEND THE PLEASANT BAY RESOURCE MANAGEMENT ALLIANCE

Article I. Recitals

WHEREAS, the estuary known as Pleasant Bay and its watershed lies within the municipal boundaries of Orleans, Chatham, Harwich and Brewster, and

WHEREAS, in 1995 the four towns entered into an agreement to develop a resource management plan (“plan”) to protect the vast natural resources of the Bay, and

WHEREAS, the agreement established as a goal of the plan to have the towns adopt uniform polices and regulations for the management of the Bay, and

WHEREAS, the plan developed in accordance with the agreement provides management recommendations concerning the towns’ policies and regulations relative to water quality, wetlands, wildlife, fisheries, boating, shorelines structures, and public access, and

WHEREAS, the Towns of Harwich, Orleans, Chatham and Brewster have approved the plan and subsequent plan updates (herein collectively referred to as “the plan”), and

WHEREAS, in 1998 the Towns of Harwich, Orleans and Chatham formed the Pleasant Bay Alliance, which The Town of Brewster joined in 2007, to coordinate implementation of the plan, and

WHEREAS, the Alliance has, in accordance with the plan, generated data, technical analysis, reports and public educational information encompassing water quality, watershed nutrient loading and related topics, coastal processes and structures, wetlands health, navigation, fisheries, wildlife and public access to the benefit of the member towns and the region,

NOW THEREFORE, the undersigned towns, in consideration of the mutual covenants contained herein, hereby agree as follows:

Article II. Policy and Purpose

1. This agreement extends the Pleasant Bay Resource Management Alliance (“Alliance”). Through participation in the Alliance the undersigned towns agree to implement the plan recommendations, acting by and through their designated officers, employees or agents. The towns also agree to seek funding through Town Meeting for implementation of the plan in accordance with the terms of this agreement.
2. Each town participating in the Alliance shall retain authority over the resources and activities within its jurisdiction. The Alliance shall coordinate, and not duplicate or compete with, the functions of existing regulatory and planning organizations in each

of the undersigned towns as they pertain to the Pleasant Bay Resource Management Plan.

Article III: Steering Committee

1. A Steering Committee shall be created, with two members appointed by the Board of Selectmen/Select Board of each undersigned town.
2. The members of the Steering Committee shall serve at the pleasure of the Board of Selectmen/Select Board of the Town by whom they were appointed.
3. Provided there is a quorum of a majority of (five) members present, the Steering Committee shall act by majority vote.
4. The Steering Committee shall elect a Chairman, Vice-Chairman, and Treasurer annually.
5. During any fiscal year for which a Town Meeting in one or more of the undersigned towns fails to appropriate funds in accordance with the provisions of Article VI of this agreement, the Steering Committee members from such town shall serve as ex officio members and shall not vote.
6. The Steering Committee shall be authorized to expend funds, subject to the conditions contained herein, from the Pleasant Bay Resource Management Alliance Account as described in Article V of this agreement. The Steering Committee shall have no authority to contract for services or expend funds in excess of the amount available in said account. All contracts shall be in writing and no contract shall be entered into without a certification of the Town of Chatham Finance Department in accordance with Article V of this agreement.
7. The Steering Committee shall have overall responsibility and accountability for coordinating with officers, employees or agents of the undersigned towns to implement the plan.

Article IV: Technical Resource Committee

1. A Technical Resource Committee shall be created, with four members from each of the undersigned towns. The Committee members may include the harbormaster, shellfish constable, conservation agent, health agent, town planner, or their equivalent as determined by the Board of Selectmen/Select Board, of each undersigned town.
2. The members of the Technical Resource Committee representing each town shall be appointed by their respective Board of Selectmen/Select Board.
3. The Technical Resource Committee shall provide technical assistance, advice, and recommendations to the Steering Committee in the implementation of the plan.

Article V: Alliance Account

1. An account shall be established under the jurisdiction of the Town of Chatham Finance Department to be known as the Pleasant Bay Resource Management Alliance Account (“Alliance Account”).
2. The Alliance Account shall be the depository for all non-municipal funds and municipal appropriations made for the implementation of the plan.

3. Expenditures from the Alliance Account shall be authorized by a majority vote of the Steering Committee as provided herein. Any expenditure so authorized shall be subject to the customary and ordinary requirements for the expenditure of funds in the Town of Chatham.
4. The Steering Committee is authorized to release funds from the Alliance Account for consultant services, or other goods and services related to the Pleasant Bay Resource Management Plan's implementation.

#### Article VI: Budgeting and Reporting

1. The Steering Committee shall prepare a proposed annual budget and operating plan for the coming fiscal year.
2. The proposed annual budget and operating plan shall be presented to the Boards of Selectmen of the undersigned towns per each town annual budget schedule.
3. The proposed annual budget shall indicate the amount of funds requested from the Towns of Orleans, Chatham, Harwich and Brewster for the coming fiscal year, as well as the amount and source of all non-municipal funds. The total amount of funds requested from the Towns of Orleans, Chatham, Harwich and Brewster, shall be apportioned as follows: thirty-five (35) percent to Orleans, thirty-five (35) percent to Chatham, eighteen (18) percent to Harwich, and twelve (12) percent to Brewster. In accordance with current practice, all participating towns shall include their share of funds as a line item in their annual town budget.
4. The proposed annual budget shall present the expenditures planned for the coming year.
5. At the end of each fiscal year the Steering Committee shall submit a financial statement and a report of activities to the Boards of Selectmen of the undersigned towns to be publicized in annual town reports.
6. Funds in the Alliance Account not expended by the end of the current fiscal year shall remain in said account and applied toward approved expenditures related to the implementation of the Pleasant Bay Resource Management Plan in the following fiscal year.

#### Article VII: Renewal and Termination

1. The approved plan shall be reviewed and updated as necessary every five years. Any proposed amendments to the approved plan shall be submitted to the Board of Selectmen/Select Board in each of the undersigned towns for review and may be submitted to Town Meetings in the undersigned towns for approval at the discretion of the Board of Selectmen/Select Board.
2. This agreement may be terminated by any one of the undersigned towns upon sixty (60) days written notice to the other towns. Should a town elect to opt out of the agreement, the agreement shall remain in force and effect for the remaining towns.
3. This agreement shall not expire until December 31, 2038 unless prior to that date the undersigned towns take action either to extend or terminate the agreement.
4. Upon termination of the Alliance, the assets remaining in the Alliance Account after all outstanding obligations have been paid shall be returned to the source of funds. If

*Memorandum of Agreement to Extend the Pleasant Bay Resource Management Alliance*

the source of funds is not discernible, then remaining funds shall be distributed among the undersigned towns in accordance with Article IV. Section 3 of this agreement.

5. This agreement shall be subject to the applicable provisions of General Laws, Chapter 40, Section 4A governing contracts between municipalities except such provisions of Chapter 40, Section 4A requiring Town Meeting approval in which case each town's process shall be governed by applicable provisions of that town's Home Rule Charter.

Executed this      day of                      , 2018 by

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Chatham Board of Selectmen

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Harwich Board of Selectmen

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Orleans Board of Selectmen

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Brewster Select Board



**Pleasant Bay Watershed Permitting  
Pursuant to the Massachusetts Clean Waters Act  
Intermunicipal Agreement  
Between  
The Towns of Brewster, Chatham, Harwich and Orleans**

This Intermunicipal Agreement ("Agreement") is entered into as of May 21, 2018 (the "Effective Date") by and among the Towns of Brewster, Chatham, Harwich and Orleans, each one a municipal corporation acting through their respective chief executive officers (collectively, with their successors and assigns, the "Parties").

**RECITALS**

WHEREAS, municipalities are authorized in accordance with G.L. c. 40, §4A to enter into intermunicipal agreements for the purpose of performing jointly, or on behalf of each other, activities or undertakings which any of the municipalities are authorized by law to perform; and

WHEREAS, Brewster, Chatham, Harwich and Orleans have been authorized to enter into this Agreement as evidenced by a vote of their respective Town Meetings, authorizing the execution of this Agreement by their respective Boards of Selectmen; and

WHEREAS, the Commonwealth of Massachusetts has, pursuant to the Federal Clean Water Act §208(b) (3) and 40 C.F.R. 130.6(e), prepared and certified the Cape Cod Water Quality Management Plan Update ("208 Plan Update") developed by the Cape Cod Commission, which was certified by the Governor of the Commonwealth on June 10, 2015, and submitted to the United States Environmental Protection Agency, Region 1 ("USEPA"); and

WHEREAS, USEPA approved the 208 Plan Update on September 15, 2015; and

WHEREAS, Section 2A of Chapter 259 of the Acts of 2014 requires Massachusetts Department of Environmental Protection (MassDEP) "to develop a watershed permitting approach to address and optimize nitrogen management measures intended to restore water quality to meet applicable water quality standards in watersheds included in an approved area wide nitrogen management plan developed pursuant to section 208 of the federal Clean Water Act," and

WHEREAS, the 208 Plan Update includes a number of recommendations for improving water quality in the estuaries and embayments on Cape Cod, including the development of a watershed-based permit program ("Permit") pursuant to Section 2A of Chapter 259 of the Acts of 2014; and

WHEREAS, the 208 Plan Update designates the towns as Waste Treatment Management Agencies (WMAs) responsible for meeting Total Maximum Daily Loads (TMDL) on a watershed basis; and

WHEREAS, the estuaries and embayments of the Pleasant Bay system have experienced greatly increased anthropogenic loads of nitrogen delivered to the water through surface and groundwater sources from an increasingly developed watershed, and that this increase in nitrogen has increased the rate of eutrophication of the waters causing adverse aesthetic, water quality, and habitat impacts that result in violation of state water quality standards, all as documented in the Massachusetts Estuary Project (“MEP”) report entitled, *“Linked Watershed-Embayment Model to Determine Critical Nitrogen Loading Thresholds for the Pleasant Bay System, Towns of Orleans, Chatham, Brewster and Harwich, Massachusetts, Final Report, May 2006”*; and

WHEREAS, MassDEP developed and USEPA approved the report entitled *“Pleasant Bay System, Total Maximum Daily Loads for Total Nitrogen (Report #96-TMDL-12, Control #244.0), MADEP, May, 2007,”* establishing 19 Total TMDLs for Total Nitrogen in Pleasant Bay; and

WHEREAS, meeting the established TMDLs for Pleasant Bay will require substantial reductions in the amount of nitrogen flowing into Pleasant Bay from current and future watershed sources; and

WHEREAS, the Towns of Brewster, Chatham, Harwich and Orleans share the watershed of Pleasant Bay and, by an inter-municipal memorandum of agreement entered into in 2018 (Attachment 1), have formed the Pleasant Bay Alliance (Alliance) to coordinate resource management of Pleasant Bay among the member towns and further that the provisions of said inter-municipal agreement relating to the receipt and expenditure of funds and the designation of Chatham as the fiscal agent for the Alliance are hereby incorporated by reference into this Agreement; and

WHEREAS, Pleasant Bay is a state-designated Area of Critical Environmental Concern (ACEC); and

WHEREAS, a Resource Management Plan for the Pleasant Bay ACEC and Watershed developed by the Alliance and approved by Town Meetings of the four member towns and the Secretary of the Executive Office of Energy and Environmental Affairs identifies excessive nitrogen loading from watershed surface and groundwater sources as a primary threat to the health and sustainability of Pleasant Bay; and

WHEREAS, the Parties agree that wastewater, fertilizer, and stormwater are the prime source of controllable watershed nitrogen causing impairment of the embayment and that, as a result, a joint effort is required to restore and protect beneficial uses and aquatic resources of the Bay and its tributaries; and

WHEREAS, each of the Parties have, to varying degrees, established or are in the process of preparing a Comprehensive Wastewater Management Plan (“CWMP”) or equivalent plan, pursuant to the requirements of MassDEP to address its share of

responsibility for reducing the amount of nitrogen flowing into Pleasant Bay from watershed sources; and

WHEREAS, the Alliance is charged under the locally- and state-approved Resource Management Plan to convene a Pleasant Bay Watershed Work Group consisting of representatives of the member towns to work with MassDEP, USEPA, and the Cape Cod Commission, among others, to facilitate efforts to meet TMDLs on a watershed basis, through activities such as monitoring, technical analysis, modeling, and coordination of regional activities as may be required under a watershed permit; and

WHEREAS, the Pleasant Bay Alliance has compiled the *Pleasant Bay Composite Nitrogen Management Analysis* (March 2017) which presents in a uniform way the attenuated nitrogen loads and load removal requirements contained in individual town plans; and

WHEREAS, on June 23, 2017 the Select Boards of Brewster, Chatham, Harwich and Orleans voted to sign a *Resolution of the Towns Sharing the Watershed of Pleasant Bay* endorsing the *Pleasant Bay Composite Nitrogen Management Analysis* (March 2017) as an accurate representation of each Town's share of current attenuated nitrogen load and its responsibility to remove nitrogen in Pleasant Bay, as follows:

Town	Share of Attenuated Pleasant Bay Watershed Nitrogen Load	Share of Attenuated Pleasant Bay Watershed Nitrogen Load Removal
Brewster	6,359 kg/yr (13%)	2,262 kg/yr (13%)
Chatham	16,572 kg/yr (34%)	4,076 kg/yr (23%)
Harwich	10,929 kg/yr (23%)	4,399 kg/yr (25%)
Orleans	14,646 kg/yr (30%)	6,980 kg/yr (39%)
Total	48,503 kg/yr (100%)	17,717 kg/yr (100%)

and

WHEREAS, MassDEP initiated a new voluntary program of Watershed Permitting to facilitate removal of excess nitrogen loads impacting coastal embayments. The Alliance and member towns were invited by MassDEP to participate in a Watershed Permit Pilot Project for Pleasant Bay, to fully examine the requirements and benefits of entering into such a permit, and to compile the information required for such a permit; and

WHEREAS, based on the pilot project, Brewster, Chatham, Harwich, and Orleans believe that it is in their mutual best interests to jointly execute a Watershed Permit for the following reasons: (1) a Watershed Permit will allow greater flexibility to achieve TMDL compliance by providing a MassDEP accepted framework of nitrogen mitigation measures beyond a traditional MassDEP issued groundwater discharge permit; (2) a Watershed Permit will recognize community efforts to achieve compliance with the Clean Water Act through non-traditional nitrogen management approaches; (3) a Watershed Permit will support the towns' application for State Revolving Loan Fund (SRF) financing for non-traditional technologies and allow for higher priority for SRF financing for both traditional and non-traditional technologies for qualified projects; (4) a Watershed Permit will provide

an assured procedure for documenting nitrogen removal credit(s) toward TMDL compliance; and (5) a Watershed Permit will allow communities to demonstrate they are undertaking a MassDEP approved framework of actions to address water quality impairment and excess nitrogen in the Pleasant Bay watershed and in so doing obtain forbearance from MassDEP enforcement efforts intended to compel action to address water quality impairment and TMDL compliance; and

WHEREAS, a core aspect of the permit is a Targeted Watershed Management Plan (TWMP), found in Attachment 2. The TWMP summarizes the nutrient management plans (i.e., CWMPs) already prepared by the towns for the watershed, and is an elaboration of the Composite Analysis completed in March 2017 that was the basis for the June 2017 joint resolution; and

WHEREAS, In order to obtain a Watershed Permit, a four-town inter-municipal agreement will need to be executed that confirms each town's share of nitrogen removal responsibility and its intended implementation schedule, giving all towns the assurance that the towns are working together and that improved water quality will be not delayed by one town's inactions; and

WHEREAS, following the execution of this agreement, the Parties will be free to submit a Watershed Permit application for MassDEP review and approval (Attachment 3) as specified below.

NOW, THEREFORE, in consideration of the promises and mutual benefits to be derived by the Parties hereto, the Parties agree as follows:

1. **Recitals** to this Agreement are incorporated into and are part of this Agreement.

2. **Watershed Boundary**

The Pleasant Bay Watershed is comprised of all land and water in the Towns of Brewster, Chatham, Orleans, and Harwich that have been determined by USGS, as shown depicted in the Linked Watershed-Embayment Model to Determine Critical Nitrogen Loading Thresholds for the Pleasant Bay System, Towns of Orleans, Chatham, Brewster and Harwich, Massachusetts, Final Report, May 2006, to be contributing groundwater or surface water flow into Pleasant Bay and its fresh and saltwater lakes, ponds, rivers, creeks, bays, coves, and other wetlands.

3. **Targeted Watershed Management Plan**

a. The Parties agree that the most cost-effective means in terms of total cost, of meeting the TMDL requirements and attaining water quality and beneficial use goals, may be a regional, watershed-based approach to mitigate nitrogen at locations within the watershed where contributing loads are the greatest and methods useful for nitrogen reduction are most effective.

b. The Parties agree that the Targeted Watershed Management Plan (TWMP) is a fair representation of its CWMP and thereby endorse that document.

c. The Parties agree that the implementation table [specific reference] in the TWMP reflects their respective town's intent with respect to implementing nitrogen control plans. Further, the Parties recognize that nitrogen removal plans in the first five years of the implementation table represent DEP enforceable commitments and that later nitrogen removal measures are presented for planning purposes.

d. The Parties acknowledge the likely growth in watershed nitrogen loads from future development and intend to enact nitrogen growth management strategies contained in their respective local nitrogen management plan (i.e. CWMP) and summarized in the TWMP.

#### **4. Joint Responsibilities and Shared Activities.**

a. Each Party will continue to develop and/or implement its own MassDEP approved CWMP or comparable plan, as described in the TWMP, but shall include in their respective plan, if appropriate, any joint efforts undertaken by the Parties pursuant to this Agreement.

b. The Parties agree to be named joint permittees on a Permit for the Bay pursuant to the 208 Plan Update and Chapter 259 of the Acts of 2014, and any future requirements for such Permits established by MassDEP pursuant to any applicable state or federal regulations. The 20-year permit will require nitrogen removal activities as described in the TWMP, which is found in Attachment 2.

c. The Towns further agree to individually fund those measures expected to achieve control of their respective share of the load identified in the TWMP unless they mutually agree to joint efforts to mitigate nitrogen. The Parties agree to adopt a fair and practical methodology for implementing the most cost-effective approach, in order to comply with any permits issued by MassDEP, and to share on a fair and equitable basis the capital, operating, administrative, legal, operational, and other ancillary costs associated with a regional, watershed-based wastewater and/or nutrient management system.

d. The Parties agree to develop, if deemed mutually beneficial based on comparison of other wastewater management options of each Town, a fair and practical methodology for a reasonable nitrogen trading mechanism, including metrics for determining a nitrogen credit trading "currency" in terms of dollars per pound or other trading metric, as a means to implement a watershed-based plan.

e. The Parties agree to measure key parameters, share data and compile an annual report of progress as required under the Permit. Accordingly, the Parties agree to continue to support on-going system-wide monitoring and modeling of water quality and other nutrient-related ecological parameters in the Pleasant Bay system and to share equitably in the costs of these activities as set forth in the Memorandum of Agreement establishing the Alliance.

f. Each Party shall cooperate with the other Parties and other entities as appropriate to identify, apply for, secure, manage, and fairly allocate federal, state, or other funding sources, as such may become available, to finance the planning and implementation of multi-town or regional nutrient management plans resulting from the cooperative efforts of the Parties under this Agreement.

5. **Pleasant Bay Alliance.** The Parties hereby agree that the Alliance comprised of town representatives appointed in conformance with Memorandum of Agreement forming the Alliance, will oversee the Permit referenced in this IMA. The Alliance's responsibilities in this regard will be to:

- a. Coordinate joint activities of the Parties under this Agreement;
- b. Coordinate with the various departments and boards of their respective towns to apply for and implement a Permit for the Bay, subject to approval by each of the Parties prior to filing;
- c. Share or develop engineering and economic studies and evaluations to define means of meeting the Parties' respective nitrogen reduction targets and to develop cost-performance relationships that define most cost-effective technologies and practices for the removal of nitrogen;
- d. Coordinate system-wide monitoring and modeling of water quality and other nutrient-related ecological parameters in the Pleasant Bay system as needed to support implementation of the TWMP and compliance with the terms of the Permit;
- e. Develop and propose for adoption amendments to this IMA, if necessary, or other forms of agreement that will define and require the action of each Party to implement agreed-upon plans to apply for and implement, a Permit;
- f. The Alliance has no authority to bind one or more of the Parties. Its role shall be solely administrative in nature and to make recommendations to the Parties for actions required to implement such recommendations. The incurrence of any obligation under this Agreement by any Party shall be subject to the approval of the chief executive officer of each Party (e.g., Board of Selectmen) and the legislative body (e.g., Town Meeting), if required, to implement such recommendations.

## 6. **Terms of Agreement**

a. **Effective Date of Agreement** – The effective date of this Agreement shall be the date upon which this Agreement is entered into as first written above.

b. **Term of Agreement** – Pursuant to G.L. c. 40, §4A, the maximum term of this Agreement shall be twenty years, unless otherwise renewed or extended by mutual agreement. Coterminous with the Memorandum of Agreement establishing the Alliance, this Agreement will be reassessed by the Boards of Selectmen of each participating town at intervals of five years, or, if more stringent, in accordance with any permit renewal

requirements established by the MassDEP and may be modified by mutual agreement of the Parties through an amendment of this Agreement, if necessary, to achieve permit renewal and compliance.

c. Termination – This Agreement may be terminated by any one Party upon sixty (60) days notice to the other Parties, provided, however, that any obligations created by a joint Watershed Permit issued by the MassDEP shall continue for each of the Parties unless the Permit is modified pursuant to a joint application filed by all or the remaining Parties. Should a town elect to opt out of the Watershed Permit, the Permit shall remain in force and effect on the remaining towns, accepting that modification to the Permit may be necessary to the extent certain permit activities relied upon the opt out town’s participation.

d. Dispute Resolution – In the event of a dispute arising out of or in relation to the terms of this Agreement, representatives of the Parties shall meet and endeavor to settle the dispute in an amicable manner through mutual consultation. If such persons are unable to resolve the dispute in a satisfactory manner within thirty (30) calendar days, either party may seek assistance of an independent third party, mutually-agreeable to both or all Parties.

e. Assignment - Any Party may assign to another governmental entity established for the purpose of addressing wastewater issues in the Town the responsibility in whole or in part for implementing the watershed permitting activities contemplated in the Agreement.

f. Amendment of this Agreement – This Agreement may be changed or modified through a mutually agreed upon written Amendment executed by each and all of the Parties to this Agreement. Any Amendment shall be attached to and shall become part of this Agreement.

g. Mutual Indemnification – Each party to this Agreement shall indemnify and hold harmless each and all other Parties to this Agreement, their officers, agents, consultants, employees and assigns for all liability arising out of the activities under this Agreement.

h. Subject to Appropriation – The obligations of each of the Parties shall be subject to appropriation and the availability of funds.

i. No Remuneration – Parties to this Agreement shall be solely responsible for any and all costs incurred by themselves, their agents, their employees, committee members, consultants or other persons or entities resulting from activities undertaken pursuant to this Agreement.

j. Governance – This Agreement shall be governed by, construed under and enforced in accordance with the laws of the Commonwealth of Massachusetts.

k. Severability – If any provision of this Agreement is determined to be illegal, unenforceable, or void, then all Parties shall be relieved of their obligations under

that provision, provided, however, that the remainder of the Agreement shall remain in full effect.

1. Entire Agreement - This Agreement constitutes the entire agreement between the Parties.

IN WITNESS THEREOF, the Parties hereto have executed this Agreement as of the first date written above.

Town of Brewster  
By its Select Board

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Town of Chatham  
By its Board of Selectmen

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Town of Harwich  
By its Board of Selectmen

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Town of Orleans  
By its Board of Selectmen

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Attachments:

1. Alliance Memorandum of Agreement
2. Targeted Watershed Management Plan
3. Watershed Permit Application and Conditions



May 22, 2018

Ms. Kristy Senatori  
Executive Director  
Cape Cod Commission  
PO Box 226  
3225 Main Street- Route 6A  
Barnstable, MA 02630

Re: Request for a Determination that the Pleasant Bay Targeted Watershed Management Plan is consistent with the Cape Cod Water Quality Management Plan Update

Dear Ms. Senatori:

Acting under authorization by our respective Town Meetings, we the undersigned Boards of Selectmen/Select Board of Brewster, Chatham, Harwich and Orleans, submit this letter requesting a determination that the Pleasant Bay Targeted Watershed Management Plan (TWMP) is consistent with the Cape Cod Water Quality Management Plan Update (208 Plan Update).

The four towns share the watershed of Pleasant Bay, a state-designated Area of Critical Environmental Concern (ACEC), and formed the Alliance to coordinate development and implementation of a Resource Management Plan (RMP) for the ACEC and watershed. The RMP and subsequent updates, approved by Town Meetings of the four member towns and by the Secretary of the Executive Office of Energy and Environmental Affairs, identifies excessive nitrogen loading from watershed surface and groundwater sources as a primary threat to the health and sustainability of ACEC resources. In response to this threat, the Alliance and member towns participated in development of a Massachusetts Estuaries Project Technical Report for Pleasant Bay (2006). The Technical Report served as the basis for MassDEP's establishing 19 Total Maximum Daily Loads (TMDLs) for Total Nitrogen in Pleasant Bay, which call for substantial reductions in watershed nitrogen loads.

Each of our towns as a Waste Management Agency (WMA) has established or is in the process of preparing a plan to address its share of responsibility for reducing the amount of nitrogen flowing into Pleasant Bay from watershed sources. Through the Alliance, the towns worked together to understand the full effect of the four individual town nutrient reduction plans for Pleasant Bay, and to identify and pursue efficiencies in monitoring, modeling, and implementation. A result of this collaboration is the *Pleasant Bay Composite Nitrogen Management Analysis*, which the Towns' Boards of Selectmen adopted as an accurate representation of each town's share of nitrogen load and responsibility for load removal. Nitrogen removal technologies identified in the town plans and summarized in the Composite Analysis include a combination of traditional and non-traditional nitrogen reduction approaches to be implemented over forty years.

The Alliance and member towns were invited by MassDEP to participate in a Watershed Permit Pilot Project in order to fully examine the requirements and benefits of entering into such a

permit. Based on the pilot project, the Towns' find that it is in their mutual best interests to jointly execute a Watershed Permit for the following reasons: (1) a Watershed Permit will allow more flexibility to achieve TMDL compliance by providing a MassDEP-accepted framework of nitrogen mitigation measures beyond a traditional MassDEP-issued Groundwater Discharge Permit; (2) a Watershed Permit will recognize community efforts to achieve compliance with the Clean Water Act through non-traditional nitrogen management approaches; (3) the Watershed Permit will support town applications for State Revolving Loan Fund (SRF) financing for non-traditional technologies and allow for higher priority for SRF financing for both traditional and non-traditional technologies for qualified projects; (4) the Watershed Permit will provide an assured procedure for documenting nitrogen removal credits toward TMDL compliance; and (5) the Watershed Permit will allow communities to demonstrate they are undertaking a MassDEP approved framework of actions to address water quality impairment and excess nitrogen in the Pleasant Bay watershed and in so doing obtain forbearance from MassDEP enforcement efforts intended to compel action to address water quality impairment and TMDL compliance.

Accordingly, the Towns have undertaken the following actions necessary to obtain a Watershed Permit:

1. Obtained authorization from our respective Town Meetings to execute an Intermunicipal Agreement (IMA) for the purposes of applying for and entering into a Pleasant Bay Watershed Permit. The IMA designates the Alliance to coordinate joint activities under the permit;
2. Developed a Pleasant Bay Targeted Watershed Management Plan (TWMP) which documents the measures each town intends to undertake to reduce its share of nitrogen load in the Pleasant Bay watershed and when those removals will occur. A copy of the (TWMP) is enclosed;
3. Obtained necessary certificates from the Massachusetts Environmental Policy Act (MEPA) Office documenting that all MEPA requirements have been met for their respective comprehensive wastewater/nutrient management plans (CWMPs). The MEPA certificates issued to the Towns of Chatham (EOEA #11510), Harwich (EEA #15022), and Orleans (EOEA #14414) encompass implementation activities presented in the TWMP. It is noted that Orleans is currently seeking to amend its approved CWMP. In consideration of the 208 planning process, the amended CWMP will incorporate non-traditional nitrogen mitigation approaches not originally contemplated in the approved Orleans CWMP. The Town of Orleans will file a Notice of Project Change (NPC) for the amended CWMP as necessary; the other towns will likewise file NPC's for any proposed future changes as needed. Nutrient management activities proposed by the Town of Brewster do not trigger MEPA review.

In addition to these requirements, MassDEP has issued guidance on watershed permitting which states that plans and projects for which a WMA is seeking nitrogen credit through a watershed permit require a 208 Plan Update consistency determination. WMAs seeking a watershed permit with DEP shall also first obtain a 208 Plan Update consistency determination from the Commission.

The Alliance and member towns as WMAs have been working closely with Cape Cod Commission staff throughout the development of the TWMP to ensure that it meets the criteria

for a determination of consistency with the 208 Plan Update. *Section 16.0 Consistency with the 208 Plan Update*, reviews each of the Commission’s ten consistency criteria and describes the manner in which the TWMP complies. Further data in support of the finding of consistency for each criterion are included in the TWMP and appendices.

It is our understanding that this letter and enclosed attachments fully satisfy the submission requirements for a request for determination of consistency. However, if additional information is required, please contact Carole Ridley, Alliance Coordinator, at 508-430-2563, or [cr@ridleyandassociates.com](mailto:cr@ridleyandassociates.com).

Thank you for your consideration of this request.

Sincerely,

Town of Brewster  
By its Select Board

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Town of Chatham  
By its Board of Selectmen

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Town of Harwich  
By its Board of Selectmen

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Town of Orleans  
By its Board of Selectmen

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Attachments

1. TWMP
2. MEPA Certificates

June 1, 2018

Hon. Martin Suuberg  
Commissioner  
Massachusetts Department of Environmental Protection  
1 Winter Street  
Boston, MA 02108

Re: Application by the Towns of Brewster, Chatham, Harwich and Orleans for a Watershed Permit to undertake nitrogen reduction measures in the Pleasant Bay

Dear Commissioner Suuberg:

Acting under authorization by our respective Town Meetings, we the undersigned Boards of Selectmen/Select Board of Brewster, Chatham, Harwich and Orleans, submit this letter of application for a Pleasant Bay Watershed Permit to be issued by Massachusetts Department of Environmental Protection (MassDEP).

The four towns share the watershed of Pleasant Bay, which is a state-designated Area of Critical Environmental Concern (ACEC), and have formed the Pleasant Bay Alliance (Alliance) to coordinate a Resource Management Plan (RMP) for the ACEC and watershed. The RMP, which has been approved by Town Meetings of the four member towns and by the Secretary of the Executive Office of Energy and Environmental Affairs, identifies excessive nitrogen loading from watershed surface and groundwater sources as a primary threat to the health and sustainability of ACEC resources. In response to this threat, the Alliance and member towns participated in the development of a Massachusetts Estuaries Project Technical Report for Pleasant Bay (2006). The technical report served as the basis for MassDEP's establishing 19 Total Maximum Daily Loads (TMDLs) for Total Nitrogen in Pleasant Bay, which call for substantial reductions in watershed nitrogen loads.

Each of our towns have established or are in the process of preparing a plan to address its share of responsibility for reducing the amount of nitrogen flowing into Pleasant Bay from watershed sources. Through the Alliance, the towns have worked together to understand the full effect of the four individual town nutrient reduction plans for Pleasant Bay, and to identify and pursue efficiencies in monitoring, modeling and implementation. A result of this collaboration is the *Pleasant Bay Composite Nitrogen Management Analysis*, which the towns have adopted as an accurate representation of each town's share of nitrogen load and responsibility for load removal. The nitrogen removal technologies identified in the town plans and summarized in the Composite Analysis include a combination of traditional and non-traditional nitrogen reduction approaches to be implemented over forty years.

The Alliance and member towns were invited by MassDEP to participate in a Watershed Permit Pilot Project in order to fully examine the requirements and benefits of entering into such a permit. Based on the pilot project, the Towns' find

that it is in their mutual best interests to jointly execute a Watershed Permit for the following reasons: (1) a Watershed Permit will allow more flexibility to achieve TMDL compliance by providing a MassDEP-accepted framework of nitrogen mitigation measures beyond a traditional MassDEP-issued groundwater discharge permit; (2) a Watershed Permit will recognize community efforts to achieve compliance with the Clean Water Act through non-traditional nitrogen management approaches; (3) the Watershed Permit will support the towns' applications for State Revolving Loan Fund (SRF) financing for non-traditional technologies and be given higher priority for SRF financing for both traditional and non-traditional technologies for qualified projects; (4) the Watershed Permit will provide an assured procedure for documenting nitrogen removal credits toward TMDL compliance; and (5) the Watershed Permit will allow communities to demonstrate they are undertaking a MassDEP approved framework of actions to address water quality impairment and excess nitrogen in the Pleasant Bay watershed and in so doing obtain forbearance from MassDEP enforcement efforts intended to compel action to address water quality impairment and TMDL compliance.

Accordingly, the Towns have undertaken the following actions necessary to obtain a Watershed Permit:

1. Obtained authorization from our respective Town Meetings to execute an Intermunicipal Agreement (IMA) for the purposes of applying for and entering into a Pleasant Bay Watershed Permit. The IMA designates the Alliance to coordinate joint activities under the permit. An executed copy of the IMA is enclosed with this application;
2. Developed a Pleasant Bay Targeted Watershed Management Plan (TWMP) which documents the measures each town intends to undertake to reduce its share of nitrogen load in the Pleasant Bay watershed and when those removals will occur. A copy of the (TWMP) is enclosed;
3. Obtained a written determination from the Cape Cod Commission confirming that the Pleasant Bay TWMP is consistent with the requirements of the Cape Cod Water Quality Management Plan Update (208 Plan Update). A copy of the consistency determination is enclosed;
4. Obtained necessary certificates from the Massachusetts Environmental Policy Act (MEPA) Office documenting that all MEPA requirements have been met for their respective comprehensive wastewater/nutrient management plans (CWMPs). The MEPA certificates issued to the Towns of Chatham (EOEA #11510), Harwich (EEA #15022), and Orleans (EOEA #14414) encompass implementation activities presented in the TWMP. It is noted that Orleans is currently seeking to amend its approved CWMP. In consideration of the 208 planning process, the amended CWMP will incorporate non-traditional nitrogen mitigation approaches not originally contemplated in the approved Orleans CWMP. The Town of Orleans will file a Notice of Project Change (NPC) for the amended CWMP as necessary; the other towns will likewise file NPC's for any proposed

future changes as needed. Nutrient management activities proposed by the Town of Brewster do not trigger MEPA review.

It is our understanding that this letter and enclosed attachments fully satisfy the application requirements for a Watershed Permit. However, if additional information is required to complete this application or to assist with your review of our request, please contact Carole Ridley, Alliance Coordinator, at 508-430-2563, or [cr@ridleyandassociates.com](mailto:cr@ridleyandassociates.com).

Thank you for your consideration of this application.

Sincerely,

Town of Brewster  
By its Select Board

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Town of Chatham  
By its Board of Selectmen

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Town of Harwich  
By its Board of Selectmen

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Town of Orleans  
By its Board of Selectmen

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## Attachments

1. IMA
2. TWMP
3. Consistency Determination
4. MEPA Certificates



**PLEASANT BAY WATERSHED PERMIT**

Name and Address of Permittees:

- (1) Town of Brewster, 2198 Main Street, Brewster, Massachusetts 02631
- (2) Town of Chatham, 549 Main Street, Chatham, Massachusetts 02633
- (3) Town of Harwich, 732 Main Street, Harwich Center, Massachusetts 02645
- (4) Town of Orleans, 19 School Road, Orleans, Massachusetts 02653

Date of Issuance: July 1, 2018

Date of Expiration: June 30, 2038

**I. AUTHORITY FOR ISSUANCE**

Pursuant to authority granted by M.G.L. c. 21, § 27(6) and Section 2A of Chapter 259 of the Acts of 2014, the Massachusetts Department of Environmental Protection (“the Department” or “MassDEP”) hereby issues the following Permit to the Towns of Brewster, Chatham, Harwich and Orleans (collectively, “the Permittees”), subject to the terms and conditions set forth below.

**II. PURPOSE**

The waters of Pleasant Bay are impaired by excessive input of Nitrogen from the Pleasant Bay watershed, as demonstrated in the Massachusetts Estuaries Project report titled, *Linked Watershed-Embayment Model to Determine Critical Nitrogen Loading Thresholds for the Pleasant Bay System, Orleans, Chatham, Brewster and Harwich, Massachusetts*, dated May 2006 (“MEP Report”), and the associated total maximum daily load (TMDL) report titled, *Final Pleasant Bay System Total Maximum Loads For Total Nitrogen (Report # 96-TMDL-12, Control #244.0)*, dated May 2007 (“TMDL Report”). The purpose of this Permit is to authorize work needed to implement the Permittees’ mitigation strategy for Pleasant Bay, as set forth in the Permittees’ plan titled, *Pleasant Bay Targeted Watershed Management Plan*, dated May 2018 (“the TWMP”), as such plan may be amended from time-to-time as provided for herein. This Permit establishes performance standards, authorizes certain activities, and establishes timeframes under an adaptive management framework for achieving the water quality and habitat quality restoration goals required to achieve the designated uses established by the Department for Pleasant Bay under the Massachusetts Water Quality Standards, 314 CMR 4.00.

**III. REGULATED AREA**

The Permittees have voluntarily agreed to work together collaboratively in accordance with the terms of an Inter Municipal Agreement, effective [date] (“the IMA”), and this Permit, to implement the TWMP to achieve the water quality and habitat quality restoration goals established by the TMDL Report for Pleasant Bay. The area regulated under this Permit is the Pleasant Bay watershed, as shown in Figure 1, which is attached hereto (“the Regulated Area”). The MEP Report and its accompanying data disk lists all parcels of land included in the Pleasant Bay watershed.

**Figure 1: Pleasant Bay Watershed Regulated Area**



Figure credits: USGS, SMAST, and Cape Cod Commission

### IV. SPECIAL CONDITIONS

#### A. TWMP Implementation Schedule

1. The Permittees shall take the following actions in accordance with the following schedule:

Phase	Years		Brewster		Chatham		Harwich		Orleans		Total
			Activity	kgN/yr	Activity	kgN/yr	Activity	kgN/yr	Activity	kgN/yr	
	Up to 2018		Capt. Golf Course fertigation	230	Muddy Creek inlet restoration		Muddy Creek inlet restoration				1,769
			Capt. Golf Course fertilizer reduction	930							
			Enact fertilizer reduction by-law	121	Enact fertilizer reduction by-law	247			Enact fertilizer reduction by-law	241	
All towns: develop TWMP, execute IMA, obtain watershed Permit											
1	1 to 5	2019 to 2023	Develop onsite denitrification plan		Complete Harwich sewer connection		Install Phase 2 sewers	2,672	Amend CWMP		3,145
			Finalize contingency plan				Enact fertilizer reduction by-law	200	Lonnies Pond aquaculture	273	
All towns; update monitoring data; remodel Pleasant Bay; evaluate nitrogen trading; prepare plan for next 5 years											
2	6 to 10	2024 to 2028	Install onsite denitrification	118			Install Phase 3 sewers	1,565	Install Meetinghouse Pond sewers	2,014	5,887
Subject to adaptive management								Other aquaculture	1,516	Install onsite denitrification	
3	11 to 15	2029 to 2033	Install onsite denitrification	118	Install Frost Fish Creek Sewers	803			Install onsite denitrification	675	5,107
Subject to adaptive management					Install Ryders Cove sewers	2,605		Other Aquaculture	906		
4	16 to 20	2034 to 2039	Install onsite denitrification	118	Install Muddy Creek sewers	1,597			Install onsite denitrification	675	2,390
Subject to adaptive management											

2. The activities set forth in Section IV.A.1. above are considered enforceable requirements under the Permit, unless and until action is taken to modify the TWMP or the approved Implementation Schedule, revoke the Permit or withdraw from the Permit in accordance with the terms and conditions of the Permit. Any prospective changes to the TWMP or the approved implementation schedule shall be identified in the Annual Reports required by Section VI.J. of this Permit. Any such proposed changes are subject to the Department’s review and approval.

3. Section IV. A. 1., above, summarizes the Phase 1 (Years 1 to 5) activities the Permittees are required to perform in order to secure enforcement forbearance as provided under Section V of this Permit. Section IV.A.1. also summarizes the Phases 2 through 4 (Years 6 to 20) enforceable activities until such time as they are revised and MassDEP approved through adaptive management and submittal on an Annual Report in conformance with Section VI.J., a TWMP update or Watershed Permit modification.

**B. Monitoring and Reporting**

1. Sentinel Sampling Stations

The Permittees shall monitor water quality at the sentinel sampling stations shown on the plan titled, *Water Quality Sample Stations Chatham, MA*, prepared by the Chatham Community Development Department, dated December 15, 2009, and as shown and referenced in the MEP Report, and record the results, in accordance with the following:

Frequency	Watershed/Stations	Parameters	Sample Type
Twice during July, twice during August, and once during September	Little Pleasant Bay (PBA-12), Bassing Harbor (PBA-3 and CM-13), Muddy Creek (PBA-05), Meetinghouse Pond - Outer (WMO-10), Lonnies Pond (PBA-15), Namequoit Rive - Upper (WMO-6), Pochet- Upper (WMO-05), Pah Wah Pond (PBA-11), Little Quanset Pond (WMO-12), and Round Cove (PBA-09)	Particulate Organic Nitrogen (PON), Dissolved Organic Nitrogen (DON), Dissolved Inorganic Nitrogen (DIN), Dissolved Oxygen (DO), Chlorophyll a, Secchi Depth, salinity, Total Suspended Solids (TSS)	Grab/Observation

2. Aquaculture

The applicable Permittee(s) shall monitor the aquaculture project in Lonnies (Kescayo Ganset) Pond according to the following schedule as referenced in “ Technical Report DRAFT FINAL Lonnies Pond Shellfish Demonstration Project Year 1 Monitoring Summer/Fall 2016 Oyster Deployment” dated January 2017

<b>Frequency</b>	<b>Stations</b>	<b>Parameters</b>	<b>Sample Type</b>
Bi-weekly from late June to mid-October on the mid-ebb tide	LP-1, LP-2, LP-3, LP-4 (PBA-15), LP-5 (M5), LP-6 (M6), LP-7 (M7), LP-8 (M8)	Temperature, salinity, total nitrogen (nitrate + nitrite, ammonia, dissolved organic nitrogen (DON), particulate organic nitrogen (PON)), chlorophyll-a (Chl-a), pheophytin-a, orthophosphate, dissolved oxygen (DO), transparency (secchi depth), and alkalinity	Grab/Observation

3. Fertigation

The applicable Permittee(s) shall sample and monitor the fertigation well IW-6D in accordance with the following schedule.

<b>Parameter</b>	<b>Minimum Sampling Frequency</b>
Flow	Daily, when operational
pH	Monthly (during April through November) <sup>1</sup>
Total Nitrogen (Total Kjeldahl Nitrogen + Nitrate Nitrogen + Nitrate Nitrogen)	Monthly (during April through November)
Ammonia Nitrogen	Monthly (during April through November) <sup>1</sup>
Nitrate Nitrogen	Monthly (during April through November) <sup>1</sup>
Total Mass Load of Total Nitrogen Pumped	Annually

<sup>1</sup> After one full year of monitoring the Total Nitrogen, Ammonia Nitrogen and Nitrate Nitrogen, the Department may determine, upon the request of the applicable Permittee(s), that the frequency of monitoring may be reduced.

4. Fertilizer Reduction

The applicable Permittee(s) shall report annually the amount of fertilizer applied to the Captains Golf Course, 1000 Freemans Way, Brewster, Massachusetts and any other facilities for which a fertilizer reduction credit may be applied.

**C. Adaptive Management Framework**

1. This Permit establishes an adaptive management framework in which future decisions will be made as part of an ongoing science-based process and the needs of the Permittees. The Permittees shall implement this framework, as set forth in the TWMP, to evaluate the

results of their water quality management program and adjust and modify their strategies and practices, as needed, and in accordance with this Permit, to address conditions that are causing water quality impairments due to excessive Nitrogen in Pleasant Bay.

2. Subject to MassDEP approval, the Permittees may assume Nitrogen reduction credit for non-traditional approaches and/or non-traditional technologies only if the Permittees implement and maintain such approaches and/or technologies in accordance with the terms and conditions of this Permit. If this Permit is revoked or terminated, MassDEP reserves the right, to the extent of its statutory and regulatory authority, to require the Permittees, individually or collectively, to implement proven technologies to achieve the water quality and habitat quality restoration goals established by the TMDL Report for Pleasant Bay.
3. Nitrogen reduction credits for non-traditional approaches shall be approved by the Department if the data generated from the monitoring of such approaches, as reported in the Annual Reports required under Section VI.J. of this Permit, demonstrates their effectiveness to the Department's satisfaction. Validated data from demonstration projects other than those covered under this permit may, at the discretion of the Department, also be considered in determining nitrogen reduction credits.
4. The Permittees shall continuously provide a contingency plan in the TWMP that relies on proven technologies to achieve the target Nitrogen threshold concentrations at the sentinel sampling stations identified in the MEP Report and the TMDL Report for the Pleasant Bay watershed.

#### **D. Groundwater Discharge Permits**

The Department has issued Groundwater Discharge Permit #44-1 to the Town of Chatham, which is incorporated herein by reference, and which is one component of the implementation activities described in the TWMP. Any groundwater discharge permits issued by the Department in the future to the Permittees, either collectively or individually, pursuant to 314 CMR 5.00, applicable to the Regulated Area, and consistent with the TWMP, shall also be deemed incorporated by reference herein.

### **V. COMPLIANCE AND ENFORCEMENT**

**A. Establishment of Conditions and Limitations.** This Permit requires the Permittees to implement cost-effective controls and reasonable best management practices for nonpoint sources, and to provide the level of treatment established by other discharge permits issued by the Department to the Permittees, individually or collectively, and it specifies an implementation schedule for achieving the water quality and habitat quality restoration goals established by the TMDL Report for Pleasant Bay. The implementation schedule established by this Permit affords the Permittee(s) adequate time to meet the minimum water quality criteria for Nitrogen by utilizing an adaptive management framework to control such sources, as provided by the TWMP.

**B. Enforcement.** While this Permit is in effect, the Department agrees to exercise enforcement discretion by forbearing from initiating unilateral enforcement action against the Permittees related to water quality impairment in Pleasant Bay from excess Nitrogen. This enforcement forbearance applies solely to the Nitrogen contribution from all nonpoint sources and any otherwise unregulated sources that are subject to the TWMP, as the TWMP may be amended from time-to-time in accordance with this Permit. This paragraph does not relieve the Permittees, individually or collectively, from any obligation to comply with the terms and conditions of any other permit, approval or order issued by the Department, including, without limitation, any other permit, approval or order referenced in or incorporated in this Permit, any failure to obtain any other permit or approval otherwise required by the Department, or any failure to comply with the terms and conditions established by this Permit. For purposes of this paragraph, unilateral enforcement action includes not only the issuance of any unilateral administrative order and notice of intent to assess a civil administrative penalty, but also any other action taken by the Department unilaterally to mandate an alternative Nitrogen mitigation strategy, such as establishing a local water pollution abatement district pursuant to M.G.L. c. 21, § 28, and designating one or more locations within the Pleasant Bay watershed as Nitrogen Sensitive Areas under 310 CMR 15.215.

**C. Treatment of co-permittees.** Each co-permittee is severally liable for those activities they agree to carry out under the IMA. Each co-permittee is not liable for violations related to those activities for which their co-permittees are solely responsible under the IMA, provided they do not own or operate the treatment system or control technique or are otherwise contractually responsible for the activity that resulted in the violation. Furthermore, each co-permittee who has coverage under another permit or approval issued by the Department which is incorporated herein by reference shall not be deemed in violation of that other permit or approval for the sole reason that one or more of the other co-permittees is in violation of this Permit.

## VI. GENERAL CONDITIONS

- A. Incorporation of TWMP and IMA by reference.** The TWMP and IMA, and any subsequent amendments thereto, are incorporated into this Permit by reference.
- B. General Duty.** The Permittees shall comply with all terms and conditions of this Permit. Noncompliance with this Permit is grounds for enforcement action, permit termination, permit revocation, permit modification, or denial of a permit renewal application.
- C. Notification of Delays.** The Permittees shall promptly notify the Department, in writing, upon learning of any delay in compliance with the implementation schedule established by this Permit. Such notice shall state the anticipated length and cause of the delay, the measure or measures to be taken to minimize the delay, and a timetable for implementing those measures. The Permittees shall take appropriate measures to avoid or minimize any such delay.
- D. Proper Operation and Maintenance.** The Permittees, at all times, shall properly operate and maintain all facilities and systems of treatment and control and related appurtenances which are installed or used by the Permittees to achieve compliance with the terms and conditions of this Permit.
- E. Duty to Mitigate.** The Permittees shall take all reasonable steps to minimize or prevent any significant adverse impact on human health or the environment that may result from carrying out activities authorized by this Permit.
- F. Relationship to Other Permits.** This Permit shall not be construed to relieve the Permittees, individually or collectively, of the obligation to comply with the terms and conditions of any other permit order or approval, including any § 401 water quality certificate, issued by the Department.
- G. Duty to Monitor.** The Permittees shall carry out the approved monitoring activities established by this Permit in Section IV. B. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Monitoring information required by this Permit shall be retained for the life of the permit, or as otherwise approved by the Department. Records of monitoring information include: (1) the date, exact place, and time of sampling or measurements; (2) the individual(s) who performed the sampling or measurements; (3) the date(s) analyses were performed; (4) the individual(s) who performed the analyses; (5) the analytical techniques or methods used; and (6) the results of such analyses. Monitoring results must be conducted according to test procedures approved by the Department or the United States Environmental Protection Agency for such purposes, unless other test procedures are specified in this Permit.
- H. Duty to Report Monitoring Results.** The Permittees shall report to the Department the results of monitoring performed for purposes of this Permit in the Annual Reports pursuant to Section VI. J.



**I. Toxics Control.** In conducting activities under this Permit, the Permittees shall not discharge any pollutant or combination of pollutants in toxic amounts. Any toxic components of such activities shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard.

**J. Annual Reporting.** The Permittees shall submit Annual Reports to the Department for review and approval, at which time the Department will determine if modifications to the TWMP or Permit are necessary. The initial report is due one (1) year from the effective date of this Permit and annually thereafter. The reports should contain information regarding activities of the previous calendar year. The following information shall be contained in each annual report:

- (a) a description, including dates, of the installation of any treatment and control systems and facilities, or approaches taken, during the reporting period;
- (b) a summary of results of any monitoring information that has been collected and analyzed during the reporting period;
- (c) a performance evaluation of the treatment and control systems and facilities, and approaches taken, during the reporting period, including identification of any performance shortcomings or challenges along with recommended corrective actions and optimization activities, as necessary;
- (d) a discussion of the activities planned, and the associated critical path, for the next annual reporting cycle, consistent with the implementation schedule;
- (e) a self-assessment review of compliance with the terms and conditions of this Permit during the reporting period, and
- (f) every fifth annual report shall include a progress report which describes the progress made in achieving the water quality and habitat quality restoration goals required to achieve the designated uses for Pleasant Bay, including an evaluation of the results of the Permittees' water quality management program to date, any proposed adjustments and modifications to the strategies and practices under the TWMP, pertinent sampling and monitoring results, as well as other data pertinent to the technologies installed and approaches taken under the TWMP as of the date of the report, any proposed nitrogen reduction credits for non-traditional approaches requested in accordance with Section IV.C.3. of this Permit, any changes requested to the approved Implementation Schedule, and any other information requested by the Department.

**K. Modification of the TWMP or Implementation Schedule.** The Permittees shall request, in writing, prior Department approval for modifications to the TWMP and/or the Implementation Schedule established by this Permit in Section IV. A. Such modifications shall become effective and enforceable requirements under this Permit upon approval.

**L. Notification of Changes under the IMA.** In the event the Permittees agree to amend the IMA, or one or more of the Permittees unilaterally rescinds, terminates or otherwise withdraws from the IMA, then the Permittees shall promptly notify the Department in writing of such action.

**M. Duty to Provide Information.** The Permittees shall furnish to any authorized representative of the Department any information which is requested to determine compliance with this Permit.

The Permittees shall also furnish any authorized representative of the Department, upon request, copies of records required to be kept by this Permit.

**N. Termination of Permit Coverage.** Any one or more of the Permittees may terminate coverage under this Permit by providing written notice to the Department at least thirty (30) days in advance of the date such termination is to take effect. Such notice will not be construed to relieve any of the Permittees, individually or collectively, of their obligations to comply with the terms and conditions of this Permit while such coverage was in effect.

**O. Facility Closure Requirements.** The Permittees shall notify the Department in writing at least thirty (30) days prior to the closure of any treatment or control system or facility covered by this Permit. The Department may require specific measures during deactivation of such systems to prevent any significant adverse environmental impacts.

**P. Planned Changes.** The Permittees shall notify the Department in writing as soon as possible of any planned alterations or additions to any treatment or control system covered by this Permit, provided that such alterations or conditions are not subject to any other permit, or any § 401 water quality certificate, issued by the Department under the Surface Water Discharge Permitting Program or Groundwater Discharge Permitting Program. The Department may require specific measures to prevent any significant adverse environmental impacts that may result from such changes.

**Q. Submittals.** All reports and notices required by this Permit shall be submitted either electronically to [[insert e-mail address](#)] or by hand-delivery of mailed to the following addresses:

[Name/Title]  
Massachusetts Department of Environmental Protection  
20 Riverside Drive  
Lakeville, Massachusetts 02347

**R. Permit Actions.** This Permit may be modified, revoked and reissued, or terminated by the Department for cause, including any noncompliance with the terms and conditions of this Permit, or if necessary to effectuate compliance with any law or regulation enacted or promulgated after the effective date of this Permit, or to otherwise effectuate the purposes of the Massachusetts Clean Waters Act.

**S. Inspection and Entry.** The Permittees shall allow the Department and its authorized representatives to enter upon the Permittees' premises where a regulated facility or activity is located or conducted, or where records required by this Permit are kept, access and copy, at reasonable times, any records that must be kept under the conditions of the permit, inspect at reasonable times any facilities, equipment, practices, or operations regulated or required under this Permit, and sample or monitor at reasonable times for the purpose of determining compliance with the terms and conditions of this Permit. In addition, the Permittees shall take reasonable efforts upon request of the Department to secure from the owners and operators of premises owned or operated by third parties access at all reasonable times to conduct such activities.

**T. Property Rights.** The issuance of this Permit does not convey any property rights of any sort, or any exclusive privileges, or authorize any injury to private property, or any invasion of personal rights.

**U. Compliance with Laws.** The issuance of this Permit does not relieve the Permittees, individually or collectively, of their obligations to comply with applicable federal, state, and local laws, regulations, ordinances and bylaws.

**V. Severability.** The provisions of this Permit are severable, and if any provision of this permit, or the application of any provision of this Permit to any circumstance, is held invalid, the application of such provision to the circumstances, and the remainder of this Permit shall not be affected thereby.



# Pleasant Bay Alliance



## **PLEASANT BAY TARGETED WATERSHED MANAGEMENT PLAN**

A Compilation of the Wastewater and Nitrogen Management Plans  
of Brewster, Chatham, Harwich and Orleans  
in Support of a DEP Watershed Permit

**May  
2018**

# PLEASANT BAY TARGETED WATERSHED MANAGEMENT PLAN

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## **EXECUTIVE SUMMARY**

The primary threat to the health of Pleasant Bay is nitrogen enrichment from watershed sources. For close to two decades, the Pleasant Bay Alliance (Alliance) has coordinated actions among the four towns sharing the watershed of Pleasant Bay to address this concern. The Alliance's contributions to understanding and managing nutrient loading include establishing and sustaining a water quality monitoring program, and coordinating the bay-wide approach to the MEP Technical Analysis and development of TMDLs. The Alliance also generated the analysis that led to Chatham's and Harwich's decision to construct the Muddy Creek bridge, which is the first nutrient management project implemented in the Pleasant Bay watershed, and will significantly reduce the amount of sewerage needed in the sub-watershed. The Alliance convenes a monthly Watershed Work Group that brings together town, state and county personnel involved in nutrient management. In addition, the Alliance monitors tide levels and conducts research on the geomorphology of the barrier beach and inlet system, which influence system-wide hydrodynamics and ecological conditions.

The *Pleasant Bay Resource Management Plan Update* approved by Town Meetings in each member town, and by the state, directs the Alliance to continue this work concerning watershed-based nutrient management. Specifically, the Alliance is charged with coordinating joint activities under a Pleasant Bay Watershed Permit to be issued to the Towns by Massachusetts DEP. The Alliance has developed this Targeted Watershed Management Plan (TWMP) in response to that charge. The TWMP builds on previous analyses undertaken by the towns and the Alliance, as described below.

**The *Pleasant Bay Composite Nitrogen Management Analysis*, the predecessor to this document, was issued in March 2017. Its primary purpose was to show the combined effect of four towns' wastewater management plans on nutrient removal within the Pleasant Bay watershed.** That analysis was vetted by Town staff and technical consultants, as well as the Cape Cod Commission and DEP.



## *Pleasant Bay Targeted Watershed Management Plan*

*In June 2017, the Towns signed a joint resolution endorsing the Composite Analysis as an accurate representation of each Town's share of current nitrogen load and load removal responsibility.* The Towns also agreed to participate in a Watershed Permit Pilot Project with the Alliance, DEP, US EPA, and the Cape Cod Commission to pursue efficiencies and cost savings through coordinated implementation of nutrient management actions. The Towns expect to be issued a Watershed Permit in 2018.

### *The Watershed Permit provides the following benefits to the towns:*

- A DEP-accepted framework of nitrogen mitigation measures beyond a traditional DEP-issued groundwater discharge permit;
- A framework for obtaining nitrogen reduction credits for compliance with the Clean Water Act through non-traditional nitrogen management approaches;
- Higher ranking for State Revolving Loan Fund (SRF) financing for both traditional and non-traditional technologies for qualified projects;
- An assured procedure for documenting nitrogen removal credits toward TMDL compliance; and
- DEP's agreement to exercise enforcement discretion by forbearing from initiating unilateral enforcement actions against the towns related to water quality impairment in Pleasant Bay from excess nitrogen.

*This TWMP is a core aspect of the Watershed Permit.* The TWMP is an elaboration of the Composite Analysis and summarizes the nutrient management plans (i.e., CWMPs) already prepared by the towns in the watershed, and is not a new plan. The TWMP, like the Composite Analysis, documents what each town intends to do to reduce its share of nitrogen load in the Pleasant Bay watershed and when those removals will occur. With the benefit of this information, Brewster, Chatham, Harwich and Orleans may choose to modify their individual plans, pursue joint projects or enter into negotiations with each other to take advantage of efficiencies.

**The TWMP demonstrates that the town plans are designed to remove enough nitrogen to achieve published standards and address other wastewater-related town needs.** Those published standards take the form of Total Maximum Daily Loads (TMDLs)<sup>1</sup>. System-wide, the amount of attenuated nitrogen load to be removed in order to meet TMDLs is 17,717 kg/yr, or 36% of the total load bay-wide. There are nineteen separate TMDLs in Pleasant Bay and the

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<sup>1</sup> When the term TMDL is used in this report, it refers to nitrogen-based TMDLs.

## ***Pleasant Bay Targeted Watershed Management Plan***

amount of removal needed varies in different subembayments, ranging from 0% removal in Crows Pond and Chatham Harbor, to 75% removal in Lower Muddy Creek and 83% removal in Meetinghouse Pond. These removals pertain to existing watershed load. It is understood that 100% of any future load from added development also must be removed.

**Each town has agreed to remove nitrogen in proportion to its share of the current attenuated load.** This approach is common to all four of the town plans and is the basis of this analysis. There are seven subembayments where one town is solely responsible for load removal. In the remaining subembayments, two or more towns share load removal requirements.

**Nearly three quarters of the required load removal is focused in six subembayments.** There are six subembayments for which an individual town's load removal requirement exceeds 5% of the system-wide load reduction requirement. Combined, these subembayments account for 71% of the total load reduction requirement. These subembayments are Round Cove, Lower Muddy Creek, Ryder's Cove, Meetinghouse Pond, Pochet and Pleasant Bay/Little Pleasant Bay.

**On a subwatershed basis, gaps and overages in nitrogen removal create opportunities for exploring cost efficiencies through nutrient trading and shared facilities.** In eight subwatersheds, existing plan removals are slightly below the amount required to meet TMDLs. These differences are not significant enough to warrant plan modification, and could be met through adaptive management. In eight other subembayments, the amount of nitrogen removal exceeds the amount required to meet TMDLs. However, the performance of the town plans in meeting TMDLs could be affected by variable performance of non-traditional technologies, or additional wastewater flow from new development in the watershed.

**Watershed wide, the four town plans provide a combination of traditional and non-traditional technologies (a so-called "hybrid approach"), with non-traditional technologies accounting for about 25% of the estimated removal system-wide.** Individually, the plans differ in the degree to which they utilize traditional and non-traditional technologies. Non-traditional approaches make greater use of natural processes and their performance will vary due to environmental factors. For this reason, non-traditional approaches are subject to a regulatory

## ***Pleasant Bay Targeted Watershed Management Plan***

requirement for a back-up traditional system in the event that the non-traditional approach does not function as predicted. Back-up is planned in some, but not all, subwatersheds in which non-traditional approaches are proposed.

**In those subembayments where the nitrogen loads from more than one town must be reduced, costs savings may be realized through nitrogen trading.** A watershed-wide approach may identify locations and technologies where one town removes more than its requirement and another town removes less, with payment of a negotiated amount to equalize the costs. Such opportunities exist in the northerly headwaters subembayments shared by Brewster and Orleans, and in the Muddy Creek and Pleasant Bay subembayments shared by Chatham and Harwich.

**The implementation of town plans will occur over several decades.** This TWMP includes a detailed implementation schedule that shows how over the next five years the four towns will remove about 28% of the nitrogen required to meet TMDLs. It also presents a listing of future activities now planned for years 6 through 20 that could remove nearly all the nitrogen required to meet TMDLs. (Those future activities are presented for planning purposes and may change as the towns' adaptive management programs are applied to the results of the initial activities.)

**In their implementation timelines, the towns have given relatively high priority to four of the six high-load sub-watersheds: Meetinghouse Pond, Muddy Creek Upper and Lower (Harwich) and Round Cove.** The Pleasant Bay subembayment is designated as a high priority by Brewster and Harwich. It will be addressed in a later phase of the Chatham and the Orleans plans (although nitrogen removals in the headwaters embayments will have an indirect positive impact on Pleasant Bay). However, Pochet, which accounts for nearly 9% of the total load reduction requirement, is not scheduled for early implementation by Orleans.

**Implementation activities within each community will be undertaken under the direction of the respective town as the designated Waste Management Agency.** In accordance with the intermunicipal agreement for entering into a Watershed Permit, the Alliance is charged with coordinating joint activities of the Towns/WMAs including:

## *Pleasant Bay Targeted Watershed Management Plan*

- Fully exploring the opportunities for efficiency and cost savings identified in the *Pleasant Bay Composite Nitrogen Management Analysis*;
- Sharing or developing engineering and economic studies and evaluations to define means of meeting the Towns' respective nitrogen reduction targets and to develop cost-performance relationships that define most cost-effective technologies and practices for the removal of nitrogen; and
- Coordinating system-wide monitoring and modeling of water quality and other nutrient-related ecological parameters in the Pleasant Bay system as needed to support implementation of the TWMP and compliance with the terms of the Watershed Permit.

### **1.0 PURPOSE**

Water quality in Pleasant Bay is impacted by watershed inputs from activities in four towns: Brewster, Chatham, Harwich and Orleans. Each town has formulated a plan for reducing the nitrogen loads that are the primary cause for water quality problems. Each town plan also addresses multiple watersheds, in addition to Pleasant Bay, and accounts for a variety of town-wide needs and priorities. It is the purpose of this Targeted Watershed Management Plan to:

- compile the portions of the four town plans that deal specifically with the Pleasant Bay watershed,
- compare the proposed town-by-town nitrogen removals against the Total Maximum Daily Loads (TMDLs) for Pleasant Bay,
- identify gaps and overlaps in the collective plans for nitrogen removal,
- identify actions that may be helpful in improving the cost-effectiveness of the combined plans,
- document consistency with the Cape Cod Commission's 208 Plan Update, and
- provide the foundation for a Watershed Permit to be issued by the Massachusetts Department of Environmental Protection (DEP).

An earlier version of this report, the *Pleasant Bay Composite Nitrogen Management Analysis* (Composite Analysis), was issued in March of 2017. A Joint Resolution supporting the Composite Analysis was executed by the four Boards of Selectmen in June 2017.

This analysis is presented to the four towns' Boards of Selectmen for consideration. With the benefit of this information, each town may choose to modify its plan, pursue joint projects or enter into negotiations with one or more towns to take advantage of efficiencies. Such actions can easily be accommodated within the long implementation periods associated with each town plan, and are anticipated in the implementation schedule to be contained in the Watershed Permit.

## **2.0 DATA SOURCES AND METHODS**

This analysis incorporates information from the Pleasant Bay portion of each town's wastewater management plan as of March 2018. The nutrient loading and load reduction information is based on the analyses generated by the Massachusetts Estuaries Project (MEP), as modified by engineering studies provided in the individual town plans and vetted by each member community. Drafts of this report have been reviewed by each town's representative on the Pleasant Bay Alliance's Watershed Work Group and by each town's wastewater consultant. Drafts of this report were also submitted to the Cape Cod Commission and DEP for comment.

As watershed-based analysis of the four town plans continues, use of watershed decision support tools available through the Cape Cod Commission may be advisable to facilitate consideration of updated land use information and nitrogen load estimates.

Numerous reports have been published related to the nature and extent of the nitrogen loading problem and proposals to reduce that loading. The most pertinent documents are listed in Table A-1 in Appendix A.

## **3.0 BACKGROUND**

Pleasant Bay is the largest coastal embayment on Cape Cod. The Pleasant Bay system is state-designated as Outstanding Resource Waters and an Area of Critical Environmental Concern. According to the Cape Cod Commission, the water surface of the Bay covers nearly 6,200 acres and approximately 11,800 acres of land surface are within the Bay's watershed.

For modeling purposes, the system as a whole consists of 19 separate subembayments (e.g., Round Cove, Meetinghouse Pond, Crows Pond, etc.), each of which has a TMDL for total nitrogen. The land area contributing groundwater and, thus, nitrogen load to each subembayment is delineated as a separate subwatershed.

## *Pleasant Bay Targeted Watershed Management Plan*

MEP studies have determined that the water quality in most Pleasant Bay subembayments is moderately or significantly impaired. Nitrogen has been identified as the principal contaminant, from the following controllable sources:

- Septic systems 75%
- Stormwater runoff 9%
- Lawn and golf course fertilization 16%

The MEP has determined that 36% of the current attenuated watershed nitrogen load bay-wide must be removed to restore water quality. Individual subembayments have nitrogen removal needs ranging from 0% to 83%. Each of the four towns in the Pleasant Bay watershed has developed plans for nitrogen removal, and those plans are in varying stages of implementation.

As reported in the 2006 MEP technical report, there were 8,637 separate land parcels located partially or totally within the Pleasant Bay watershed in the early part of that decade. Table 1 enumerates those parcels by town, and shows the extent to which those parcels were developed at that time.

**Table 1. Enumeration of Parcels within the Pleasant Bay Watershed (MEP, 2006)**

<b>Number of Watershed Parcels</b>	<b>Brewster</b>	<b>Chatham</b>	<b>Harwich</b>	<b>Orleans</b>	<b>Total</b>
Developed	709	2,724	1,517	2,365	7,315
Vacant but Developable	112	236	256	284	888
Vacant and Undevelopable	150	86	71	127	434
Total	971	3,046	1,844	2,776	8,637

Of all the parcels in the watershed, about 85% were developed at the time of preparation of the MEP report. Of the 15% that were not developed, about one-third were considered undevelopable due to zoning, ownership or other reasons. At full build-out, the number of developed parcels would increase to about 8,300, a 12% increase. This percentage increase understates the potential increase in nitrogen load in the watershed, because many of the currently undeveloped lots can be subdivided so that the build-out parcel count could be much higher than 8,300.

## **4.0 NITROGEN LOADS AND REMOVAL REQUIREMENTS**

Groundwater modeling performed as part of the MEP studies allows the Pleasant Bay watershed and individual subwatersheds to be delineated. The TMDLs were set for 19 individual subembayments and for the system as a whole. The watersheds to those 19 subembayments have been aggregated to 18 for this report, as shown in Figure 1. (That aggregation was necessary because the 2007 town-by-town allocation of existing loads was conducted for all individual subembayments except for the Pleasant Bay and Little Pleasant Bay subembayments. For the purposes of this report, these two subembayments were combined into one subembayment called “Pleasant Bay.”)

The MEP Technical Report presents estimates of nitrogen loads originating both within the watershed, as well as within the embayment. The “watershed loads” generally include nitrogen from septic systems; lawn, golf course and cranberry bog fertilization; and stormwater runoff. The watershed loads are considered “locally controllable” and it is those loads that are addressed in town plans and reported here. Loads that occur in the embayment, including atmospheric deposition and benthic release, are not considered to be locally controllable and, therefore, are not addressed in town plans or in this analysis.

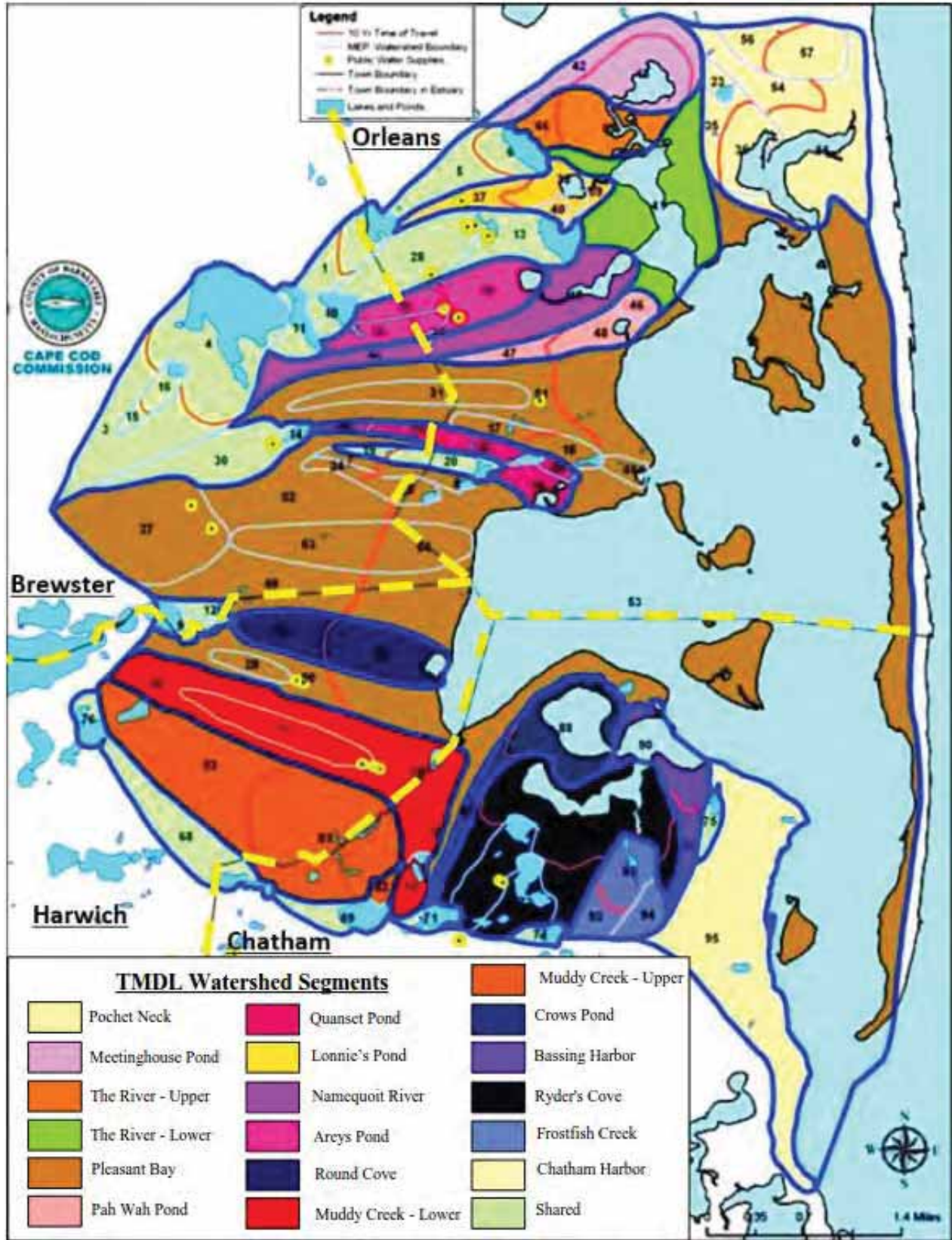
The MEP studies also quantify the natural attenuation that reduces watershed loads once they reach the groundwater and flow toward the embayment. When nitrogen loads pass through multiple attenuation sites (bogs, streams, ponds), significant natural nitrogen removal can occur that must be accounted for. Over the entire Pleasant Bay system, natural processes reduce the unattenuated load by about 11%:

Overall unattenuated watershed load	54,500 kg/yr
Less natural attenuation	<u>-6,000 kg/yr</u>
Attenuated load	48,500 kg/yr

Table A-2 summarizes the unattenuated and attenuated loads coming from each town to each of the 18 subembayments in the Pleasant Bay system. On a percent-of-unattenuated-load basis, the greatest natural attenuation occurs in Brewster in the watersheds it shares with Orleans, and in the Muddy Creek watershed shared by Chatham and Harwich.

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**Figure 1. Location of Pleasant Bay Subembayments**





## *Pleasant Bay Targeted Watershed Management Plan*

Based on the ecological health of each subembayment, specifically the degree of water quality impairment, the MEP estimated the threshold loads (TMDLs) of nitrogen above which ecological impairment occurs. The difference between the actual load and the threshold load or TMDL is the amount of nitrogen that must be removed to restore water quality. Table A-3 summarizes the amount of nitrogen that must be removed in each of the 18 subembayments. The aggregate attenuated nitrogen load to be removed in order to meet TMDLs is 17,717 kg/yr.

### **5.0 ALLOCATION OF RESPONSIBILITY FOR NITROGEN LOAD REMOVALS**

There needs to be some equitable assignment of responsibility for removal of the excess nitrogen loads in the watershed. Each of the four towns has developed its nitrogen management plan on the premise that its responsibility for nitrogen removal is proportional to its current attenuated nitrogen load. For example, 79% of the current attenuated nitrogen load to the Areys Pond subembayment comes from Orleans, so Orleans has assumed that it should remove 79% of the nitrogen over the threshold load. This approach is the one now recommended by the Cape Cod Commission in the 208 Plan Update and this approach is endorsed by DEP.

Table A-3 applies that approach to load removal to the 18 Pleasant Bay subembayments. In the aggregate, the town responsibilities for removal of attenuated nitrogen load are:

Brewster	2,262 kg/yr (13% of total removal responsibility)
Chatham	4,076 kg/yr (23% of total removal responsibility)
Harwich	4,399 kg/yr (25% of total removal responsibility)
Orleans	<u>6,980 kg/yr</u> (39% of total removal responsibility)
Total	17,717 kg/yr (100% of total removal responsibility)

Orleans has the largest load removal responsibility because the subembayments it impacts are the most impaired, overall. Chatham has the largest attenuated nitrogen load, but significant portions of that load are tributary to subembayments with no impairment (such as Chatham Harbor).

Table 2 presents the annual nitrogen load removals allocated to each town and to each subembayment. The blue-shaded cells in Table 2 are those where the nitrogen removal requirement exceeds 5% of the overall 17,717 kg/yr (886 kg/yr).

**Pleasant Bay Targeted Watershed Management Plan**

**Table 2. Nitrogen Removal Requirements by Town and by Subembayment (kg/yr)**

<b>Subembayment</b>	<b>Brewster</b>	<b>Chatham</b>	<b>Harwich</b>	<b>Orleans</b>	<b>Total</b>
Meetinghouse Pond <i>Town Percent of Total Removal</i>				1,876 100%	1,876 100%
Lonnies Pond <i>Town Percent of Total Removal</i>	14 5%			284 95%	298 100%
Areys Pond <i>Town Percent of Total Removal</i>	29 20%			113 80%	142 100%
The River - Upper <i>Town Percent of Total Removal</i>	3 1%			375 99%	378 100%
The River - Lower <i>Town Percent of Total Removal</i>	6 1%			518 99%	524 100%
Namequoit River <i>Town Percent of Total Removal</i>	19 5%			348 95%	367 100%
Paw Wah Pond <i>Town Percent of Total Removal</i>				413 100%	413 100%
Quanset Pond <i>Town Percent of Total Removal</i>	29 11%			227 89%	256 100%
Round Cove <i>Town Percent of Total Removal</i>	1 0.1%		1,209 99.9%		1,210 100%
Muddy Creek Upper <i>Town Percent of Total Removal</i>		193 25%	584 75%		777 100%
Muddy Creek Lower <i>Town Percent of Total Removal</i>		584 37%	986 63%		1,570 100%
Ryder's Cove <i>Town Percent of Total Removal</i>		1,954 100%			1,954 100%
Crows Pond <i>Town Percent of Total Removal</i>		0 -			0 -
Bassing Harbor <i>Town Percent of Total Removal</i>		0 -			0 -
Frost Fish Creek <i>Town Percent of Total Removal</i>		803 100%			803 100%
Pochet <i>Town Percent of Total Removal</i>				1,569 100%	1,569 100%
Pleasant Bay (including Little Pleasant Bay) <i>Town Percent of Total Removal</i>	2,161 39%	542 10%	1,620 29%	1,257 22%	5,580 100%
Chatham Harbor <i>Town Percent of Total Removal</i>		0 -			0 -
<b>Total (All Subembayments)</b> <i>Town Percent of Total Removal</i>	<b>2,262</b> <b>13%</b>	<b>4,076</b> <b>23%</b>	<b>4,399</b> <b>25%</b>	<b>6,980</b> <b>39%</b>	<b>17,717</b> <b>100%</b>

**Notes:**

1. Blue shading denotes entries that are greater than 5% of total (more than 886 kg/yr).
2. Blue shaded entries account for 71% of overall requirement.
3. See Table A-2 and A-3 in Appendix A for derivation of load removal requirements.

## *Pleasant Bay Targeted Watershed Management Plan*

Those eight shaded cells cover six subembayments and represent 71% of the total removal requirement Bay-wide. They are:

Meetinghouse Pond—Orleans

Round Cove—Harwich

Lower Muddy Creek—Harwich

Ryder's Cove—Chatham

Pochet—Orleans

Pleasant Bay (Main and Little Pleasant Bay)—Brewster, Harwich and Orleans

These high-load areas represent 48% (Chatham) to 96% (Brewster) of the individual town's overall responsibility.

## **6.0 DESCRIPTION OF TOWN PLANS FOR PLEASANT BAY**

The town plans all provide significant details on the planning approaches taken and related findings and recommendations. Town-provided summaries of each plan, as they relate to Pleasant Bay, are presented in Appendix B.

## **7.0 COMPARISON OF TOWN PLANS WITH REMOVAL REQUIREMENTS**

The four town plans were analyzed to determine the nitrogen load removals that should occur once those plans are implemented. Tables A-4 and A-5 compare the town-planned removals with the removal requirements derived from the TMDLs for each subembayment. Table 3 summarizes those tables for the entire Pleasant Bay system. The orange-shaded cells are those locations where the planned nitrogen removal is less than the TMDL requirements. The green-shaded cells are those locations where the town plans will remove more nitrogen than required by the TMDLs. Figure 2 graphically compares the planned removals with the TMDL requirements. Table 3 leads to the following key findings:

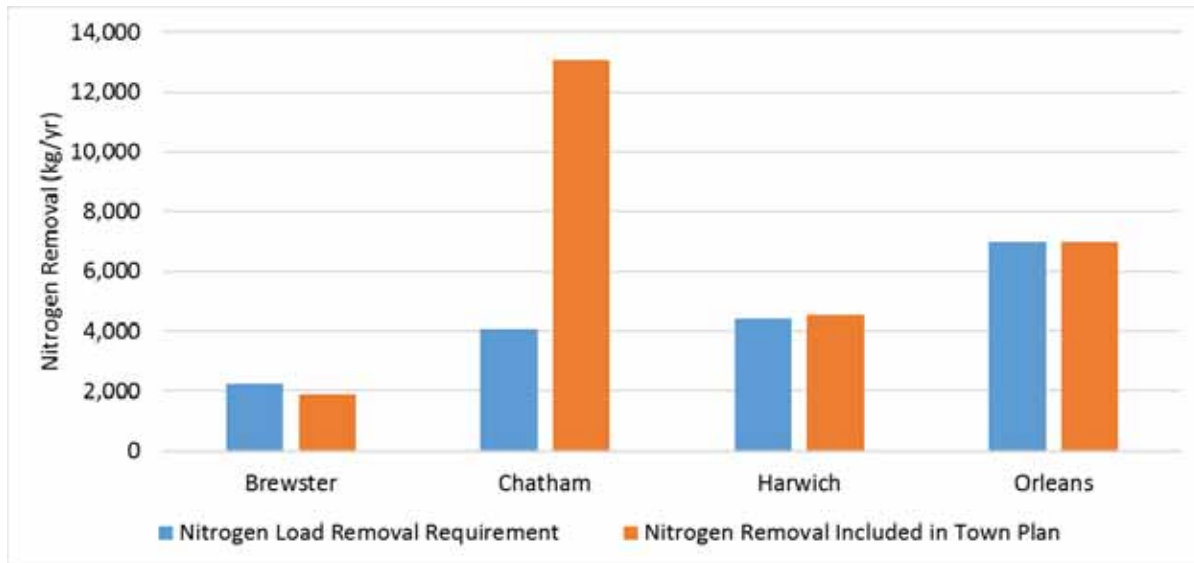
***Pleasant Bay Targeted Watershed Management Plan***

- In 10 subembayments, the town plans collectively achieve removals that are very close to those dictated by the TMDLs. In these places, all planned removals are within 5% of the removal need. Such minor differences are easily addressed through adaptive management.
- In six subembayments impacted by Chatham, the removals will be significantly in excess of the need. This reflects the fact that Chatham plans to install sewers town-wide, for multiple reasons beyond just nitrogen removal. Chatham will remove significant nitrogen loads in the watersheds of Crows Pond, Bassing Harbor and Chatham Harbor, where no removal is needed, and removals will exceed the TMDL requirements in Muddy Creek, Ryder’s Cove and the Pleasant Bay subembayment.

**Table 3. Comparison of Town Plans with Watershed Load Removal Requirements**

	Brewster	Chatham	Harwich	Orleans	Total
Nitrogen Load Removal Requirement, kg/yr	2,262	4,076	4,399	6,980	17,717
Nitrogen Removal Included in Town Plan, kg/yr	1,871	13,058	4,540	6,974	26,442
Load Removal in Excess of TMDL, kg/yr	-	8,982	141	-	9,123
Load Removal Below TMDL, kg/yr	390	-	-	7	397
Load Removal Compared with TMDL	-17%	220%	3%	-0.1%	49%

**Figure 2. Comparison of Nitrogen Removal Requirements and Town Plans**



Although no nitrogen removal is required in the Crows Pond, Bassing Harbor and Chatham Harbor subembayments, the proposed removals will have a positive impact on the system as a whole.

## *Pleasant Bay Targeted Watershed Management Plan*

Table 3 shows that Brewster's plan will remove 390 kg/yr less than required by the TMDL. Brewster developed its plan based on the nitrogen reductions that were determined from the original MEP model run for Pleasant Bay used to develop the TMDL for the system. The load reduction requirements used in this watershed plan are from a more recent modeling scenario that used updated water consumption in Harwich and simulated increased flushing in Muddy Creek as a result of the construction of the Muddy Creek bridge. These changes have altered the estimated nitrogen load in the main Pleasant Bay sub-embayment, where Brewster is responsible for a certain share of its removal. These changes will be evaluated further in future modeling scenarios, and the allocations of responsibilities for the changes will be discussed further among the towns. Brewster is committed to meeting its load reduction responsibility under the Watershed Permit.

This analysis of the town plans reveals a difference in how fertilizer loads are handled. Orleans is basing its plan on a 25% reduction in residential fertilizer nitrogen loads, consistent with direction provided by the Cape Cod Commission. Brewster is including 50% residential fertilizer reduction as part of its plan. Chatham and Harwich intend to implement fertilizer control programs, but their nitrogen management plans do not explicitly take credit for that removal. Further, there has been differing interpretation of the fertilizer nitrogen loads determined from the MEP technical reports. Tables presented in this analysis include a uniform 25% reduction in residential fertilizer load for all towns, based on a consistent interpretation of the unattenuated fertilizer loads reported in the MEP documents. Brewster's plan also includes 100% of the documented reduction in fertilizer use at the Captains Golf Course.

## **8.0 CHOICE OF TECHNOLOGIES**

Table 4 summarizes each town's choice of technology for load reduction and the associated load to be removed under existing conditions. Individually, the plans differ in the degree to which they utilize traditional and non-traditional technologies. However, the combination of the four town plans provides a hybrid approach watershed wide, with non-traditional technologies accounting for about 25% of the estimated removal system-wide. The system-wide removal is comprised of 72% sewerage, 7% fertilizer reductions, and 21% other non-traditional methods.

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**Table 4. Summary of Towns' Nitrogen Removal Plans by Technology**

	Brewster	Chatham	Harwich	Orleans	Total
Town-Planned Removal of Attenuated Nitrogen Load, Kg/yr					
Source Control					
Sewering	0	12,812	4,340	2,014	19,166
Residential Fertilizer Reduction	121	247	200	241	809
Golf Course Fertilizer Reduction	930	0	0	0	930
On-site Denitrifying Systems	590	0	0	2,024	2,614
Remediation					
Permeable Reactive Barriers	0	0	0	<i>Note 3</i>	0
Fertigation at Golf Courses	230	0	0	0	230
Shellfish Propagation	0	0	0	2,695	2,695
<b>Total</b>	<b>1,871</b>	<b>13,059</b>	<b>4,540</b>	<b>6,974</b>	<b>26,444</b>
Source Control vs. Remediation					
Source Control Subtotal, kg/yr	1,641	13,059	4,540	4,279	23,519
Remediation Subtotal, kg/yr	230	0	0	2,695	2,925
Percent Remediation Technologies	12%	0%	0%	39%	<b>11%</b>
Traditional vs. Non-Traditional					
Traditional Subtotal, kg/yr	930	12,812	4,340	2,014	20,096
Non-traditional Subtotal, kg/yr	941	247	200	4,960	6,348
Percent Non-traditional Tech.	50%	2%	4%	71%	<b>24%</b>

Notes:

1. Traditional technologies include sewerage and golf course fertilizer reductions. All other technologies and approaches are considered non-traditional.
2. Brewster is currently evaluating on-site denitrifying systems for meeting the town's nitrogen reduction requirement. If the use of denitrifying systems is adopted by Brewster, they will be developed in sufficient numbers to meet the TMDLs under current and build-out conditions and to provide an appropriate margin of safety.
3. Orleans' load removal plan is evolving as its Amended CWMP is being prepared. Permeable Reactive Barriers are not part of the current plan, but are being tested in another watershed and may be added to the Pleasant Bay plan in the future.

In developing their respective nitrogen management plans, each of the four towns has gone through a thorough assessment of alternative approaches to meeting nutrient reduction targets through an extensive public engagement process. The resulting plans represent community consensus on nitrogen management approaches, in view of competing municipal needs.

Table 4 shows two types of nitrogen removal strategies: "source control" and "remediation". Source control approaches, such as traditional sewerage, prevent the nitrogen from reaching the environment. In contrast, remediation approaches address the nitrogen once it is in the groundwater or in the embayment to be protected. Remediation techniques, also referred to as non-traditional approaches, rely on natural processes and their performance will vary due to environmental factors. For this reason, non-traditional approaches are subject to a regulatory requirement for traditional back-up in the event that the non-traditional measures do not function as predicted; see Section 18 on contingency planning.

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Table 4 includes fertilizer reduction strategies as source control measures; those strategies have not been historically used to meet TMDLs and their efficacy is more difficult to document than sewerage. Remediation or non-traditional approaches will be piloted and monitored by the towns to determine the effectiveness and the appropriate degree of application of these approaches Within an adaptive management program. Table 4 shows how the load reduction expected through remediation is somewhat different from that associated with non-traditional technologies.

DEP has asked each of the four towns to designate Core Areas, where proven source control methods will be employed to meet TMDLs. Figure 3 shows the Core Areas for Nitrogen Control to include the following:

- Brewster: Captains Golf Course, where the only measurable source control method is proposed (golf course fertilizer reduction)
- Chatham: all Phase 1 areas identified in the Chatham CWMP within the watershed<sup>2</sup>
- Harwich: all proposed sewer service areas in the watershed
- Orleans: the proposed sewer service area for Meetinghouse Pond (the only traditional component of the evolving town plan).

In the aggregate, 12,200 kg of nitrogen will be removed annually in these areas by the end of the 20-year permit cycle. This removal is roughly equal to 70% of the TMDL removal requirement in the aggregate. Implementation of proven source control measures in the Core Areas will address the following percentages the towns' requirements:

Brewster	41%
Chatham	123%
Harwich	98%
Orleans	30%.

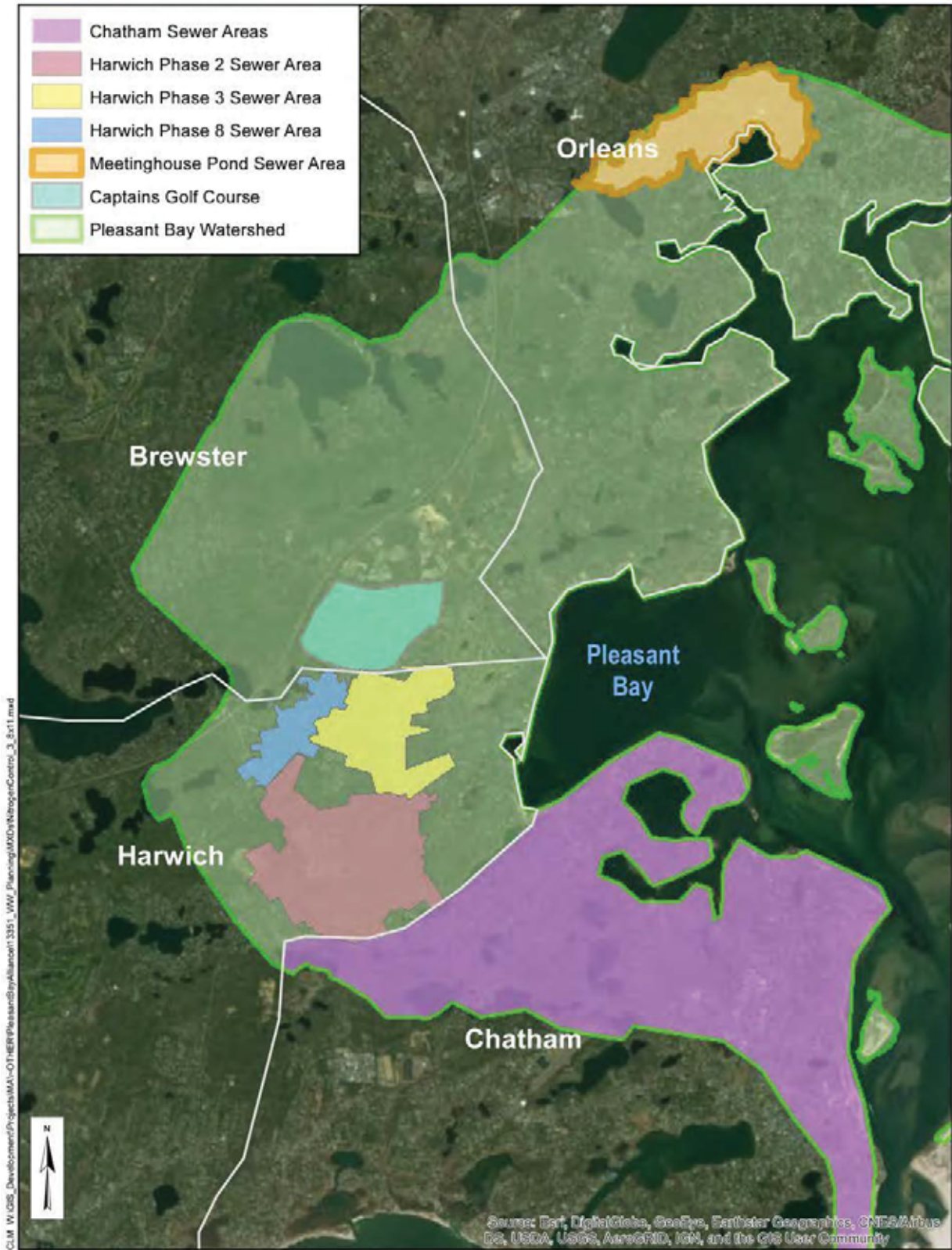
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<sup>2</sup> The Chatham "Core" area for the Pleasant Bay Watershed includes those sewersheds identified as part of Phase 1 on Figure 5-1 of the Town's 2009 CWMP. These "Core" sewersheds located within the Pleasant Bay watersheds are shown on Figure 9-6 of the Town's 2009 CWMP, and include the following: Sewershed Nos. 6, 7, 8, 9, 10, 11, 14, 17, 18, 20, 38, 39, 71, 72, 73, 74, 75, 79, and 80.

The Town of Chatham is continuing to propose the use of sewerage to address its TMDL nitrogen loads. The Town is also planning to sewer all remaining areas within the watershed as part of the Town-wide plan; however, those areas are not "required" in order for Chatham to meet its contribution to the Pleasant Bay Watershed. Figure 3 shows both the Phase 1 sewersheds and the entire proposed sewer area in Chatham.

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**Figure 3. Core Areas for Nitrogen Control**





## **9.0 MANAGING GROWTH IN NITROGEN LOADS**

The Composite Analysis and the data presented earlier in this report all focus on the existing nitrogen loads to Pleasant Bay, without regard to potential future growth in the watershed. Nonetheless, it is important to remember the two-part requirement for nitrogen control when existing loads exceed thresholds:

- Reduce current bay-wide nitrogen loads by 36% to bring those loads below the thresholds.
- Control 100% of all future loads to ensure that loads always stay below the thresholds.

Failure to control nitrogen load increases in sensitive watersheds can negate actions to reduce current loads. The longer the implementation period for initial nitrogen removal activities, the more likely that growth will negate that progress.

A review of the towns' plans has identified the increases in wastewater flow or nitrogen load assumed to occur through build-out or other planning horizon. The towns' build-out percentages are as follows, as described in Appendix C:

Brewster	19%
Chatham	22%
Harwich	41%
Orleans	26%

In the aggregate, the towns' estimates project watershed-wide growth of approximately 27% of the existing attenuated loads. Since 100% of "new" nitrogen loads must be controlled in nitrogen-sensitive watersheds, a 27% growth in loads translates to an 74% increase in the loads that must be removed. Therefore, the long-term viability of the watershed nitrogen management plan is very dependent on the towns' abilities to implement future phases of nitrogen control technologies in a timely fashion to keep pace with growth.

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There is no accepted uniform method of conducting build-out analyses, and a great deal of judgement is involved. This makes it difficult to compare projections developed by the towns, or for the towns in the MEP evaluations. However, the town-prepared estimates are comparable, in the aggregate (27%), to those prepared for the MEP technical report (30%), and to those prepared by the Commission (26%).

If growth through build-out increases the nitrogen removal need by 74%, key questions then become:

- How much of that growth is likely to occur during the 20-year term of the Watershed Permit?
- How much of that growth is accommodated in the design of nitrogen control measures already planned?

To gauge the impact of growth on the ability of the towns to achieve their TMDL targets in 20 years, an analysis was conducted assuming:

- 75% to 80% of the build-out growth will occur in the next 20 years (by 2038)
- Growth will occur uniformly across all Pleasant Bay sub-watersheds
- The sewerage plans of Chatham, Harwich and Orleans largely anticipate the growth in those areas.

Of the 13,100 kg/year of watershed-wide growth that has been projected, about 8,300 kg/year will be accommodated by the sewer systems in the three towns. The remaining 4,800 kg/year of “new” nitrogen must still be addressed by expanded or new nitrogen control initiatives, predominantly in Brewster and Orleans. The implementation schedule outlined in Section 11 indicates that over 90% of the TMDL load reductions will occur in 20 years without growth. This analysis indicates that only 75% to 80% of the goal will be achieved if the town growth projections occur. With these assumptions, Brewster must augment its plan by 50% and Orleans by 35%, if TMDL compliance is to occur at the same rate as with no growth.

Tools are available to control nitrogen loads from new development and redevelopment. Some of those tools can assist in addressing existing loads. Each town should adopt the appropriate nitrogen

## *Pleasant Bay Targeted Watershed Management Plan*

load management tools to specifically address new nitrogen loads from growth within the watershed. Current town plans include the use of these tools:

- Increasing minimum lots sizes in area that will not be sewerred
- Continued open space acquisition
- Reducing potential for accessory apartments
- Implementing flow-neutral regulations sufficient to allow enhanced funding by DEP
- Adopting nitrogen control regulations
- Providing incentives for growth in non-sensitive watersheds.

Zero-percent State Revolving Loan Fund (SRF) funding is available from DEP for nutrient management projects that include plans to manage nitrogen load increases, including flow-neutral regulations. To the extent that zero-percent funding is crucial to the implementation of costly projects, all four towns should continue implementing whatever actions are necessary to secure that funding.

### **10.0 COSTS**

This analysis includes an assessment of town-provided cost estimates for Pleasant-Bay-related infrastructure and programs. That assessment is under development. Estimates prepared by the towns show comparable costs per pound of nitrogen removed for traditional technologies. Costs for non-traditional approaches are still being developed and potential savings may not be clearly identified until extensive demonstration projects are complete. Once costs are more fully established, a composite cost analysis will be provided.

### **11.0 IMPLEMENTATION SCHEDULES**

The four towns are in varying stages of implementation of their nitrogen management plans, consistent with their CWMPs and planning activities conducted following CWMP completion. To gain the benefits of a Watershed Permit, it will be necessary to formalize implementation schedules into a 20-year framework, consisting of four 5-year periods. A designated set of activities will occur in the first 5-year block of time, and the results of those activities will allow the towns, through adaptive management, to fine-tune their plans for the next 5-year period. After four cycles of adaptive management, it is expected that the towns will have each accomplished most of the work needed to achieve their shares of TMDL responsibility.

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Table 5 presents the 20-year implementation plan currently envisioned by the towns, in a form that is acceptable to DEP as a key part of the Watershed Permit. The activities shown in this implementation schedule are the key elements of each town's plans, and include the nitrogen load reductions expected through implementation of fertilizer control regulations.

Table 5 first shows the activities that have been completed, or will have been completed, by the presumed July 1, 2018 effective date of the permit. Those include:

- The completion of the Muddy Creek bridge by Chatham and Harwich
- Nitrogen control activities at the Captains Golf Course in Brewster
- Development of this TWMP
- Execution of an inter-municipal agreement among the towns and
- Obtaining the Watershed Permit.

Not shown in this "pre-permit" timeframe are the CWMPs (and similar documents) prepared prior to 2015.

Figure 4 depicts a summary of the implementation plans in graphical form.

In the first 5 years of the permit (2019 to 2023), the towns are prepared to commit to the activities shown in the blue-shaded segment of Table 5. They include:

- Brewster: development of a plan for using on-site denitrification systems to remove approximately 590 kg/yr of attenuated nitrogen load;
- Chatham: construction of sewers that will allow Harwich to send wastewater to the Chatham WWTF;
- Harwich: completion of Phase 2 of its plan that will eliminate septic systems in East Harwich and allow the transport of wastewater (and about 2,700 kg/yr of nitrogen) to Chatham for treatment and discharge outside the Pleasant Bay watershed.
- Orleans: Completion of its Amended CWMP, initiation of a full-scale aquaculture system in Lonnie's Pond (to remove about 270 kg/y of nitrogen), and evaluation of PRBs for possible use in the Pleasant Bay watershed.

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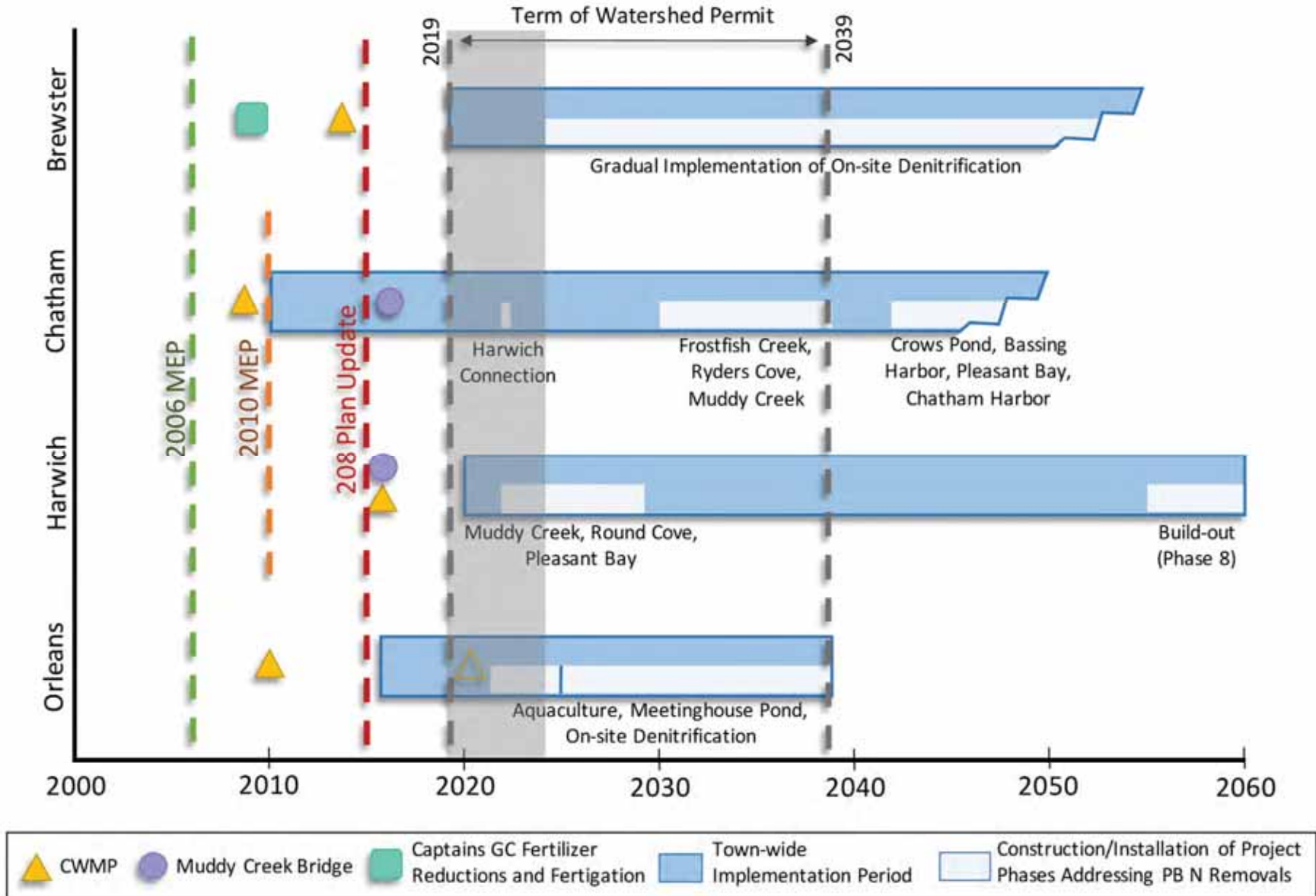
**Table 5. Implementation Plan: Expected Project Completion and Potential Annual Nitrogen Removals**

Phase	Years		Brewster		Chatham		Harwich		Orleans		Total
			Activity	kgN/yr*	Activity	kgN/yr*	Activity	kgN/yr*	Activity	kgN/yr*	kgN/yr*
	up to 2018		Res. fertilizer control	121	Res. fertilizer control	247	Muddy Creek Bridge		Res. fertilizer control	241	1,769
			Capt GC fertigation	230	Muddy Creek Bridge						
			Capt GC fert. reduction	930							
	All towns: develop TWMP; demonstrate 208 consistency; execute IMA; obtain Watershed Permit										
11 **	to 52	2019 to 2023	Develop denit plan		Harwich connection		Ph 2 sewers	2,672	Amended CWMP		3,145
			Devel. conting. plan				Res. fertilizer control	200	Lonnie's Pond aqua.	273	
			Strengthen GC plan						PRB evaluation		
	All towns: update monitoring data, re-model Bay, evaluate nitrogen trading options, prepare plan for next 5 yr										
26 ***	to 10	2024 to 2028	On-site denit systems	118			Ph 3 sewers	1,565	MtgHouse Pond sewers	2,014	5,887
									Other aquaculture	1,516	
									On-site denit systems	674	
3 ***	11 to 15	2029 to 2033	On-site denit systems	118	Frostfish Creek sewers	803			On-site denit systems	675	5,107
					Ryders Cove sewers	2,605			Other aquaculture	906	
41 ***	6 to 20	2034 to 2038	On-site denit systems	118	Muddy Creek sewers	1,597			On-site denit systems	675	2,390
	after year 20	after 2038	On-site denit systems	236	Crows Pond sewers	1,214	Ph 8 sewers	970			8,146
					Bassing Harbor sewers	511	Harwich effl. disposal	(867)	****		
					Pleasant Bay sewers	901					
					Chatham Harbor sewers	5,181					
			<b>Total</b>	<b>1,871</b>	<b>Total</b>	<b>13,059</b>	<b>Total</b>	<b>4,540</b>	<b>Total</b>	<b>6,974</b>	<b>26,444</b>

- \* Removals pertain to current nitrogen loads without growth, and represent estimates of removal potential.
- \*\* First Phase (Years 1 to 5) includes activities that are firm commitments by the towns and are necessary to gain DEP enforcement discretion.
- \*\*\* Phases 2 through 5 (Years 6 to 20) include activities that are now planned and considered enforceable until such time as they may change depending on the outcomes of Phase 1 and application of each town's adaptive management program, as per the Watershed Permit.
- \*\*\*\* The discharge of Harwich effluent within the Pleasant Bay watershed may become necessary if alternative disposal sites are not developed.

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Figure 4. Town Implementation Schedules



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In addition to those actions by each town alone, collectively the four towns will:

- Update and analyze databases of planning and water quality information;
- Update and run the Pleasant Bay hydrodynamics and water quality model;
- Explore nitrogen trading opportunities; and
- Finalize plans and commit to projects to be accomplished in the following 5-year period (2024 to 2028).

Based on CWMPs and subsequent analyses, it is expected that the activities to be conducted in the first 5 years of the Watershed Permit will remove about 2,940 kg/yr of attenuated nitrogen load. When combined with the 1,160 kg/yr already removed, that represents about 23% of the TMDL removal requirement.

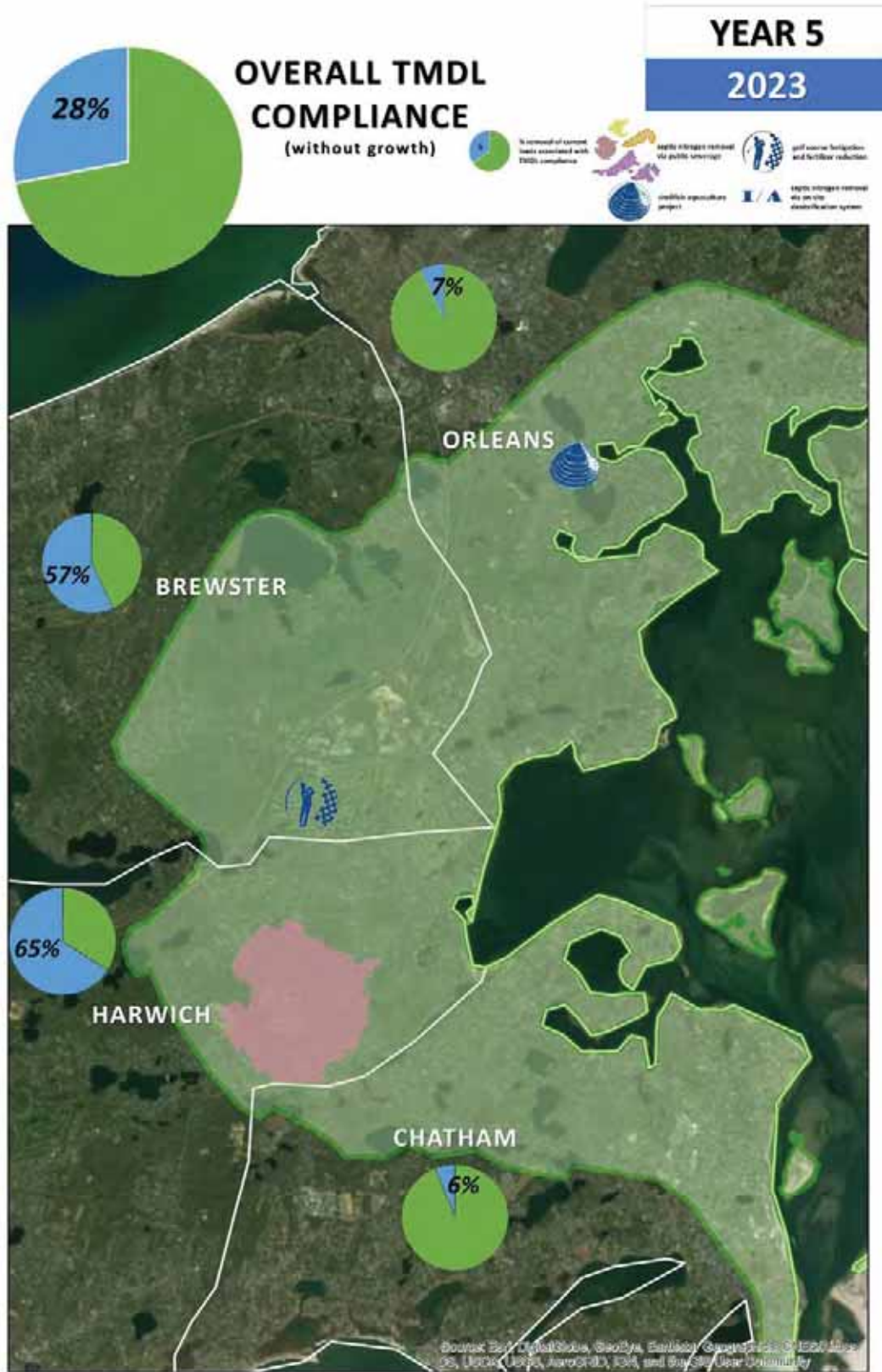
Table 5 shows the towns' current plans for years 6 through 20 of the Watershed Permit period in similar 5-year increments. It is fully expected that the precise nature and timing of activities will be different from those shown in Table 5, due to the planned remodeling of the Bay, and the fact that performance of activities in years 1 to 5 will not be exactly as now envisioned. The activities shown in Table 5 for years 6 to 20 (the tan-shaded segments) are presented for planning purposes. Those activities are still enforceable under the Watershed Permit, but can be refined based on the results of actions taken in the first five years.

Figures 5 and 6 depict the geographic distribution of the nitrogen control measures to implemented by Year 5 and Year 20, respectively, of the Watershed Permit. The on-site denitrification and aquaculture elements of the Brewster and Orleans plans are shown somewhat schematically since the precise location of these elements has not been determined.

Figure 7 charts the expectations for removal of current nitrogen loads over the 20-year period of the Watershed Permit and beyond to the completion of all town programs. Non-traditional technologies are being relied upon for about one-third of the removals in each 5-year interval. The TMDL requirement of 17,717 kg/yr would be achieved in the last 5-year period, assuming good performance of the non-traditional technologies and no growth in watershed load.

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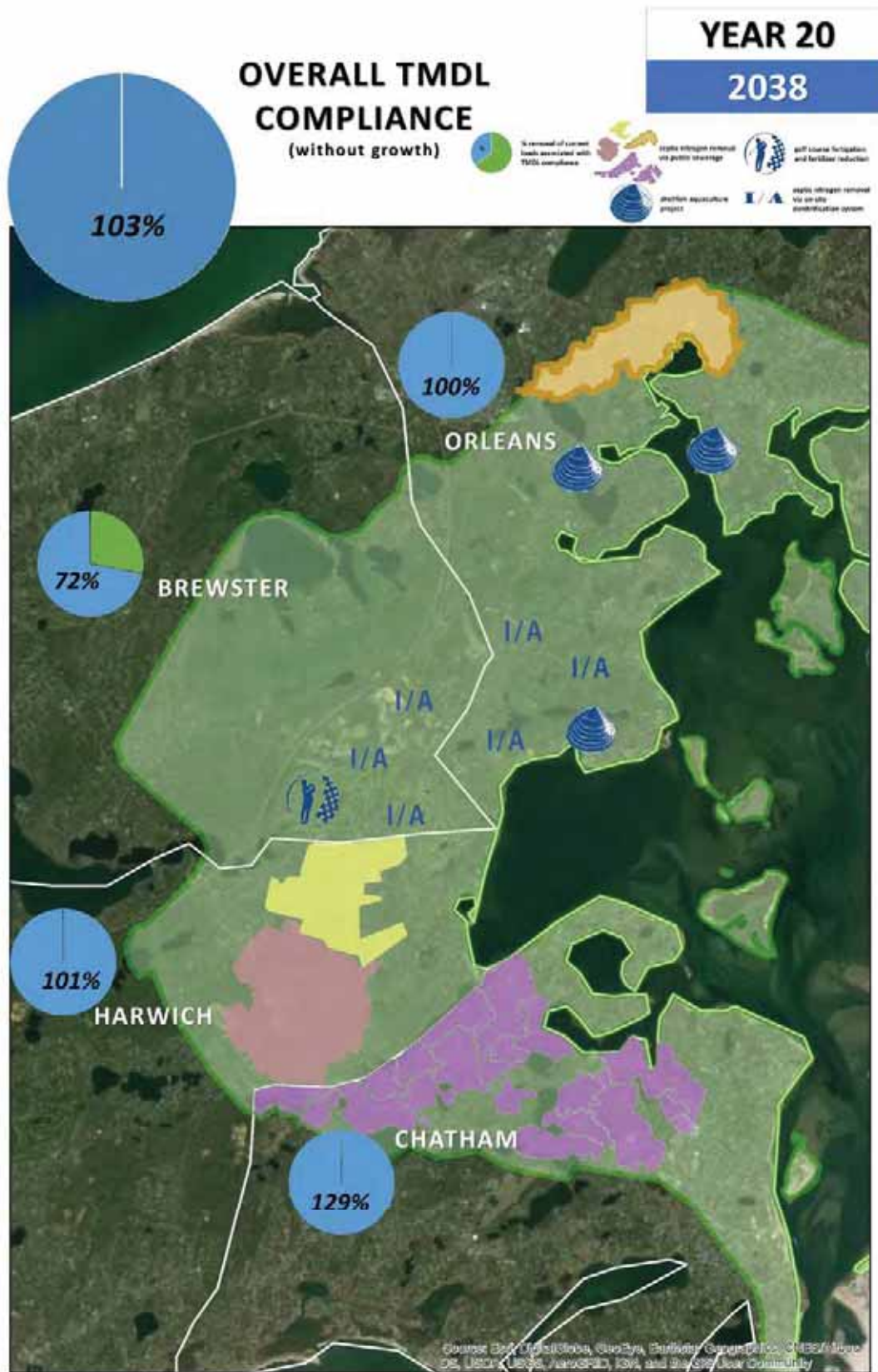
Figure 5. Location of Nitrogen Control Measures Expected to be in Place by Year 5



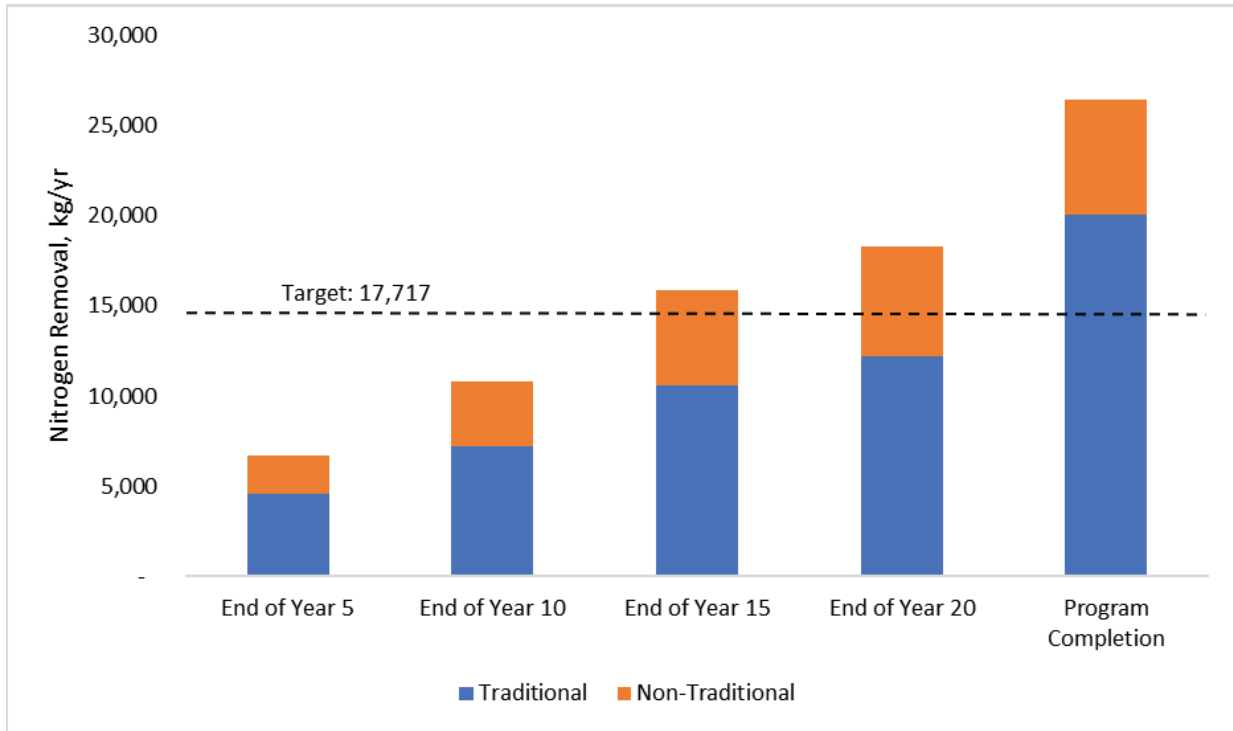


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Figure 6. Location of Nitrogen Control Measures Expected to be in Place by Year 20



**Figure 7. Cumulative Nitrogen Removal, kg/yr by Technology Type**



## 12.0 OPPORTUNITIES FOR NITROGEN TRADING

Looking at the Pleasant Bay watershed in its entirety, one can identify the most cost-effective locations for nitrogen load removal. The nitrogen removed at those optimum locations will not necessarily match the towns’ responsibilities for TMDL compliance. That is, without a watershed-wide approach, one or more of the towns in a shared subwatershed may implement projects that are not as cost-effective as projects in other towns.

That problem can be overcome through nitrogen trading, in which the town with the low-cost options removes more nitrogen than it is responsible for and another town removes less. The second town pays the first town for the “extra” nitrogen load that is removed on its behalf.

While the cost of nitrogen removal is a key factor in determining the “optimal” approach, other considerations are important as well. One must also consider the location of the removal in the watershed, because options that remove nitrogen along the shore or in the water body are preferred

## *Pleasant Bay Targeted Watershed Management Plan*

over those that remove nitrogen high in the watershed. Nitrogen removals upgradient of natural attenuation locations are not as favored as those downgradient of those locations.

There are opportunities for nitrogen trading between Brewster and Orleans in the headwaters subembayments at the north end of Pleasant Bay. In six shared subembayments (Lonnie's Pond, Areys Pond, the Upper and Lower River, Namequoit River and Quanset Pond), Brewster is responsible for 5% of the nitrogen removal and Orleans for 95%. Brewster's raw loads are attenuated by 71% before reaching receiving waters, so removing 100 kg in Brewster reduces the load to the receiving waters by only 29 kg. The Towns should explore this opportunity. Brewster should also explore options for nitrogen trading in the Pleasant Bay subwatershed with Chatham and Harwich.

Nitrogen trading should also be considered between Chatham and Harwich in the Muddy Creek and Pleasant Bay subwatersheds. Chatham intends to remove all of its septic load in the Pleasant Bay watershed as part of a town-wide sewerage program that is aimed at more than just nitrogen removal. In these three subembayments, Chatham's plan would remove 1,240 kg/yr more than required to meet the TMDL. This "over removal" is equivalent to about 40% of Harwich's responsibility in these subembayments. By nitrogen trading, Harwich could pay Chatham and avoid significant infrastructure.

An important consideration in nitrogen trading is the location of the nitrogen to be removed. Once specific trading scenarios are identified, it will be necessary to run the MEP model to be sure that relocation of the removal still allows water quality goals to be met.

The actual cost paid for nitrogen trading would be determined through negotiations between the participating towns, and would likely fall somewhere between the cost avoided by the "buyer" and the incremental cost incurred by the "seller".

### **13.0 MONITORING**

Pleasant Bay has an extensive database and ongoing monitoring to assess changes in ecological conditions resulting from implementation measures. Per MEP guidance, the focus of monitoring

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efforts is on water column nitrogen and dissolved oxygen concentrations, eelgrass coverage and vitality, and benthic infauna health and diversity.

**Water column concentrations** – The Alliance’s Water Quality Monitoring Program recently completed its 17<sup>th</sup> monitoring season. Monitoring occurs at 24 station locations selected to track TMDL compliance. A MassDEP-approved Quality Assurance Project Plan (QAPP) is in place and includes the following parameters: nitrogen (DON, PON, DIN, TON, TN), oxygen, temperature, salinity, and phytoplankton pigments. Sample collection occurs five times annually from July through September. Data are analyzed by the UMASS Dartmouth School for Marine Science and Technology (SMAST) and reported to the Alliance. The Alliance issues periodic reports with basic statistics, and conducts in-depth statistical trend assessments on a five-year basis. The statistical trend assessments were further evaluated by SMAST to discern the ecological implications of any statistically significant trends. The Alliance monitoring program is funded annually by the towns and will continue.

**Eelgrass coverage** – The MEP relied on eelgrass coverage reported by the MassDEP Eelgrass Mapping Project. The project conducted mapping using aerial imagery and field verification methods. Data are available for the following years: 1994, 2001, 2006, 2010 and 2012. The schedule and extent of future mapping to be conducted by the program needs to be identified, to determine whether additional data collection will be necessary to monitor future changes in Pleasant Bay eelgrass beds.

**Benthic infauna** – The MEP conducted quantitative sediment sampling in 2000 for benthic animals at 34 locations throughout the Bay. Species number and individual counts were assessed for diversity and evenness and compared to findings developed by SMAST over the past 30 years based on measurements in other Cape Cod estuaries. In 2008 MEP conducted a more detailed estimate of Muddy Creek that included collection of benthic infauna at six locations. In 2014, the Provincetown Center for Coastal Studies (PCCS) collected benthic infauna samples at all MEP locations except Muddy Creek. This effort was undertaken in concert with a benthic mapping project for the Cape Cod National Seashore. The results of this PCCS study are not yet available.

Recently the Alliance asked SMAST to assess the water quality, eelgrass, and benthic infauna data needed for assessing ecological health in Pleasant Bay through updated MEP modeling. The Alliance proposes to review the data needs for modeling with its member towns through the Watershed Work Group. Based on this review, the Alliance may recommend that the towns pursue joint actions to update data on a cost-effective watershed basis.

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In addition, it should be noted that individual towns are developing monitoring programs tailored to pilot projects for non-traditional technologies. For example:

- Orleans worked with SMAST to develop a monitoring program for an oyster growing pilot project in Lonnie's Pond;
- Brewster has installed groundwater test wells at several locations (mostly around Captains Golf Course) to track impacts of fertilizer reductions;
- Chatham and Harwich are undertaking bacterial and nitrogen-related water quality monitoring to evaluate changes in water quality resulting from the Muddy Creek Restoration Bridge Project.

### **14.0 ADAPTIVE MANAGEMENT**

Each town's plan incorporates adaptive management to allow monitoring results to direct or redirect implementation measures. A summary of each town's adaptive management approach is presented in Appendix D. While adaptive management will be an ongoing process, the Watershed Permit incorporates a regular 5-year updating of each town's plan, building on annual town reports documenting year-to-year progress.

### **15.0 ANNUAL PROGRESS REPORTING**

The ultimate TMDL compliance point is the restoration of habitat (eelgrass or benthic infauna); a town is not in compliance with the federal Clean Water Act until watershed nitrogen loads have been reduced to the point where that habitat is restored. A difficult regulatory issue is the travel time of nitrogen in the groundwater and the uncertainties associated with estimating how a reduction in watershed load will impact water-column nitrogen concentrations and how that reduction will lead to habitat restoration. Complicating the issue is the fact that the watersheds of most impacted embayments span multiple towns which may be proceeding with nitrogen control on different schedules and at different paces. Achievement of the nitrogen load reductions implicit in the TMDLs is the only substantive mechanism for compliance over the short term.

Towns must document implementation steps annually to inform the public, allow coordination with other towns and comply with the Watershed Permit. Such documentation would give each

## ***Pleasant Bay Targeted Watershed Management Plan***

town the assurance that other towns are acting toward the common goals and help inform each town's adaptive management plan.

The Alliance's Watershed Work Group will develop a standardized reporting form that each town will complete by the end of each February, documenting key information from the previous year. The Watershed Work Group would then compile the data to produce a composite report by the end of each March. One important component of the proposed annual report would be an update of towns' water use by sub-embayment as a tool to judge changes in watershed nitrogen loads. Other information could include:

- The status of all of its activities called for in the TWMP and each town's CWMP;
- A spreadsheet-based estimate of the nitrogen load removals accomplished to date;
- A performance evaluation of each technology to identify performance challenges that should be corrected in the next year;
- The results of the water quality monitoring program conducted during the year;
- The results of habitat assessments (may not be done every year);
- Documentation of the capital expenditures that have been made and that are expected over the upcoming five years, from the town's Capital Improvement Plan;
- Progress made on non-structural elements of the CWMP; and
- Proposed changes in implementation (such as acceleration or delay of upcoming segments).

All of this information is critical input to the towns' adaptive management plans, and to the five-year update of the implementation schedule and the Watershed Permit.

### **16.0 CONSISTENCY WITH 208 PLAN UPDATE**

Pleasant Bay has been identified by the Cape Cod Commission as a priority watershed for the development of a Targeted Watershed Nutrient Management Plan (TWMP). Among the purposes of the TWMP is to demonstrate consistency with the 208 Plan Update and provide a basis for watershed permitting of non-traditional technologies.

Specific guidance on the requirements for 208 Plan Update consistency has been provided by the Cape Cod Commission in Appendix G of the 2017 Addendum to the *Water Quality Management*

## ***Pleasant Bay Targeted Watershed Management Plan***

*Plan Update.* The 10 consistency requirements are listed below, with notations on how the four Pleasant Bay towns are meeting these requirements:

1. **Towns assume responsibility for controllable nitrogen for any part of the watershed within their jurisdictions** – As stated in the June 2017 Joint Resolution, the towns have assumed responsibility for removing their proportional shares of attenuated nitrogen load reduction necessary to achieve the TMDL, based on the towns’ contributions of attenuated load, as further documented in this report.
2. **Plans meet nutrient reduction targets** – This TWMP shows that TMDLs will be met.
3. **Planning occurs at a watershed level with consideration of a hybrid approach**– This TWMP shows that the individual town plans vary in the degree to which they will employ non-traditional technologies. The composite of plans demonstrates a hybrid approach on a watershed basis, with 70% of the nitrogen reduction coming from traditional technologies, 6% from fertilizer reduction, and 24% from other non-traditional technologies.
4. **The public was engaged to gain plan consensus**– Each town plan has undergone extensive community review and vetting, as detailed in the respective plans.
5. **Plans include strategies to manage nitrogen loading from new growth** – Each town plan includes assumptions about growth in watershed nitrogen loads; see Appendix C. However, greater detail is needed to ensure that future phases are implemented in a timely fashion to keep pace with growth, particularly in Brewster and Orleans.
6. **Plans include adaptive management plans**-- All town plans incorporate adaptive management programs, as detailed in Appendix E.
7. **Plans include monitoring programs**– The Alliance has extensive baseline data on water quality, eelgrass and benthic infauna, and an ongoing water quality monitoring program. Each town has instituted monitoring protocols for specific pilot projects and initial efforts, and each town plan incorporates adaptive management to adjust implementation based on monitoring results. The Watershed Permit contains monitoring requirements for both traditional and non-traditional approaches.
8. **Plans include assessments of the towns’ abilities to pay for the proposed work**—As summarized in Section 10 and Appendix D, all towns have addressed this issue.
9. **Towns commit to 5-yr reviews of 208 Plan Update consistency until water quality goals are achieved** – It is expected that an updated assurance of 208 Plan Update consistency will be obtained at the end of each 5-year segment of the Watershed Permit, based on the 5-year progress reports required by the Watershed Permit.

## *Pleasant Bay Targeted Watershed Management Plan*

10. **Towns collaborate on nitrogen allocation, shared solutions, and cost saving measures –**  
The four towns have collaborated in addressing nutrient management issues in Pleasant Bay through the Pleasant Bay Alliance. Initial collaboration led to the watershed-wide MEP analysis. Coordination continues in the implementation stage. Chatham and Harwich have coordinated in constructing the Muddy Creek Restoration Bridge Project and have executed an IMA for shared treatment and effluent disposal. This TWMP identifies other areas where joint action among the towns could be pursued such as nitrogen trading. A four-town IMA will be executed to support the Watershed Permit and confirm the towns' intentions to continue collaborative efforts.

This TWMP is intended to demonstrate the four towns' progress in meeting the requirements for consistency with the 208 Plan Update, and allows the Cape Cod Commission's certification to be an important supplement to the Watershed Permit.

### **17.0 PERMITS**

Table 6 lists the permits that have been obtained or will be needed to implement most of the towns' nitrogen removal projects, based on current in-place permitting programs.

Massachusetts DEP is formulating a watershed permitting program to accomplish multiple goals including the facilitation of non-traditional nitrogen management technologies. Application for a watershed permit will require submission of a TWMP that demonstrates 208 compliance. This TWMP has been prepared to support the application for the Pleasant Bay Watershed Permit. Discussions of permitting considerations for non-traditional technologies are contained in appendices to this TWMP, as follows:

- Appendix F Residential Fertilizer Controls
- Appendix G Commercial Fertilizer Reductions
- Appendix H Golf Course Fertigation
- Appendix I On-site Denitrification Systems
- Appendix J Shellfish Harvesting
- Appendix K Inlet Widening

These appendices describe the general intent of the technology, the nitrogen removal mechanisms, the important implementation steps, Watershed Permit conditions (where appropriate), and the methods for computing nitrogen removal credits.



*Pleasant Bay Targeted Watershed Management Plan*

**Table 6. Traditional Permits Required for Town Plans**

<b>Permit or Approval</b>	<b>Brewster</b>	<b>Chatham</b>	<b>Harwich</b>	<b>Orleans</b>
Groundwater Discharge Permit		✓	✓	✓
Reclaimed Water Permit Program and Standards				✓
Compliance with MA Wetlands Prot. Act	✓	✓	✓	✓
DEP Plan Review		✓	✓	✓
DEP Site Assignment			✓	✓
MEPA certificates		✓	✓	✓
Cape Cod Comm. 208 consistency review	✓	✓	✓	✓
Review by MA Nat. Heritage and Endangered Species Program		✓	✓	✓
Review by MA Historic Commission		✓	✓	✓
Compliance with local Historic District rules		✓	✓	✓
Local Permits		✓	✓	✓
MA DOT permits for work in state roads		✓	✓	✓
Local Board of Health Regulations-operation of small WWTFs	✓			✓
MA Surface Water Quality Certificate		✓	✓	✓
US CZM consistency review		✓	✓	✓
MA Div. Marine Fisheries approvals		✓	✓	
MA Div. Fisheries and Wildlife approvals		✓	✓	
US Coast Guard approvals		✓	✓	
US Army Corps of Engineers permits		✓	✓	✓
US NPDES general construction permit		✓	✓	✓
US NPDES MS4 stormwater permits	✓	✓	✓	✓

Commercial fertilizer reductions and golf course fertigation have already been accomplished at Captains Golf Course in Brewster, and the construction of the Muddy Creek bridge has accomplished inlet widening in Chatham and Harwich. The appendices describing these nitrogen reduction approaches (Appendices G, H and K) are intended to document how these technologies will be operated and monitored and how nitrogen removal credits will be computed.

On-site denitrification systems are proposed by Brewster and Orleans and each town will develop a town-specific program during the first five years of the Watershed Permit. The associated appendix in this TWMP (Appendix I) is intended to document current thinking on how such programs may be implemented, but each town’s plan will allow this preliminary approach to be made more pertinent to the local conditions and town decisions.

## *Pleasant Bay Targeted Watershed Management Plan*

The Watershed Permit will initially address commercial fertilizer reduction (Appendix G), fertigation (Appendix H) and shellfish harvesting (Appendix J). Other technologies will be added to the Permit as they are further developed. As more experience is gained, both the Permit Conditions and the appendices to this TWMP will be updated.

### **18.0 CONTINGENCY PLANS**

DEP requires towns to prepare contingency plans to back up non-traditional approaches to nitrogen removal. Contingency plans are presented in Appendix L for Brewster and Orleans, with recommendations on how they should be made more robust.

### **19.0 AUTHORITY**

The four towns have developed an Intermunicipal Agreement (IMA) to memorialize their intentions to address their respective responsibilities for nitrogen control, agree to a cooperative effort, and to be part of the DEP Watershed Permit. Town meetings are scheduled for the spring of 2018 that are intended to authorize the Boards of Selectmen to execute that IMA.

### **20.0 NEXT STEPS**

The development of this Targeted Watershed Management Plan is an important step toward a coordinated four-town effort to improve water quality in Pleasant Bay. Several important steps should be taken to continue that effort:

This TWMP should be submitted to the Cape Cod Commission to obtain certification that the plan is consistent with the 208 Plan Update. Assuming favorable actions at spring 2018 town meetings, the Boards of Selectmen in each town should execute the inter-municipal agreement (IMA) that supports this plan and the Pleasant Bay Watershed Permit. With this TWMP, a 208 Plan consistency certification and a signed IMA, the four towns should collectively apply to DEP for the Watershed Permit. Upon anticipated receipt of the Watershed Permit, the Alliance will exercise its responsibilities as the entity charged with coordinating regional activities under the Permit.

## *Pleasant Bay Targeted Watershed Management Plan*

Concomitantly, all four towns should continue to aggressively implement their nitrogen management plans, as summarized in Table 5.

The Alliance and member towns face multiple issues related to Watershed Permit implementation, administration, monitoring and reporting for which there is no guidance or precedent. The lack of clear regulatory pathways, cost models, monitoring and reporting requirements, and management frameworks hinders swift implementation of promising non-traditional technologies. The Alliance pledges to work with its member towns, DEP, EPA and the Cape Cod Commission to develop *Regional Watershed Permit Implementation Guidance for Nitrogen Management in Pleasant Bay*. As described below, the undertaking has the following interrelated objectives:

- optimizing non-traditional nitrogen reduction measures and exploring alternate funding mechanisms;
- providing a means for modeling the effects of optimized nitrogen reduction scenarios based on updated ecological conditions; and
- documenting steps required for effective implementation.

Pending funding, the following activities are proposed:

- 1. Implementation and management protocols for non-traditional technologies.** Towns in the Pleasant Bay watershed are relying on non-traditional technologies as a cost-effective nitrogen reduction strategy. This task will identify steps for implementing non-traditional technologies and obtaining nitrogen reduction credit, and address how any of these steps might vary from town to town. Issues to be addressed for each technology include: development of sample regulations, bylaws, and policies needed for implementation; steps for obtaining required permits; analysis of implementation cost and cost sharing; performance monitoring and documentation required for nitrogen reduction credit; and best management practices for on-going municipal oversight and management.
- 2. Nitrogen trading demonstration project.** Nitrogen trading is a promising strategy for optimizing cost savings while achieving reduction goals in shared watersheds. This task will develop a framework for employing nitrogen trading in the Pleasant Bay watershed and will provide a replicable template for other watersheds. This task will include: (a) criteria for selecting sites for nitrogen trading; (b) process for assessing economic costs of nitrogen mitigation; (c) procedure for negotiating and establishing nitrogen trading prices;

## *Pleasant Bay Targeted Watershed Management Plan*

(d) analysis of legal and regulatory measures needed to implement nitrogen trading; and  
(e) development of a sample nitrogen trading agreement.

- 3. Ecosystem monitoring and modeling for implementation.** The Massachusetts Estuaries Project model runs used as the basis for TMDLs were conducted in 2005 using data that is now fifteen years old. Since that time, major changes to the system have occurred, including formation of a second inlet. For this task, the Alliance will be the first regional watershed to: (a) update baseline ecosystem assessment data for water quality, eelgrass, benthic infauna, and other ecological indicators; and (b) develop updated linked watershed-water quality models to assess the impact of optimized TWMP scenarios.

## **APPENDIX A**

### **Data Tables**

**Table A-1. Information Sources**

<b>Report</b>	<b>Author</b>	<b>Date</b>
MEP Linked Watershed-Embayment Model to Determine Critical Nitrogen Loading Thresholds for the Pleasant Bay System, Orleans, Chatham, Brewster and Harwich, Massachusetts	MassDEP, University of Massachusetts Dartmouth School of Marine Science and Technology	May 2006
Final Pleasant Bay System Total Maximum Daily Loads for Total Nitrogen	Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs, MassDEP, Bureau of Resource Protection	May 2007
CCC Technical Memorandum - RE: Individual Town Nitrogen Loads by TMDL Watershed/Segments to Pleasant Bay	Cape Cod Commission (Ed Eichner)	Nov 28, 2007
Town of Chatham: Final Comprehensive Wastewater Management Plan and Final Environmental Impact Report	Stearns & Wheeler, LLC	May 2009
MEP Technical Memorandum - RE: MEP Scenarios to Evaluate Water Quality Impacts of the Addition of a 24-ft Culvert in Muddy Creek Inlet	MassDEP, University of Massachusetts Dartmouth School of Marine Science and Technology	Oct 5, 2010
Town of Orleans: Comprehensive Wastewater Management Plan and Single Environmental Impact Report	Wright-Pierce	Dec 2010
Town of Brewster, Massachusetts: Integrated Water Resource Management Plan Phase II Final Report	Horsley Witten Group, Inc.	Jan 28, 2013
Town of Brewster, Massachusetts: Pleasant Bay Nitrogen Management Alternatives Analysis Report	Horsley Witten Group, Inc.	Mar 20, 2013
208 Plan: Cape Code Area Wide Water Quality Management Plan Update	Cape Cod Commission	Jun 2013
Final Comprehensive Wastewater Management Plan/Single Environmental Impact Report Town of Harwich, Massachusetts	CDM Smith	Mar 2016
Amended Comprehensive Wastewater Management Plan - Preliminary Draft (Prepared for the Town of Orleans, MA)	AECOM Technical Services, Inc.	Jun 2016
Pleasant Bay Composite Nitrogen Management Analysis	Wright-Pierce	Mar 2017

**Table A-2. Unattenuated and Attenuated Watershed Loads, (kg/yr)**

<b>Subembayment</b>	<b>Brewster</b>	<b>Chatham</b>	<b>Harwich</b>	<b>Orleans</b>	<b>TOTAL</b>
Meetinghouse Pond					
<i>Unattenuated Watershed Load</i>				2,256	2,256
<i>Attenuated Watershed Load</i>				2,256	2,256
<i>% Attenuation</i>				0%	0%
Lonnies Pond (Kescayo Gansett Pond)					
<i>Unattenuated Watershed Load</i>	248			1,139	1,387
<i>Attenuated Watershed Load</i>	40			838	878
<i>% Attenuation</i>	84%			26%	37%
Areys Pond					
<i>Unattenuated Watershed Load</i>	282			367	649
<i>Attenuated Watershed Load</i>	95			367	462
<i>% Attenuation</i>	66%			0%	29%
The River - Upper					
<i>Unattenuated Watershed Load</i>	61			1,174	1,235
<i>Attenuated Watershed Load</i>	79			98	1,005
<i>% Attenuation</i>	89%			15%	19%
The River - Lower					
<i>Unattenuated Watershed Load</i>	107			1,549	1,656
<i>Attenuated Watershed Load</i>	16			1,390	1,406
<i>% Attenuation</i>	85%			10%	15%
Namequoit River					
<i>Unattenuated Watershed Load</i>	117			1,034	1,151
<i>Attenuated Watershed Load</i>	51			935	986
<i>% Attenuation</i>	56%			10%	14%
Paw Wah Pond					
<i>Unattenuated Watershed Load</i>				679	679
<i>Attenuated Watershed Load</i>				679	679
<i>% Attenuation</i>				0%	0%
Quanset Pond					
<i>Unattenuated Watershed Load</i>	142			723	865
<i>Attenuated Watershed Load</i>	72			569	641
<i>% Attenuation</i>	49%			21%	26%
Round Cove					
<i>Unattenuated Watershed Load</i>	22		,291		2,293
<i>Attenuated Watershed Load</i>	12		,277		2,278
<i>% Attenuation</i>	50%		1%		1%
Muddy Creek Upper					
<i>Unattenuated Watershed Load</i>		1,234	3,808		5,042
<i>Attenuated Watershed Load</i>		531	1,637		2,168
<i>% Attenuation</i>		57%	57%		57%

**Table A-2. Unattenuated and Attenuated Watershed Loads, (kg/yr)**  
(Continued)

<b>Subembayment</b>	<b>Brewster</b>	<b>Chatham</b>	<b>Harwich</b>	<b>Orleans</b>	<b>TOTAL</b>
Muddy Creek Lower					
<i>Unattenuated Watershed Load</i>		1,488	2,512		4,000
<i>Attenuated Watershed Load</i>		1,458	2,462		3,920
<i>% Attenuation</i>		2%	2%		2%
Ryder's Cove					
<i>Unattenuated Watershed Load</i>		4,054			4,054
<i>Attenuated Watershed Load</i>		3,613			3,613
<i>% Attenuation</i>		11%			11%
Crows Pond					
<i>Unattenuated Watershed Load</i>		1,542			1,542
<i>Attenuated Watershed Load</i>		1,537			1,537
<i>% Attenuation</i>		0.3%			0.3%
Bassing Harbor					
<i>Unattenuated Watershed Load</i>		620			620
<i>Attenuated Watershed Load</i>		607			607
<i>% Attenuation</i>		2%			2%
Frost Fish Creek					
<i>Unattenuated Watershed Load</i>		1,059			1,059
<i>Attenuated Watershed Load</i>		1,059			1,059
<i>% Attenuation</i>		0%			0%
Pochet					
<i>Unattenuated Watershed Load</i>				3,135	3,135
<i>Attenuated Watershed Load</i>				3,073	3,073
<i>% Attenuation</i>				2%	2%
Pleasant Bay (including Little Pleasant Bay)					
<i>Unattenuated Watershed Load</i>	6,212	1,526	4,743	4,055	16,536
<i>Attenuated Watershed Load</i>	6,077	1,526	4,553	3,538	15,694
<i>% Attenuation</i>	2%	0%	4%	13%	5%
Chatham Harbor					
<i>Unattenuated Watershed Load</i>		6,308			6,308
<i>Attenuated Watershed Load</i>		6,241			6,241
<i>% Attenuation</i>		1%			1%
<b>ALL SUBEMBAYMENTS</b>					
<i>Unattenuated Watershed Load</i>	<b>7,171</b>	<b>17,831</b>	<b>13,354</b>	<b>16,111</b>	<b>54,468</b>
<i>Attenuated Watershed Load</i>	<b>6,359</b>	<b>16,572</b>	<b>10,929</b>	<b>14,643</b>	<b>48,503</b>
<i>% Attenuation</i>	<b>11%</b>	<b>7%</b>	<b>18%</b>	<b>9%</b>	<b>11%</b>

Notes:

1. Unattenuated and attenuated loads are as reported by the Cape Cod Commission (Eichner, November 28, 2007) and by the MEP (MEP Technical Memorandum, October 5, 2010) for Round Cove, Muddy Creek (Upper and Lower), and Pleasant Bay.



**Table A-3. Attenuated Watershed Load Removals (kg/yr)**

<b>Subembayment</b>	<b>Brewster</b>	<b>Chatham</b>	<b>Harwich</b>	<b>Orleans</b>	<b>TOTAL</b>
Meetinghouse Pond					
<i>Attenuated Watershed Load</i>				2,256	2,256
<i>Threshold Watershed Load</i>				386	386
<i>Removal Required</i>				1,870	1,870
Lonnies Pond (Kescayo Gansett Pond)					
<i>Attenuated Watershed Load</i>	41			838	879
<i>Threshold Watershed Load</i>	27			566	593
<i>Removal Required</i>	14			272	286
Areys Pond					
<i>Attenuated Watershed Load</i>	95			367	462
<i>Threshold Watershed Load</i>	69			265	334
<i>Removal Required</i>	26			102	128
The River - Upper					
<i>Attenuated Watershed Load</i>	79			98	1,005
<i>Threshold Watershed Load</i>	46			30	634
<i>Removal Required</i>	33			68	371
The River - Lower					
<i>Attenuated Watershed Load</i>	16			1,390	1,406
<i>Threshold Watershed Load</i>	10			882	892
<i>Removal Required</i>	65			08	514
Namequoit River					
<i>Attenuated Watershed Load</i>	51			935	986
<i>Threshold Watershed Load</i>	33			599	632
<i>Removal Required</i>	18			336	354
Paw Wah Pond					
<i>Attenuated Watershed Load</i>				679	679
<i>Threshold Watershed Load</i>				266	266
<i>Removal Required</i>				413	413
Quanset Pond					
<i>Attenuated Watershed Load</i>	72			569	641
<i>Threshold Watershed Load</i>	44			350	394
<i>Removal Required</i>	28			219	247
Round Cove					
<i>Attenuated Watershed Load</i>	12		,277		2,278
<i>Threshold Watershed Load</i>	11		,068		1,069
<i>Removal Required</i>	0.3		1,209		1,209
Muddy Creek Upper					
<i>Attenuated Watershed Load</i>		531	1,637		2,168
<i>Threshold Watershed Load</i>		346	1,046		1,392
<i>Removal Required</i>		185	591		776

**Table A-3. Attenuated Watershed Load Removals (kg/yr)**  
(Continued)

<b>Subembayment</b>	<b>Brewster</b>	<b>Chatham</b>	<b>Harwich</b>	<b>Orleans</b>	<b>TOTAL</b>
Muddy Creek Lower					
<i>Attenuated Watershed Load</i>		1,458	2,462		3,920
<i>Threshold Watershed Load</i>		874	1,476		2,350
<i>Removal Required</i>		584	986		1,570
Ryder's Cove					
<i>Attenuated Watershed Load</i>		3,613			3,613
<i>Threshold Watershed Load</i>		1,630			1,630
<i>Removal Required</i>		1,983			1,983
Crows Pond					
<i>Attenuated Watershed Load</i>		1,537			1,537
<i>Threshold Watershed Load</i>		1,540			1,540
<i>Removal Required</i>		0			0
Bassing Harbor					
<i>Attenuated Watershed Load</i>		607			607
<i>Threshold Watershed Load</i>		609			609
<i>Removal Required</i>		0			0
Frost Fish Creek					
<i>Attenuated Watershed Load</i>		1,059			1,059
<i>Threshold Watershed Load</i>		257			257
<i>Removal Required</i>		802			802
Pochet					
<i>Attenuated Watershed Load</i>				3,073	3,073
<i>Threshold Watershed Load</i>				1,505	1,505
<i>Removal Required</i>				1,568	1,568
Pleasant Bay (including Little Pleasant Bay)					
<i>Attenuated Watershed Load</i>	6,077	1,526	4,553	3,538	15,694
<i>Threshold Watershed Load</i>	3,913	981	2,932	2,275	10,101
<i>Removal Required</i>	2,164	545	1,621	1,263	5,593
Chatham Harbor					
<i>Attenuated Watershed Load</i>		6,241			6,241
<i>Threshold Watershed Load</i>		6,241			6,241
<i>Removal Required</i>		0			0
<b>ALL SUBEMBAYMENTS</b>					
<i>Attenuated Watershed Load</i>	<b>6,360</b>	<b>16,572</b>	<b>10,929</b>	<b>14,643</b>	<b>48,504</b>
<i>Threshold Watershed Load</i>	<b>4,101</b>	<b>12,478</b>	<b>6,522</b>	<b>7,724</b>	<b>30,825</b>
<i>Removal Required</i>	<b>2,259</b>	<b>4,099</b>	<b>4,407</b>	<b>6,919</b>	<b>17,684</b>

Notes:

1. Attenuated watershed loads are taken from Table A-2. Total threshold watershed loads are taken from Table VIII-4 of the 2006 MEP report and Table 2 of the 2010 MEP Technical Memo. Town shares of thresholds are proportional to their attenuated loads.

**Table A-4. Town Plan Removals (kg/yr) and Reliance on Non-Traditional Technologies**

Subembayment	Brewster	Chatham	Harwich	Orleans	Total
Meetinghouse Pond <i>Non-Traditional Technologies Share</i>				1,876 2%	1,876 10%
Lonnies Pond <i>Non-Traditional Technologies Share</i>	0.5 100%			284 100%	285 100%
Areys Pond <i>Non-Traditional Technologies Share</i>	1.0 100%			113 100%	114 100%
The River - Upper <i>Non-Traditional Technologies Share</i>	0.1 100%			374 54%	374 47%
The River - Lower <i>Non-Traditional Technologies Share</i>	0.3 100%			517 100%	517 100%
Namequoit River <i>Non-Traditional Technologies Share</i>	0.8 100%			348 100%	349 100%
Paw Wah Pond <i>Non-Traditional Technologies Share</i>				413 100%	413 100%
Quanset Pond <i>Non-Traditional Technologies Share</i>	1.0 100%			228 100%	229 100%
Round Cove <i>Non-Traditional Technologies Share</i>	0.0 100%		1,251 3%		1,251 3%
Muddy Creek Upper <i>Non-Traditional Technologies Share</i>		438 2%	805 3%		1,243 3%
Muddy Creek Lower <i>Non-Traditional Technologies Share</i>		1,192 2%	1,073 4%		2,265 3%
Ryder's Cove <i>Non-Traditional Technologies Share</i>		2,674 3%			2,674 3%
Crows Pond <i>Non-Traditional Technologies Share</i>		1,248 3%			1,248 3%
Bassing Harbor <i>Non-Traditional Technologies Share</i>		514 1%			514 1%
Frost Fish Creek <i>Non-Traditional Technologies Share</i>		832 3%			832 3%
Pochet <i>Non-Traditional Technologies Share</i>				1,564 100%	1,564 100%
Pleasant Bay (including Little Pleasant Bay) <i>Non-Traditional Technologies Share</i>	1,867 50%	930 3%	1,411 6%	1,257 100%	5,465 48%
Chatham Harbor <i>Non-Traditional Technologies Share</i>		5,229 1%			5,229 1%
Total (All Subembayments) <i>Non-Traditional Technologies Share</i>	1,871 50%	13,058 2%	4,540 4%	6,974 71%	26,442 24%

Notes:

1. Non-traditional technologies are considered to be remediation technologies, residential fertilizer reductions, and on-site denitrification systems.
2. All town plans have been adjusted for a uniform 25% residential fertilizer reduction.
3. Yellow shaded cells identify subembayments where town plans rely on non-traditional technologies for >25% of their planned removals.

**Table A-5. Town Plan Nitrogen Removals Compared to TMDL (kg/yr)**

Subembayment	Brewster	Chatham	Harwich	Orleans	Total
Meetinghouse Pond <i>Amount Town Plans Over/Under</i>				00	
Lonnie's Pond <i>Amount Town Plans Over/Under</i>	13			0	13
Areys Pond <i>Amount Town Plans Over/Under</i>	28			0	28
The River - Upper <i>Amount Town Plans Over/Under</i>	2.5			1	4
The River - Lower <i>Amount Town Plans Over/Under</i>	5.8			1	7
Namequoit River <i>Amount Town Plans Over/Under</i>	18			0	18
Paw Wah Pond <i>Amount Town Plans Over/Under</i>				0	0
Quanset Pond <i>Amount Town Plans Over/Under</i>	28			1	27
Round Cove <i>Amount Town Plans Over/Under</i>	0.8		42		42
Muddy Creek Upper <i>Amount Town Plans Over/Under</i>		245	221		466
Muddy Creek Lower <i>Amount Town Plans Over/Under</i>		608	87		696
Ryder's Cove <i>Amount Town Plans Over/Under</i>		720			720
Crows Pond <i>Amount Town Plans Over/Under</i>		1,248			1,248
Bassing Harbor <i>Amount Town Plans Over/Under</i>		514			514
Frost Fish Creek <i>Amount Town Plans Over/Under</i>		29			29
Pochet <i>Amount Town Plans Over/Under</i>				55	
Pleasant Bay (including Little Pleasant Bay) <i>Amount Town Plans Over/Under</i>	294	388	209	0	115
Chatham Harbor <i>Amount Town Plans Over/Under</i>		5,229			5,229
Total (All Subembayments) <i>Amount Town Plans Over/Under</i>	390	8,982	141	7	8,726

Notes:

1. **Orange font** and shading indicate the amount a town plan is under the TMDL.
2. **Green font** and shading indicate the amount a town plan is over the TMDL.
3. All town plans have been adjusted for a uniform 25% residential fertilizer reduction.

**APPENDIX B**  
**Summary of Town Plans for  
Pleasant Bay**

## **APPENDIX B**

### **SUMMARY OF TOWN PLANS FOR PLEASANT BAY**

#### **BREWSTER**

The Town of Brewster contributes approximately 13% of the attenuated wastewater nitrogen load to the Pleasant Bay watershed and is responsible for 13% of the aggregate removal. The Town has developed an Integrated Water Resources Management Plan (IWRMP). The IWRMP Phase II report was issued in final form in January 2013 with assessments and recommendations addressing nitrogen loading to Pleasant Bay, existing and future drinking water, and stormwater and freshwater pond needs. Nitrogen management alternatives are further discussed in a March 2015 report. The Brewster Plan includes significant fertilizer reductions that have already taken place at the Captain's Golf Course, fertigation at the golf course, and reductions in residential fertilizer loads. Brewster considered shellfish propagation or aquaculture to meet the remaining nitrogen reduction for the Town. The Town is currently looking at new septic leachfield technologies for nitrogen reduction (since the shellfish management option may not be feasible) and is investigating potential pilot projects to test this option. Sewering of a residential neighborhood has been identified as a backup option, but the proposed location is at the upper end of the watershed, meaning it would take decades for there to be water quality improvement in the Bay.

#### **CHATHAM**

The Town of Chatham contributes approximately 34% of the attenuated wastewater nitrogen load to the Pleasant Bay watershed and is responsible for 23% of the overall removal. The Town began implementing its Comprehensive Wastewater Management Plan (CWMP) in 2010. The CWMP includes the sewerage of the entire town, with the implementation of later sewerage phases being contingent upon results of on-going monitoring under the adaptive management plan. The Town of Chatham, in cooperation with the Town of Harwich, recently completed the construction of a new bridge to replace inadequate culverts that will provide increased tidal flushing and improved water quality in Muddy Creek.

The Town of Chatham, in 2017, entered into an IMA with the Town of Harwich that will allow portions of Harwich, within the Pleasant Bay watershed, to be connected by sewer infrastructure to the Chatham WPCF for treatment. Chatham and Harwich have subsequently been listed to receive State Revolving Funds (SRF) for implementation of the initial phase of joint sewerage to accomplish this task. In addition, Chatham continues with future phases of sewer implementation according to the Town-wide plan.

Chatham is proceeding under MEPA Certificate (EOEEA #11510) to implement Phase 1 of its plan to achieve TMDL compliance within all of its watersheds, including those related to Pleasant Bay.

## **HARWICH**

The Town of Harwich contributes approximately 22% of the attenuated wastewater nitrogen load to the Pleasant Bay watershed and is responsible for 25% of the overall removal. The Town developed a recommended program to address nitrogen removal and meet other town needs. That program, described in a draft CWMP, was submitted for review to MEPA and the CCC in February 2013. Upon further refinement of infrastructure and non-infrastructure program components and review of the 208 Water Quality Plan, the Town filed the final CWMP in March 2016 with MEPA and the CCC. MEPA issued a Certificate of Approval on May 13, 2016. The Commission gave Development of Regional Impact Individual (DRI) approval in August 2016.

The CWMP proposes wastewater collection in the Pleasant Bay watershed and recommends a community partnership with Chatham to treat wastewater generated and collected in the Pleasant Bay watershed at the existing Chatham treatment facility. Treated effluent would initially be recharged at the Chatham facility but may in the future be conveyed back to East Harwich for recharge, depending on water quality results. The Harwich CWMP also includes several nontraditional components such as the Muddy Creek inlet widening, and inclusion of stormwater best management practices (BMPs) throughout town. Several non-infrastructure components are included, such as review of potential open space acquisition parcels to minimize buildout, and fertilizer education programs (instead of a fertilizer control ordinance).

## **ORLEANS**

The Town of Orleans contributes 30% of the attenuated wastewater nitrogen load to the Pleasant Bay watershed and is responsible for 39% of the overall removal. The Town's CWMP was completed in 2010 and received MEPA and DRI approvals with conditions in 2011. The CWMP characterizes nitrogen reduction needs pursuant to the MEP and TMDL reports for Pleasant Bay. The Needs Assessment completed in 2009 identifies other wastewater needs to address Title 5 compliance and economic development. The Town's CWMP is a phased sewerage plan supplemented with non-traditional solutions that may reduce the scale of later sewerage requirements.

The Town has embarked on supplemental planning aimed at accelerating the use of non-traditional solutions to minimize sewerage. The Orleans Water Quality Advisory Panel developed a "Consensus Agreement" in 2015 that recommends a strong emphasis on evaluation of the ability of non-traditional technologies to meet the TMDL requirements for Pleasant Bay. In 2016, the Town has installed a demonstration oyster-growing project in Lonnie's Pond and is planning another shellfish project in Quanset Pond. The Town is also seeking funds to install a pilot project of four on-site septic systems with nitrogen removing biofilters.

Under the Consensus Agreement, only the Meetinghouse Pond subembayment is scheduled for public sewerage. If non-traditional methods are not found to be fully viable, the Town will need to utilize additional sewer extensions to meet TMDL requirements.

**APPENDIX C**

**Town Plans Related to  
Managing Growth in  
Nitrogen Loads**



## APPENDIX C

### TOWN PLANS RELATED TO MANAGEMENT OF GROWTH IN NITROGEN LOADS

#### BREWSTER

The Town has developed an Integrated Water Resources Management Plan (IWRMP). The IWRMP Phase II report was issued in final form in January 2013. Nitrogen management alternatives are further discussed in a March 2015 report addressing nitrogen loading to Pleasant Bay. As part of the IWRMP, the Town's consultant completed a build-out analysis which included parcel-by-parcel consideration of pre-existing, non-conforming lots to determine if future development is possible.

The build-out analysis conducted for the MEP technical report on Pleasant Bay indicated that attenuated nitrogen loads to the Bay from Brewster could increase by 19%. The Pleasant Bay sub-watershed was projected to have a 18% increase in loads; the Namequoit River sub-watershed would have a 90% increase; and the Arey's Pond sub-watershed would show little change.

Brewster is currently completing an updated build-out analysis by sub-watershed; preliminary figures indicate a growth in attenuated nitrogen load of 19% through build-out.

Brewster plans the following activities to manage growth in nitrogen load in its portion of the Pleasant Bay watershed:

- Continued acquisition of land for conservation;
- Regulations requiring the use of onsite denitrification systems for new development;
- Changes to the Town's water quality regulations to further control nitrogen loading for industrial and residential properties; and
- Changes to zoning and/or health regulations to limit future nitrogen loads.

#### CHATHAM

The Town of Chatham began implementing its Comprehensive Wastewater Management Plan (CWMP) in 2010. The CWMP includes the sewerage of the entire town, with the implementation of later sewerage phases being contingent upon results of on-going monitoring under the adaptive management plan.

The 2009 Final CWMP documents the town's expected 22% increase in wastewater flow within the Pleasant Bay portions of Chatham. This estimate represents a more detailed and current analysis than that conducted in the MEP technical report (which predicts a 11% increase).

The Chatham sewers will remove more septic nitrogen from the Pleasant Bay watershed than is needed because the septic nitrogen removal percentages will exceed those called for in the TMDL in all cases. Since the implementation of Chatham sewers in the Pleasant Bay watershed will not

occur until the later years of the watershed permit (and beyond), some of the expected growth will increase loadings to the Bay, to the extent it occurs in the next 10 years, but will be more than compensated for once sewers are installed.

Chatham manages growth through its zoning regulations and through Article 2 of its Sewer Use Regulations. The latter document allows a given property to be developed to the extent otherwise allowable under current Board of Health and Title 5 regulations. This “flow neutral” approach was deemed satisfactory by DEP for Chatham to receive enhanced funding for construction of its sewer system.

## **HARWICH**

The Town of Harwich filed its final CWMP in March 2016 for regulatory approval which was received in August 2016.

The Harwich CWMP reports a build-out evaluation that predicts a town-wide increase in wastewater flow and nitrogen loading of 30%. In the areas to be served by the proposed sewer system, increases in septic nitrogen load are projected to range from 3% to 10% in five of the eight areas, 29% in the Herring River watershed, and 41% in the Pleasant Bay watershed. The basic build-out for the Pleasant Bay watershed is 15%; an additional 26% was added to account for expected extra growth in East Harwich related to rezoning. The build-out analysis conducted for the MEP report predicts a 34% increase in attenuated nitrogen load in the Harwich portions of the Pleasant Bay watershed.

The areas of highest growth in Harwich, including the East Harwich Village Center, are in the Muddy Creek sub-watershed.

Harwich has laid out a multi-phased plan to build sewers in nitrogen-sensitive watersheds. Phases 2 and 3 of that program address septic nitrogen loads in the Pleasant Bay watershed. The sewer layouts accommodate the growth expected there through build-out. That is, the completion of Phase 2 and 3 sewers will provide capacity for the 41% growth expected in the Pleasant Bay watershed. Only if growth exceeds that percentage will additional nitrogen controls be needed.

The Harwich CWMP also includes stormwater best management practices (BMPs) throughout town, and a review of potential open space acquisition parcels to minimize buildout impacts.

## **ORLEANS**

The Town’s CWMP was completed in 2010 and received MEPA and DRI approvals with conditions in 2011. In Section 4 of the CWMP, build-out is estimated to create a 36% increase in wastewater flow and nitrogen load. The Town adopted a planning horizon that was assumed to allow about two-thirds of the build-out flows and loads, or a 22% increase from current conditions. Those increases apply town-wide, and it was then assumed that the growth would occur uniformly in all watersheds impacted by Orleans (Pleasant Bay, Nauset system, Atlantic Ocean and Cape Cod Bay).

In conjunction with the Town 's supplemental planning activities, its consultant prepared a build-out analysis specific to the Pleasant Bay watershed in 2018. That analysis found:

- 2,912 existing dwellings in the watershed
- 916 potential new dwellings
- 657 potential accessory dwellings

Assuming that only 25% of the potential accessory dwellings would be built, these data indicate 1,080 new dwellings at build-out.

By applying average per-dwelling flows from town-wide 2014-2015 data, the Town estimates there will be a 26% increase in wastewater flows and a 26% increase in watershed nitrogen loads at build-out in the Pleasant Bay watershed. Build-out percentages for each Pleasant Bay sub-watershed are not available.

Orleans has identified the following measures to influence growth in the nitrogen load in Pleasant Bay:

- Continued open space acquisition
- Maintaining one-acre zoning in the R District
- Reducing potential for new apartments in the Rural Business District
- Implementing flow-neutral regulations sufficient to allow enhanced funding by DEP
- Maintaining the Orleans Nutrient Regulation in un-sewered areas.

These steps are to be implemented in conjunction with zoning changes that will help divert growth to the downtown area, which is to be sewerred and which is not in the Pleasant Bay Watershed.

**APPENDIX D**  
**Town Financial Plans**

## **APPENDIX D**

### **SUMMARY OF TOWN FINANCIAL PLANS**

#### **BREWSTER**

Brewster's plan for nitrogen reduction in the Pleasant Bay watershed includes a reduction in fertilizers at the Captains Golf Course, a recapture of nitrogen through the irrigation well at the course, residential fertilizer management and the implementation of a program to build and operate on-site denitrification septic systems for a number of homes and businesses in the watershed. Little or no additional funding is needed for the golf course and residential fertilizer management components of the plan. However, there is a cost for the implementation of the on-site septic treatment systems and the Town has begun deliberations on how to finance their design, construction and operation. Final funding plans will be completed during the pilot testing of these systems in the first five years of the Watershed Permit.

The Town expects that a portion of the cost of these systems will be funded by the property owner, with the remaining portion covered by the Town. The cost sharing percentage has not yet been determined. Brewster anticipates participating in any zero-interest State Revolving Loan Fund financing available through the implementation of the Watershed Permit, and is also evaluating the use of general tax revenue to finance the Town's cost for the systems. Financing of the property owner's portion of the cost through a betterment program, similar to the Town's road betterment program, will also be considered. Funding provided by the Town may be tied to an incentive program where property owners can obtain more funding in an initial phase of implementation in an effort to accelerate the restoration of Pleasant Bay.

The impact to property owners will depend on the final cost share approved by the Town. The current estimated cost for the onsite treatment systems is \$8,000 to \$12,000 and will vary from parcel to parcel. There will be an annual cost for operation and maintenance that will be determined during the pilot phase of the project. If a betterment program is adopted, the property owner's capital cost could be financed over many years. The funding provided by the Town will not impact its ongoing ability to fund other Town services.

#### **CHATHAM**

The Town's CWMP financing plan is outlined in Section 11.4 of the 2009 Chatham CWMP. As originally proposed, the Town anticipated appropriations of \$15 to \$20 million every two years for design and construction. Over the last eight years Chatham has maintained that approach.

Chatham has appropriated over \$150 million since 2010 and has successfully obtained 0% SRF funding for each of its sewer infrastructure projects, and an \$18 million grant from USDA for the Water Pollution Control Facility (WPCF) upgrade. All projects to date, and moving forward, are funded on the Town's tax rate. This approach was taken to provide fiscal fairness and to use debt drop-off for increased affordability. This approach was developed through extensive efforts of the Town Manager and Finance Director to develop and present an approvable financing plan for implementation to the community. The Town agreed to this method following several public

meetings and presentations during and following completion of the CWMP with the approach independently reviewed for the Board of Selectman by an outside consultant not related to the planning/design consultant.

The Town created its own cost calculator for residents to estimate the impact to their tax rate based on their property value.

The Town to date has not adjusted its sewer user fees, and, on an ongoing basis, is collecting data on sewer connection costs paid by property owners.

## **HARWICH**

Harwich’s nitrogen management plan has a cost of between \$2.6 to \$47.2 million for each phase of the program for a total potential program cost of \$230 million. This total includes an additional allowance of \$3.8 million for the Muddy Creek and Cold Brook attenuation projects and includes \$1.3 million allowances for the study and restoration of Hinckley’s Pond, Seymour Pond, Bucks Pond and John Joseph Pond.

Harwich’s Wastewater Implementation Committee (WIC) evaluated various cost recovery models. The WIC received input from several Town representatives. During these discussions, three tenets developed. Most importantly, the WIC felt that everyone in the Harwich community will receive benefits from restored water quality and that everyone contributes in some manner to the biggest problem – nitrogen coming from on-site septic systems.

To this end, one of the Committee’s recommendations was that capital costs for Harwich’s wastewater plan be funded primarily through property taxes. Future use of various user fee possibilities was explored and may be utilized if warranted.

Harwich’s 40-year Plan will be constructed in phases:

Phase 1: 2013 to 2015	\$2,550,000
<b>Phase 2 2016 to 2020</b>	<b>\$24,300,000 (Pleasant Bay Watershed)</b>
<b>Phase 3: 2021 to 2025</b>	<b>\$21,010,000 (Pleasant Bay Watershed)</b>
Phase 4A: 2026 to 2028	\$34,400,000
Phase 4B: 2029 to 2032	\$22,300,000
Phase 5: 2033 to 2037	\$23,200,000
Phase 6: 2038 to 2042	\$21,200,000
Phase 7: 2043 to 2047	\$47,200,000
<b>Phase 8: 2048 to 2052</b>	<b>\$33,900,000 (Pleasant Bay Watershed)</b>

This results in a total potential cost of \$230 million over 40 years. However, the CWMP is a living document and the Town will continue to pursue means to lower that overall cost.

The near-term plan calls for design and construction of the Pleasant Bay watershed sewer collection system such that initial flow to the Chatham facility will start in 2021. Since near-term needs are capital only, property taxes will be used to service the debt. Once customers are connected and utilizing the system, they will be charged for a portion of the system operation and maintenance costs.

The average tax increase for a resident in a \$350,000 assessed value home to fund the Phase 2 amount is about \$150 annually assuming all construction costs are recovered via general property tax. The average annual tax increase for the entire 40-year wastewater program is about \$400. Those connected to a sewer would also pay a portion of the operation and maintenance costs and the initial hook-up costs to connect their home to the pipe in the street. It is assumed the Town would utilize the State Revolving fund (SRF) loan program at zero- to two-percent interest over a 30-year bond to fund this program.

The Harwich Board of Selectmen endorsed a cost recovery policy for wastewater program implementation that utilizes the combination of town-wide property taxes, an infrastructure investment fund and a sewer enterprise account based on water consumption. Where appropriate, grant funds will be applied for, and if awarded, will be used to offset costs as applicable. This policy will be utilized to support the implementation of at least the first three phases of the eight-phase program and is subject to change should other potential beneficial funding programs become available to the Town and the actions of town meeting and subsequent ballot results.

## **ORLEANS**

Orleans' Amended CWMP recommends traditional sewerage of 24% of total properties. Non-traditional methods will be used to meet TMDL requirements, including aquaculture projects, PRBs, and enhanced individual septic systems. Total capital cost of the program (in FY17 dollars) is \$83,000,000. This includes projects that are predominantly outside the Pleasant Bay watershed.

Orleans will use rely on a combination of betterments and property taxes to pay for the capital costs of the program. Traditional sewerage is expected to be divided into collection system costs paid through betterments, and treatment facility/ disposal costs paid through general taxation. The rationale is that the whole community will benefit from a treatment facility with septage handling capacity, so those costs will be borne by taxpayers.

The Town of Orleans is moving forward with final design for public sewers in its downtown in FY19. This area is located outside of the Pleasant Bay watershed but is a precursor to future efforts that will benefit the bay. In planning for a downtown sewer system and non-traditional technologies in other locations, the Town evaluated the annual costs to commercial and residential property owners, including those located outside the sewerage area. The results are as follows, and pertain to the entire Orleans program, not just the portion in Pleasant Bay:

<b>METHOD 2</b> <b>TRADITIONAL COSTS ONLY</b> <b>Collection System 100% Betterments</b> <b>WWTF/Effluent Disposal 100% Property Taxes</b>						
Area of Orleans	Number of Users in Category	Average Property's Additional Tax Burden (100% WWTF/Effluent Disposal Costs only)	Average Total Betterment Amount (100% for Collection System Costs only)	10-Year Term @ 2% Interest	20-Year Term @ 2% Interest	30-Year Term @ 0% Interest
Non-Residential - Sewered	477	\$85	\$19,373	\$2,150	\$1,172	\$645
Residential - Sewered	1,084	\$60	\$13,108	\$1,455	\$793	\$436
Unsewered Areas	4,999	\$125	\$0	\$0	\$0	\$0

The above table demonstrates the costs to Orleans property owners to complete a downtown sewer project and proceed with non-traditional technologies. The calculations above assume 0% interest financing for construction costs, and 4% borrowing for non-eligible costs over 20 years. The Town has developed a 40-year repayment schedule for full CWMP implementation that will be refined as the results of non-traditional demonstration projects allow the Town to adapt its plan.

The Town of Orleans is fully aware that wastewater management infrastructure is one of many services that that the municipality provides its residents. In 2018, the Town was in construction on a new Police Station and DPW facility, and is working to address all of its facility and infrastructure needs while maintaining affordability in its tax structure. This is an ongoing effort, and wastewater management needs are acknowledged as a necessary part of the Town's capital planning program moving forward.



**APPENDIX E**  
**Town Adaptive  
Management Plans**

## APPENDIX E

### Adaptive Management Plan Summary for Towns in the Pleasant Bay Watershed

#### BREWSTER

The Town of Brewster has developed a plan to meet its nitrogen reduction requirements for the Pleasant Bay TMDL. The plan includes three actions that have already occurred; 1) fertilizer reductions at the Captains Golf Course; 2) the recapture of nitrogen through the golf course irrigation well; and 3) the implementation of a town-wide fertilizer bylaw. These actions constitute 56% percent of the total reduction for the Town. Brewster plans to use on-site denitrifying septic systems to meet the remainder of its nitrogen reduction goal.

If the on-site denitrifying systems do not work as planned, the town has a contingency plan to develop a neighborhood sewage collection and treatment system in the upper reaches of the Pleasant Bay watershed. This option was presented in the Town's Pleasant Bay Nitrogen Management Alternatives Analysis Report (HW March 20, 2015). The neighborhood is sufficiently large enough to provide the necessary nitrogen reduction to replace the on-site system option, and there is land available for the treatment and disposal facilities.

#### CHATHAM

Chatham's CWMP relies exclusively on sewerage so that restoration targets will be highly dependent on wastewater treatment plant (WWTP) performance and verification will be based on effluent monitoring at the WWTP and monitoring at the sentinel stations within Pleasant Bay as well as mapping eelgrass and monitoring benthic infauna. The environmental monitoring will track water quality and habitat changes within Pleasant Bay. As trends are observed, it may be necessary to reevaluate the implementation plan for possible mid-course corrections. The CWMP identified the following steps for its Adaptive Management Plan:

- 1. Implementation of the CWMP:** Areas of town affecting Pleasant Bay will be sewerage in both Phase 1 (extending to 2030) and Phase 2 (extending to 2040).
- 2. Documentation of Capital Expenditures:** This will verify that Chatham is meeting its obligations as prescribed in the CWMP.
- 3. Compliance with the Groundwater Discharge Permit:** Monthly discharge monitoring reports will verify WWTP performance.
- 4. Reporting on Groundwater Elevation and Quality Monitoring in the Vicinity of the WWTP:** This is conducted as part of the groundwater discharge permit monitoring requirements.
- 5. Reporting on Estuarine Water Quality Monitoring:** This monitoring is ongoing and coordinated with the Pleasant Bay Alliance.

6. **Habitat Assessments:** Habitat monitoring programs will be focused primarily on eelgrass mapping and benthic infaunal analysis. MassDEP will continue its eelgrass mapping program while benthic infaunal analysis monitoring programs are still under discussion.
7. **Coordination with the Pleasant Bay Alliance for Regional Model Runs:** This anticipates the need to update the MEP model for Pleasant Bay to address the dynamic nature of the system and to provide guidance on how to best address physical changes that may affect water and habitat quality.
8. **Periodic Watershed Assessments and Other Evaluations:** Assessments will be completed every 5 to 10 years to review water consumption, septic system discharges, WWTP performance and non-wastewater nitrogen loads. These data will be compared to water quality data to further deduce correlations between mitigation activities and impacts on water quality and habitat health.
9. **Evaluate Possible Changes to the CWMP as Part of Adaptive Management:** The above tasks will guide the community, in consultation with MassDEP and the CCC, in determining if changes to the CWMP are warranted.

## HARWICH

The AMP associated with Harwich's recommended program will have several components to allow for systematic review of the implementation phase and the resulting changes to water quality, community growth, and economic viability. Specifically, the following items are proposed to comprise the AMP:

1. **Technical Review Committee:** A technical review committee (TRC) will be established to review the progress of implementing the CWMP recommended program and the potential need to modify the plan during the implementation phase.
2. **Water Quality Monitoring:** The Town plans to continue monitoring water quality at the sentinel and check stations. Monitoring will move from the detailed sampling program required for the MEP modeling to periodic monitoring to track the progress of the program's implementation.
3. **Habitat Monitoring:** The Town anticipates that MassDEP will continue eelgrass mapping, to assess the results of the recommended program's implementation. Benthic habitat monitoring may also be beneficial to evaluate the effects of the program's implementation. The feasibility and responsibility for such monitoring will be determined through discussion between the Town, CCC, and MassDEP.
4. **Wastewater Treatment Plant/Groundwater Discharge Reporting:** The Towns of Harwich and Chatham will be required through their groundwater discharge permits from MassDEP to develop regular compliance reports.
5. **CWMP Implementation and Funding Status:** The TRC will be provided an annual implementation progress report following each calendar year containing an update regarding the implementation of the recommended program and the status of the project's funding.

**6. Community Growth Status:** Each year, concurrent with preparation of the implementation progress report, a written update will be prepared and submitted to the TRC describing community growth both in the community at-large and within the sewered areas.

**7. CWMP Recommended Program Modifications:** Based on the information provided, the TRC may recommend updates or modifications to the CWMP recommended program over the course of the implementation phase.

## ORLEANS

Orleans has an approved CWMP from 2010 that described its Adaptive Management Plan; however, the town is developing an amended CWMP that relies on both traditional and non-traditional approaches and is therefore modifying its original plan. The following tasks will be incorporated in the revised plan:

**1. Baseline Water Quality Data Assessment:** This task is to evaluate the adequacy of sampling locations and sampling methodology (protocols and parameters) in order to accomplish the following monitoring objectives:

- Establish current baseline conditions for evaluating water quality improvements as the town's overall nutrient management program is implemented;
- Establish baseline conditions for evaluating specific demonstration projects;
- Allow Massachusetts Estuaries Project (MEP) model revisions where physical conditions and nutrient loads have changed;
- Verify MEP model runs made as part of CWMP updates; and
- Determine data gaps and recommend additional monitoring to meet the above monitoring goals.

**2. Long Term Water Quality Monitoring:** This will continue the water quality monitoring program in conjunction with the Pleasant Bay Alliance in order to track changes in water quality as a result of land based mitigation strategies or physical changes in Pleasant Bay due to its dynamic nature. The monitoring program will be continuously evaluated to provide pertinent data as conditions warrant.

**3. Demonstration Project Monitoring:** The demonstration projects currently active in Orleans (shellfish in Lonnie's Pond and the PRB at the Nauset Middle School) will be evaluated for effectiveness and, depending on results, will be assigned nitrogen removal credit, as appropriate, for integration in the overall mitigation plan.

**4. MEP Model Update:** The MEP model for Pleasant Bay will be updated to account for physical changes in the system since the original 2001 to 2004 study period. The updated model can then run scenarios based on the activities proposed under the amended CWMP to evaluate effectiveness.

5. ***Stormwater and Fertilizer Monitoring:*** The town has two consultants evaluating the effectiveness of the town's efforts at fertilizer BMPs through a fertilizer by-law and protocols for fertilizing town properties. The town is implementing its NPDES Phase II stormwater permit as well. The data collected to determine the effectiveness of these programs can then be incorporated in mitigation scenarios run through the MEP model to predict their impact on water quality improvement.

**APPENDIX F**  
**Permitting Considerations for  
Residential Fertilizer Controls**

## **APPENDIX F**

### **Permitting Considerations for Residential Fertilizer Controls**

#### **BASIC CONCEPT**

Lawn and garden fertilization is a very widespread source of nitrogen loading. While one home or even one neighborhood do not represent a large nitrogen load, a watershed-wide reduction in fertilizer use is a low-cost method of estuary protection.

#### **FATE OF APPLIED NITROGEN**

Fertilizer applied to lawns and gardens is typically of the slow-release type. When applied to vegetated surfaces, the nitrogen will take one or more of five routes:

- Mineralization of organic forms into ammonium and nitrate
- Nitrification of ammonia into nitrate
- Denitrification of the nitrate producing nitrogen gas
- Uptake in the grass as organic nitrogen
- Leaching to the groundwater

If the grass is removed from the lawn after cutting, the nitrogen is transported to a disposal or recycling site and may be removed from the watershed. If the grass is mulched and left in place, its organic nitrogen will mineralize over time and be available to support additional grass growth, or will leach, or will be denitrified.

If the property owner spills or inadvertently applies fertilizer on a paved surface, and fails to clean up, then the fertilizer nitrogen is likely to directly impact the groundwater through stormwater facilities and may not be taken up by vegetation.

#### **BASELINE CONDITIONS**

The MEP watershed model estimated fertilizer nitrogen loads based on 5,000-square-foot lawns, and nitrogen leaching at 0.22 lb per 1,000 square feet, assuming that 20% of the nitrogen that is applied reaches the groundwater.

Watershed-wide, the MEP baseline is 7,100 lb/yr of nitrogen from residential and commercial lawns, slightly more than the estimated total leaching from the four golf courses (roughly 5,300 lb/yr). The MEP estimate is noted to be conservative, but it does not explicitly address fertilizer use in home gardens.

## **ELEMENTS OF AN EFFECTIVE MUNICIPAL CONTROL PLAN**

It is generally agreed that municipal bylaws or regulations are the most appropriate ways to effect water-quality-related improvements in residential fertilize practices. An effective town bylaw or regulation should address:

- Reducing the lawn area that is fertilized
- Reducing the fertilizer application rate
- Use of slow-release fertilizers
- Improving the fertilizer application practices to avoid days prior to expected heavy rainfall, eliminate spillage, avoid application to non-pervious surfaces, etc.
- Greater public awareness of fertilization practices

## **EXISTING TOWN BYLAWS AND REGULATIONS**

Bylaws have been enacted to influence nitrogen leaching from residential fertilization in:

- Brewster
- Chatham
- Orleans

In 2013, the Cape Cod Commission created a cape-wide Fertilizer Management District of Critical Planning Concern that allows towns to adopt fertilizer management regulations at the local level. The Commission has established guidelines on acceptable local regulations and has produced consumer-awareness materials. The Commonwealth of Massachusetts has addressed the ability of towns to control fertilization through statute, and the UMass Extension Service has developed Best Management Practices. The Town of Harwich has relied on the Massachusetts program as a substitute for a local bylaw.

## **BASIS FOR NITROGEN REMOVAL CREDIT**

Since residential lawn/garden fertilization is such a widespread practice, it is impractical to try to accumulate information on the amount of fertilizer used at each home, or the area to which it is applied. It is generally agreed that a municipal bylaw addressing the points listed above should, over time, achieve a 25% reduction in fertilizer leaching compared with the MEP baseline.

A 25% reduction from the MEP-estimated fertilizer loads would be a reduction of 809 kg/yr across the watershed. By town, the nitrogen removals would be:

Brewster	121 kg/yr
Chatham	247 kg/yr
Harwich	200 kg/yr
Orleans	241 kg/yr

In light of the watershed-wide removal requirement of 17,717 kg/yr, a 25% reduction in fertilizer loads will address about 5% of the problem. (Note: some lawn fertilization occurs up-gradient of natural attenuation sources, so these statistics overstate somewhat the relative importance of fertilizer controls.)



Orleans is basing its nitrogen control plan on the above-noted 25% reduction and Brewster's 2015 plan include a 50% reduction. To the extent that actual reductions in Brewster and Orleans are less than expected, other plan components must be adjusted to make up the difference. Neither Chatham nor Harwich has formally included the 25% credit in its plans, so any actual reduction in fertilizer leaching will allow other plan components to be cut back somewhat.

Harwich's reliance on the state allowance is viewed as less likely to achieve the 25% reduction that should occur with the types of local bylaws adopted by the other towns. It would be a reasonable, low-cost measure for Harwich to institute its own bylaw to more fully take advantage of this nitrogen control approach.

**APPENDIX G**  
**Permitting Considerations for  
Commercial Fertilizer Reductions**

## APPENDIX G

### Permitting Considerations for Commercial Fertilizer Reductions

#### BASIC CONCEPT

Golf courses can be a significant source of nitrogen loading, and closer control of application rates can have meaningful benefits in estuary protection. Brewster intends to use this approach to reduce the nitrogen loading from the municipally-owned Captains Golf Course in the Pleasant Bay watershed. It could also be used at other golf courses within the watershed.

#### FATE OF APPLIED NITROGEN

Nitrogen applied to golf courses is typically of the slow-release type. When applied to vegetated tees, greens and fairways, the nitrogen will take one or more of five routes:

- Mineralization of organic forms into ammonium and nitrate
- Nitrification of ammonia into nitrate
- Denitrification of nitrate producing nitrogen gas
- Uptake in the grass as organic nitrogen
- Leaching to the groundwater

If the grass is removed from the site after cutting, the nitrogen is transported to a disposal or recycling site and is presumably removed from the watershed. If the grass is mulched and left in place, its organic nitrogen will mineralize over time and be available to support additional grass growth, or will leach, or will be denitrified.

The baseline condition is the estimated nitrogen load from the golf course as reported in the 2006 MEP report. The MEP report, and the proposed reduction strategy here, are founded on an assumption that 20% of the chemical fertilizer applied to the course leaches into the groundwater. Specifically, the MEP load estimate is based on 26,700 lb/yr of applied fertilizer nitrogen and 5,340 lb/yr reaching the groundwater.

#### SPECIFIC CONDITIONS AT CAPTAINS GOLF COURSE

The following facts are reported in the March 2015 document *Pleasant Bay Nitrogen Management Alternatives Report*, prepared by Horsley Witten:

- The fertilizer applications at the Captains course in 2009 to 2010 were 14,900 to 18,000 lb/yr, indicating an average reduction of 10,250 lb/yr compared to the estimates made in the MEP.
- In 2014, fertilizer applications were even lower, indicating a reduction of 12,900 lb/yr.
- There was been an increase in groundwater nitrogen concentrations as measured at golf course monitoring wells, between 2010 and 2015.

Brewster has requested a nitrogen reduction credit of 2,050 lb/yr reduction in groundwater nitrogen load, based on the reported 10,250 lb/yr reduction in application rate and the leaching rate of 20% used in the MEP model.

## **OUTLINE OF FORMAL PROGRAM**

To formalize the fertilizer reduction program at the Captains Golf Course, and gain DEP approval under the Watershed Permit, the Town will undertake a series of actions. These actions will include:

1. Instituting a formal tracking procedure for fertilizer purchase, storage and use at the Captains course. This will include an annual evaluation of the nitrogen contribution from golf course fertilizers based the quantity of fertilizers applied in a given years and the leaching rate assumptions used in the MEP model.
2. Conducting a nitrogen leaching evaluation in Year 1 of the permit based on available data, including the historical nitrogen fertilization rates at the golf course, data from the ongoing golf course groundwater monitoring program and literature research on the assimilation of nitrogen in soils over time. This analysis will evaluate various phenomena such as fertilizer-related nitrogen retention in the soil and release time. This analysis will be provided to DEP in the first annual report. In consultation with the Town, DEP may determine the need for additional water quality sampling, including the possible installation of lysimeters under the golf course, to further understand and document fertilizer leaching to groundwater.

The formal fertilizer reduction program would be based on the following assumptions:

1. The golf course is (and will continue to be) town-owned.
2. The lead town contact is Chris Miller, Natural Resources Director.
3. The fertilization will be conducted by town employees or by contractors under Town supervision
4. The record keeping for fertilizer applications will be carried out under the terms of a written protocol.
5. Any water quality samples, including those for nitrogen analyses (nitrate, ammonia and TKN), will be analyzed by a DEP-certified laboratory.
6. DEP will review and approve the annual computation of load reductions.
7. DEP will review the nitrogen leaching evaluation and work with the Town to evaluate if any changes to the nitrogen loading assumptions are appropriate.

## **BASIS FOR NITROGEN REMOVAL CREDIT**

Monitoring of the fertilizer reduction program should include:

1. Formal accounting of all fertilizer purchased by type and nitrogen content.
2. Documentation of fertilizer quantities on hand at beginning and end of year.
3. Quantification of fertilizer nitrogen applied in the given year, both in total and on a pound-per-1000-sf basis.

Each year's data will be summarized in the annual report documenting the reduction in nitrogen load that has occurred. That load reduction estimate will be based on the records of fertilizer applied and the MEP model's leaching percentage, unless more accurate leaching data become available.

The nitrogen load reduction due to reduced fertilizer use will be evaluated in context of the estimated nitrogen reduction as a result of fertigation practices.

### **SAMPLE CALCULATIONS**

To help understand the proposed computation of nitrogen load removal, the following sample calculations are provided to illustrate the approach:

#### **Load reduction based on curtailment of fertilizer use**

1. Fertilizer nitrogen purchased during the year	15,000 lb
2. Fertilizer nitrogen in storage at beginning of the year	2,000 lb
3. Fertilizer nitrogen in storage at end of the year	1,000 lb
4. Fertilizer use in the year	
• Purchased	15,000 lb
• Change in storage	<u>+1,000 lb</u>
• Applied	16,000 lb
5. Fertilizer leached in year (at 20%)	3,200 lb
6. MEP baseline leaching	5,340 lb
7. Reduction in leaching compared to MEP	2,140 lb/yr (970 kg/yr)

**APPENDIX H**  
**Permitting Considerations for  
Golf Course Fertigation**

## APPENDIX H

### Permitting Considerations for Golf Course Fertigation

#### BASIC CONCEPT

Golf course fertigation involves the capture of groundwater nitrogen through irrigation wells, whose output is used to irrigate and fertilize a golf course. Brewster intends to use this technology to reduce the impact of the municipally-owned Captains Golf Course in the Pleasant Bay watershed.

#### FATE OF APPLIED NITROGEN

Nitrogen collected from the fertigation wells is likely to be entirely in the form of nitrates. When applied to vegetated tees, greens and fairways, that nitrate will take one or more of three routes:

- Denitrification in the soil
- Uptake in the grass as organic nitrogen
- Leaching to the groundwater

If the grass is removed from the site after cutting, the nitrogen is transported to a disposal or recycling site and is presumably removed from the watershed. If the grass is mulched and left in place, its organic nitrogen will mineralize over time and be available to support additional grass growth, or will leach, or will be denitrified.

The direct application of nitrates in the irrigation water (and the secondary release of mineralized organic nitrogen from the clippings) should result in a reduction in chemical fertilizer addition

The baseline condition is the estimated nitrogen load from the golf course as reported in the 2006 MEP report. That estimate is based on the assumption that 20% of the chemical fertilizer applied to the course leaches into the groundwater. It also assumes that no nitrogen is recaptured by the irrigation well. Specifically, the MEP load estimate is based on 26,700 lb/yr of applied fertilizer nitrogen and 5,340 lb/yr reaching the groundwater.

#### SPECIFIC CONDITIONS AT CAPTAINS GOLF COURSE

The following facts are reported in the March 2015 document *Pleasant Bay Nitrogen Management Alternatives Report*, prepared by Horsley Witten:

- The single existing golf course irrigation well pumps about 30 million gallons per year.
- From 2006 to 2010, the recovered groundwater had a nitrogen concentration 1.0 to 5.5 mg/l, with most measurements falling between about 2.0 mg/l and about 3.0 mg/l.

The current fertigation program is removing approximately 500 lb/yr of nitrogen, based on these data and an assumed leaching rate of 20%. The reduction may differ from that figure if fertigation leaching is shown to be different from the leaching of commercial fertilizer.

## **OUTLINE OF FORMAL PROGRAM**

To formalize the fertigation system at the Captains Golf Course, and gain DEP approval under the Watershed Permit, the Town will undertake the following actions:

1. Utilize the existing irrigation well and monitor total nitrogen concentrations in the water withdrawn from the well and applied to the golf course.
2. Calculate the total amount of nitrogen withdrawn from the well and calculate the nitrogen load reduction assuming that 20% of this nitrogen returns to the aquifer as leachate.
3. Evaluate if additional fertigation wells will optimize capture of nitrogen and if this could lead to additional credit.
4. As part of the nitrogen leaching evaluation described in Appendix G, evaluate the leaching rate of return irrigation water in the context of ongoing fertilization practices.

The formal fertigation program would be based on the following assumptions:

1. The golf course, irrigation well is, and will continue to be, town-owned.
2. The lead town contact is Chris Miller, Natural Resources Director.
3. The fertigation program will be operated and maintained by town employees and or conducted under Town supervision if contracted out.
4. Flow meters on the irrigation wells used to document compliance with the Water Management Act Permit for the golf course will be used to quantify the volume of water pumped each year
5. The irrigation well flow meters will be calibrated biennially.
6. Any water quality samples, including those for nitrogen analyses (nitrate, ammonia and TKN), will be analyzed by a certified DEP laboratory.
7. DEP will review and approve the computations of annual nitrogen load removal.
8. DEP will review the nitrogen leaching report and work with the Town to evaluate if there is sufficient information to revise the nitrogen leaching assumptions for irrigation water.

## **BASIS FOR NITROGEN REMOVAL CREDIT**

Monitoring of the fertigation project should include:

1. Monthly measurement of flow pumped from each irrigation well and the associated nitrogen concentration (based on the collected data, the measurement frequency may be reduced after Year 1.)
2. Calculation of the nitrogen load reduction based on a 20% leaching rate for returned irrigation water.
3. In consultation with the Town, DEP will determine if periodic measurement of recharge nitrogen concentrations in lysimeters is needed to estimate leaching rates.

The estimate of nitrogen load removal via fertigation should be coordinated with the estimated reduction in fertilizer applied; see Appendix G on this subject.



## SAMPLE CALCULATIONS

To help understand the proposed computation of nitrogen load removal, the following sample calculations are provided to illustrate the approach:

### Load reduction based on nitrogen removed from aquifer

1. Irrigation volume:	30 Mgal/yr
2. Irrigation N concentration:	2.5 mg/l
3. Irrigation N load applied:	630 lb/yr
4. Irrigation N load leaching to groundwater (based on 20% leaching):	130 lb/yr
5. Commercial fertilizer load replaced:	630 lb/yr
6. Commercial fertilizer leaching avoided (based on 20% leaching):	130 lb/yr
7. Net fertigation reduction in N leaching:	
o N removed from groundwater	630 lb/yr
o Change in N leaching	<u>-0 lb/yr</u>
o Net	630 lb/yr (290 kg/yr)

Over the first five years of the Watershed Permit, fertilizer applications and groundwater nitrogen concentrations shall be measured and compiled, to allow the Year 5 report to update/confirm the load reduction now estimated at 500 lb/yr (230 kg/yr).

**APPENDIX I**  
**Permitting Considerations for  
On-Site Denitrification Systems**

## APPENDIX I

### Permitting Considerations for On-Site Denitrification Systems

Use of on-site denitrification systems is proposed for the Pleasant Bay watershed. Programs will be developed for this approach during the first five years of the Watershed Permit. The following material is provided as general guidance on what those programs may include, and how performance will be measured. It is expected that those programs will be somewhat different than what is summarized here.

#### BASIC CONCEPT

Individual on-site septic systems are the largest source of groundwater nitrogen loading on Cape Cod. This nitrogen load can be reduced by the installation and operation of modular wastewater treatment systems or by leaching field modifications that are designed to remove a portion of the nitrogen load reaching the groundwater. Brewster and Orleans intend to use this approach to address a portion of their responsibilities in TMDL compliance in the Pleasant Bay watershed.

#### FATE OF APPLIED NITROGEN

Nitrogen leaving a septic system is predominantly in the ammonia and organic forms and is largely *converted* to nitrates in passage through the leaching field. On-site denitrification systems convert ammonia to nitrate and then convert the nitrate to nitrogen gas, thus effecting the nitrogen *removal*.

The baseline condition is the estimated nitrogen load from the residential and commercial septic systems in Brewster and Orleans, as reported in the 2006 MEP report. Those estimates are based on the assumption that 90% of the water use at a home or business becomes wastewater and that the septic system recharge adds 26.25 mg/l nitrogen to the groundwater. Specifically, the MEP estimated an attenuated load of 8,600 lb/yr reaching the groundwater from septic systems in Brewster and 24,400 lb/yr reaching the groundwater in Orleans.

#### BASIS FOR DETERMINING EFFECTIVENESS OF ON-SITE DENITRIFICATION

For mechanical treatment systems that are installed after septic tanks, the effectiveness of the system can be measured by sampling its effluent. No further credit is given for nitrogen removal through the leaching system because the removal of solids and organics in the treatment unit largely eliminates the conditions conducive to nitrogen removal in the leaching system.

For on-site systems using a horizontal reactive barrier (often called the “layer cake” system), the supplemental nitrogen removal occurs in the leaching field and the system effectiveness must be measured through buried lysimeters located below the leaching field.

The two primary parameters that determine the nitrogen load from a given home or business are the wastewater flow (estimated from the water use) and the septic system effluent nitrogen concentration. For a given water use and measured effluent concentration, the computed groundwater nitrogen load can then be compared to the load based on 26.25 mg/l nitrogen to determine the load removed by installing the nitrogen removal system. This table summarizes the computations:

**Unattenuated Nitrogen Removed per Property, lb/yr, based on MEP Baseline**

Effluent N conc., mg/l	Water Use, gpd				
	130	140	150	160	170
6	7.2	7.8	8.3	8.9	9.4
8	6.5	7.0	7.5	8.0	8.5
10	5.8	6.2	6.7	7.1	7.6
12	5.1	5.5	5.9	6.2	6.6
14	4.4	4.7	5.0	5.4	5.7
16	3.6	3.9	4.2	4.5	4.8
18	2.9	3.2	3.4	3.6	3.8
20	2.2	2.4	2.6	2.7	2.9
26.25	0.0	0.0	0.0	0.0	0.0

Based on Cape Cod experience with on-site denitrification systems and considering the lower wastewater flows at seasonal properties, these calculations indicate that Brewster and Orleans should plan on per-property removals of 3 to 6 lb/yr.

These computed load removals apply to systems located downgradient of natural attenuation sites, such as ponds or streams. The amount of natural attenuation must be considered when crediting actions against removal targets that are based on attenuated loads. That is, a system that is documented to remove 5.2 lb/yr can only be credited at 2.6 lb/yr if it is located upgradient from a freshwater pond.

**OUTLINE OF FORMAL PROGRAM**

The towns of Brewster and Orleans are proposing to address some of their TMDL responsibility through the use on on-site denitrification systems. To formalize these programs in Brewster and Orleans, and gain DEP approval under the Watershed Permit, the towns should undertake a series of actions. These actions are aimed at a thorough accounting of system performance, and proper accounting for natural attenuation. The actions should include:

1. Establish a mechanism for mandating the installation of on-site denitrification systems on private properties in designated sub-watersheds, and requiring their proper operation, maintenance and monitoring.
2. Establish a system for collecting and compiling data on water use and effluent quality at the properties using on-site denitrification systems.
3. Set forth the management role the town will have in the performance monitoring program and develop the details of that program.

4. Determine what town action will be taken to deal with poorly performing systems, and put in place a program to accomplish that objective and to obtain the associated easements.
5. Obtain and archive record (“as-built”) drawings to document the nature and locations of all on-site systems installed under this program.

The formal on-site denitrification program would be based on the following assumptions:

1. The on-site denitrification systems will be privately owned, with the towns having access for supplemental/confirmatory monitoring and for emergency repair and replacement.
2. The lead town contacts will be:
  - Name, title in Orleans
  - Name, title in Brewster
3. System design and installation will be in accordance with Title 5, and the responsible party will provide a certification that the system is designed/installed properly.
4. Operation and monitoring of all on-site systems will be conducted by licensed operators that may be pre-qualified by the towns.
5. A treatment-system-specific O&M manual will be maintained either at the property or at a central Town facility.
6. Effluent sampling will be carried out under the terms of a written protocol.
7. A DEP-certified laboratory will conduct nitrogen analyses (NO<sub>3</sub>, NH<sub>3</sub>, TKN).
8. DEP will review and approve the annual computation of load reductions.

## **BASIS FOR NITROGEN REMOVAL CREDIT**

Monitoring of the on-site denitrification program should include the following:

1. Annual water use at each participating home or business, based on water meter reading for properties served by public water, and based on estimates for others.
2. Periodic effluent samples analyzed for nitrogen species (NO<sub>3</sub>, NH<sub>3</sub>, TKN). (Assume quarterly sampling of each system initially, and then the establishment of a less frequent, statistically-based routine, based on actual performance variability.)

All of these monitoring data should be included in the Town’s annual reporting of nitrogen removal activities. The first four years of data should be summarized in a report that presents the data and draws conclusions on the reduction in nitrogen load that has occurred. That load reduction estimate will be based on:

- The computed load removal based on actual effluent quality compared with the MEP 26.25 mg/l baseline, and
- Adjustments for natural attenuation, based on the location of each system in the watershed and MEP estimates of attenuation.

Removals will be reported by sub-watershed.

## **SAMPLE CALCULATIONS**

To help understand the proposed computation of nitrogen load removal, the following sample calculations are provided to illustrate the approach:

**Load reduction for properties not subject to natural attenuation**

1. Water use at home X, annual average	140 gpd
2. Average effluent quality, total N (4 analyses)	15.75 mg/l
3. Baseline effluent quality	26.25 mg/l
4. Nitrogen removal (unattenuated)	
• Concentration below MEP baseline	10.5 mg/l
• Load removal	4.0 lb/yr
5. Natural attenuation	none
6. Nitrogen removal (attenuated)	4.0 lb/yr

**Load reduction for properties subject to natural attenuation**

1. Water use at home Y, annual average	150 gpd
2. Average effluent quality, total N (4 analyses)	13.45 mg/l
3. Baseline effluent quality	26.25 mg/l
4. Nitrogen removal (unattenuated)	
• Concentration below MEP baseline	12.8 mg/l
• Load removal	5.2 lb/yr
5. Natural attenuation (one pond)	50%
6. Nitrogen removal (attenuated)	2.6 lb/yr

**Overall load reduction (illustrative of an idealized sampling program)**

Sum of load removals at all properties, considering attenuation	450 lb/yr
Number of properties	100
Average attenuated load removal per property	4.50 lb/yr

Based on an idealized average load removal of 4.5 lb/yr per system from the example above, the towns would continue to require on-site systems with the total goal of:

Brewster	290 homes
Orleans	990 homes

**APPENDIX J**  
**Permitting Conditions for  
Shellfish Harvesting**

## **APPENDIX J**

### **Permitting Considerations for Shellfish Harvesting**

#### **BASIC CONCEPT**

Shellfish, particularly oysters, remove particulate matter from the water column and increase water clarity. In so doing, they remove nitrogen from coastal waters. The Town of Orleans intends to foster the growth and harvest of oysters to address a portion of its responsibilities in TMDL compliance in the Pleasant Bay watershed.

#### **FATE OF NITROGEN**

Nitrogen sources in the watershed are largely transformed to nitrate in passage through the unsaturated soils above the groundwater and in the groundwater itself on its way to down-gradient coastal ponds. Upon entering the estuarine environment, watershed-based nitrates are converted to phytoplankton, which are then filtered out by shellfish, serving as their food source. Once converted to oyster biomass, the nitrogen

- Leaves the estuarine environment when the shellfish are harvested
- Is excreted by the shellfish as feces and pseudo feces

The feces accumulate on the bottom of the estuary and the incorporated nitrogen is either

- stored long-term in the sediments
- converted to nitrogen gas through denitrification or
- released back into the water column.

#### **BASELINE CONDITIONS**

The baseline condition is that reported in the 2006 MEP report. Shellfish were being harvested at various places the Pleasant Bay at that time, and that nitrogen removal is indirectly accounted for in the linked watershed embayment model based on water quality sampling data. New initiatives to increase nitrogen removal via aquaculture achieve additional nitrogen removal above that baseline. In Lonnie's Pond, the focus of Orleans' initial investigation, shellfish harvesting has occurred on a recreational basis, with far smaller harvests than now contemplated.

#### **ORLEANS PLAN**

The Orleans Amended Comprehensive Wastewater Management Plan (ACWMP) includes shellfish aquaculture as a means of nutrient removal to meet TMDLs. Since 2016, the Town of Orleans has been operating an oyster aquaculture pilot project in Lonnie's Pond, to determine (1) the ability to grow oysters in this basin, (2) oyster survival, (3) the incorporation of nitrogen into oyster tissue and shell, (4) oyster filtration and bio-deposition rates, and (5) the fate of nitrogen deposited to bottom sediments. Results from the first two years of growing and monitoring are being evaluated.



The Orleans ACWMP identifies areas in Paw Wah, Arey's, Lonnie's and Meetinghouse Ponds, and portions of the River and Pochet Creek, as potential Aquaculture Demonstration Areas for the purpose of nutrient removal to meet TMDLs. Aquaculture grants in these areas for this purpose will continue to be evaluated and, if demonstrated appropriate and effective, may be established and operated. Similar efforts that may be proposed by other towns should be evaluated.

## **BASIS FOR DETERMINING NITROGEN REMOVAL**

Studies of the Lonnie's Pond aquaculture demonstration project have determined that there are three pathways for nitrogen removal and concluded that oyster harvest and benthic denitrification are the primary ones, with long-term storage considered to be inconsequential.

DEP has reviewed the Lonnie's Pond results to date and determined that the denitrification pathway is not yet fully characterized and that oyster harvesting is the only mechanism by which nitrogen removal credits can be gained.

## **OUTLINE OF FORMAL PROGRAM**

The Town of Orleans is proposing to address some of its TMDL responsibility through the use of shellfish aquaculture. To formalize this program in Orleans, and gain DEP approval under the Watershed Permit, the Town should undertake a series of actions. These actions are aimed at establishing a robust on-going program, thorough accounting of nitrogen removal, and proper monitoring of water quality. The actions should include:

1. Establish the appropriate locations for aquaculture equipment.
2. Provide for acquisition of land and/or rights of access
3. Establish a system for collecting and compiling data on oyster inventory and harvest.
4. Set forth a thorough water quality monitoring program aimed at documenting long-term changes in water quality.
5. Establish a plan to deal with natural occurrences that may disrupt the program.
6. Address citizen concerns on the possible impacts of aquaculture equipment and activities on the public use of Lonnie's Pond.
7. Obtain and archive record ("as-built") drawings to document the nature and locations of all physical structures and equipment installed under this program.

The formal aquaculture program would be based on the following assumptions:

1. The aquaculture equipment will be publicly owned, with the town having access across private property for maintenance activities including repair and replacement.
2. The lead town contacts will be:
  - Nathan Sears, Natural Resources Department
3. System design and installation will be in accordance with a plan prepared by responsible professionals who will provide a certification that the system is designed/installed properly.
4. Operation of all aquaculture systems and oyster harvesting may be conducted by private licensed operators that may be pre-qualified by the towns, with approval by DEP or designee.
5. A staffing plan and O&M manual will be maintained either at the site or at a central Town facility.
6. Water quality and oyster sampling will be carried out under the terms of a written protocol.

7. A DEP-certified laboratory will conduct tissue and water quality analyses.
8. DEP will review and approve the annual computation of load reductions.

**BASIS FOR NITROGEN REMOVAL CREDIT**

Monitoring of the shellfish harvesting program should include the following:

1. Tracking of all oyster harvests, including organism count and wet weight
2. Periodic sampling of harvested oysters to determine average dry weight and nitrogen content.
3. Periodic water quality samples analyzed for temperature, salinity, transparency, alkalinity, nitrogen species (NO<sub>3</sub>, NH<sub>3</sub>, TKN, DON, PON), chlorophyll-a, pheophytin-a, dissolved oxygen, etc.

All of these monitoring data should be included in the Town’s annual reporting of nitrogen removal activities. The first four years of data should be summarized in a report that presents the data and draws conclusions on the reduction in nitrogen load that has occurred. That load reduction estimate will be based on:

- The measured wet and dry weight of harvested oysters and
- Average nitrogen content of oysters based on statistical sampling.

The load reduction estimates based on harvest data shall be supported by data showing improvements in water column samples.

**SAMPLE CALCULATIONS**

To help understand the proposed computation of nitrogen load removal, the following sample calculations are provided to illustrate the approach:

- |                                    |                            |
|------------------------------------|----------------------------|
| 1. Annual oyster harvest           | 400,000 organisms per year |
| 2. Average oyster nitrogen content | 0.30 grams per organism    |
| 3. Nitrogen removal                |                            |
| • Grams                            | 120,000 grams per year     |
| • Pounds                           | 260 lb/yr                  |

**APPENDIX K**  
**Permitting Conditions for Inlet  
Widening**

## **APPENDIX K**

### **Permitting Considerations for Inlet Widening**

#### **BASIC CONCEPT**

Nitrogen loads from the watershed reach coastal embayments by way of groundwater and surface water flow. Those loads are diluted by the exchange of lower-concentration water from the open ocean or from downstream embayments, and it is the degree of dilution that largely determines the trophic status of the embayment. In some embayments, that critical tidal exchange has been impeded by the construction of a roadway across the mouth of the embayment. The widening of embayment opening can be an effective tool for improving upstream water quality by restoring historical tidal flushing.

#### **FATE OF NITROGEN**

With this approach, water quality is improved not by the conversion of nitrogen to harmless forms, but by the transport of nitrogen to downstream water bodies. This shifting of nitrogen load benefits the upstream water body, but the subsequent downstream load increase must still be addressed.

#### **MUDDY CREEK PROJECT**

Muddy Creek is a tidal river shared by the Towns of Chatham and Harwich. Two undersized box culverts restricted tidal flow between Muddy Creek and Pleasant Bay for more than a century.

In 2014, the two Towns launched the Muddy Creek Restoration Bridge Project in partnership with Massachusetts Division of Ecological Restoration, US Fish & Wildlife Service, and NOAA Restoration Center. The restoration encompassed the removal of two restrictive box culverts and construction of a new single-span bridge with an open channel. Partial tidal flow was restored through the east (Chatham) side of the channel on February 11, 2016 and the channel was fully open to tidal flow on April 1, 2016. The restoration of tidal flow benefits 55 acres of wetlands upstream of the new bridge and channel, and also is expected to reduce nitrogen concentrations in Muddy Creek.

#### **BASELINE CONDITIONS**

Two subwatersheds shared by Harwich and Chatham contribute nitrogen to Muddy Creek: Upper Muddy Creek subwatershed and Lower Muddy Creek subwatershed.

According to the 2006 MEP Technical Report, the existing watershed load to these subwatersheds was 9.98 kg/day in Upper Muddy Creek and 8.48 kg/day in Lower Muddy Creek. At buildout, watershed loads are predicted to increase to 13.96 kg/day in Upper Muddy Creek and 10.19 kg/day in Lower Muddy Creek.

There are separate TMDLs for nitrogen for Upper and Lower Muddy Creek. The TMDLs calls for a 75% removal of septic load in Upper Muddy Creek and 100% removal in lower Muddy Creek.

## **EXPECTED IMPACTS ON NITROGEN REMOVAL REQUIREMENTS**

A 2010 technical memo by SMAST predicted that the inlet widening could potentially result in a 20% drop in the difference between the existing conditions modeled and the threshold concentration at the lower Muddy Creek station. Based on this information, Harwich included the Muddy Creek Bridge as a Phase 1 element of its CWMP.

Given that the new culvert directly effects Muddy Creek, the percent removal of existing septic watershed loads to meet threshold in Upper Muddy Creek is predicted to decline from 75% removal to 45% removal. In Lower Muddy Creek, a decline from 100% removal to 50% removal is predicted.

Table 13-13 in the final Harwich CWMP shows a 13.7 kg/day removal in the Pleasant Bay watershed following Phase 1 (inlet widening), and another 10 kg/day following the conclusion of Phase 2 (sewering), for a total of 23.7 kg/day.

Additional nitrogen reductions are still required in the Muddy Creek watershed to meet the threshold concentration in Lower Muddy Creek, but the magnitude is reduced through the installation of the wider culvert. This modification is expected to save roughly \$5.7 million in collection system costs alone, at \$25,000 per lot, according to the Harwich CWMP.

## **MONITORING PROGRAM**

Pleasant Bay Alliance has monitored water quality at two monitoring stations in Muddy Creek: one in lower Muddy Creek (PBA 5), and one in Upper Muddy Creek (PBA 5A). A DEP-approved Quality Assurance Project Plan is in place and includes the following parameters: nitrogen species (DON, PON, DIN, TON, TN), dissolved oxygen, temperature, salinity, phytoplankton pigments, etc.). Sample collection occurs five times annually from July through early September. Samples are analyzed by the UMASS Dartmouth School for Marine Science and Technology. There are sixteen years of pre-construction data and one year of post-construction data analyzed to date. This monitoring effort is ongoing and will continue following project completion to document long-term water quality changes.

A comparison of pre-construction baseline data with one year of post-construction water quality data suggest that it is too early to see major changes in water quality due to the bridge. However, the following changes were observed:

- Total nitrogen decreased from the prior year at both Stations 5 and 5A. The change in total nitrogen at Station 5 does not appear to be significant. Total nitrogen at Station 5A is lowest level observed. There was no significant change observed in the distribution of other forms of nitrogen compared to prior years
- Pigment concentrations went up at both stations. A similar trend was observed at other Pleasant Bay stations and so it is likely due to a factor such as weather and is unrelated to the bridge.
- While the range of DO values narrowed, levels were not inconsistent with prior years.

- Salinity was the area where the most significant changes were observed.

The Pleasant Bay Alliance will continue to collect nutrient-related water quality data as described above.

### **BASIS FOR NITROGEN REMOVAL CREDIT**

Use of the MEP Linked Watershed-Embayment Model has predicted that the post-construction nitrogen removal requirements in the Muddy Creek sub-watersheds will be less than under pre-construction conditions. Harwich has based its CWMP on achieving the lower (post-construction) removal requirements. (Since Chatham intends to sewer the entire sub-watershed for reasons beyond just nitrogen control, the Muddy Creek project does not change the Chatham load removal.)

The “nitrogen credit” attributable to the Muddy Creek inlet widening is the reduction in load removal afforded to Harwich. The monitoring data will allow adaptive management of the Harwich program. If either more or less extensive sewerage is needed in Harwich to actually achieve the target sentinel station nitrogen concentrations, that finding will represent the confirmation or adjustment of the “nitrogen credit” now attributed to the Muddy Creek inlet widening. Remodeling of the Pleasant Bay system may give a better indication of predicted improvements in overall water quality resulting from the inlet widening.

**APPENDIX L**

**Town Contingency Plans to  
Support Use of Non-Traditional  
Technologies**

## **APPENDIX L**

### **CONTINGENCY PLANS TO SUPPORT NON-TRADITIONAL TECHNOLOGIES**

#### **NEED FOR CONTINGENCY PLANS**

While many non-traditional technologies hold promise for low-cost and quickly-implemented nitrogen control, the lack of widespread experience with these technologies poses a risk to the towns that intend to rely on them. DEP requires that towns proposing non-traditional solutions develop contingency plans based on proven technology that can be readily implemented if the non-traditional solution turn out to be ineffective.

#### **CONTINGENCY PLAN FOR BREWSTER**

Brewster's share of the Pleasant Bay nitrogen removal requirement is 2,262 kg/yr. The Town proposes to remove 930 kg/yr of nitrogen load by reducing fertilizer applications at the municipally-owned Captains Golf Course, and this approach carries little risk and needs no back-up plan. Another 941 kg/yr is proposed to be removed through golf course fertigation, on-site denitrification systems and residential fertilization controls, all of which are considered non-traditional and require a proven back-up.

The Town's contingency plan involves the development of a neighborhood wastewater collection and treatment system in the upper reaches of the Pleasant Bay watershed. This option was presented in the Town's Pleasant Bay Nitrogen Management Alternatives Analysis Report (Horsley-Witten, March 20, 2015). The neighborhood is sufficiently large enough to provide the necessary nitrogen reduction to replace the on-site system option, and there is land available for the treatment and disposal facilities.

Brewster will update and expand this contingency plan in the first five years of the Watershed Permit. Additional information on future control of land for a treatment and disposal facility will be provided. The number of homes that would be served will be updated based on the extent of nitrogen removal from golf course fertilizers and the Town's non-traditional options. Opportunities for locating a disposal facility on Town land outside the Pleasant Bay watershed will be explored, as well as on Town-owned land in the watershed, such as at the Captain's Golf Course or the golf course driving range. In addition, nitrogen trading opportunities that rely on traditional solutions will be evaluated in consultations with the other watershed towns. The updated contingency plan will document the extent of treatment to be provided, the ability to utilize land for treatment facilities, the type of treatment system proposed and estimated costs for implementation.



## **CONTINGENCY PLAN FOR ORLEANS**

Orleans completed its CWMP in late 2010 and secured regulatory approval in the subsequent 15 months. That 2010 plan has a traditional “backbone” of a municipal sewer system that would be built in phases. Concurrent with the phased construction of sewers and treatment/disposal capacity, Orleans would explore non-traditional nitrogen removal methods, and depending on their success and cost, avoid one or more of the later sewer phases. Since 2012, Orleans has been pursuing various non-traditional methods, with emphasis on shellfish propagation, PRBs, on-site denitrification, and residential fertilizer controls.

Orleans’ share of the Pleasant Bay nitrogen removal requirement is 6,980 kg/yr. The Town proposes to remove 2,014 kg/yr of nitrogen load by fully sewerage the Meetinghouse Pond sub-watershed, and this facet of the Orleans program needs no back-up plan. Another 4,960 kg/yr is proposed to be removed through non-traditional means, and requires a proven back-up.

Underlying this effort is the recognition that the 2010 CWMP serves as the contingency plan, in whole or in part, for the non-traditional options that are being pursued. The first phase of sewerage is now in the design phase. While those first-phase sewers will not remove nitrogen from the Pleasant Bay watershed, constructing the Phase 1 infrastructure is a necessary step to allow later traditional phases to be built that will serve Pleasant Bay properties and remove Pleasant Bay nitrogen load.

Because the 2010 CWMP is accepted by the Town and has received regulatory approval, it represents a robust contingency plan. However, current efforts to design and construct wastewater infrastructure for Phase 1 should also include those steps necessary to identify and secure effluent disposal sites with capacity for the entire traditional plan. If the CWMP must be implemented in the future due to the failure of non-traditional options (or their performance below expectations), effluent disposal sites may have been developed in other uses, and the needed capacity may not be available.

## **NECESSARY NEXT STEPS**

To strengthen the contingency plans of Brewster and Orleans, additional steps should be taken.

- Brewster should update and refine its contingency plan in the first five years of the permit as discussed above.
- Orleans should take steps to identify and secure land for effluent disposal of the flows that would be generated in the full 6-phase plan, as part of its Amended CWMP.

**APPENDIX M**  
**Acknowledgments**

## APPENDIX M

### ACKNOWLEDGEMENTS

This Targeted Watershed Management Plan has been prepared by the Pleasant Bay Alliance with technical assistance from Wright-Pierce. Substantive input was obtained by the members of the Alliance's Watershed Work Group:

Brewster	Mr. Chris Miller, Director, Natural Resources Dept.
Chatham	Dr. Robert Duncanson, Director, Natural Resources Dept.
Harwich	Mr. Heinz Proft, Natural Resource Director
Orleans	Mr. George Meservey, Planning Director
Coordinator	Ms. Carole Ridley

Technical consultants of the four towns have reviewed this document, and their comments have been addressed. Comments by Brian Dudley of MassDEP and Erin Perry and other staff of the Cape Cod Commission have also been incorporated. Substantial guidance also was provided by Jill Goldsmith, Chatham Town Manager; Chris Clark, Harwich Town Administrator; Michael Embury, Brewster Town Administrator; and John Kelly, Orleans Town Administrator.

This report was approved by the Pleasant Bay Alliance Steering Committee:

Brewster	Mr. Chris Miller, Director, Natural Resources Dept. Ms. Ryan Bennett, Town Planner
Chatham	Ms. Jane Harris
Harwich	Mr. Chuck Bartlett
Orleans	Mr. Allin P. Thompson, Jr. Ms. Dolly Howell Ms. Judith Bruce Ms. Fran McClennen

May 4, 2018  
WP Project No. 13351C

Ms. Carole Ridley  
Pleasant Bay Alliance  
115 Kendrick Road  
Harwich, MA 02645

Subject: Pleasant Bay Targeted Watershed Management Plan  
Final Report

Dear Carole:

Enclosed is the final report entitled "Pleasant Bay Targeted Watershed Management Plan: A Compilation of the Wastewater and Nitrogen Management Plans of Brewster, Chatham, Harwich and Orleans in Support of a DEP Watershed Permit". We are providing you 50 printed copies and one electronic copy of this report.

We have enjoyed collaborating with you on this analysis of the four towns plans and the development of this report, and we are pleased by the active involvement of the Alliance's Watershed Work Group and other town representatives. All technical aspects of this report have been prepared by me or under my direction.

We look forward to assisting the Alliance in integrating this report into the application for the DEP Watershed Permit and coordinating it with the four-town inter-municipal agreement.

Please contact me with any questions you may have.

Very truly yours,  
WRIGHT PIERCE



Michael D. Giggey, PE  
Senior Vice President



*Larry  
Ballantine*

1. Problem Solving/Decision Making: (5 points)

Anticipates, Identifies, & prevents problems, involves others in seeking solutions. Makes clear and consistent decisions, acts with integrity in all decision making and makes timely decisions.

Is good at anticipating issues and suggesting solutions. Clarification regarding ongoing projects need to be made and communicated earlier. e.g., pet burial ground, Saquatucket Harbor, Wastewater Very good at arguing his case, e.g., CPC articles

2. Strategic planning and organizing: (5 points)

Aligns priorities with broader goals, measures outcomes use feedback to change as needed, evaluates alternatives, solutions oriented, develops realistic plans, meets deadlines & follows through

Has provided a financial map to plan future. Unfortunately, has assume spending levels greater than majority of BOS had agreed. Especially when supporting schools. Needs to look at other strategic issues – organization, personnel, IT.

3. Communication: (5 points)

Connects with peers, subordinates and public, actively listens clearly and effectively shares information, demonstrates effective oral and written communication skills. Seeks to clarify and confirm the accuracy of understanding of vague terms and instructions

Communication to BOS is often after-the-fact – examples, contacting CDM for outreach, school potential expenses. Occasionally seems to be “playing-to-the audience” with statements that minimizing spending will result in layoffs and anything expenditure less than proposed school budget increases will result in students moving to other schools. Relations with the Wastewater

Support Comm. Has often been strained as Chris has informed the comm after the fact rather than bring them into the discussion before decisions are made. Communication has often been late.

4. Leadership: (5 points)

Accepts responsibility for own work, develops trust and credibility demonstrate honest and ethical behavior engages the talents, experiences, and capabilities of others. Results-oriented and desire to excel in job

Strong desire to excel in job. Creditability is occasionally strained as can mislead and not be forthcoming in expenditures such as Middle School/Cultural Center, use of CDM Smith, pet cemetery

Staff relationships could be improved as indicated by turnover of personnel. It appears that Staff is not always comfortable that positions well defined.

5. Teamwork: (5 points)

Successfully works with others to achieve desired results, contributes to team projects, exchange ideas and opinions, helps prevent, resolve conflicts, develops positive working relationships and is flexible, open-minded promoting mutual respect for all

Works to develop team approaches but this effort is overshadowed by occasional lack of delegation and efforts to do all himself.

6. Customer Orientation: (5 points)

Listens, identifies, and responds quickly and effectively

to internal and external customers' needs and sets work activities accordingly; goes beyond what is expected and follows up to ensure customer satisfaction

Has effectively communicated with many residents regarding wastewater issues and town finances. Beyond expectations in public meeting attendance. Always takes time to be available to residents.

#### 7. Productivity: (5 Points)

Maintains fair workload; takes on additional responsibilities as needed; manages priorities; develops and follows work procedures; completes assignments on time and to specifications

Chris has taken on addition temporary responsibilities due to staff turnover which has placed a burden on Chris's workload; never-the-less could better delegate.

#### 8. Quality: (5 Points)

Demonstrates accuracy, thoroughness, and reliability; manages time and priorities; develops and follows work Procedures

Works very hard to achieve quality results. Large workload sometimes prevents expected accuracy and thoroughness. Cases in point are Saquatucket Harbor, Wastewater, Middle School.

#### 9. Department specific competency: (5 Points)

Chris's many years and variety of experiences makes him very competent for the Town Adm position. He has had experience in most issues which come before the town. Only issue I would like improved is mentoring/training of staff.

Please list 9 goals & objectives for the following year, 6 attainable goals, 2 possible goals & 1 "if time permits" goal (not in priority order)

1. Assess town-wide IT to move to a consolidated plan which most efficiently and effectively provides IT services to town staff and residents.
2. Fill Assistant Town Admin position with one skill focus to relieve some of his time pressure and a skill which the ATA can use as a basis to gain experience to necessary for the TA
3. Improve financial analysis to include revenues and all costs for departments and operations to help in decision making.
4. Look at efficiencies and priorities to keep budget increases to as close to 2.5% as possible.
5. Develop a staff/consultant organization to help residents implement the wastewater plan. Make this as easy to understand and as painless as possible.
6. Wastewater, work with CDM Smith to implement Phase 2
7. Wastewater, work with HCT to develop the Cold Brook Project to benefit environment and remove properties as listed in CWMP to reduce potential wastewater treatment costs
8. Collective bargain with three unions in active or pending contracts
9. Develop the Capital and Operating Budget FY20 within Prop 2 1/2



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 Fax: 508-432-5039

Office of the Town Administrator  
 732 Main Street

**Town Of Harwich**  
 Harwich, MASSACHUSETTS 02645

Name:	Christopher Clark		
Job Title:	Town Administrator	Classification:	Contract
Administrator:	Christopher Clark		
Department:	Town Administrator		
Anniversary Date:	12/27/2013	Evaluation date:	

**\*\*Town Manager Evaluation\*\***

**Key for Performance evaluations:**

**EX: Exceptional**

Performance far exceeds expectations due to exceptionally high quality of work performed in all essential areas of responsibility.

**EE: Exceeds Expectations**

Performance consistently exceeded expectations in all essential areas of responsibility and the quality of work overall was excellent, resulting in an overall quality of work that was superior.

**ME: Meets Expectations**

Performance consistently met expectations in all essential areas of responsibility at times possibly exceeding expectations and the quality of work overall was very good.

**IN: Improvement Needed**

Performance did not consistently meet expectations or performance failed to meet expectations in one or more essential areas of responsibility.

**UN: Unsatisfactory**

Performance was consistently below expectations in the most essential areas of responsibility and/or reasonable progress towards critical goals was not made. Significant improvement is needed in one or more important areas.

**A. Last Evaluation's Goals: (if applicable) 40 points total**

Goal:	Rating:					Points:	Comments:
Available points per section:	1	2	3	4	5		
Last Evaluation's Goals as printed in CC's self evaluation	UN	IN	ME	EE	EX	4	
	UN	IN	ME	EE	EX	3	
	UN	IN	ME	EE	EX	4	
	UN	IN	ME	EE	EX	3	
	UN	IN	ME	EE	EX	4	
	UN	IN	ME	EE	EX	3	
	UN	IN	ME	EE	EX	4	
	UN	IN	ME	EE	EX	3	

**B. Job Success Factors:  
(45 points total)**

**1. Problem Solving/Decision Making: (5 points)**

Anticipates, identifies, & prevents problems, involves others in seeking solutions. Makes clear and consistent decisions, acts with integrity in all decision making and makes timely decisions.

Rating:					Points:	Comments: Attached
1	2	3	4	5		
UN	IN	ME	EE	EX	3	

**2. Strategic planning and organizing: (5 points)**

Aligns priorities with broader goals, measures outcomes, uses feedback to change as needed, evaluates alternatives, solutions oriented, develops realistic plans, meets deadlines & follows through

Rating:					Points:	Comments: Attached
1	2	3	4	5		
UN	IN	ME	EE	EX	3	

**3. Communication: (5 points)**

Connects with peers, subordinates and public, actively listens, clearly and effectively shares information, demonstrates effective oral and written communication skills. Seeks to clarify and confirm the accuracy of understanding of vague terms and instructions

Rating:					Points:	Comments: Attached
1	2	3	4	5		
UN	IN	ME	EE	EX	2	

**4. Leadership: (5 points)**

Accepts responsibility for own work, develops trust and credibility, demonstrates honest and ethical behavior, engages the talents, experiences, and capabilities of others. Results-oriented and desire to excel in job

Rating:					Points:	Comments: Attached
1	2	3	4	5		
UN	IN	ME	EE	EX	3	

**5. Teamwork: (5 points)**

Successfully works with others to achieve desired results, contributes to team projects, exchange ideas and opinions, helps prevent, resolve conflicts, develops positive working relationships and is flexible, open-minded promoting mutual respect for all

Rating:					Points:	Comments: Attached
1	2	3	4	5		
UN	IN	ME	EE	EX	3	

**6. Customer Orientation: (5 points)**

Listens, identifies, and responds quickly and effectively to internal and external customers' needs and sets work activities accordingly; goes beyond what is expected and

Rating:					Points:	Comments: Attached
1	2	3	4	5		
UN	IN	ME	EE	EX	4	

follows up to ensure customer satisfaction

**7. Productivity: (5 Points)**

Maintains fair workload; takes on additional responsibilities as needed; manages priorities; develops and follows work procedures; completes assignments on time and to specifications

Rating:					Points:	Comments: Attached
1	2	3	4	5		
UN	IN	ME	EE	EX	4	

**8. Quality: (5 Points)**

Demonstrates accuracy, thoroughness, and reliability; manages time and priorities; develops and follows work procedures

Rating:					Points:	Comments: Attached
1	2	3	4	5		
UN	IN	ME	EE	EX	2	

**9. Department specific competency: (5 Points)**

	Rating:					Points:	Comments:
	UN	IN	ME	EE	EX	4	
	1	2	3	4	5		

**Complaint Letters:**

	# of inc	Points	Points	Average	
0 letters: (1 point)					
1 letter: (-1 point)	#		Dept Avg: (1 point)		
2 letters: (-2 points)	#		(0 point)		
More than 2 letters: (-3 points)	#		(-1 point)		
				Points:	1

**Future Goals and Objectives: (9 points)**

<p>Please list 9 goals &amp; objectives for the following year, 6 attainable goals, 2 possible goals &amp; 1 "if time permits" goal</p> <p>Attached</p>	Points:	9
---------------------------------------------------------------------------------------------------------------------------------------------------------	---------	---

**C: Miscellaneous:  
(4 points total)**

Has the Town Administrator come up with any cost saving ideas/solutions? (1 point)	Points:	1
Has the Town Administrator obtained any grants/Gifts? (1 point)	Points:	1

Has the Town Administrator been able to "turn back" any funds? (1 point)	Points:	1
Has the Town Administrator obtained letters of commendation? (1 point)	Points:	1

UN	IN	ME	EE	EX
----	----	----	----	----

Total points:	70
---------------	----

Overall rating:  
(100 total possible points)

Professional Development Plan/Comments:

Although as indicated in my ratings Chris meets expectations in most categories as Chris as much to offer the town. However, as I tried to explain in comments improvement would help in areas of communication, care in decision making and development of staff to better delegate work

Town Administrator Name: Christopher Clark

Town Administrator Signature : \_\_\_\_\_ Date: \_\_\_\_\_


My signature also indicates that I have received a copy of this evaluation  
I would like to include comments regarding my evaluation.

Select person: Larry Ballantine 4.29.18

Chair: \_\_\_\_\_ Date: \_\_\_\_\_

Signatures:

May 14, 2018

## Town Administrator's Evaluation from Jannell Brown

The evaluation form provided to grade our Town Administrator is not appropriate for this position. I said this same thing in 2016, when we were asked to use it.

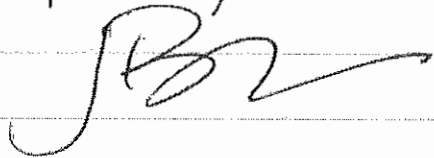
This year there were 6 gradable goals; yet the first section of the evaluation form has 8 sections worth 5 points each, which each select person was left to fill in. I filled in 6 with the goals and left 2 blank.

To ask me to grade 9 future goals is absurd. The Board of Selectmen presents yearly goals to the TA sometime between August and October every year. I will not be part of that Board, nor do I know what the goals presented will be. Nine points were lost in this section, and I spoke the same of this part of this evaluation form in 2016.

Finally, while I did not receive any complaint letters regarding the TA, I received many oral complaints, from both staff and constituents. I did not document these complaints and therefore no points were lost. Similarly

I did not receive any positive praise letters regarding the TA. No points were gained. To grade the TA in the same manner the TA grades department needs is not the correct approach to evaluation. In the future, I hope there is another method of evaluation adopted by the BOS.

Respectfully,



Tele: 508-430-7513  
 Fax: 508-432-5039

Office of the Town Administrator  
 732 Main Street

**Town of Harwich**  
 Harwich, MASSACHUSETTS 02645

<b>Name:</b>	Christopher Clark		<b>Classification:</b>	Contract	<b>**Town Manager Evaluation**</b>		
<b>Job Title:</b>	Town Administrator						
<b>Administrator:</b>	Christopher Clark						
<b>Department:</b>	Town Administrator						
<b>Anniversary Date:</b>	12/27/2013	<b>Evaluation date:</b>	5/9/13				
<b>Key for Performance evaluations:</b>							
<b>EX: Exceptional</b> Performance far exceeds expectations due to exceptionally high quality of work performed in all essential areas of responsibility.							
<b>EE: Exceeds Expectations</b> Performance consistently exceeded expectations in all essential areas of responsibility and the quality of work overall was excellent. resulting in an overall quality of work that was superior.							
<b>ME: Meets Expectations</b> Performance consistently met expectations in all essential areas of responsibility at times possibly exceeding expectations and the quality of work overall was very good.							
<b>IN: Improvement Needed</b> Performance did not consistently meet expectations or performance failed to meet expectations in one or more essential areas of responsibility.							
<b>UN: Unsatisfactory</b> Performance was consistently below expectations in the most essential areas of responsibility and/or reasonable progress towards critical goals was not made. Significant improvement is needed in one or more important areas.							
<b>A. Last Evaluation's Goals: (if applicable) 40 points total</b>							
	<b>Goal:</b>		<b>Rating:</b>		<b>Points:</b>	<b>Comments:</b>	
	Available points per section:	1	2	3	4	5	
	Financial Leadership + Stability	UN	IN	ME	EE	EX	3
	Governance	UN	IN	ME	EE	EX	2
	Infrastructure	UN	IN	ME	EE	EX	4
	Natural Resources	UN	IN	ME	EE	EX	4
	Planning + Econ Dev	UN	IN	ME	EE	EX	3
	Quality of Life / Public Safety	UN	IN	ME	EE	EX	4
	N/A	UN	IN	ME	EE	EX	0
	N/A	UN	IN	ME	EE	EX	0
<b>B. Job Success Factors:</b>							

(45 points total)						Rating:	Points:	Comments:				
<b>1. Problem Solving/Decision Making: (5 points)</b>												
Anticipates, identifies, & prevents problems, involves others in seeking solutions. Makes clear and consistent decisions, acts with integrity in all decision making and makes timely decisions.						2 UN	3 ME	4 EE	5 EX	1		
<b>2. Strategic planning and organizing: (5 points)</b>												
Aligns priorities with broader goals, measures outcomes, uses feedback to change as needed, evaluates alternatives, solutions oriented, develops realistic plans, meets deadlines & follows through						1 UN	2 IN	3 ME	4 EE	5 EX	4	
<b>3. Communication: (5 points)</b>												
Connects with peers, subordinates and public, actively listens, clearly and effectively shares information, demonstrates effective oral and written communication skills. Seeks to clarify and confirm the accuracy of understanding of vague terms and instructions						1 UN	2 IN	3 ME	4 EE	5 EX	1	
<b>4. Leadership: (5 points)</b>												
Accepts responsibility for own work, develops trust and credibility, demonstrates honest and ethical behavior, engages the talents, experiences, and capabilities of others. Results-oriented and desire to excel in job						1 UN	2 IN	3 ME	4 EE	5 EX	2	
<b>5. Teamwork: (5 points)</b>												
Successfully works with others to achieve desired results, contributes to team projects, exchange ideas and opinions, helps prevent, resolve conflicts, develops positive working relationships and is flexible, open-minded promoting mutual respect for all						1 UN	2 IN	3 ME	4 EE	5 EX	3	
<b>6. Customer Orientation: (5 points)</b>												
Listens, identifies, and responds quickly and effectively to internal and external customers' needs and sets work activities accordingly; goes beyond what is expected and follows up to ensure customer satisfaction						1 UN	2 IN	3 ME	4 EE	5 EX	3	

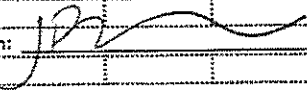
# Town meeting  
warrant cleared after  
BOS signed it!



<b>7. Productivity: (5 Points)</b>		Rating:					Points:	Comments:
Maintains fair workload; takes on additional responsibilities as needed; manages priorities; develops and follows work procedures; completes assignments on time and to specifications		1	2	3	4	5	3	
		UN	IN	ME	EE	EX		
<b>8. Quality: (5 Points)</b>		Rating:					Points:	Comments:
Demonstrates accuracy, thoroughness, and reliability; manages time and priorities; develops and follows work procedures		1	2	3	4	5	3	
		UN	IN	ME	EE	EX		
<b>9. Department specific competency: (5 Points)</b>		Rating:					Points:	Comments:
		UN	IN	ME	EE	EX	3	
		1	2	3	4	5		
<b>Complaint Letters:</b>	0 letters: (1 point)	# of inc	Points		Points	Average		
	1 letter: (-1 point)	#		Dept Avg: (1 point)				
	2 letters: (-2 points)	#		(0 point)			Points:	
	More than 2 letters: (-3 points)	#		(-1 point)				
<b>Future Goals and Objectives: (9 points)</b>	Please list 9 goals & objectives for the following year, 6 attainable goals, 2 possible goals & 1 "if time permits" goal							
							Points:	
							0	
<b>C: Miscellaneous: (4 points total)</b>	Has the Town Administrator come up with any cost saving ideas/solutions? (1 point)					Points:		
							1	
		Has the Town Administrator obtained any grants/Gifts? (1 point)					Points:	
							0	

\* nothing in writing

\* not grading on unobtainable objectives  
unknown

						Has the Town Administrator been able to "turn back" any funds? (1 point)	Points:		
							(1)		
						Has the Town Administrator obtained letters of commendation? (1 point)	Points:		
<b>Overall rating:</b> (100 total possible points)			UN	IN	ME	EE	EX	Total points:	0
								(45)	
<b>Professional Development Plan/Comments:</b>									
<b>Signatures:</b>						Town Administrator Name: Christopher Clark			
						Town Administrator Signature:	Date:		
						<input type="checkbox"/> My signature also indicates that I have received a copy of this evaluation			
						<input type="checkbox"/> I would like to include comments regarding my evaluation.			
						Select person: 	Date: 5/14/18		
						Chair:	Date:		

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Office of the Town Administrator  
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**Town Of Harwich**  
 Harwich, MASSACHUSETTS 02645

<b>Name:</b>	Christopher Clark		
<b>Job Title:</b>	Town Administrator	<b>Classification:</b>	Contract
<b>Administrator:</b>	Christopher Clark		
<b>Department:</b>	Town Administrator		
<b>Anniversary Date:</b>	12/27/2013	<b>Evaluation date:</b>	

**\*\*Town Manager Evaluation\*\***

**Key for Performance evaluations:**

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Performance far exceeds expectations due to exceptionally high quality of work performed in all essential areas of responsibility.

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Performance did not consistently meet expectations or performance failed to meet expectations in one or more essential areas of responsibility.

**UN: Unsatisfactory**

Performance was consistently below expectations in the most essential areas of responsibility and/or reasonable progress towards critical goals was not made. Significant improvement is needed in one or more important areas.

**A. Last Evaluation's Goals: (if applicable) 40 points total**

Goal:	Rating:					Points:	Comments:
	1	2	3	4	5		
Available points per section:							
Budget Message Etc	UN	IN	ME	EE	EX	4	
Marijuana regs	UN	IN	ME	EE	EX	3	
Bank St., Central Ave Etc	UN	IN	ME	EE	EX	3	
Housing Trust - draft Trust, article	UN	IN	ME	EE	EX	4	
CPC Articles	UN	IN	ME	EE	EX	4	
Wastewater - phase 2 etc	UN	IN	ME	EE	EX	3	
DY/Yarmouth/Harwich	UN	IN	ME	EE	EX	4	
	UN	IN	ME	EE	EX		

**B. Job Success Factors:  
(45 points total)**

**1. Problem Solving/Decision Making: (5 points)**

Anticipates, Identifies, & prevents problems, involves others in seeking solutions. Makes clear and consistent decisions, acts with integrity in all decision making and makes timely decisions.

Rating:					Points:	Comments:
1	2	3	4	5		
UN	IN	ME	EE	EX	4	

**2. Strategic planning and organizing: (5 points)**

Aligns priorities with broader goals, measures outcomes, uses feedback to change as needed, evaluates alternatives, solutions oriented, develops realistic plans, meets deadlines & follows through

Rating:					Points:	Comments:
1	2	3	4	5		
UN	IN	ME	EE	EX	4	

**3. Communication: (5 points)**

Connects with peers, subordinates and public, actively listens, clearly and effectively shares information, demonstrates effective oral and written communication skills. Seeks to clarify and confirm the accuracy of understanding of vague terms and instructions

Rating:					Points:	Comments:
1	2	3	4	5		
UN	IN	ME	EE	EX	3	

**4. Leadership: (5 points)**

Accepts responsibility for own work, develops trust and credibility, demonstrates honest and ethical behavior, engages the talents, experiences, and capabilities of others. Results-oriented and desire to excel in job

Rating:					Points:	Comments:
1	2	3	4	5		
UN	IN	ME	EE	EX	3	

**5. Teamwork: (5 points)**

Successfully works with others to achieve desired results, contributes to team projects, exchange ideas and opinions, helps prevent, resolve conflicts, develops positive working relationships and is flexible, open-minded promoting mutual respect for all

Rating:					Points:	Comments:
1	2	3	4	5		
UN	IN	ME	EE	EX	4	

**6. Customer Orientation: (5 points)**

Listens, identifies, and responds quickly and effectively to internal and external customers' needs and sets work activities accordingly; goes beyond what is expected and

Rating:					Points:	Comments:
1	2	3	4	5		
UN	IN	ME	EE	EX	2	

follows up to ensure customer satisfaction

--

**7. Productivity: (5 Points)**

Maintains fair workload; takes on additional responsibilities as needed; manages priorities; develops and follows work procedures; completes assignments on time and to specifications

Rating:					Points:	Comments:
1	2	3	4	5		
UN	IN	ME	EE	EX	4	

**8. Quality: (5 Points)**

Demonstrates accuracy, thoroughness, and reliability; manages time and priorities; develops and follows work procedures

Rating:					Points:	Comments:
1	2	3	4	5		
UN	IN	ME	EE	EX	3	

**9. Department specific competency: (5 Points)**

municipal finance/budgeting

Rating:					Points:	Comments:
UN	IN	ME	EE	EX	4	
1	2	3	4	5		

**Complaint Letters:**

0 letters: (1 point)	# of inc	Points		Points	Average	Points: 1
1 letter: (-1 point)	#		Dept Avg: (1 point)			
2 letters: (-2 points)	#		(0 point)			
More than 2 letters: (-3 points)	#		(-1 point)			

**Future Goals and Objectives: (9 points)**

<p>Please list 9 goals &amp; objectives for the following year, 6 attainable goals, 2 possible goals &amp; 1 "if time permits" goal</p> <p>Technology/IT position - &amp; Risk Assessment</p> <p>Create HR position - if not thru ATA - that strengthens employees confidence in addressing concerns</p> <p>Housing Trust - Identification of town owned land to move afford force housing opportunities</p> <p>Wasterwate improved &amp; continued education related to phase 2 sewerage and issues to be addressed for homeowners</p> <p>Improved bond rating</p> <p>Infrastructure- meetings &amp; coordination within departments to ensure all projects are assessed for any additional improvements</p> <p>Zoning; changes re; density for housir , commerical and apartment initiatives &amp; harwichport parking needs</p> <p>TA or ATA schedule monthly meetings at CC to address questions/concerns from public - <b>if time permits</b></p> <p>Budget - work with MRSD &amp; all departments to reduce budget increases for FY20 within prop 2.5</p>	Points: 9
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**C: Miscellaneous: (4 points total)**

Has the Town Administrator come up with any cost saving ideas/solutions? (1 point)	Points: 1
health care savings	
Has the Town Administrator obtained any grants/Gifts? (1 point)	Points: 1

Has the Town Administrator been able to "turn back" any funds? (1 point)	Points:	1
Has the Town Administrator obtained letters of commendation? (1 point)	Points:	1

Overall rating:  
(100 total possible points)

UN	IN	ME	EE	EX
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Total points:	70
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Professional Development Plan/Comments:

Signatures:

Town Administrator Name: Christopher Clark  
 Town Administrator Signature : \_\_\_\_\_ Date: \_\_\_\_\_

<input type="checkbox"/>	My signature also indicates that I have received a copy of this evaluation
<input type="checkbox"/>	I would like to include comments regarding my evaluation.

Select person: Jane S. Kavanagh Date: 5/16/18

Chair: \_\_\_\_\_ Date: \_\_\_\_\_

## **1. Problem Solving/Decision Making**

For the most part Chris is able to anticipate, identify, prevent and respond to problems & looks for solutions. Normally decision making is thorough, analytical and addresses various municipal and regulatory concerns.

## **2. Strategic Planning & Organizing**

There have been multiple projects and priorities on Chris' agenda and the BOS. Chris has juggled the wastewater phase 2 initiative with the public and worked with CDM Smith, as well as continued discussions with Chatham as the project moves ahead. In addition, work with Dennis Yarmouth to further address wastewater issues down the line has also been led by Chris along with Larry and have been successful to date.

## **3. Communications**

Chris has worked collectively with various towns on the wastewater items noted above as well as Yarmouth in regard to developing a housing trust for Harwich. He has also participated in the regional health care group to address innovative ways to reduce overall health care costs for the town (high deductible plan etc.).

## **4. Leadership**

Chris works with all departments within Town Hall and seems to work effectively with PD, FD, DPW, Community Center, Recreation etc. This year has been difficult with the various losses we experienced at the Council on Aging, Planning and Building departments. In addition, the ATA returning to a planning role has added to his current load. The overall volatility within these departments has probably lead to various stresses. Hopefully with the hire of a new ATA Chris' role will allow for more focused work in areas that are truly his dedicated role. As a leader he needs to assess each project or departmental issue for adherence to regulatory and bylaw requirements. Oversight of the various projects such as the Wastewater initiative, Saquatucket water and land side projects, along with a new FD station and road and sidewalk initiatives all require such oversight. It appears the pet burial/crematory did not receive this type of vetting. We need to ensure moving forward that all projects are vetted by Department heads and the TA.

## **5. Teamwork**

As noted above, Chris works well inside and outside of our organization. However, at times, possibly due to the issues noted above, there appears that more could be done to work effectively to share information and/or exchange ideas or opinions. Many hands make light work but this saying isn't applicable when various "hands" have moved on. Once an ATA is hired Chris should be able to delegate more and have more time to work as a team member so he can assist as well as administer to departments.

## 6. Customer Orientation

Our customers are our citizens as well other internal & external customers (contractors, etc.) Chris wears several hats in his position and works effectively in most of these roles. However, there have been various times that responses to BOS members have been delayed or not acknowledged. Equally I have had people (residents & non-residents) indicate a lack of response to an email or call. I want to reiterate that the hiring of an ATA should help alleviate the issue but note this to call Chris' attention to the problem & hope that the extra effort to return a call or email is conveyed.

## 7. Productivity

Chris has a heavy workload and attends multiple evening meetings and attended the Cape Housing Institute & wastewater related meetings, CPS meetings and more this past year. For the most part, assignments are completed on time and he manages his priorities and schedule well. We have had various occasions where some information wasn't relayed in a timely manner or wasn't fully understood by Chris (harbor, pet cemetery, contract questions) that required the BOS to address these items on various occasions.

## 8. Quality

Based on the variety of issues and workload noted above Chris is reliable and can manage his time & priorities accurately. My major issue with this past year is related to the Warrant revisions and the addition of the MRSD information without consulting the BOS. I would also propose an earlier deadline for meetings with departments, Finance Committee, Capital Outlay etc. so we are to finalize the Warrant at a much earlier date.

  
Julie Kavanagh, BOS  
5/16/18



## **Michael MacAskill, Town Administrator Evaluation Comments**

### **A. Last Evaluation's Goals: (if applicable) 40 points total**

1-Although the FY19 Budget received favorable votes and was passed at Town Meeting, the Board specifically requested a 2% budget and the budget that the Town Administrator brought to the Board was in excess of 7%. Options for alternate budget proposals were not explored or provided. The continued use of free cash, new revenue and increased fees is not sustainable. An updated and accurate 5 year financial forecast should be provided to the Board on a regular basis during budget season in order to make accurate short and long term financial decisions. Mr. Clark did work to improve the Town's bond rating.

2-The creation of marijuana bylaws and regulations was delegated to the Town Planner and a ban was passed due to the efforts of the Police Chief and strong public safety concerns.

3-The Bank St. RFP when first brought to the Board was not adequate and much work had to be done in order to move the project forward.

4- We were lucky to have Bob Lawton on staff to assist with the Housing Trust. A more robust education campaign will need to be undertaken for future housing initiatives.

5-The Town Administrator, Staff, the CPC and other Boards should be proud of the number of successful and varied projects that were funded through CPC. The collaborative work done this year should be a model for CPC funding in future years.

6- The Town Administrator has put a lot of effort into Wastewater projects, but it would have been better if the Wastewater Support Committee had been engaged earlier in the process to address resident concerns.

7-Through the efforts of Selectman Ballantine, our consultant and Mr. Clark, wastewater solutions throughout town continue to move forward.

8- The Town Administrator's proposal to add a Help Desk to the IT department at full salary and benefits did not adequately address the request of the Board to reorganize the IT department and the Board did not support the Administrator's proposal. This goal will be carried forward to next year's goals.

### **1. Problem Solving/Decision Making: (5 points)**

Anticipates, Identifies, & prevents problems, involves others in seeking solutions. Makes clear and consistent decisions, acts with integrity in all decision making and makes timely decisions.

Mr. Clark does not always provide the Board with clear and accurate information. The Board often has to address the same issue in multiple meetings and is required to request information that should be provided up front. A long term solution for the IT Department and IT needs of the Town has taken too long to resolve. Although the Town Administrator has been very busy with other priorities, the Board specifically asked this need be addressed. We thank both the Police and Fire Department for attempting to assist Mr. Clark with this project. The Board discovered that changes had been made to the Town Meeting Warrant after the Board had finalized and signed it. The decision to make changes without consulting the Board undermines the

relationship and trust between the Board and the administration. The Board viewed this as a serious breach of authority.

## 2. Strategic planning and organizing: (5 points)

Aligns priorities with broader goals,  
measures outcomes use feedback to change as  
needed, evaluates alternatives, solutions oriented,  
develops realistic plans, meets deadlines & follows through

More work needs to be done in long term financial and capital planning. The Town Administrator should analyze the entire budget in a more integrated way that takes into account future consequences of decisions made today. There should be policies regarding capital items that are adhered to; instead of moving capital items in or out of budgets to attain desired budget percentages, ex. School budget. The management of the Saquatucket project was a source of consternation for the Board throughout the entire year. The Board felt that they were not given important information in real time in order to make necessary decisions. The direction of the project kept changing, based on reactionary information and statements, instead of facts. Even though the entire project will now happen because of the Seaport grant, the process for both the Board and residents was unnecessarily muddled and created a lack of trust and confidence in the Town's ability to manage a major project.

## 3. Communication: (5 points)

Connects with peers, subordinates and public, actively  
listens clearly and effectively shares information,  
demonstrates effective oral and written communication  
skills. Seeks to clarify and confirm the accuracy  
of understanding of vague terms and instructions

Communication continues to be an area of weakness for Mr. Clark. The Board often received incomplete or inadequate information. Requests for information by the Board are not handled in a timely, consistent manner. Critical information is often received after the fact, even though the Board meets on a weekly basis. Mr. Clark has a tendency to back track on statements that he makes and/or change information depending on the audience. Effective communication should be a top priority of the Town Administrator. Mr. Clark must work harder to keep the Board informed in real time.

#### 4. Leadership: (5 points)

Accepts responsibility for own work, develops trust and credibility demonstrate honest and ethical behavior engages the talents, experiences, and capabilities of others. Results-oriented and desire to excel in job

The Town Administrator acts as the onsite leader for town staff and volunteers, with policy making authority designated to the Board. Ultimately, if there are errors or delays, the responsibility falls to the leader of any organization. Finger pointing undermines trust and collaboration. The recent questions regarding the pet burial grounds and the use of Cemetery funds involved more than one department oversight and the blame should not be placed on one individual. It would be more appropriate to accept responsibility for mistakes and propose solutions for corrective actions. In the Saquatucket project, the work and the role of the DPW should have been clear and defined to the Board from the onset.

#### 5. Teamwork: (5 points)

Successfully works with others to achieve desired results, contributes to team projects, exchange ideas and opinions, helps prevent, resolve conflicts, develops positive working relationships and is flexible, open-minded promoting mutual respect for all

Mr. Clark worked effectively with the Fire Chief and Fire Station Building Committee to develop plans, alternates and a firm cost to bring to the voters. The Board was kept informed during the process. This should be the model for all future projects the town brings to the voters. Mr. Clark needs to more effectively delegate responsibilities and projects to staff, but should monitor the results and outcomes, providing guidance and expertise where necessary. An environment of mentorship, collaboration and trust should be fostered from leadership.

#### 6. Customer Orientation: (5 points)

Listens, identifies, and responds quickly and effectively to internal and external customers' needs and sets work activities accordingly; goes beyond what is expected and follows up to ensure customer satisfaction

Mr. Clark does strive to listen and address resident concerns, however, due to the fact that he has spread himself too thin, he is not able to always resolve problems in a timely manner. Emails and return phone calls as well as follow up can often take too long. It is important to acknowledge that residents are the customers of municipal government and deserve timely responses. Internally, HEA negotiations took too much time, particularly in response and the intervals between scheduled meetings. Mr. Clark did attend many Committee meetings, community events and inter-municipal activities.

#### 7. Productivity: (5 Points)

Maintains fair workload; takes on additional responsibilities as needed; manages priorities; develops and follows work procedures; completes assignments on time and to specifications

Mr. Clark does manage a large workload, particularly with having to fill in as a temporary COA director and the transition of the Assistant Town Administrator to another department. Mr. Clark should review the day to day management of the Town and delegate responsibilities to capable staff. Because Mr. Clark often had too many balls in the air, attention to detail was lacking at times and some work areas experienced delays.

#### 8. Quality: (5 Points)

Demonstrates accuracy, thoroughness, and reliability; manages time and priorities; develops and follows work Procedures

The Board consistently had to ask for backup materials and information regarding contracts they were asked to sign. Procurement and contract processes need to be reviewed, expanded and consistent across Town. A framework for procurement should be developed in collaboration with the Finance Director. The Action Item register, goals and objectives was not updated and followed through on with the same thoroughness that was exhibited in the prior year. The Board had to request information and follow up on a regular basis. When the Town Administrator focuses on specific areas and projects, the quality of the output increases.

#### 9. Department specific competency: (5 Points)

Mr. Clark was able to bring a professional Assistant Town Administrator on board which has helped the overall administrative program. Department heads are generally given a lot of authority to manage their own departments. As Mr. Clark experienced by working in the Council on Aging, it is of value to spend time within departments to understand their functions and needs. Clearly defined roles and responsibility would help with minimizing turn over, particularly on the Department head level. Mr. Clark should not assign blame to the Board for decisions or changes that are necessary or in the best interest of the town.

Please list 9 goals & objectives for the following year, 6 attainable goals, 2 possible goals & 1 "if time permits" goal (not in priority order)

1. Assess town-wide IT to move to a consolidated plan which most efficiently and effectively provides IT services to town staff and residents.
2. Fill Assistant Town Admin position with one skill focus to relieve some of his time pressure and a skill which the ATA can use as a basis to gain experience to necessary for the TA
3. Improve financial analysis to include revenues and all costs for departments and operations to help in decision making.
4. Look at efficiencies and priorities to keep budget increases to as close to 2.5% as possible.
5. Develop a staff/consultant organization to help residents implement the wastewater plan. Make this as easy to understand and as painless as possible.
6. Wastewater, work with CDM Smith to implement Phase 2
7. Wastewater, work with HCT to develop the Cold Brook Project to benefit environment and remove properties as listed in CWMP to reduce potential wastewater treatment costs
8. Collective bargain with three unions in active or pending contracts
9. Develop the Capital and Operating Budget FY20 within Prop 2 1/2

Tele: 508-430-7513

Office of the Town Administrator

Fax: 508-432-5039

732 Main Street

# Town Of Harwich

Harwich, MASSACHUSETTS 02645

<b>Name:</b>	Christopher Clark		<b>Classification:</b>	Contract			
<b>Job Title:</b>	Town Administrator						
<b>Administrator:</b>	Christopher Clark		<b>**Town Manager Evaluation**</b>				
<b>Department:</b>	Town Administrator						
<b>Anniversary Date:</b>	12/27/2013	<b>Evaluation date:</b>	5/13/2018				
<b>Key for Performance evaluations:</b>							
<b>EX: Exceptional</b>							
Performance far exceeds expectations due to exceptionally high quality of work performed in all essential areas of responsibility.							
<b>EE: Exceeds Expectations</b>							
Performance consistently exceeded expectations in all essential areas of responsibility and the quality of work overall was excellent. resulting in an overall quality of work that was superior.							
<b>ME: Meets Expectations</b>							
Performance consistently met expectations in all essential areas of responsibility at times possibly exceeding expectations and the quality of work overall was very good.							
<b>IN: Improvement Needed</b>							
Performance did not consistently meet expectations or performance failed to meet expectations in one or more essential areas of responsibility.							
<b>UN: Unsatisfactory</b>							
Performance was consistently below expectations in the most essential areas of responsibility and/or reasonable progress towards critical goals was not made. Significant improvement is needed in one or more important areas.							
<b>A. Last Evaluation's Goals: (if applicable) 40 points total</b>							
	<b>Goal:</b>		<b>Rating:</b>		<b>Points:</b>	<b>Comments:</b>	
Available points per section:		1	2	3	4	5	All Comments provided on a separate sheet.
		UN	IN	ME	EE	EX	3
		UN	IN	ME	EE	EX	3
		UN	IN	ME	EE	EX	3
		UN	IN	ME	EE	EX	3
		UN	IN	ME	EE	EX	4
		UN	IN	ME	EE	EX	3
		UN	IN	ME	EE	EX	3
		UN	IN	ME	EE	EX	3

<b>B. Job Success Factors:</b>									
<b>(45 points total)</b>									
<b>1. Problem Solving/Decision Making: (5 points)</b>				<b>Rating:</b>		<b>Points:</b>	<b>Comments:</b>		
Anticipates, identifies, & prevents problems, involves others in seeking solutions. Makes clear and consistent decisions, acts with integrity in all decision making and makes timely decisions.				1	2	3	4	5	
				UN	IN	ME	EE	EX	3
<b>2. Strategic planning and organizing: (5 points)</b>				<b>Rating:</b>		<b>Points:</b>	<b>Comments:</b>		
Aligns priorities with broader goals, measures outcomes, uses feedback to change as needed, evaluates alternatives, solutions oriented, develops realistic plans, meets deadlines & follows through				1	2	3	4	5	
				UN	IN	ME	EE	EX	3
<b>3. Communication: (5 points)</b>				<b>Rating:</b>		<b>Points:</b>	<b>Comments:</b>		
Connects with peers, subordinates and public, actively listens, clearly and effectively shares information, demonstrates effective oral and written communication skills. Seeks to clarify and confirm the accuracy of understanding of vague terms and instructions				1	2	3	4	5	
				UN	IN	ME	EE	EX	2
<b>4. Leadership: (5 points)</b>				<b>Rating:</b>		<b>Points:</b>	<b>Comments:</b>		
Accepts responsibility for own work, develops trust and credibility, demonstrates honest and ethical behavior, engages the talents, experiences, and capabilities of others. Results-oriented and desire to excel in job				1	2	3	4	5	
				UN	IN	ME	EE	EX	3
<b>5. Teamwork: (5 points)</b>				<b>Rating:</b>		<b>Points:</b>	<b>Comments:</b>		
Successfully works with others to achieve desired results, contributes to team projects, exchange ideas and opinions, helps prevent, resolve conflicts, develops positive working relationships and is flexible, open-minded promoting mutual respect for all				1	2	3	4	5	
				UN	IN	ME	EE	EX	3
<b>6. Customer Orientation: (5 points)</b>				<b>Rating:</b>		<b>Points:</b>	<b>Comments:</b>		
Listens, identifies, and responds quickly and effectively to internal and external customers' needs and sets work activities accordingly; goes beyond what is expected and				1	2	3	4	5	
				UN	IN	ME	EE	EX	3







**OFFICE OF THE TOWN ADMINISTRATOR**

**Christopher Clark, Town Administrator**

Phone (508) 430-7513

Fax (508) 432-5039

732 MAIN STREET, HARWICH, MA 02645



**MEMO**

To: Board of Selectmen

From: Christopher Clark  
Town Administrator

Re: FY 18 Self-Evaluation for Performance and requested FY 19 pay of 2%  
and one week vacation buyback

Date: April 26, 2018

Pursuant to my employment agreement, a performance evaluation should be conducted during the months of April or May prior to the Annual Town Election. The process that I use for the Department heads is that they complete a self-assessment first and then I adjust accordingly. I have taken the time to perform a self-evaluation for my performance over FY 18. I believe overall FY 18 was a very good year in terms of a lot of items having been progressed or accomplished including, to name only a few, a balanced FY 19 budget, free cash came in at a very high level of \$3.5 million which will allow the continuing building of reserves, Standard & Poor's provided a favorable stable rating with an acknowledgment of strong financials, our new auditors reviewed our operations and found us to be fundamentally sound, wastewater areas involving to design the new sewer system has progressed, a clean water community partnership known as DHY is developing including a successful grant application, the Cold Brook project continues to progress, all Selectmen supported projects to CPC were voted on favorably, and challenges such as marijuana zoning issues have been proposed for Town Meeting consideration.

The evaluation form is similar to the one that was used last year with a strong emphasis on last year's goals, overall job success factors and recommendations for upcoming goals. A minimal satisfactory score is 60 points. My self-evaluation generated a score of 76. Generally Department heads receive scores in the 80s and low 90s typically. I have attempted to be critical of my own performance. I would like to recommend that the Board of Selectmen review this and adjust accordingly. If my score stays in the general range of my self-evaluation than I would be eligible for a 2% cost-of-living adjustment consistent with other managers for FY 19.

I do have a supplemental request to be allowed to be paid for one week of vacation for FY 18. Last week during school vacation week I had originally intended trying to take four days off but was only able to manage one. The vacancy in the Assistant Town Administrator's position has led me to put in even more hours than normal. Many of these hours are done outside of traditional workday. I still have over two weeks of vacation time to use but do not see how I can accomplish this as we continue the process for recruitment of the Assistant Town Administrator. Thank you for your consideration.

Tele: 508-430-7513  
 Fax: 508-432-5039

Office of the Town Administrator  
 732 Main Street

**Town Of Harwich**  
 Harwich, MASSACHUSETTS 02645

Name:	Christopher Clark		
Job Title:	Town Administrator	Classification:	Contract
Administrator:	Christopher Clark		
Department:	Town Administrator		
Anniversary Date:	12/27/2013	Evaluation date:	4/26/2018

**\*\*Town Administrator Self-Evaluation\*\***

**Key for Performance evaluations:**

**EX: Exceptional**

Performance far exceeds expectations due to exceptionally high quality of work performed in all essential areas of responsibility.

**EE: Exceeds Expectations**

Performance consistently exceeded expectations in all essential areas of responsibility and the quality of work overall was excellent resulting in an overall quality of work that was superior.

**ME: Meets Expectations**

Performance consistently met expectations in all essential areas of responsibility at times possibly exceeding expectations and the quality of work overall was very good.

**IN: Improvement Needed**

Performance did not consistently meet expectations or performance failed to meet expectations in one or more essential areas of responsibility.

**UN: Unsatisfactory**

Performance was consistently below expectations in the most essential areas of responsibility and/or reasonable progress towards critical goals was not made. Significant improvement is needed in one or more important areas.

**A. Last Evaluation's Goals: (if applicable) 40 points total**

Goal:	Rating:					Points:	Comments:
Available points per section:	1	2	3	4	5		
Financial: FYT 2019 Budget Message very detailed, S&P gave good rating highlighting financial plan, new Auditor presented good report and Visual Software on Line. Favorable Free Cash building reserves and OPEB.	UN	IN	ME	EE	EX	4	Favorable votes BOS,CPC, COC,FC
Government direct planning dept on the ban of Marijuana Zoning Regs.	UN	IN	ME	EE	EX	3	Favorable votes BOS,Plan. B.,FC
RFP 203 Bank St. (Pending),4 Central Ave (Bids in) and 70 Willow Warrant	UN	IN	ME	EE	EX	4	On Warrant favorable BOS & FC
Propose Housing Trust to address housing issues	UN	IN	ME	EE	EX	4	Favorable votes BOS,CPC, COC,FC
Lead effort on numerous CPC applications -Records Storage, Hinckly's etc	UN	IN	ME	EE	EX	4	Favorable votes BOS, CPC, COC,FC
Wastewater Efforts involving Pleasant Bay Sewer Construction including outreach to community	UN	IN	ME	EE	EX	3	Favorable votes BOS, CPC, COC,FC
Wastewater efforts involving DHY Clean Water Community Partnership including community meeting and grant. Cold Brook efforts to partner HCT	UN	IN	ME	EE	EX	4	Favorable votes BOS, CPC, COC,FC

Department organization efforts - coming to conclusion on Managers salary review, IT reorganization (ongoing), HSA implementation, Recruit ATA	UN	IN	ME	EE	EX	3	
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**B. Job Success Factors:**

**(45 points total)**

**1. Problem Solving/Decision Making: (5 points)**

Anticipates, Identifies, & prevents problems, involves others in seeking solutions. Makes clear and consistent decisions, acts with integrity in all decision making and makes timely decisions.

Rating:					Points:	Comments: Cape Tech Ballot was preventative item, 35 Chatham Road,
1	2	3	4	5		
UN	IN	ME	EE	EX	4	

**2. Strategic planning and organizing: (5 points)**

Aligns priorities with broader goals, measures outcomes, uses feedback to change as needed, evaluates alternatives, solutions oriented, develops realistic plans, meets deadlines & follows through

Rating:					Points:	Comments: Leadership on Health Insurance, Wastewater
1	2	3	4	5		
UN	IN	ME	EE	EX	4	

**3. Communication: (5 points)**

Connects with peers, subordinates and public, actively listens, clearly and effectively shares information, demonstrates effective oral and written communication skills. Seeks to clarify and confirm the accuracy of understanding of vague terms and instructions

Rating:					Points:	Comments: Dept Head meetings are very informative & public presentations Emails need to be better
1	2	3	4	5		
UN	IN	ME	EE	EX	3	

**4. Leadership: (5 points)**

Accepts responsibility for own work, develops trust and credibility, demonstrates honest and ethical behavior, engages the talents, experiences, and capabilities of others. Results-oriented and desire to excel in job

Rating:					Points:	Comments: Provide strong leadership and direction. Takes responsibility when mistakes occur.
1	2	3	4	5		
UN	IN	ME	EE	EX	4	

**5. Teamwork: (5 points)**

Successfully works with others to achieve desired results, contributes to team projects, exchange ideas and opinions, helps prevent, resolve conflicts, develops positive working relationships and is flexible, open-minded promoting mutual respect for all

Rating:					Points:	Comments: Works in work teams to solve problems. Work well with COC and Fin Com.
1	2	3	4	5		
UN	IN	ME	EE	EX	4	

**6. Customer Orientation: (5 points)**

Listens, identifies, and responds quickly and effectively

Rating:					Points:	Comments: This varies in that do a
1	2	3	4	5		

to internal and external customers' needs and sets work activities accordingly; goes beyond what is expected and follows up to ensure customer satisfaction

UN	IN	ME	EE	EX	3	good job on wastewater and citizen issues. Due to workload issues.

**7. Productivity: (5 Points)**

Maintains fair workload; takes on additional responsibilities as needed; manages priorities; develops and follows work procedures; completes assignments on time and to specifications

Rating:					Points:	Comments: Work a lot on various projects. Very productive working a lot of hours outside office.
1	2	3	4	5		
UN	IN	ME	EE	EX	4	

**8. Quality: (5 Points)**

Demonstrates accuracy, thoroughness, and reliability; manages time and priorities; develops and follows work procedures

Rating:					Points:	Comments: A tremendous amount of work was completed Budget, CPC, Land, Wastewater etc.
1	2	3	4	5		
UN	IN	ME	EE	EX	3	

**9. Department specific competency: (5 Points)**

Administration is responsible for the coordination and leadership of 22 various depts I also take on an active role in administration of projects during FY 18 SAQ Waterside, SAQ Landside (John& Bob), Golf. This year with Charleen moving to Planner ATA recruit.

Rating:					Points:	Comments: ATA disruption but still kept workload
UN	IN	ME	EE	EX	4	
1	2	3	4	5		

**Complaint Letters:**

0 letters: (1 point)	# of inc	Points	Dept Avg: (1 point)	Points	Average
1 letter: (-1 point)	#	1	(0 point)		1
2 letters: (-2 points)	#		(-1 point)		
More than 2 letters: (-3 points)	#				
					Points: 2

**Future Goals and Objectives: (9 points)**

<p><b>Please list 9 goals &amp; objectives for the following year, 6 attainable goals, 2 possible goals &amp; 1 "if time permits" goal</b></p> <p>Develop the Capital and Operating Fy 20 Budget within Prop. 2 1/2</p> <p>Wastewater work with CDM to Implement Phase Two Construction</p> <p>Wastewater work with HCT on design and permitting of Cold Brook Project</p> <p>Wastewater work with DHY Clean Water Community Partnership to implement Special Legislation and Agreement</p> <p>Formally establish Housing Trust and begin working on identifying partnerships for housing</p> <p>Continue to work with Departments on submitting proposals that comply with the CPC requirements</p> <p>Finalize recruitment and implementation of a new ATA into the Administrative Leadership</p> <p>Collective Bargaining has three unions in active or pending with other contracts coming up</p> <p>Implement IT plan for Organization by finalizing County Review and Services Agreement and implementing</p>	Points: 9
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**C: Miscellaneous: (4 points total)**

<p><b>Has the Town Administrator come up with any cost saving ideas/solutions? (1 point)</b></p> <p>Helped to introduce HAS product to CCMHG and Unions</p>	Points: 1
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Has the Town Administrator obtained any grants/Gifts? (1 point)	Points:	<input type="text"/>
Has the Town Administrator been able to "turn back" any funds? (1 point) Several budgets had turnbacks that the TA administers with Legal having shortfall.	Points:	<input type="text" value="1"/>
Has the Town Administrator obtained letters of commendation? (1 point) Danette Gonsalves pointed out my efforts in her letter to Town of Harwich unpon her departure from Water Commission (See attached)	Points:	<input type="text" value="1"/>


Passing Score: 60  
Overall rating:  
(100 total possible points)

UN	IN	ME	EE	EX	Total points:	76
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Professional Development Plan/Comments:

I have been the Town Administrator for now over four years and am very proud of the financial and administrative leadership provided. Financially we are strong with another great year for Free Cash, able to build reserves and strong comments from S&P and new Auditors. Many efforts have been undertaken this year and will need to be sustained (Housing Trust, Green Communities, Wastewater - Pleasant Bay etc)

Signatures:

Town Administrator Name: Christopher Clark  
Town Administrator Signature:  Date: 4/26/18

My signature also indicates that I have received a copy of this evaluation  
 I would like to include comments regarding my evaluation.

Select person: \_\_\_\_\_ Date: \_\_\_\_\_

Chair: \_\_\_\_\_ Date: \_\_\_\_\_

**Danette Gonsalves**  
**242 Route 137**  
**Harwich, MA 02645**  
**10-19-2017**



**Citizens of Harwich, and my fellow Colleagues:**

After serving an uninterrupted tenure of 22 years, I write this letter to announce my formal retirement as Water Commissioner for the Town of Harwich effective December 1, 2017. I am leaving at a time when I am fully confident in the direction and leadership of Water/Wastewater Superintendent Dan Pelletier, the experienced and professional staff and Water Commission.

I would like to thank the citizens of the Town of Harwich, the wonderful staff at the water department, my fellow commissioners Gary Carreiro and Allin Thompson, Superintendent Dan Pelletier, liaison Michael McCaskill and Town Administrator Chris Clark. Thank you for all the great opportunities you have given me as an employee. I have enjoyed working with and learning from my colleagues for the past twenty two years, and am ready to move on to the next phase in my life.

The Harwich Water Department has been an award winning Public Water System from the Massachusetts governor and the Department of Environmental Protection year after year for dedicated service and commitment to water protection, and outstanding performance and achievement and I am happy to have been a part of this. Another point of significant progress I have witnessed in the past few years has been the renewed relationship between the Water Department and Board of Selectman. I would especially like to thank Chris Clark for his devotion to the water department during a very difficult time of adjustment. He became acting Water Superintendent along with his full time duties as Town Administrator. He gave his full attention to helping us through and I am very grateful to him for this.

While I look forward to enjoying my retirement, I will miss being part of our team. I trust that the friendships I have developed here will last well into the future. Please let me know if I can be of any assistance during this transition.

Respectfully yours,

Danette Gonsalves

**Harwich Board of Selectmen  
FY18 Goals and Objectives  
Adopted by the BOS on July 3, 2017**

<b>GOAL 1. FINANCIAL LEADERSHIP AND STABILITY</b>			
Provide financial leadership and stability to all Town departments and Town sanctioned boards and committees. (Primary responsibility is with TA although the Finance Team, Capital Outlay Committee and the Finance Committee provide significant assistance)			
<b>Objective</b>	<b>Action Items/Deliverables</b>	<b>Time Frame</b>	<b>Responsible BOS Member</b>
Objective A: Develop FY2019 budget within the limits of Proposition 2½ that minimizes the use of capital exclusions, debt exclusions or general overrides.	<p><b>1. Capital Plan:</b> Provide Seven Year Capital Plan, 2019-2025. Include all planned capital expenditures that impact the Harwich budget, including those for the MRSD and Cape Cod Technical High School</p> <p><b>2. Report:</b> Estimated Free Cash</p> <p><b>3. Report:</b> FY2019 TA Budget Message</p> <p><b>4. Provide Initial Budget &amp; additional updates as needed</b></p>	<p>1. January 2018</p> <p>2. TBD</p> <p>3. TBD</p> <p>4. TBD</p>	TA/Finance with Whole BoS Support
Objective B: Provide transparency in town finances. Accurate, complete and timely financial information is essential to effective cost management and decision-making. Progress was made in FY 16 on this Objective. Additional work is needed to help quantify "real," total expenses by department in order to improve budgeting and long-term planning. This information also needs to be readily available to taxpayers.	<p><b>1. Expense (comprehensive, direct &amp; indirect) and revenue reports.</b></p> <ul style="list-style-type: none"> <li>Provide monthly (or quarterly) expense and revenue reports, including staffing levels for each Town department. Include building, vehicle and equipment insurance premiums by department, as well as an estimated amount of liability insurance premium in monthly department expense reports. Where health insurance (and possibly life, dental, disability insurance) cannot be specified because it is considered personal information, assume an average and provide explanation. These expense reports should also include indirect costs with explanations and assumptions. All clarifications are to be acknowledged by the affected Department Heads. (Further explanations are requested in the following Action/Deliverable.) Make these reports available to the public either in the BOS Meeting Packets or on the BOS Web Site.</li> <li>Deliverables: complete and accurate periodic expense and revenue reports for all (or select) Town Departments.</li> </ul> <p><b>2. Detailed Sources Report</b></p> <ul style="list-style-type: none"> <li>Explain each department's operating cost breakdown and how these costs are covered by fees, grants, improvement funds, stabilization funds, facility maintenance and repair funds, revolving funds and the general fund. Provide examples of combinations of sources that were used to fund projects. As an example provide a financial report on the Harbormaster Department using FY2016 data (last complete year of data) that shows all sources and amounts of revenue and all direct, indirect and related expenses associated with that department. Include projections for cost increases or decreases related to large capital expenses or staffing changes. Schedule public briefings and provide written final report available for distribution. The BOS will select up to three additional departments for a similar financial analysis and explanation.</li> <li>Deliverables: Detailed, written descriptions on clear revenue sources for selected departments</li> </ul> <p><b>3. Complete visual software implementation</b></p> <ul style="list-style-type: none"> <li>Further implement the visual software to better inform the taxpayers where their tax dollar is being spent. Investigate and document options to provide greater financial transparency to the public with easy access to the Town's expenditure information for the current fiscal year or past years. One such option is the "Open Checkbook," feature that is offered in Arlington, MA. Information on every level of government expenditures, from total spending to payroll information to individual vendor payments is available. Memorandum #1: Assess what level of information is required? What visual software is available to do what is needed? What is recommended and why was this program chosen over other financial systems? Implement visual software. Demonstrate to BOS, FinComm, staff and interested residents. Assess, evaluate and report on user feedback. Accept written comments to IT or Finance Director from users and report on "Open Checkbook," concept for Harwich.</li> <li>Deliverable: <ul style="list-style-type: none"> <li>a) Presentation of fully functional visual expenditure software.</li> <li>b) Evaluation report. Evaluate the need to form an insurance advisory committee to work with the TA to identify, develop options &amp; implement town insurance matters.</li> </ul> </li> </ul> <p><b>4. Annual Auditor Reports</b></p>	<p>1. TBD</p> <ul style="list-style-type: none"> <li>TBD</li> </ul> <p>• TBD</p> <p>2. TBD</p> <ul style="list-style-type: none"> <li>TBD</li> </ul> <p>• TBD</p> <p>3. TBD</p> <ul style="list-style-type: none"> <li>TBD</li> </ul> <p>a) TBD</p> <p>b) TBD</p> <p>4. TBD</p>	<p>1. FD</p> <p>2. TA, FD</p> <p>3. FD</p> <p>4. FD</p>



<p>Goal 1, Objective B: Continued</p>	<ul style="list-style-type: none"> <li>• Provide and post last three years Harwich Auditor's Reports. Document how the Finance Dept. has resolved auditor's suggestions/recommendations. Provide by memorandum a list of last three years auditors' comments/recommendations along with identification of what actions have been implemented to address audit discrepancies or recommendations. <ul style="list-style-type: none"> <li>• Deliverable: Memorandum.</li> </ul> </li> </ul> <p><b>5. Implement training and risk reduction programs.</b></p> <ul style="list-style-type: none"> <li>• Identify and document activities and potential savings that could be achieved through the Massachusetts Inter-local Insurance Association (MIIA) rewards programs that are intended to reduce risks of financial losses. Document directions/procedures to manage property insurance and program savings opportunities throughout Town departments. Implement periodic review of Statement of Values to ensure completeness and appropriate replacement values are being used. <ul style="list-style-type: none"> <li>• Deliverables: Memorandum.</li> </ul> </li> </ul> <p><b>6. Fund Balance Report.</b> Report balances of all funds, including grants and gift funds and post on the Accounting Department web page.</p>	<p>5. TBD</p> <p>6. Semi-Annual</p>	<p>5. ATA</p> <p>6. FD</p>
<p>Objective C: Develop specific financial strategies to increase S&amp;P Bond (Debt) rating. Bond rating agencies cite "sound financial management policies, as rationale for high ratings (AAA) for general obligation bonds.</p>	<p><b>1. Savings from better debt ratings.</b></p> <ul style="list-style-type: none"> <li>• Provide memorandum discussing potential savings that could result over the next 5-10 years of planned borrowing if the debt rating of Harwich was increased. Determine specific actions and accomplishments to better position Harwich for AAA debt rating. <ul style="list-style-type: none"> <li>• Deliverable: Memo/Plan of action with schedule on steps to achieve better debt ratings.</li> </ul> </li> </ul> <p><b>2. Sustainable OPEB funding.</b></p> <ul style="list-style-type: none"> <li>• Identify and document specific, sustainable revenue sources to fund annual contributions to Other Post Employment Benefits (OPEB).</li> <li>• Report annually on the unfunded liability of the Harwich OPEB, currently estimated at approximately \$40M. However, since we are part of the MRSD and CCRTHS, Harwich is responsible for 75% and 12% of the Monomoy and Cape Cod Technical unfunded OPEB liability, respectively, which together could exceed another \$40M.</li> </ul> <p><b>3. Tax collection policy/procedure.</b></p> <ul style="list-style-type: none"> <li>• Harwich attempted to conduct an auction in June, 2017, to sell tax titles held by the Town on a block of properties that were significantly delinquent on payment. The overall results of this process should be evident early in FY18 and should be documented.</li> <li>• Also, going forward, the Harwich Treasurer should develop (and publish) a policy and procedure document that addresses how the Town will collect unpaid taxes in the future. For example, based on this experience with auctioning tax titles to collect unpaid real estate taxes, does the bulk auction process offer the best financial benefit? What percentage of delinquencies were corrected before the auction? Would dealing with smaller quantities of parcels every 2-3 years be more effective? Discuss lessons learned.</li> <li>• Deliverables: <ul style="list-style-type: none"> <li>a) Assessment of the Harwich tax title auction process.</li> <li>b) Policy and procedures to better manage delinquent tax payments.</li> </ul> </li> </ul> <p><b>4. Develop Harwich Financial Policy.</b></p> <ul style="list-style-type: none"> <li>• Develop an appropriate set of financial policies for the Town of Harwich. Other towns have recently used this assistance and have been successful in upgrading their bond rating.</li> <li>• Investigate Best Practices published by the Bureau of Accounts, Division of Local Services, MA DOR.</li> <li>• Also solicit assistance from the Massachusetts Community Compact Initiative.</li> <li>• Provide memorandum of what is planned to be done, the resources required and what beneficial outcome is anticipated.</li> <li>• Explore and schedule other best practices for future implementation. <ul style="list-style-type: none"> <li>• Deliverables: <ul style="list-style-type: none"> <li>a) Plan Memorandum outlining approach and resources required to develop the Harwich Financial Policy.</li> <li>b) Harwich Financial Policy</li> </ul> </li> </ul> </li> </ul>	<p>1. TBD</p> <ul style="list-style-type: none"> <li>• TBD</li> </ul> <p>2. TBD</p> <ul style="list-style-type: none"> <li>• TBD</li> <li>• Annually</li> </ul> <p>3. TBD</p> <ul style="list-style-type: none"> <li>a) TBD</li> <li>b) TBD</li> </ul> <p>4. TBD</p> <ul style="list-style-type: none"> <li>a) TBD</li> <li>b) TBD</li> </ul>	<p>1. TA, FD, T/C</p> <p>2. TA</p> <p>3. T/C</p> <p>4. TA, FD</p>

**GOAL 2. GOVERNANCE**

Communicate and conduct Town government business in an efficient, effective, transparent and responsive manner. Establish working relationships with agencies/offices of Federal, State, county and town governments. Conduct human resource and labor management.

Objective	Action Items/Deliverables	Time Frame	Responsible BOS Member
<p><b>Objective A: Conduct Town government business in an efficient and effective manner</b></p>	<p><b>1. Develop Automation Implementation Plan.</b></p> <ul style="list-style-type: none"> <li>With a goal of improving permitting/payment service to residents and visitors, a software implementation plan should be developed that outlines and schedules the departments and services to be automated. This plan should include estimated benefits, costs and schedule for automating each Town permitting/payment process.</li> <li>Based on the approved plan, identify and document requirements for the next phase or version.</li> <li>The next version or phase of implementation will either expand on-line services to other departments, including Golf, Waterways, Recreation, Community Center and Harbors, or it will incorporate new requirements or features in the software version currently in use.</li> <li><b>Deliverable:</b> Implementation Plan for online permitting/payments</li> </ul>	1. TBD	1. TA, FD
	<p><b>2. Implement the next version of online Town services and/or expand its use to other Town Departments.</b></p> <ul style="list-style-type: none"> <li>Each implementation should include <u>documentation</u> of:                             <ul style="list-style-type: none"> <li>work flow and data requirements for each department;</li> <li>test planning for focus groups, back-up/security, and features/functionality.</li> </ul> </li> <li>Conduct and document the actual testing (and re-testing, as required) and provide a final test report.</li> <li>Offer training or on-line help. Primary responsibility remains with departments where permits and payments are being automated. At some point each department should assess and document the benefits of online automation.</li> <li><b>Deliverables:</b> Numerous - as listed above. (Milestones are useful to oversee software implementation progress.)</li> </ul>	2. TBD/ Negotiable	2. Primary responsibility, departments where permits and payments are being automated. At some point each department should assess and document the benefits of online automation.
	<p><b>3. Implement changes to the Home Rule Charter approved at the May, 2017 Annual Town Meeting.</b></p> <ul style="list-style-type: none"> <li>Revise Harwich Committee Handbook as needed.</li> <li>Obtain acknowledgement and compliance statements from all committee chairs affected by these Home Rule Charter changes.</li> <li>Request that the Charter Review Committee continue to assess Charter to identify what needs to be changed/improved and provide recommended Charter changes for ATM consideration.</li> <li>Obtain, review and support, as appropriate, any further recommended changes from the Charter Review Committee.</li> <li><b>Deliverables:</b> Signed acknowledgement statements.</li> </ul>	3. 1st qtr	3. Don Howell, BCRC
	<p><b>4. Propose and Implement Near-Term Improvements to Town Committees.</b></p> <p>Town sanctioned organizations, boards and committees are comprised of residents possessing a wide cross section of interests and experience. These groups provide valuable investigative and advisory support to the Town. From time to time it may be necessary to make some adjustments to the existing boards/committees where it has become evident that changes would be beneficial. This action is to identify those changes that should be made soon and provide an implementation plan that achieves these near-term changes. As a minimum the following areas need review:</p> <ul style="list-style-type: none"> <li>Is the charge or mission statement still accurate, current, meaningful and have defined deliverables or goals?</li> <li>Should the committee be discharged, combined or redirected? Why?</li> <li>Is there an "oversight," process established to ensure effective use of citizen participation? (such as periodic attendance or communications with BOS Liaison or Administration Staff).</li> <li><b>Deliverable:</b> Memorandum of recommended changes with rationale and plans for implementation.</li> </ul>	4. TBD	4. Whole Board, D. Howell lead
	<p><b>5. Assess Town Hall document storage needs.</b></p> <ul style="list-style-type: none"> <li>Administration is to estimate document storage needs currently and for the next 10 years.</li> <li>Department Heads should be familiar with the Massachusetts Municipal Records Retention Manual (<a href="http://www.sec.state.ma.us/arc/arc/rmu/rmuidx.htm">www.sec.state.ma.us/arc/arc/rmu/rmuidx.htm</a>) to ensure that municipal records are properly stored and preserved, as required by MGL ch.66 sec. 1. Technical assistance and workshops are provided by the Records Management Unit, a division of the MA State Archives.</li> <li>Based on these estimated needs, investigate storage sites at a remote location, such as basement of Community Center or police station.</li> <li>Consider the impact of the new MA Public Records Law which requires local officials to make all records created or received by a government entity available to anyone who asks for them.</li> </ul>	TBD 5. TBD	5. TC, CCD

<p><b>Goal 2, Objective A Con't</b></p>	<ul style="list-style-type: none"> <li>On access requirements As identify documents currently stored with the Town Clerk that are considered "historic,. Provide preliminary Engineering designs of a "modular, (expandable) storage facility for optional storage sites.</li> <li><u>Deliverables:</u> <ol style="list-style-type: none"> <li>Requirements Analysis - what documents/data need to be stored? How much and what type of space is required over the next 10 years</li> <li>Alternatives study - what options does the Town have to accommodate these requirements and at what estimated costs? What sources of funding are available for part or all of this activity (grants, CPC)?</li> </ol> </li> </ul> <p><b>6. Plan for regulation of Recreational Marijuana Establishments.</b>  A temporary moratorium was approved at the ATM in May, 2017, which allows Harwich until June 30, 2018, to plan on how to address the potential impacts of using land or structures in Harwich to cultivate, manufacture, test, process, package or offer for retail sale marijuana in the Town. This allows the Town to analyze the Cannabis Control Commission's regulations regarding Recreational Marijuana Establishments and related uses, determine whether the Town shall, by ballot measure restrict any, or all Recreational Marijuana Establishments and assess adopting new provisions of the zoning bylaw to address the impacts and operations of Recreational Marijuana Establishments and related uses. The time for this action is actually shorter, since this action most likely result in an Article for the next Town Meeting.</p> <ul style="list-style-type: none"> <li><u>Deliverables:</u> <ol style="list-style-type: none"> <li>A task breakdown structure with schedule - what are the major tasks, accomplishments, milestones, and deliverables that are needed and by when in order to be ready to submit an article for the 2018 ATM.</li> <li>Resource Estimate/Commitment - How much time from Town staff, legal counsel, possible Town Committee.</li> <li>Assessment of available funding, grants, State assistance, collaboration/cooperation with other towns.</li> <li>Contingency plan (what if ...?)</li> </ol> </li> </ul> <p><b>7. Disposition of 203 Bank St. and 4 Central Ave.</b></p> <ul style="list-style-type: none"> <li>Develop and provide a written plan to sell or transfer title of the two properties as directed by May Town Meeting. The plan should detail the steps or process to be followed along with a schedule to value and prepare parcels, mark parcel boundaries as necessary, set minimum bids as appropriate, publish notices, conduct the sale and report on the net proceeds deposited to the land sale account as stated by Town Counsel at the Town Meeting. In the case of the Bank St. parcel it may be appropriate to solicit public comments from organizations, such as the Harwich Conservation Trust, that may have an interest in using some or all of the parcel for preservation and open space uses. If there are no comments or interest, a plan to sell the Bank St. parcel should be prepared as directed above.</li> <li><u>Deliverables:</u> <ol style="list-style-type: none"> <li>Plan for sale of 4 Central Ave. parcel.</li> <li>Plan for public input recommendations.</li> <li>Plan for sale of 203 Bank St. parcel</li> <li>Execute plans.</li> </ol> </li> </ul> <p><b>8. Finance Department Procedures.</b></p> <ul style="list-style-type: none"> <li>Assess the status of written procedures for Accounting, Assessing, and Treasurer.</li> <li>Develop or update these procedures as necessary in order to maintain stability during staffing turnovers.</li> <li><u>Deliverables:</u> <ol style="list-style-type: none"> <li>Procedures Status Memorandum,</li> <li>Plan memorandum detailing what can be done in FY18,</li> <li>Procedures update.</li> </ol> </li> </ul>	<p>TBD TBD</p> <p>6. TBD</p> <p>7. TBD</p> <p>8. TBD</p>	<p>6. PB, TP, TA</p> <p>7. TA, TE</p> <p>8. FD</p>
<p><b>Objective B: Conduct Town government business in a transparent manner</b></p>	<p><b>1. Develop &amp; implement informational meetings.</b>  ("Pre-annual town meetings) to improve understanding and assess potential impacts of the Harwich budget and selected warrant articles.</p> <ul style="list-style-type: none"> <li><u>Deliverable:</u> Develop and implement a plan that addresses how to select budget items and warrant articles that need this attention, what outreach method will be implemented, what resources are needed and how Administration will evaluate the results.</li> </ul> <p><b>2. Improve Public Awareness and Outreach.</b></p> <ul style="list-style-type: none"> <li>In addition to wastewater management projects that were the focus of last year, improve awareness and understanding of the BOS, other Town-sanctioned groups, and Town departments.</li> </ul>	<p>1. TBD</p> <p>2. TBD</p>	<p>1. MacAskill, TA, FD</p> <p>2. TA</p>

<p><b>Goal 2, Objective B: Con't</b></p>	<ul style="list-style-type: none"> <li>By Q2 of this FY the Town Administrator will develop new ways to communicate to the public the actions of the Selectmen, and Town boards, committees and departments. Provide residents and visitors with information about selected parts of Town government through the use of newsletters, periodic programs, site visits, and other communications media. Initially the focus of this objective/task will be the Water Department operations and one other department (Wastewater Project will be treated separately.).</li> <li><u>Deliverables:</u> <ol style="list-style-type: none"> <li>Two memoranda each co-authored by Administration and head of the departments selected to participate in this outreach activity describing activities planned, resources and schedules required to achieve this objective.</li> <li>Periodic status reports on media projects, site visits, and initial feedback from residents/visitors.</li> <li>End-of-year report on lessons learned.</li> </ol> </li> </ul> <p><b>3. Report CVEC Energy Savings.</b> Report revenue benefits and associated off-taker sharing with the Water Enterprise Fund on the Town website (Consider posting actual savings on the sign at the Town Disposal Area.</p> <p><b>4. Develop Records Management Plan.</b></p> <ul style="list-style-type: none"> <li>Plan, create and implement a phased, formal, written records management program that complies with open meeting and public records statutes that includes specific standards for both paper and electronic records.</li> <li>Every record that is made or received by a government entity or employee is presumed to be a public record unless a specific statutory exemption permits or requires it to be withheld in whole or in part.</li> <li>Electronic records, such as computer files, email, and audio- and videotapes are subject to the public records law.</li> <li>Information on The Municipal Records Retention Manual can be found at <a href="http://www.shutesbury.org/sites/default/files/PublicRecord_retention.pdf">http://www.shutesbury.org/sites/default/files/PublicRecord_retention.pdf</a>.</li> <li>The Massachusetts Public Records Law is found at <a href="#">Massachusetts General Law, Chapter 66, (Section 10 in particular is of importance to records requesters)</a>, with its supporting regulation being found at <a href="#">950 Code of Massachusetts Regulations 32.00</a>.</li> <li>The exemptions to the Public Records Law are found at <a href="#">Massachusetts General Law, Chapter 4, Section 7(26)</a>.</li> <li>This activity has been an objective of the Board of Selectmen since 2014.</li> <li><u>Deliverables:</u> Plan with resources and schedules. Execution</li> </ul>	<p>Q2</p> <p>3. TBD</p> <p>4. TBD</p>	<p>3. ATA, FD</p> <p>4. TC</p>
<p><b>Objective C: Conduct Town government business in a responsive manner</b></p>	<p><b>1. Email addresses for Town Departments, and Town-sanctioned groups.</b></p> <ul style="list-style-type: none"> <li>Establish Harwich-specific email addresses in order to enhance communication between residents and town departments, committees, boards or other Town-sanctioned groups provide all such groups with a Town email address.</li> <li>Identify these email addresses on the Town website.</li> <li>Provide appropriate backup of email transmissions that use Town servers.</li> <li>Create a policy that requires all official communications between public and these Town groups be made through the Harwich email system.</li> <li>Provide technical support to fully implement. <ul style="list-style-type: none"> <li><u>Deliverables:</u> <ol style="list-style-type: none"> <li>Memorandum #1: provide a level of effort (labor) and cost estimate for Town staff to accomplish this objective.</li> <li>Memorandum #2: provide draft policy and procedures to implement.</li> <li>Memorandum #3: provide on-line training materials.</li> <li>Memorandum #4: provide evaluation report.</li> </ol> </li> </ul> </li> </ul> <p><b>2. Town Hall hours of operation.</b> Reevaluate the pros and cons of Harwich Town Hall being open later on Mondays and closed early on Fridays.</p> <ul style="list-style-type: none"> <li><u>Deliverable:</u> <ol style="list-style-type: none"> <li>Memorandum that reviews the original purpose of staying open longer on Mondays all year, assesses impacts of on-line access to Town Hall services, quantifies benefits (if any) to residents, reviews merits department-by-department, provides comparisons with other Massachusetts Town Hall operations, and addresses other relevant issues, such as having some departments work longer one day while other Town operations work a standard work week.</li> <li>Assessment report with recommendations.</li> </ol> </li> </ul>	<p>1. TBD</p> <p>2. TBD</p>	<p>1. IT</p> <p>2. TA (Subject to Collective Bargaining)</p>

Goal 2, Objective C: Con't	<p><b>3. Improved broadcast technology.</b></p> <ul style="list-style-type: none"> <li>Evaluate potential improvements to audio reception, recording and broadcasting in Griffin Room.</li> <li>Propose technological options to record other meetings in this room without IT staffing. <ul style="list-style-type: none"> <li><u>Deliverables:</u> Report on technology options and costs for improved audio broadcast of meetings in Town Hall and Harwich Community Center.</li> </ul> </li> </ul>	3. TBD	3. Ch.18
	<p><b>4. Use of MRSD facilities.</b></p> <ul style="list-style-type: none"> <li>Develop a reasonable agreement for room usage at Monomoy Regional High School and Harwich Elementary School (with and without fees) for meetings or use by Town-sanctioned groups.</li> <li>Investigate and document usage of High School Auditorium for Annual Town Meeting.</li> <li>Discuss possibilities with Chatham, MRSD School Committee and Superintendent and report results. (Harwich is already paying 75% of the debt service and operating costs for those buildings.) <ul style="list-style-type: none"> <li><u>Deliverables:</u> Memorandum on results of discussions.</li> </ul> </li> </ul>	4. TBD	4. Jannel Brown & Michael MacAskill
	<p><b>5. Information technology (IT) resource sharing.</b></p> <ul style="list-style-type: none"> <li>Assess the scope of technical support required for IT, defined in this activity as computing, including hardware, software, telecommunications, and generally anything involved in the secure transmittal and storage of information or the systems that facilitate communication within and between all departments and supporting groups in Harwich.</li> <li>What are the available capabilities within the Town staff to conduct IT support?</li> <li>What alternatives are available to augment Town staff, including IT staff sharing with MRSD, CCTHS, Water Department Enterprise or other neighboring towns or applying for a MA Community Compact Initiative grant or other Mass IT grants. <ul style="list-style-type: none"> <li><u>Deliverables:</u> Report on each item.</li> </ul> </li> </ul>	5. TBD	5. TA, IT
	<p><b>6. Support from the Friends of the Council on Aging (COA).</b></p> <p>Reportedly, the "Friends,, among other things, will support meal programs, provide transportation assistance by financing and operating a minibus, support socialization programs, pay for renovation or enhancement to currently used space, and to consider supporting future needs of the COA.</p>	6. TBD	6. COA

**GOAL 3: INFRASTRUCTURE**

Work with and support the design, construction and renovation activities of the Harbormaster, Fire Department, Golf Department, Department of Public Works, Library and other departments conducting major projects in the Town. These projects will require coordination support from Administration and staff support from various other Town Departments such as Engineering/Surveying, Health, Building and DPW. (The financial investment, complexity and scheduling requires that the following Infrastructure actions be a high priority of the Town Administrator.)

Objective	Action Items/Deliverables	Time Frame	Responsible BOS Member
Objective A: Support and report periodically on the water side rebuilding project at Saquatucket Harbor.		TBD	HM, TA
Objective B: Support and report on the land side design project		TBD	HM, TA
Objective C: Support and monitor progress on development of construction plans and bid documents for the renovation and expansion of Fire Station #2 on Route 137 in East Harwich.		TBD	TE, FC
Objective D: Support & monitor progress on the CV Golf Course multifaceted project to construct new cart barn, reskin & re-roof the existing, metal maintenance facility, & reconfigure existing parking lot and associated landscaping.		TBD	GD, TA, TE, FM

Goal 3, Continued. Objective E: Investigate renovation project proposed for Lower County Road. Director of DPW in Nov 19, 2015 memorandum recommended this project for FY2018.	Develop a plan including public hearings, financing options, milestones and schedules.	TBD	DPW, TA
Objective F: Support and report on participation on Cape Cod Technical High School Building Committee.		TBD	TA
Objective G: Support and report on Brooks Library re-bid and compliance with Town vote		TBD	FM
Objective H: Support and report Route 28 reconstruction. Support and report on community involvement, State compliance, planning, and public information activities in the Rt. 28 reconstruction project from Herring River to the Dennis line.			DPW, TA

#### GOAL 4: NATURAL RESOURCES

Continue to implement the Comprehensive Wastewater Management Plan			
Objective	Action Items/Deliverables	Time Frame	Responsible BOS Member
Objective A: Wastewater planning design and implementation.  (The financial investment, complexity and scheduling requires that the following Infrastructure actions and deliverables be a high priority of the Town Administrator.)	1. Finalize payment to the Town of Chatham of the capacity purchase fee in accordance with the inter-municipal agreement between Harwich and Chatham which permits Harwich to deliver wastewater to Chatham for treatment of up to 350,000 gallons of sewage a day.	1. TBD	1. TA, FD (Completed)
	2. Support and report on the design of the Pleasant Bay (south) sewer system.	2. TBD	2. CDM, TA
	3. Support and report on the design of the Chatham Interconnector system.	3. TBD	3. CDM, TA
	4. Convene periodic wastewater management discussions with representatives of neighboring Towns (Dennis, Brewster, Orleans, Yarmouth) to continue discussions on common/joint interests in combining or coordinating wastewater activities. TA to initiate; Selectmen to participate. • Deliverables: periodic reports.	4. TBD	4. Larry Ballantine & M. MacAskill, TA
	5. Revisit Hinckley Pond needs with CPC. • Initiate discussions with the Community Preservation Committee for the purpose of revisiting a request for funds for restoration of Hinckley Pond. • Establish conditions and requirements for this project to be viewed favorably by the Committee. • Identify and, with BOS approval, implement actions in furtherance meeting such minimum requirements on a schedule that would allow reconsideration of this project request in the fall of 2017. • Deliverables: re-submit application for CPC funding.	5. TBD	5. NRD
	6. Actively participate in the Pleasant Bay Alliance Project to implement the recommended steps to optimize nitrogen removal efforts underway by the four participating towns (Harwich, Orleans, Chatham, and Brewster) with the goal of a targeted watershed nutrient management plan and watershed permit. • Stay informed and attend monthly working group meetings of the Alliance Steering Committee and Watershed Work Group. • Support and implement, as appropriate and approved by the BOS, the specific 10 activities identified as "Next Steps," in the Pleasant Bay Composite Nitrogen Management Analysis presented to the BOS at the end of March, 2017. • Deliverables: Report progress periodically.	6. TBD	6. L. Ballantine

Goal A, Objective A: Con't	7. Monitor and provide report on results of mitigation projects at Muddy Creek as available.	7. TBD	7. TA, NRD
	8. Support and report on Cold Brook design, construction, implementation project as part of Phase 2 of the Harwich Comprehensive Wastewater Management Plan now that funding has been approved.	8. TBD	8. TA, CDM, NRD
	9. Identify Phase II Parcels. Prepare (Assessing Dept.) a list of all properties potentially involved in Phase II construction and implementation.	9. TBD	9. CDM, AD
	10. Prepare options and supporting analysis for aid/relief for hook-up costs. Many residents may have unusual problems (timing, financial, etc.) associated with connection to the wastewater system. A sub-committee or task force should be charged with investigating such situations and developing options to help with costs of connection. • Deliverables: 1) Action Plan and Charge, 2) presentation of analysis and recommendations to BOS, 3) Communication products for May, 2018 Town Meeting.	10. TBD	10. TA, County Health
	11. Estimate five year operating and maintenance costs related to Harwich use of Chatham treatment plan. With assistance from CDM Smith develop cost projections that are needed for Town budget planning and for community outreach and education (next objective) leading up to May, 2018 Town Meeting.	11. TBD	11. TA, WWS, CDM
Objective B: Wastewater Education and Outreach	7. Use readily available information to develop guidelines for environmentally-appropriate fertilization of lawns and gardens. • Provide guideline information on safe use of nitrogen and phosphorus fertilizers using various communication methods. • Work with the Wastewater Implementation Committee and Natural Resources Department to identify what other towns have done. • Plan and implement one method/activity to educate Harwich residents of the effects of improper lawn and garden fertilization. 1.	1. TBD	1. HD, BoH, CA
	2. Plan and implement a continuation of the wastewater education program for resident and nonresident taxpayers to explain where we are in the Wastewater Management process and what are the next activities planned. • Conduct at least 2 educational meetings, including recording and rebroadcast. • Recommend options for supporting and participating in public outreach either through contract or through involvement by regional school staff and students. • Assess media options, such as social media, podcasts, newsletters, or YouTube videos to maintain engagement of residents.	2. TBD	2. TA, WWS, CDM

**GOAL 5: PLANNING AND ECONOMIC DEVELOPMENT**

Actively participate in development of housing, business, transportation and historic and cultural enhancements. Establish working relationships with officials of nearby towns, Barnstable County, State and Federal agencies, as appropriate.			
Objective	Action Items/Deliverables	Time Frame	Responsible BOS Member
Objective A: Investigate improved utilization, sale or lease of several properties in Town.	<p>1. Disposition of underutilized Town-owned parcels. Develop a plan(s) on how to better use, sell or lease several buildings and land in Town, including the:</p> <p>a) Albro House. In the case of the Albro House the plan should include subdividing the parcel to allow space for reasonable parking for the Albro House while the remaining northerly portion would be separate and could remain as Town property. Provide estimates of resources required to accomplish each alternative.</p> <p>b) "Old Recreation, Building</p> <p>c) West Harwich Schoolhouse.</p> <ul style="list-style-type: none"> <li>• Deliverables: <ul style="list-style-type: none"> <li>i) Albro sub-division plan and execution;</li> <li>ii) Plan to sell or transfer ownership of "Old Recreation Building,;</li> <li>iii) Plan to sell or transfer ownership of the W. Harwich School-house.</li> </ul> </li> </ul>	1. TBD	<p>1a. TA, ATA</p> <p>1b. TA, FD, FM, MacAskill</p> <p>1c. TA</p>

<p><b>Goal 5, Objective A: Con't</b></p>	<p><b>2. Harwich Middle School re-purpose.</b></p> <ul style="list-style-type: none"> <li>Assess and report on the progress to transform the Harwich Middle School (HMS) to a Cultural Center.</li> <li>During FY17 the BOS agreed to investigate the potential of re-purposing the HMS for community use with a focus on cultural activities. FY 18 will be the second full year of this trial period.</li> <li>Assess and provide a written re-port on the specific progress to date (June 30), including, but not limited to, occupancy data, how the premises are being used, lease durations and terms, problems encountered, year-end revenues and costs and recommendations for changes (needed and nice to have) in year #2.</li> <li>Update this assessment report on a quarterly basis. Include a list of detailed evaluation criteria for consideration by the BOS to help in their determination of future use of this property.</li> <li>Also by Dec. 30, if leasing space does not show potential of generating the expected benefit and revenue (as measured by the evaluation criteria), a plan is to be provided to reconsider other potential uses: <ul style="list-style-type: none"> <li>Deliverables: <ul style="list-style-type: none"> <li>a) Year one - progress assessment as a cultural center. Quarterly updates. Memo on evaluation criteria to be considered for eventual decision on disposition.</li> <li>b) Written plan (as needed) on how to proceed.</li> </ul> </li> </ul> </li> </ul> <p><b>3. Support community involvement in the HECH/Chase House historic preservation and Chapter 40B development at 93 and 97 Rt. 28.</b></p> <ul style="list-style-type: none"> <li>Primary responsibility remains with HECH, Habitat for Housing and their respective contractors and consultants and not Town employees/departments.</li> <li>Town departments can participate in some planning, coordination, inspection and facilitation support to ensure public participation and consensus on project direction and implementation. <ul style="list-style-type: none"> <li>Deliverables: <ul style="list-style-type: none"> <li>a) Roles and Responsibilities Statement to define specific municipal duties relating to these projects.</li> <li>b) Periodic memorandum updates and briefings on HECH plans and accomplishments and Habitat plans and accomplishments.</li> </ul> </li> </ul> </li> </ul>	<p>2. TBD</p> <p>3. TBD</p>	<p>2. TA, CCD, FD, MacAskill</p> <p>3. ZBA, TP, ATA, TA (completed)</p>
<p><b>Objective B: Create and maintain a strong business and job growth environment</b></p>	<p><b>1. Assess and recommend what actions the Town can take to promote business development.</b> Create an economic development committee to be charged with working with the various levels of Chambers of Commerce to increase private business development in Harwich and to generate new ideas for increasing town revenue without raising taxes.</p> <ul style="list-style-type: none"> <li>Deliverables: Document</li> </ul> <p><b>2. Create and Maintain Positive Town and Business Relationship.</b></p> <ul style="list-style-type: none"> <li>Establish policies, procedures, relationships that supports a vibrant and sustainable Harwich business community.</li> <li>Continue to provide a streamlined regulatory process and business-friendly staff of volunteers, Town employees and elected officials.</li> <li>Encourage and support new small businesses in Harwich.</li> <li>Work with the Harwich Chamber of Commerce to maximize the effectiveness of HCC branding activity which seeks to promote Harwich as a destination, as well as a great place to reside or own/operate a business.</li> <li>Define issues of importance to Harwich businesses and evaluate costs of doing business in comparison to neighboring towns.</li> <li>Make recommendations for improvements as necessary. <ul style="list-style-type: none"> <li>Deliverables: Document</li> </ul> </li> </ul> <p><b>3. Assist Town departments and Town sanctioned groups with grant applications and pursue funding opportunities in support of town priorities and policy goals.</b></p> <ul style="list-style-type: none"> <li>Stay abreast of and perform research involving governmental legislation, policies and regulations that may impact the Town.</li> <li>Participate in regional school activities, such as school rebuilding or renovation projects.</li> <li>Participate in Mass Municipal Association activities that are relevant to Harwich.</li> <li>Encourage other department heads to do the same. <ul style="list-style-type: none"> <li>Deliverables: Grant applications approved and filed along with results.</li> </ul> </li> </ul>	<p>1. TBD</p> <p>2. TBD</p> <p>3. TBD</p>	<p>1. Brown &amp; MacAskill</p> <p>2. Whole Board, Brown lead</p> <p>3. TA, Whole Board, Julie Kavanagh lead</p>



Goal 5, Objective B: Con't	4. Develop educational program agreements with Monomoy Regional School District and Cape Cod Technical whereby special projects can be conducted coincident with major capital projects in Town. For example, the waterfront renovation project at Saquatucket could be the subject matter or course material for a local high school course. • Deliverables: Document attempts and results	4. TBD	4. TA
	5. Investigate novel ideas to promote Harwich and grow tourism, such as annual road races, auto shows, expanded farmers market, etc. • Deliverables: Document	5. TBD	5. Brown, CCD
	6. Explore affordable and senior housing options where the Town may retain the property. Memorandum #1: TA shall outline a plan to identify proven and novel approaches to develop Affordable housing in Harwich. • Deliverables: Document	6. TBD	6. TA, Housing Trust (TBD), Kavanagh

**GOAL 6: QUALITY OF LIFE AND PUBLIC SAFETY**

Develop and support programs that improve quality of life for Harwich residents and visitors. (Public Safety Departments have the primary responsibility for progress and accomplishments. TA has coordination, support and reporting responsibility)

Objective	Action Items/Deliverables	Time Frame	Responsible BOS Member
Objective A: Provide high quality, cost-effective public safety services to residents and visitors.	<p><b>1. Public safety initiative.</b></p> <ul style="list-style-type: none"> <li>Administration should initiate and participate in investigation of options, including increased police surveillance, low cost, automatic speed detection systems, raised crosswalks or speed bumps to lower vehicle speed on town streets. Other nearby towns have implemented more visible crosswalk signs, painted crosswalks, and speed limit posting in conjunction with actual vehicle speed display. A recent accident in Sandwich where two pedestrians were killed at a crosswalk is an unfortunate alert to public safety needs in Harwich.</li> <li>If Harwich is to continue to grow as a destination point on the Cape, the Town needs to develop and implement a public safety plan that encompasses greater pedestrian and bicycle safety and encourages slower traffic speeds.</li> <li>A plan is needed to establish Harwich as the safest community on the Cape.</li> <li>Accurate information on construction-related backups, delays and road closures needs to be communicated better. Bike path and roadway intersections have received much needed attention of late.</li> <li>Pedestrian and traffic information signs need similar improvements. Some signs are faded or not visible due to growth of trees and bushes both on town land and private property.</li> <li>Special attention is needed along Rt. 28 through Harwichport to Saquatucket Harbor. At Saquatucket Harbor it has been reported that pedestrians cross from the north side of Rt. 28 where the ticket offices are currently located to the harbor entrance. There is also bicycle traffic crossing from Gorham Road to the harbor. Crosswalks have not been repainted or never existed. This problem has been publicized in recent reports and statements by the Harbormaster in support of the Land Side Project where he said "it was an accident waiting to happen."</li> <li>Deliverable: <ul style="list-style-type: none"> <li>1. Public Safety Plan - Identify actions and resources needed to develop a comprehensive safety improvement plan for Harwich. As an early deliverable, but part of that plan, define near-term options for Saquatucket Harbor and other high risk areas that could be implemented in 30 days or less (e.g. repaint selected crosswalks, use brightly painted cones/barrels, install signs saying "Speeds strictly enforced," increase visibility of police vehicles, etc.).</li> </ul> </li> </ul>	1. TBD	<ul style="list-style-type: none"> <li>• PC</li> <li>• PC, DPW</li> <li>• MacAskill &amp; Ballantine</li> <li>• PC, MassDOT, Utility Companies</li> <li>• DPW, MassDOT</li> <li>• TA, DPW, MassDOT</li> </ul>

**Abbreviation Key**

AD	Assessing Director	GD	Golf Director
ATA	Asst. Town Administrator	HD	Health Director
BCRC	Bylaw/Charter Review Committee	HM	Harbormaster
BoH	Board of Health	IT	Computer Coordinator
BoS	Board of Selectmen	NRD	Natural Resources Director
CA	Conservation Administrator	PB	Planning Board
CCD	Community Center Director	PC	Police Chief
CDM	CDM Smith - Consulting Eng.	T/C	Treasurer/Collector
Ch18	Ch. 18 Station Manager	TA	Town Administrator
COA	Council on Aging Director	TC	Town Clerk
DPW	DPW Director	TE	Town Engineer
FC	Fire Chief	TP	Town Planner
FD	Finance Director	WWS	Water & Wastewater Superintendent
FM	Facilities Maintenance Manager	ZBA	Zoning Board of Appeals

OWNER/PETITIONER—  
TOWN OF HARWICH  
732 MAIN STREET  
HARWICH, MA 02645

LOCUS ADDRESS—  
263 SOUTH STREET

FOR REGISTRY USE ONLY

DEED REFERENCE—  
BK. 837 PG. 335

PLAN REFERENCE—  
PL.BK. 070 PG. 125  
PL.BK. 108 PG. 153

GROSS AREA—  
805,582+/- SQ. FT.  
18.49+/- ACRES

APPROVAL NOT REQUIRED UNDER  
THE SUBDIVISION CONTROL LAW

APPLICATION DATE \_\_\_\_\_

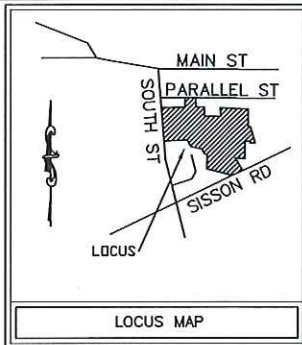
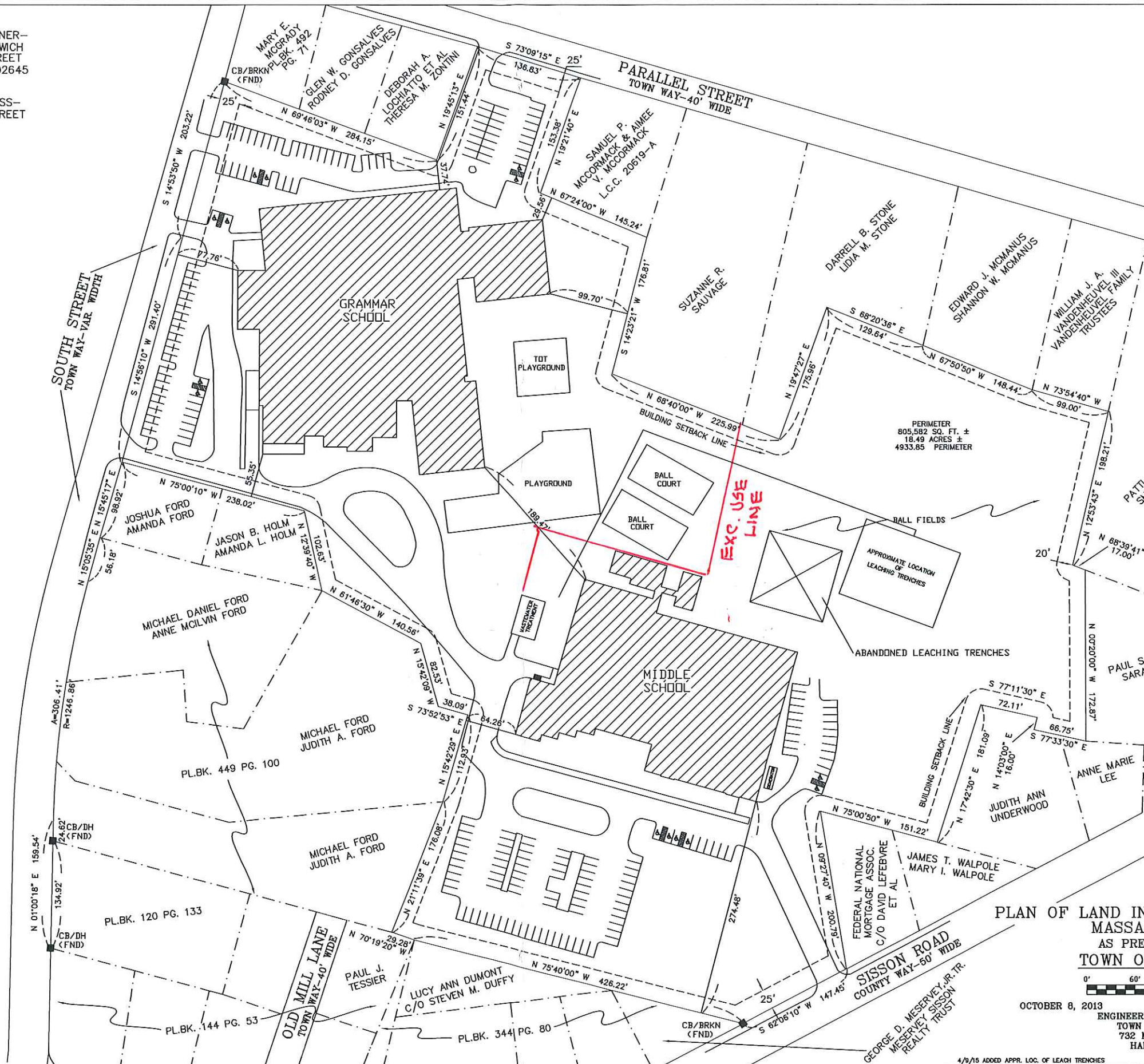
ENDORSED DATE \_\_\_\_\_

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HARWICH PLANNING BOARD  
NO DETERMINATION OF COMPLIANCE WITH ZONING  
REQUIREMENTS HAS BEEN MADE OR IS INTENDED

I CERTIFY THAT THIS PLAN CONFORMS TO THE  
1976 RULES AND REGULATIONS OF THE REGISTERS  
OF DEEDS.

DATE \_\_\_\_\_ PROFESSIONAL LAND SURVEYOR \_\_\_\_\_



ASSESSORS MAP: 40  
PARCELS: T6  
ZONING CLASSIFICATION: RM  
SETBACK REQUIREMENTS—  
FRONT 25'  
SIDE 20'  
REAR 20'  
AREA REQUIREMENT—  
40,000 SQ. FT.

PLAN OF LAND IN HARWICH (CENTER),  
MASSACHUSETTS  
AS PREPARED FOR  
TOWN OF HARWICH



OCTOBER 8, 2013 SCALE: 1"=80'  
ENGINEERING DEPARTMENT  
TOWN OF HARWICH  
732 MAIN STREET  
HARWICH, MA  
02645

## Ann Steidel

---

**From:** Young, David F. <YoungDF@cdmsmith.com>  
**Sent:** Tuesday, May 15, 2018 3:28 PM  
**To:** Ann Steidel  
**Cc:** Christopher Clark; Dan Pelletier  
**Subject:** FW: Printing Invoice for Harwich Brochures  
**Attachments:** 20180515152733072.pdf

Hi,  
Attached invoice is for printing 1,000 copies of four page brochure and DHY brochure plus 200 copies of updated workbook . Plus about \$2,000 for our time to update brochures, incorporate several edits from town staff and WIC and produce graphics. Cost will be reflected on our next invoice to the town.  
Let me know if you have any other questions.

Dave

**ARC Premier Accounts**  
 ARC New England Boston  
 199R Norfolk Ave  
 Boston, MA 02119

PROJECT EXPENSE

ARC INVOICE # 13888ARC050218  
 ARC INVOICE DATE 05/02/18  
 PROJECT EXPENSE # PW438026

BILL TO CDM Smith - Attn AP  
 75 State St # 701  
 Boston, MA 02109

SHIP TO CDM Smith (MA) BOS  
 75 State Street, Suite #701  
 Boston, MA 02110

Page 1

ORDER DATE	WORK ORDER	SHIP VIA	PURCHASE ORDER	REQUESTED BY					
04/18/18	272932			Mark Galvin					
PROJECT #	PROJECT NAME	PHASE	DEPT						
222785.1.1-1.1/542649	Harwich Brochures								
LINE	PROD CODE	DESCRIPTION	ORIG	COPY QTY	SHEET SIZE	TOTAL UNITS	UN	UNIT PRICE	EXTENSION
1	2500	COLOR COPIES 8.5x11	4	1000		4000	EACH	0.220	880.00
2	2501	COLOR COPIES 11x17	2	1000		2000	EACH	0.400	800.00
3	2501	COLOR COPIES 11x17	6	200		1200	EACH	0.400	480.00
4	1954	SADDLE STITCH BOOKLET	1	200		200	EACH	0.750	150.00
5	5202	COURIER CHARGE	1	1		1	EACH	10.000	10.00
SUBTOTAL			SALES TAX		INVOICE TOTAL				
2320.00			145.00		2465.00				

PROJECT  
EXPENSE

**TOWN PLANNER • 732 Main Street, Harwich, MA 02645**

508-430-7511 fax: 508-430-4703



May 17, 2018

To: Christopher Clark, Town Administrator  
From: Charleen Greenhalgh, Town Planner *CJH*  
Re: Extension of School House Road Parking Lot



As requested I have reviewed the May 16, 2018 letter from the Harwich Chamber of Commerce President, Michael Ulrich. In my research of the property, I found that the Town took the back portion of the property which fronts on Pleasant Street by eminent domain in 1994 (Bk 9229 PG 37, attached "A").

In 2002, the Harwich Chamber of Commerce received Site Plan Review Approval from the Planning Board for the current Chamber building, which sits on Parcel F3-A, and the rear parking lot, which sits on Parcel F3 (plan attached "B"). The decision by the Planning Board (Bk 15618 PG 306, attached "C") did impose a condition (#5) stating that "[T]here shall be no removal of trees". The site plan as approved does provide for 33% green space and the property is located with the CV and RM zoning districts. The commercial zone (CV) run 200' back from Route 28. A majority of the existing parking is located within the residential zone (RM). This is municipal use, which is allowable in all zoning districts.

Despite the fact that the condition of "no removal of trees" was imposed, I do believe that within the Harwich Port area additional parking is greatly needed. Because the specific condition was imposed, it would be my opinion that a modification of the Site Plan Approval would have to be granted by the Planning Board. I believe that this could be done through the Waiver of Site Plan provision pursuant to §325-55.F of the Harwich Code.

It would be my recommendation that if such a request was made to the Planning Board, a 20 foot buffer from Pleasant Street, a 5 foot buffer from the existing drive and a 10 foot buffer from the property to the east be maintained. It would be my estimate that an additional 36 spaces could be accommodated. A revised site plan would need to be drawn up showing any proposed changes.

If you have any questions, please do not hesitate to contact me.

"A"

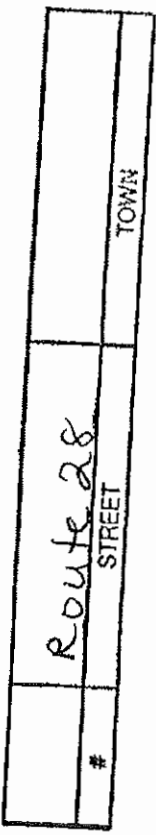
COMMONWEALTH OF MASSACHUSETTS

Barnstable, ss.

Office of the Board  
of Selectmen of the  
Town of Harwich

ORDER OF TAKING BY EMINENT DOMAIN OF LAND  
IN HARWICH, BARNSTABLE COUNTY, MASSACHUSETTS

BY  
THE BOARD OF SELECTMEN  
OF SAID TOWN OF HARWICH



We, ALLIN P. THOMPSON, JR., SANDRA B. DANIELS, SHIRLEY A. GOMES, WILLIAM A. DOHERTY, JR. and DANA A. DeCOSTA, the duly elected and qualified Selectmen of the Town of Harwich, a municipal corporation situate in the County of Barnstable and Commonwealth of Massachusetts, pursuant to the authority conferred on us by Vote of the Inhabitants of the Town of Harwich while acting under Article 33 of the Warrant for the Annual Town Meeting duly called and held on the 4th day of May, 1994, and further, under the authority conferred on us by the General Laws, Chapter 79 and Acts in amendment thereof and in addition thereto, and by virtue of every other power conferred on us by law, having duly complied with all the preliminary requirements prescribed by law do hereby ADOPT AND DECREE this Order of Taking and do hereby TAKE by Eminent Domain on behalf of the Inhabitants of said Town of Harwich in fee simple and for the purpose of clearing title thereto, a certain parcel of land in Harwich, Barnstable County, Massachusetts, more particularly described in Exhibit A attached hereto.

Meaning and intending to take and hereby taking by EMINENT DOMAIN the rights herein defined in the land delineated on the plan referred to in Exhibit A however bounded or described.

JAMES M. FALLA  
ATTORNEY AND  
COUNSELOR AT LAW  
261 MAIN STREET  
WEST HARWICH,  
MASSACHUSETTS  
02671

Any trees, buildings or other structures on the land above described are included in this Order of Taking.

No betterments are to be assessed in connection with this Order of Taking.

The land so taken shall be under the jurisdiction of the Board of Selectmen of the Town of Harwich.

The names of the owners, area of taking, and awards, if any, are as follows:

<u>PARCEL NUMBER</u>	<u>OWNER</u>	<u>AREA TAKEN</u> <u>ACRE</u>	<u>AWARD</u>
F-3	Town of Harwich or Owners Unknown	1.13	NONE

IN WITNESS WHEREOF, WE, the undersigned, duly authorized Board of Selectmen of the Town of Harwich have ADOPTED AND DECREED this Order of Taking and caused the corporate seal of said Town of Harwich to be hereunto affixed this 12<sup>th</sup> day of July, 1994.

HARWICH BOARD OF SELECTMEN

*Allin P. Thompson Jr*  
ALLIN P. THOMPSON, JR.

*Sandra B Daniels*  
SANDRA B. DANIELS

*Shirley A. Gomes*  
SHIRLEY A. GOMES

*W A Doherty Jr*  
WILLIAM A. DOHERTY, JR.

*D.A. DeCosta*  
DANA A. DeCOSTA

COMMONWEALTH OF MASSACHUSETTS

Barnstable, ss.

*July 12*, 1994

Then personally appeared the above named ALLIN P. THOMPSON, JR., duly elected Selectman of the Town of Harwich, and acknowledged the foregoing instrument to be the free act and deed of the Town of Harwich, before me,

*Juell E. [Signature]*  
Notary Public  
My Commission expires

JUELL E. [Signature]  
NOTARY PUBLIC  
MY COMMISSION EXPIRES MAR 21 1997

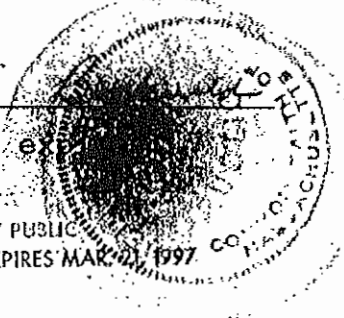




EXHIBIT A

ORDER OF TAKING BY EMINENT DOMAIN PARCEL F-3, HARWICH ASSESSORS  
MAP 14

A certain parcel of land situated in said Harwich at Harwichport, bounded and described as follows:

Commencing at the northwest corner of the school-house yard, now Parcel F-3A on Assessors Map 14, at a post; thence

Running easterly by said school-house yard about One Hundred (100) feet to a post in range of land formerly of William N. Eldredge; thence

Running northerly by land now or formerly of William N. Eldredge about Four Hundred Eighty (480) feet to the Town Road known as Pleasant Street; thence

Westerly by said Town Road One Hundred (100) feet to land formerly of James O. Hulse; thence

Running southerly about Four Hundred Eighty (480) feet to the point of beginning.

See deed of James O. Hulse to the Town of Harwich dated March 7, 1946, recorded at Barnstable in Book 647, Page 360.

JAMES M. FALLA  
ATTORNEY AND  
COUNSELOR AT LAW  
261 MAIN STREET  
WEST HARWICH,  
MASSACHUSETTS  
02671

BARNSTABLE REGISTRY OF DEEDS



May 17, 2018

To: Christopher Clark, Town Administrator  
From: Charleen Greenhalgh, Town Planner  
Re: Extension of School House Road Parking Lot

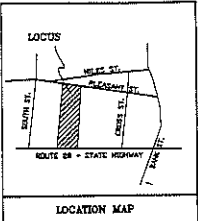
As requested I have reviewed the May 16, 2018 letter from the Harwich Chamber of Commerce President, Michael Ulrich. In my research of the property, I found that the Town took the back portion of the property which fronts on Pleasant Street by eminent domain in 1994 (Bk 9229 PG 37, attached "A").

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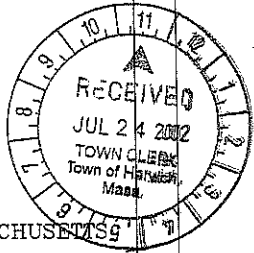
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If you have any questions, please do not hesitate to contact me.



ASSESSORS MAP - 14  
 PARCELS - F3 & F3A  
 PLAN REFERENCE -  
 NONE

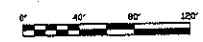
69,697 SQ. FT.  
 1.60 ACRES



**RECEIVED**  
**JUL 24 2002**  
 Harwich Planning Dept.

**PLAN OF LAND IN HARWICH, MASSACHUSETTS**  
 AS PREPARED FOR  
**CHAMBER OF COMMERCE**

MAY 17, 2002  
 REV. JUNE 5, 2002



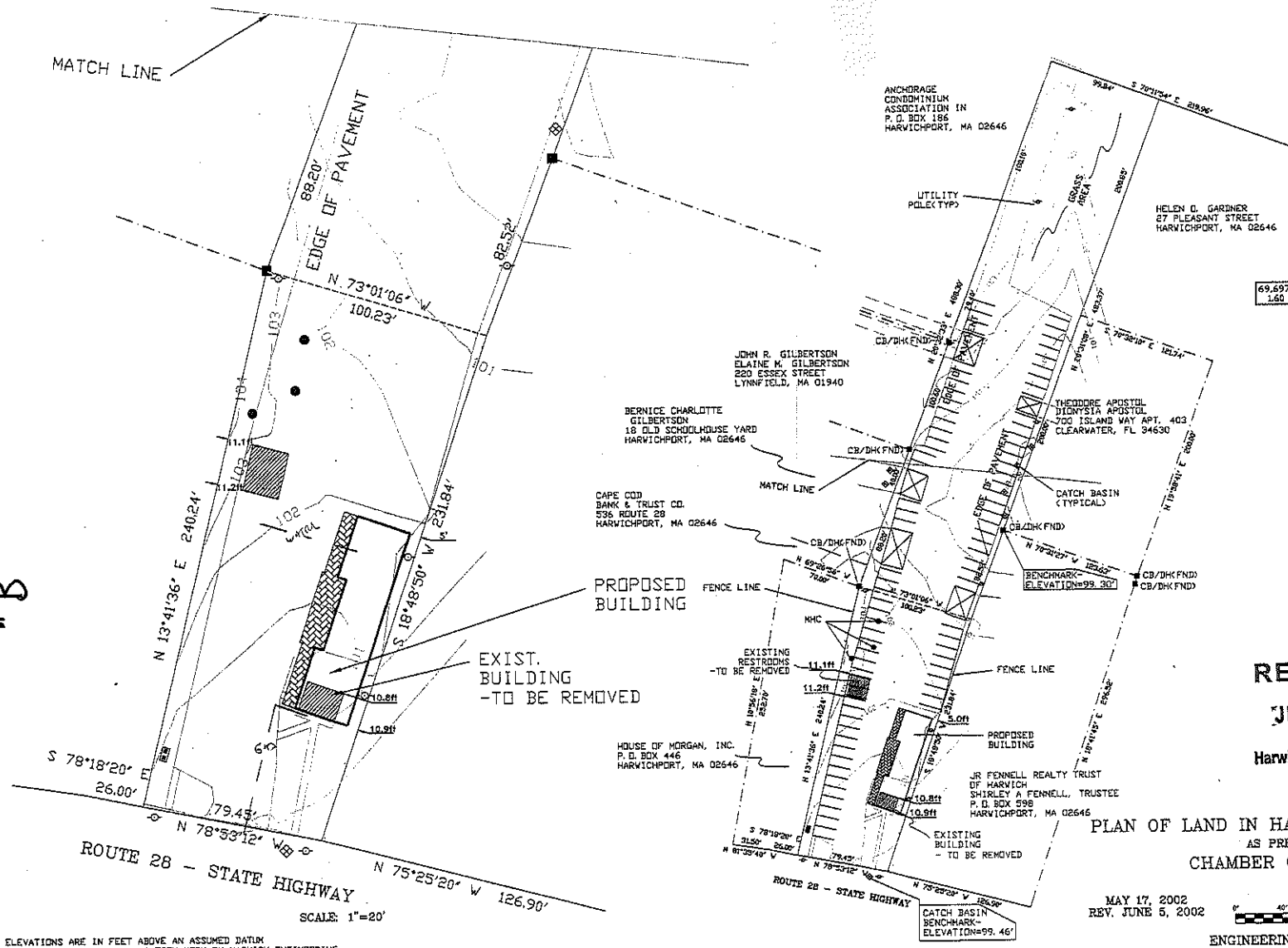
SCALE: 1"=40'

ENGINEERING DEPARTMENT  
 TOWN OF HARWICH  
 732 MAIN STREET  
 HARWICH, MA 02645

1232-00

- 1) ELEVATIONS ARE IN FEET ABOVE AN ASSUMED DATUM
- 2) FIELD INFORMATION AND LOCATION WORK BY HARWICH ENGINEERING
- 3) DIGSAFE IS TO BE CONTACTED PRIOR TO ANY CONSTRUCTION

"B"



"C"

COMMONWEALTH OF MASSACHUSETTS  
TOWN OF HARWICH  
PLANNING BOARD - SITE PLAN REVIEW

DECISION - SITE PLAN

Map 14 Parcel F3-A & F3

550 Route 28, Harwich Port

Case No. PB2002-43

Applicant: Harwich Chamber of Commerce

Hearing Date August 27, 2002

Decision Date August 27, 2002

At a public hearing held on August 27, 2002 the Town of Harwich Planning Board, acting in the matter of case number PB2002-43 voted to **approve** a Site Plan Special Permit taken under Harwich Zoning By-law Section X.K for property located at 550 Route 28, Harwich Port.

DECISION

Mr. Hart made a motion, seconded by Mr. Owens, to approve a Site Plan Special Permit under Harwich Zoning By-law Section X.K to the Harwich Chamber of Commerce to construct a new commercial building to house the Harwich Chamber and public restrooms at property located within the CV zoning district according to the following plan signed by the Board:

"Site Plan Showing Proposed Sewage Disposal System as prepared for Town of Harwich & Chamber of Commerce, 550 Route 28, dated July 23, 2002, at 1" = 20', by the Harwich Engineering Department"

The Planning Board found the application met the necessary requirements for the granting of the Site Plan Special Permit and that the issuance of this Special Permit will not be detrimental to the neighborhood nor substantially derogate from the public welfare with the following conditions:

1. Vegetation within the road right-of-way of Route 28 and the subject property shall be brushed back to eliminate obscured views.
2. Vegetation within the road right-of way of Pleasant Street and the subject property shall be brushed back to eliminate obscured views.
3. Stop bars and logos shall be painted at the entrance/exits to Route 28 and Pleasant Street.
4. A new water line shall be installed per the Harwich Water Department.
5. There shall be no removal of trees.

In addition, the Board granted the following waivers from June 2002 Rules and Regulations Governing the Subdivision of Land and Site Plans:

TRUE COPY ATTEST:

*[Signature]*  
TOWN CLERK OF  
HARWICH, MASS.

SEP 19 2002

RECEIVED  
AUG 28 2002  
TOWN CLERK  
Town of Harwich,  
Mass.

BK 15618 PG 306

- A. §2.II.A. – Drainage calculations and map.
- B. §2.II.C.2(d) – Location of trees on existing conditions plan
- C. §2.II.C.2(g) – Existing location of free standing signs on existing conditions plan.
- D. §2.II.C.3(g) – Dimension of parking areas.
- E. §2.II.C.3(k) – Wetlands within 100 feet of the site.
- F. §2.II.C.3(l) – Proposed location of free standing sign.
- G. §2.II.C.3(m) – Existing driveways within 100 feet of the site.
- H. §2.II.C.3(n) – Maximum site distance triangles.
- I. §2.II.C.3(o) – Traffic circulation arrows.
- J. §2.II.C.4 – Proposed landscaping plan.

**VOTE:**

**IN FAVOR:** Owens, Dinsmore, Hart, Eagan, Baldwin, Nightingale, Stoltz, Marsland (alternate) and Henry (alternate)

**OPPOSED:** None

**ABSTAIN:** None

*Angelo LaMantia cjh*  
 \_\_\_\_\_  
 Chairman of the Planning Board

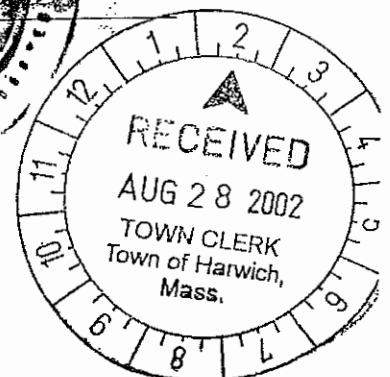
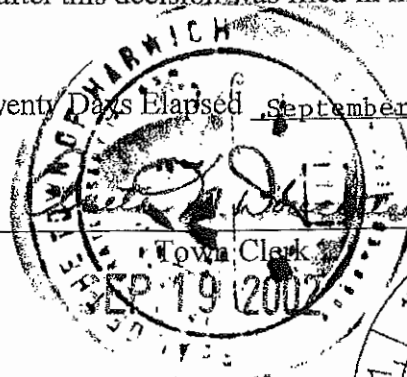
**THIS DECISION HAS BEEN FILED WITH THE TOWN CLERK ON 8/28/02.**

\_\_\_\_\_  
 Town Clerk

This is to certify that twenty days have elapsed after this decision was filed in my office and no appeal has been filed.

Date Filed August 28, 2002

Twenty Days Elapsed September 18, 2002





## CHAMBER OF COMMERCE

May 16, 2018

Mr. Michael MacAskill, Chairman Board of Selectman  
732 Main St.  
Harwich Massachusetts 02645



RE: Creating additional Harwich Port Parking  
Map 14 Parcel F3

Dear Mr. MacAskill,

Our ongoing efforts to market and drive business to Harwich has been paying off. With this increased business and activity comes the need to provide for the parking needs of our local businesses, residents and visitors. With the new Harwich Port Commons building and successful businesses downtown Harwich Port is in desperate need of additional parking.

We have a viable cost effective idea. At the northern end of the Harwich Port Municipal Parking Lot (Map 14 Parcel F3) is an unimproved section. This area is approximately 55' x 200'. This could provide for and additional 40 to 50 cars.

A buffer of trees could be left between the town lot and the home at 27 Pleasant Street as well as the end of the lot where it meets Pleasant Street.

In order to expedite this process, I would propose having our highway department get started as soon as possible. Using a gravel lot with painted lines could be done quickly and efficient for proper drainage.

We must address this issue before the busy season starts. This can be done quickly and at a very reasonable cost. The town owns the land, has the necessary equipment to do the job and fantastic experienced personnel to get it done.

We have an obligation to help and support our local businesses that rely on a very short season to make a living. Our residents and visitors that come to enjoy and live in our beautiful town deserve our very best efforts.

Very truly yours,

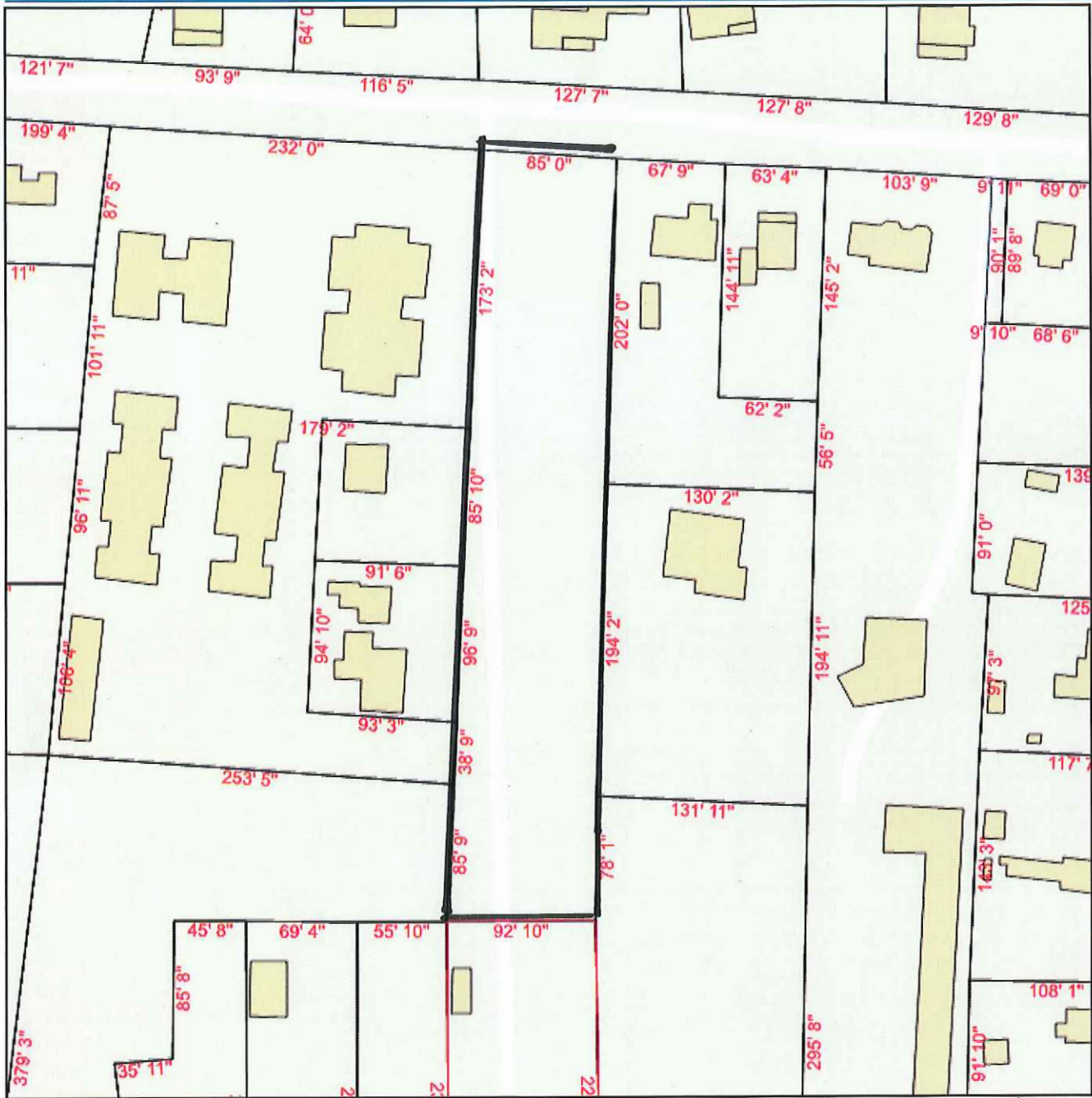
Michael Ulrich, President  
Harwich Chamber of Commerce

## 1 School House Road Harwich MA 02645



DISCLAIMER: Maps, including property and street lines, as well as building locations, was not made from an instrument survey. Locations and distances should not be used for the conveyance of property nor for determining street and property line setbacks.

## 1 School House Road Harwich MA 02645



DISCLAIMER: Maps, including property and street lines, as well as building locations, was not made from an instrument survey. Locations and distances should not be used for the conveyance of property nor for determining street and property line setbacks.



Harwich Port Parking Lot – Schoolhouse Road  
Hatched area is currently wooded



Harwich Port Parking Lot – Schoolhouse Road  
Hatched area is currently wooded



	1	2	3	4	Total
<b>BOARD OF SELECTMEN</b>					
BLANKS	11	8	7	2	28
EDWARD JAMES MCMANUS	276	260	201	164	901
STEVEN J F SCANNELL	14	26	20	9	69
THOMAS E. SHERRY	234	275	233	138	880
WRITE-INS	1	1	0	1	3
	536	570	461	314	1,881
<b>MODERATOR</b>					
BLANKS	81	84	78	32	275
MICHAEL D. FORD	453	484	379	280	1,596
WRITE-INS	2	2	4	2	10
	536	570	461	314	1,881
<b>MONOMOY REGIONAL SCHOOL COMMITTEE MEMBER</b>					
BLANKS	99	108	107	63	377
ROBERT T. RUSSELL	437	459	349	250	1,495
WRITE-INS	0	3	5	1	9
	536	570	461	314	1,881
<b>TRUSTEE, BROOKS FREE LIBRARY</b>					
BLANKS	437	493	388	272	1,590
JOAN A. MCCARTY	393	406	326	222	1,347
KATHLEEN A. REMILLARD	395	417	348	234	1,394
JEANNIE S. WHEELER	382	390	321	214	1,307
WRITE-INS	1	4	0	0	5
	1608	1710	1383	942	5,643
<b>WATER COMMISSIONER - 3 YEAR TERM</b>					
BLANKS	130	135	135	79	479
GARY A. CAREIRO	406	433	326	235	1,400
WRITE-INS	0	2	0	0	2
	536	570	461	314	1,881
<b>WATER COMMISSIONER - 1 YEAR UNEXPIRED TERM</b>					
BLANKS	110	118	107	67	402
JUDITH A. UNDERWOOD	425	448	351	247	1,471
WRITE-INS	1	4	3	0	8
	536	570	461	314	1,881
<b>QUESTION 1. WASTEWATER MANAGEMENT PLAN - PHASE 2</b>					
BLANKS	28	21	9	12	70
YES	377	404	300	206	1,287
NO	131	145	152	96	524
	536	570	461	314	1,881
<b>QUESTION 2. ROAD MAINTENANCE PROGRAM</b>					
BLANKS	34	23	10	11	78
YES	375	410	320	225	1,330
NO	127	137	131	78	473
	536	570	461	314	1,881





**HARWICH  
ASSESSORS  
OFFICE**  
508-430-7503

## Memo

To: Sandy Robinson  
Ann Steidel

From: Donna Molino

Date: May 16, 2018

**RE: Assessor's Department Weekly Report (w/e 5/12/18)**

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1. Town meeting.
2. Processed and reviewed abutter's lists.
3. Processed and reviewed weekly deeds.
4. Processed address changes.
5. Trained staff on subdivisions.
6. Worked on assessor's maps for GIS.
7. Motor vehicle abatements.

Weekly Update for the Community and Cultural Centers  
May 6 –May 12

I am pleased to provide a report on my work at both the Community Center and the Cultural Center for the week running 5/6 to 5/12.

- I worked the last event of ArtWeek. The We Can Pre-Mother's Day Tea had poetry reading by Wilderness Sarchild, author of Old Women Talking and Christine Ernst. The event was free and well received with over 65 participants.
- I meet with the Cape Cod Orchestra regarding tree placement for the approved gift for the conductor.
- I attended a meeting with Town Counsel regarding the Cultural Center contracts and waiver forms for displaying art work in the Library of the building.
- I prepared packets and agenda for the facilities committee meeting held on Friday May 11, 2018.
- Worked the event on Saturday afternoon and evening at the auditorium of the Cultural Center.
- Did necessary set up work for Town meeting on Monday. Attended the Town Meeting and helped facilitate the overflow room including set up and monitoring.
- I worked Town Meeting on Tuesday and prepared the building for the meeting. I needed to reschedule programs from the gym to accommodate the breakdown of the room and equipment on Wednesday.
- I conducted a meeting with the Program Aide for the Cultural Center to go over reservations and bookings for the year.
- I hosted a group that is interested in seeing our gym floor prior to purchasing the floor for Boston University.
- Coordinated Ragnar relay event in the Community Center gym as an overnight program. Sean Libby provided custodial services for the overnight event.
- I continue to work with the Recreation Department and my staff on the relocation plan for the clubs and organizations that use the Community Center gym for the time frame the floor is being resurfaced. Our hope is to use the Cultural Center gym creatively to meet the needs of most of our current groups.

Should you need further information on these weekly activities, please do not hesitate to get in touch with me.

Carolyn Carey, Community Center Director



TOWN OF

HARWICH

*732 Main Street  
Harwich, MA 02645*

CONSERVATION COMMISSION

(508)-430-7538 FAX (508)430-7531

May 16, 2018

To: Harwich Board of Selectmen  
From: Amy Usowski, Conservation Administrator

### **Weekly Report of the Conservation Department**

- Met with potential applicants both in the office and onsite to discuss conservation issues on properties, visited sites currently under construction, issued permits, worked on meeting minutes.
- Conducted site visits in preparation for 5/16 Cons Comm meeting.
- Completed site summaries and Conservation Commission packets for 5/16 Cons Comm hearing.
- Reviewed building and health permit applications to ensure they had nothing to do with Conservation.
- Amy and our AmeriCorps member Emma attended Mass Audubon's Coastal Waterbird Training in Mashpee.
- Met with Mass Division of Marine Fisheries, Mosquito Control, and HCT to go over water flow at the Grassy Pond/Cold Brook culvert.
- Discovered violation near Saquatucket Harbor, and have begun to work with owner on restoration plans.
- Created new pollinator garden at entrance to the Community Gardens.
- Assisted with Herring Count at Hinckley Pond.
- Started looking at department financial status as we are approaching the end of the fiscal year.



# TOWN OF HARWICH

## DEPARTMENT OF PUBLIC WORKS

273 Queen Anne Road • P.O. Box 1543 • Harwich, MA 02645

Telephone (508) 430-7555

Fax (508) 430-7598

### **DPW Activity for period of May 6, 2018 through May 12, 2018**

#### **Highway Maintenance**

- 4 days of catch basin digging
- 4 days street sweeping
- Trash picked up 3 days
- Repaired 8 catch basins
- 2 days of beach cleaning
- Laid out drainage installations on roads scheduled for fall paving
- Received 14 work orders and completed 28 work orders
- Continued coordinating with RH White and National Grid

#### **Vehicle Maintenance**

- Performed routine maintenance on both the Fire Department and Police Department All Terrain Vehicles
- Performed twenty nine repairs on vehicles, small and heavy equipment
- Prepared a trailer for service. Trailer wiring, LED lights, graphics, registration and insurance

#### **Cemetery Maintenance**

- Help set up for town meeting at Community Center
- Turned on water in cemeteries
- Filled collapsed graves in Evergreen Cemetery
- Mowed Town Buildings, Wychmere Overlook, Exchange Park, and two cemeteries

#### **Parks Maintenance**

- Mowed and prepped 7 ball fields for games
- Welding repair on a trash trailer
- Minor fence repairs on ball fields



## **Facility Maintenance**

- Received 26 new work orders and completed 18 work orders from back log
- Continued with repairs to the Saquatucket Harbor sheds - new roofing, siding, Azek trim, windows and doors over the next few weeks
- Provided oversight and management for the Transfer Station roofing and siding, which should be completed this week
- Performed repairs to Town Garden water spigots after a few frozen lines from this past winter
- Coordinating with the roofing contractor for the Fire Department Headquarters
- Completed A/C system at Fire Department Headquarters

## **Disposal Area**

- C&D: 14 loads, 246.96 tons
- MSW: 8 loads, 190.48 tons
- Recycling: 7 loads, 37.16 tons
- Vehicles Recorded: 6,752
- Revenue: \$38,501.80

## **Reception**

- Walk ins: 17
- Telephone calls: 82
- Work orders processed: 30



# Harwich Fire Department



*Fire Suppression*

*Prevention*

*Emergency Services*

Norman M. Clarke Jr., **Chief of Department**

David J. LeBlanc, **Deputy Fire Chief**

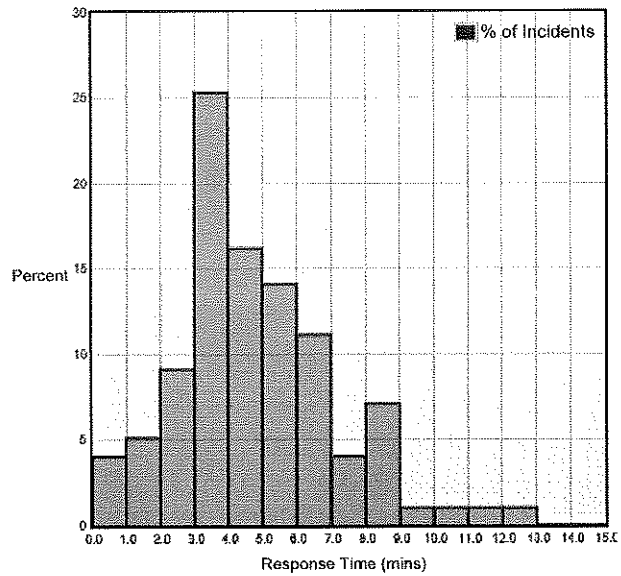
## Fire Prevention – Inspections

Week of May 6 - 11

Inspection Type	
Resale	11
Annual	9
Final	2
Lockbox	1
Liquid Propane	1
Oil Burner	1
Oil Tank	
Pre-Inspection	
Re-Inspection	1
Safety Inspection	2
Town Hall – Plans (hours)	4
Town Hall – Meeting (hours)	1
Tank Truck	
Fire Drills	1
Meetings – Misc	
Joint Inspection	

Incident Response Time Analysis	
Date Range	05/06/2018 to 05/12/2018
Total # of Runs Fitting Criteria	99 runs
Average Response Time	4.3 mins
Service(s)	Harwich Fire Department
Incident Type(s)	All

Response Time	# of Incident Responses	% of Incident Responses
0 mins	4	4%
1 mins	5	5.1%
2 mins	9	9.1%
3 mins	25	25.3%
4 mins	16	16.2%
5 mins	14	14.1%
6 mins	11	11.1%
7 mins	4	4%
8 mins	7	7.1%
9 mins	1	1%
10 mins	1	1%
11 mins	1	1%
12 mins	1	1%
13 mins	0	-
14 mins	0	-
15 mins	0	-



 Report Description

[Back To Filters](#)



Incident Type Report (Summary)  
 From 05/06/18 To 05/12/18  
 Report Printed On: 05/14/2018

Incident Type	Count	% of Incidents	Est. Property Loss	Est. Content Loss	Total Est. Loss	% of Losses
<b>1 Fire</b>						
Brush or brush-and-grass mixture fire (142)	1	1.35%	\$0.00	\$0.00	\$0.00	0.00%
Outside stationary compactor/compacted trash fire (155)	1	1.35%	\$0.00	\$0.00	\$0.00	0.00%
Outside equipment fire (162)	1	1.35%	\$0.00	\$0.00	\$0.00	0.00%
	<b>3</b>	<b>4.05%</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>0.00%</b>
<b>3 Rescue &amp; Emergency Medical Service Incident</b>						
EMS call, excluding vehicle accident with injury (321)	50	67.57%	\$0.00	\$0.00	\$0.00	0.00%
Motor vehicle accident with injuries (322)	1	1.35%	\$0.00	\$0.00	\$0.00	0.00%
Motor vehicle accident with no injuries. (324)	1	1.35%	\$0.00	\$0.00	\$0.00	0.00%
	<b>52</b>	<b>70.27%</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>0.00%</b>
<b>4 Hazardous Condition (No Fire)</b>						
Gasoline or other flammable liquid spill (411)	1	1.35%	\$0.00	\$0.00	\$0.00	0.00%
Gas leak (natural gas or LPG) (412)	2	2.70%	\$0.00	\$0.00	\$0.00	0.00%
Power line down (444)	1	1.35%	\$0.00	\$0.00	\$0.00	0.00%
	<b>4</b>	<b>5.40%</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>0.00%</b>
<b>5 Service Call</b>						
Service Call, other (500)	1	1.35%	\$0.00	\$0.00	\$0.00	0.00%
Lock-out (511)	5	6.76%	\$0.00	\$0.00	\$0.00	0.00%
Smoke or odor removal (531)	2	2.70%	\$0.00	\$0.00	\$0.00	0.00%
Unauthorized burning (561)	1	1.35%	\$0.00	\$0.00	\$0.00	0.00%
	<b>9</b>	<b>12.16%</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>0.00%</b>
<b>6 Good Intent Call</b>						
Good intent call, other (600)	1	1.35%	\$0.00	\$0.00	\$0.00	0.00%
Dispatched and cancelled en route (611)	4	5.41%	\$0.00	\$0.00	\$0.00	0.00%
	<b>5</b>	<b>6.76%</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>0.00%</b>
<b>7 False Alarm &amp; False Call</b>						
Smoke detector activation, no fire - unintentional (743)	1	1.35%	\$0.00	\$0.00	\$0.00	0.00%
	<b>1</b>	<b>1.35%</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>0.00%</b>
<b>Total Incident Count:</b>	<b>74</b>				<b>Total Est. Loss:</b>	<b>\$0.00</b>

Search Criteria	
Dates	From 05/06/2018 To 05/12/2018 (mm/dd/yyyy)
Service	Harwich Fire Department
Staff	All
Apparatus	All
Station	All
Alarm Type	All

<b>Zone/District</b>	All
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 **Report Description**

## Ann Steidel

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**From:** John Rendon  
**Sent:** Wednesday, May 16, 2018 11:20 AM  
**To:** Sandy Robinson; Ann Steidel  
**Cc:** Michelle Morris; William Neiser  
**Subject:** Harbormaster Dept Weekly Report 30 Apr - 13 May

### Operations:

- Responded aboard Marine 77 to report of conch pots outside of Allen Harbor with an excessive amount of rope floating on the surface. Identified & contacted owner of the pots.
- Investigated and confirmed a report of a sunken dinghy on the edge of the Round Cove channel. Returned to mark it with a caution buoy but was unable to locate it again.
- Notified by the HFD of a possible boat in distress off of Wyndemere Bluffs. Responded, but cancelled after it was confirmed that there was no distress.
- Towed a dead seal off the beach at Wyndemere Bluffs and took it to the Transfer Station; IFAW notified and performed a necropsy.
- Launched the new Wixon floating dock at the Route 28 landing with help from the Highway Department. Towed it to the Wixon Landing and installed it.
- Allen Harbor and Herring River channel and no wake buoys were set for the season.
- Saquatucket and Wychmere harbor no wake buoys were set.

### Admin:

- Contacted Homeowners that bid for surplus beach sand along Saquatucket Bluffs to notify them of dredge work starting 5/2/2018.
- One Commercial Slip and one Charter Slip given up for 2018, went to waitlist.
- Ordered Office Trailer from ModSpace, delivery date of 5/15/18; contacted MIIA for Certificate of Insurance listing ModSpace as Additional Insured.
- Obtained estimate from MA Frazier for (7) Portable Toilets confirmed delivery date of 5/24/18.
- Got quote from Sinarama for Float numbers at Saquatucket.
- Sent CO #4 from BTT Marine to Accounting for processing/updating PO #2.
- Sent CO #10, #11, #12 from Eastward Companies to Accounting for processing/updating PO #5.
- Mailed/Faxed Tuna Buyer Permit Applications to dealers.
- Worked on obtaining new boat information from Private Marinas, Yacht Clubs & Boat Rental Entity's for Assessors Office to Assess for Excise Taxes.
- Ordered laptop, jetpack and printer along with screenshare software from Foster for Office Trailer at Harbor, scheduled to install on 5/17.
- Finalized summer staff paperwork for Tax Office and Schedules.
- Prep'd powerpoint presentation & remarks on Article 30 for Town Meeting.
- Submitted request to MA Natural Heritage for extension of plover Time of Year restriction for beach nourishment.

### Meetings:

- Served as member of Harwich Fire oral board for evaluation of candidates for CAPT position.
- Conducted Channel 18 discussion on Article 30 in prep for Town Meeting.
- SAQ Landside Project progress meeting 5/1, 5/8.
- SAQ Marina Project progress meeting 5/3.
- SEIU Contract Negotiations with Administration.
- Attended Pre-Town Meeting dinner sponsored by Chamber of Commerce.
- Attended Town Meeting.

**Maintenance:**

- Barnstable County Dredge on site dredging SAQ Harbor entrance channel; approx 8000 cy.
- Completed Decking, cleats and bumpers on the new Wixon Landing floating dock.
- Had the Wychmere Harbor backflow preventer repaired.
- Pressure washed the bottom of 77A and 77B and painted for the season.
- Began weekly grass mowing at the Town landings.
- Installed bunk slides and guide on posts on the trailer for 77B.
- Replaced worn out chains on channel buoy anchors.

**John C. Rendon**

Harbormaster

Town of Harwich

774 212-6193 (c)

## Health Director Weekly Report Week ending April 26, 2018

Projects-

Inspected participants at the Toast of Harwich.  
 Researched health effects of pet burials on groundwater  
 Wrote statement regarding retail sales of marijuana  
 Attended the department head meeting  
 Attended the Community Development meeting  
 Met with the emergency planner from Barnstable County.  
 Sent out seasonal license renewal reminders.

<u>REAL ESTATE TRANSFER INSPECTION REPORTS</u> 14 Skippers Way 22 Hiawatha Road 2 Federal Lane 87 Julien Road 68 Lovers Lane 50 Long Road 16 Satucket Road	<u>FOOD INSPECTIONS</u> Taste of Harwich Friday 4/27/18 Mad Minnow Hands of Hope Harwich Chamber of Commerce Portside Liquors Szechuan Delight Ideal Weight Loss
<u>SEPTIC SYSTEM PERMITS</u> 97 Chatham Rd. 96 Queen Anne Rd. 16 Satucket Rd. 9 Herring Run Rd. 6 Brothers Ln. 88 Main St. Extension 1280 Orleans Rd. 2 River Rd.	<u>CERTIFICATES OF COMPLIANCE</u> 5 Kettle Pond Drive 69 Pleasant Bay Road

<u>FINAL SEPTIC INSPECTIONS</u> 97 Chatham Rd. 96 Queen Anne Rd. 16 Satucket Rd. 9 Herring Run Rd. 6 Brothers Ln. 88 Main St. Extension 1280 Orleans Rd. 2 River Rd.	<u>BUILDING PERMIT REVIEWS</u> 7 Kendall Ln. 3 Mini Rd. 314 Oak St. 615 Queen Anne Rd. 3 McElway Rd. 6 Tupelo Rd. 181 Headwater Rd. 200 Round Cove Rd. 891 Queen Anne Rd. 97 Bells Neck Rd.
<u>COMPLAINT INSPECTIONS</u> 682 Main Street (site visit) 11 Windjammer (drive-by) 12 Pleasant Valley (follow-up) Hot Stove (Noisy fan behind restaurant) 558 Depot Street (sewage smell in backyard)	<u>CONSULTATIONS</u> Terry McAnulla- responded via email, followed up with phone call- deliver food from restaurants Soil evaluation at 2 Lakeshore Drive

*Meggan Eldredge*



## Ann Steidel

---

**From:** Heinz Proft  
**Sent:** Wednesday, May 16, 2018 9:28 AM  
**To:** Ann Steidel  
**Cc:** Sandy Robinson  
**Subject:** -Natural Resources Weekly report of 05/16/18

### Natural Resources Weekly report 05/16/2018

- \* Hinckley's water level board returned – water level had been dropped.
- \* Herring count with electronic counter >550,000 fish have passed – that already exceeds both the 2016 and 2017 totals.
- \* Eel ramp check – pump running fine. Met with HCT, Conservation, DMF, and Mass. Mosquito control to plan future Grassy pond water level boards.
- \* Inspected west reservoir herring repaired net then began to drop water level in flooded bog.
- \* Saquatucket channel now closed for Shellfishing. Posted signs and updated website.
- \* Compiled Shellfish lab internship posting and application packet. This will be distributed next week.
- \* Contacted Water Resources Services regarding alum treatment RFPs and scheduled meeting with Town Administrator.
- \* Attended Pleasant Bay Alliance workgroup meeting for SNEP grant application.
- \* Re-submitted facilities department request for Shellfish Lab east side door and south side window painting.

Heinz Proft  
*Nat. Resources Director*

Memorandum from Charleen Greenhalgh  
Town Planner  
Town of Harwich

May 16, 2018

To: Christopher Clark, Town Administrator  
From: Charleen Greenhalgh, Town Planner  
Re: Weekly Report – Week of May 7, 2018

This was a particularly busy week. The week included, but was not limited to:

- Finalized the Power Point for the Annual Town Meeting for the motions and back-up information. Had to reach out to others for back-up materials. Many hours were spent on this project.
- Attended the Annual Town Meeting and ran the PowerPoint along with the Acting Assistant Town Administrator, Bob Lawton.
- Made changes to the PowerPoint for Town Meeting following the first night of Town Meeting. Created a slide specific to the Marijuana articles and how people should vote depending upon whether they wanted, or did not want, the retail sales of recreational marijuana.
- Met with an Engineer regarding a potential application.
- Attended a “special” Community Development meeting. We held an extra session to accommodate those who wished to meet with the group. We met with two representatives, regarding three different properties. Two of the discussion we invited Ann Steidel to meet with us as well as Licensing was involved. Good coordination between departments.
- Attended the 2<sup>nd</sup> night of Town Meeting and again ran the PowerPoint with Mr. Lawton. Addressed several questions that came up regarding the zoning amendments. All passed!!
- Met with an Attorney and representative regarding a property in Harwich Port.
- Met with an “upset taxpayer” about several actions that took place at the ATM. He indicated that he had not attended. I listened to his concerns and answered his questions as best I could.
- Prepared for May 10<sup>th</sup> Planning Board Meeting - Reviewed agenda and packets
- Discovered that a legal notice for cases to be held on May 22<sup>nd</sup> was not in the paper. The error was unfortunately on their end. We were able to advertise in a different paper, but had to reschedule the hearings to May 29<sup>th</sup>. We will take care of notifying the abutters, who had already been notified by the applicants.
- Attended the Planning Board
- Completed follow-up of some of the items from the Planning Board meeting.
- Met with others, including abutters, realtors, etc., at the window to answer questions, review pending applications, etc.
- Reviewed other applications and signed off in Accela



# **HARWICH**Police

DEPARTMENT

183 Sisson Road, Harwich, MA 02645

Tel 508-430-7541 Fax 508-432-2530



**DAVID J. GUILLEMETTE**  
Chief of Police

**THOMAS A. GAGNON**  
Deputy Chief

## WEEKLY ACTIVITY REPORT FOR WEEK OF 5/06/18 THROUGH 5/12/18

### PATROL

- 235 Calls and patrol-initiated activity logged
  - 3 arrests
  - 1 Protective custody (alcohol)
  
- 27 motor vehicle stops resulting in:
  - 13 Verbal warnings
  - 14 Written warnings
  
- 5 Motor vehicle accidents investigated

### ADMINISTRATION

- Interviews for position of patrol officer conducted – selection made
- Chief attended chamber's pre-town meeting informational dinner
- Chief attended Southeast Regional Advisory Council meeting (homeland security)
- Command staff attended both nights of town meeting
- Chief spoke on retail marijuana article at town meeting



# TOWN OF HARWICH

## OFFICE OF THE TREASURER/COLLECTOR

732 MAIN STREET, HARWICH, MA 02645

TEL. 508-430-7501 FAX. 508-430-7504

Amy Bullock  
Treasurer / Collector

Nancy Knepper  
Assistant Treasurer/Collector

### Weekly Report to the Board of Selectmen

Week ending May 12, 2018

Along with our regular weekly duties and responsibilities, which include but are not limited to processing payroll, receiving, reporting and depositing tax/water payments and departmental receipts, processing accounts payable checks, assisting Taxpayers and Employees with any requests and other various customer service, the following took place:

#### Weekly collections 5/6-5/12

Tax/Water Collections:	\$238,450.09
Departmental turnovers:	\$424,704.89
Total:	\$663,154.98

#### Weekly Disbursements 5/6-5/12

Accounts Payable	\$1,652,491.45
Payroll (week ending 5/5/18)	\$337,495.89
Total:	\$1,989,987.34

Respectfully submitted,

Amy Bullock, Treasurer/Collector



# Harwich Water Department Weekly Activity Report

Dan Pelletier, Superintendent

## For Week Ending: May 12, 2018

Please see the following highlights from the previous week:

- Waterproof cracked Masonry joints & re-secure alarm system wiring @ Station 2
- Replace Station 1 & Station 3 lighting to LED
- Install new J-Box @ Station 3 for new well level probe
- Replace voltage regulator on Station 11 generator
- Replace photo cell for flag pole & outside light @ T1 vault
- Repair hydrant on Long Pond Drive
- Renew water service @ 36 Hiawatha Rd & 715 Route 28
- Install new water service @ 17 Littlefield Pond Drive
- Repair water service struck by R.H. White
- Cleaned Parking lot @ 412 Route 28 from previous water main break
- Backwash filters @ Bruce Cahoon WTP & Well 10 treatment plant
- Clean Gate boxes & deploy hydrant flushing signs
- Tested medical alarms @ Station T2 & T3
- Continue Water Management Act permit coordination with Mass DEP
- Issue Notice of Award to Robert Our Company for the Lower County Road Project

### Ongoing/Upcoming Items:

- National Grid Crossover project bid preparation
- Remove & Replace access hatch @ Well 6
- Wireless Communications RFP prep
- Hydrant Flushing Begins 5/14/18 7PM-12AM

### Quick Stats

20	+25.45%	+8.22%
*Water Samples Taken	Weekly Change in Pumping	YTD Change in Pumping

\*Off-season bacteria sampling is reduced to the first and last week of each month

### Activities Last Week

Customer Concern	3	Repair/Replace Valve	1
Final Read/Property Transfer	1	Seasonal Turn On	14
Frozen Meter	2	Service Repair	1
Hydrant Repair	1	Site Visit	3
Meter Replacement	4	Water Service Installation	3

### Activities Statistics

	<u>2017</u>	<u>2018WTD</u>	<u>2018YTD</u>
Curb Stop Repair/Renewals	5	0	1
Final Read for Property Transfer	394	12	93
Frozen Water Meter/Services	2	2	22
Hydrant Maintenance/Repairs	1	1	1
Hydrant Installation/Replacement	2	0	3
Markouts	365	0	142
Meter Replacement	461	4	83
Meter Installation <i>new accounts</i>	39	0	11
Seasonal Turn On/Off	1126	14	553
Water Main Repairs	5	0	2
Water Service Installation <i>new</i>	40	0	4
Water Service Renewal	47	0	5
Service Repair/Site Visit <i>general</i>	194	7	129



# Harwich Water Department Weekly Activity Report

Dan Pelletier, Superintendent

## For Week Ending: May 5, 2018

Please see the following highlights from the previous week:

- Re-pipe & mount new outside light & motion sensor @ Station 2
- Install new plug for Well 10 sump pump, remount occupancy permit, install New LED flood light & motion sensor above garage door, cement abandoned masonry penetration
- Install new downspouts, J-Box for well level probe & associated conduit @ Station 6
- Install new level probe @ Well M1, J-Box @ Station 8 & Station 2
- Cut & Caps services @ 304 & 310 Pleasant Lake Ave & 7 Uncle Wills Rd
- Install new water service @ 9 Glen Rd
- Renew water service @ 5 Glen Rock Rd & 3 Ocean Ave
- Trench Paving- Various locations
- Water service repair @ 6 Mabel Canto Way
- Calibrate Cl2 analyzers, check iron removal @ Bruce Cahoon Plant-95%
- Clean/Vacuum Gate boxes
- PeopleGIS Training
- Quarterly Billing Rate Hearing 5/4/18

### Ongoing/Upcoming Items:

- National Grid Crossover project bid preparation
- Issue NOA for Lower County Road Project
- Continue WMA Permit Process
- Water Main Flushing 7pm-12am Starting 5/14/18
- Remove & Replace access hatch @ Well 6
- Wireless Communications RFP prep
- Quarterly Billing Rate hearing 5/4 @ 7am Griffin Room

### Quick Stats

<b>18</b>	<b>+10.26%</b>	<b>+8.61%</b>
*Water Samples Taken	Weekly Change in Pumping	YTD Change in Pumping

\*Off-season bacteria sampling is reduced to the first and last week of each month

### Activities Last Week

Final Read for Property Transfer	2	Seasonal Turn On	19
Markouts	9	Turn On Service	1
Meter Installation	1	Water Service Installation	3
Meter Replacement	5		

### Activities Statistics

	<u>2017</u>	<u>2018WTD</u>	<u>2018YTD</u>
Curb Stop Repair/Renewals	5	0	1
Final Read for Property Transfer	394	2	81
Frozen Water Meter/Services	2	0	20
Hydrant Maintenance/Repairs	1	0	0
Hydrant Installation/Replacement	2	0	3
Markouts	365	9	142
Meter Replacement	461	5	79
Meter Installation <i>new accounts</i>	39	1	11
Seasonal Turn On/Off	1126	19	539
Water Main Repairs	5	0	2
Water Service Installation <i>new</i>	40	0	4
Water Service Renewal	47	0	5
Service Repair/Site Visit <i>general</i>	194	1	122