



4/27/12

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April 26, 2012

Glenda Velez - CIP
U.S. Environmental Protection Agency - Region 1
5 Post Office Square – OEP06-01
Boston, MA 02109-3912

Fred Civian
Massachusetts Department of Environmental Protection
One Winter Street - 5th Floor
Boston, MA 02108

**Subject: Annual Update - NPDES Phase II General Permit
Town of Sandwich Stormwater Management Plan: Year 9 Update**

Dear U.S. EPA and MaDEP:

As required under the NPDES Stormwater General Permit, the Town of Sandwich hereby submits this annual update of the Town's Stormwater Management Plan (SMP). This report is a continuation of the original 5-year permit issued for the Town of Sandwich. During the ninth year, the Town continued many efforts implemented in the initial permit and strove to meet goals that were planned but not met within the first five years. An update of Year 9 accomplishments are listed below and shown in the attached tables.

Year 9 Update

The Town of Sandwich continues to be very proactive in the field of stormwater management and has successfully fulfilled nearly all of its goals established in its Stormwater Management Plan over the 9-year period.

This Annual Update provides a look at major accomplishments, new programs and goals and the status of goals that have not been met as scheduled. Below is a summary of Year 9 implementation.

Major Ninth Year Accomplishments (Spring 2011 - Winter 2012)

Below is a list of some of the significant goals accomplished over the past year. Further details and illustrations of these accomplishments are show in the attached appendix.

Stormwater Mitigation of Mill Creek

Building on an effort that started back in 1990, the Town of Sandwich has continued implementing BMP retrofits through another state grant (319 – Non-point Source Pollution). Construction of the first, second, and third phases are complete and

operational. The BMPs installed by this program mitigate stormwater pollution entering Mill Creek, a tributary of Sandwich Harbor. The grant also includes an educational aspect, actively involving local students with stormwater matters.

Shellfishing had been prohibited by the State at Sandwich Harbor since 1985 due to bacteriological contamination. Starting with illicit detection inspection in 1990 and continuing with Coastal Pollution Remediation (CPR) grants and now the 319 grant, the Town continues to actively mitigate stormwater impacts in the Town of Sandwich. The Town's efforts to abate pollution, including stormwater mitigation, have resulted in the recent reopening of the shellfish beds by the Division of Marine Fisheries.

Also this year the Town completed design work for stormwater treatment improvements in the historic Jarvesville section of old Sandwich village. This area also drains to Sandwich Harbor. Funding was being provided by the United States Department of Agriculture's Natural Resource Conservation Service. Construction will proceed as funding is secured.

In addition to the above work, Sandwich's Natural Resource Department is seeking funds to study and restore Brady's Island Marsh, which is connected to Mill Creek. The study will focus on identifying pollution sources impacting the marsh and methods to rehabilitate the marsh.

Commencement of Comprehensive Water Resources Management Plan Development

The Town of Sandwich has continued Comprehensive Water Resources Management Planning to address water resource issues across Town, including stormwater management. In addition to stormwater, the work will assess and develop solutions for wastewater and other potential pollution sources. The work is primarily funded through a legal settlement with a military contractor that operated on the Massachusetts Military Reservation and impacted groundwater resources in Town. The Town's consultant has made significant progress on the first phase of this work, the Needs Assessment. It is expected that significant progress will be made over the next year.

Environmental Exposition at Sandwich High School

The Engineering Department attends an Environmental Expo at Sandwich High School each year to view projects completed by the senior class. The Engineering Department assists students throughout their project period by providing mapping and stormwater information related to their local projects.

Sandwich Elementary School Water Festival

The Town continues to participate in Water Festivals held by the Cape Cod Commission and Americorps Cape Cod. These annual events educate elementary students about stormwater impacts and methods to minimize these impacts.

Household Hazardous Products Collection

The Town collaborates annually with four other neighboring communities to provide opportunities for residents to properly dispose of household hazardous products. This

reduces the amount of hazardous material released to the environment, including water resources.

Municipal Solid Waste Disposal Enhancements

This past year, the Town implemented a Pay-As-You-Throw program at the Solid Waste Transfer Station. This new program requires users to pay for each bag of general trash disposed of. This, together with improvements to the recycling center has reduced the Town's municipal solid waste stream and increased recycling. Reduced solid waste and increased recycling may result in local environmental benefits as residents become more aware of solid waste disposal and environmentally conscious. The Department of Public Works also distributed compost bins for home composting and aired "Home Composting - Turning Your Spoils to Soil" on local TV (a MassDEP DVD).

Community Pride Day

The Town of Sandwich continues the annual Community Pride Day where residents participate in the cleanup of the Town. The DPW distributes equipment to assist in the cleanup of trash and identifies locations where residents can focus their efforts, such as at walking trails, roadsides, beaches, marshes and along shorelines. This event helps prevent trash from entering our valuable water bodies.

Stormwater Inspections and Monitoring

The Town continues to monitor erosion control at developments and inspect illicit connections throughout town as part of its SMP. The Town's enforcement of this program has effectively cleaned up many sites, minimizing impacts to the Town's drainage system and water bodies.

Stormwater Management Plan on Display

The Stormwater Management Plan is on display on the Town's web site for public viewing. Additionally, the Town's GIS allows the public to pinpoint specific stormwater problems and relay this information via e-mail to the Department of Public Works. The e-mail shows a map and ID number of the drainage facility so the DPW can quickly respond to any drainage issues. This process also allows accurate record keeping by the DPW.

Water Quality Groups

The Town of Sandwich is proactive in matters related to water quality in Sandwich and on Cape Cod. The Town has many public officials and volunteers actively involved with water quality committees including but not limited to the Sandwich Water Quality Advisory Board, Mass Estuaries Program, Popponesset Bay State DEP Pilot Intra-municipal Work Group and 3 Bays Initiative.

Status of Goals for Year 9

Similar to the original table submitted for the NPDES General Permit, the attached table shows goals proposed for all Six Control Measures. This updated table reflects new goals and the status of Year 1 through 9 goals. The yellow highlighted cells represent goals scheduled and met in each season of respective years. Words highlighted in red represent

goals that have not yet been reached. New goals mentioned earlier have also been included in the table.

The attached appendix shows several of the actions performed by the Town to meet the Year 9 goals listed in the table.

Overall Status of 9-Year Permit Term

As can be seen in the attached table, almost all of the goals in the Town's SMP have been met over the permit period. It's important to note that several new goals were added to the Six Control Measures as the SMP evolved. Goals that were not achieved are shown below. In all instances, these goals will be accomplished in future years, as identified in the table. Note: Some of the goals overlap in the Six Control Measures.

Achieved Goals of Six Control Measures – Year 9

5.1 Public Education & Outreach

1k. Catch Basin Stencils

Through assistance from Americorps Cape Cod, the Town fastened approximately 100 storm drain markers and distributed 500 door hangers in the environmentally sensitive Town Neck area of Sandwich, which borders Mill Creek and Sandwich Harbor.

Unmet Goals of Six Control Measures

5.4 Construction Stormwater Runoff Control

4g. Recommended BMP's – Future Goal

The Town requires developers to design drainage facilities using BMP's. The Town had anticipated the Cape Cod Commission obtaining a grant to create a list of "Cape Cod BMP's" to distribute to developers. Since the grant was not awarded, the Town has begun to develop its own brochure and list of BMP's. This work is underway and is anticipated to be completed in the next permit year.

4i. Erosion Control Guidelines – Future Goal

The Town has begun to update its current Erosion Control Guideline to reflect current BMP practices and design. This guideline will be available for developers and homeowners. The guideline will also complement enforcement letters for non-compliance. This work is underway and is anticipated to be completed in the next permit year.

5.5 Post Construction Stormwater Management

5f. Recommended BMP's – Future Goal. See Unmet Goal 5.2, 4g above.

5h. Erosion Control Guidelines – Future Goal. See Unmet Goal 5.2, 4.i above.

Future Stormwater Management Plan & Permit

As mentioned above, the Town plans to complete the remaining goals of the SMP during the next permit and will continue implementing most of the SMP goals annually.

The Town will add to its SMP goals as necessary to meet compliance requirements of new permits issued by EPA and DEP. Several of the preliminary requirements for the new permit listed in the EPA letter dated August 3, 2007 are goals that the Town of Sandwich has already implemented. The Town anticipates that it will be able to comply with the others as staffing and funding becomes available.

Conclusion

The Town of Sandwich's accomplishments over the permit period meet or exceed nearly all of the scheduled goals. Additionally, new goals have been created to further enhance the Town's Stormwater Management Plan. We trust that these accomplishments will satisfy the Massachusetts Department of Environmental Protection and the United States Environmental Protection Agency requirements for this permit. Please contact Sam Jensen of the Sandwich Engineering Department if you have any questions or require further information regarding this Annual Update.

Sincerely,



Samuel J.P. Jensen, P.E.
Assistant Town Engineer

Encl.

cc: G. Dunham, Town Manager
P. Tilton, DPW Director, Town Engineer

APPENDIX

YEAR 9 UPDATE

- **USDA-NRCS GRANT – SANDWICH HARBOR STORMWATER MITIGATION**
- **STATE 319 GRANT - STORMWATER MITIGATION OF MILL CREEK**
- **COMPREHENSIVE WATER RESOURCES MANAGEMENT PLAN**
- **COMMUNITY PRIDE DAY – TRASH CLEANUP**
- **HOUSEHOLD HAZARDOUS PRODUCTS COLLECTION**
- **WET & WILD FESTIVAL**



BMP ID #	PERMIT YEAR ONE				PERMIT YEAR TWO				PERMIT YEAR THREE				PERMIT YEAR FOUR				PERMIT YEAR FIVE				PERMIT YEAR 6 ACHIEVEMENTS	PERMIT YEAR 7 ACHIEVEMENTS	PERMIT YEAR 8 ACHIEVEMENTS	PERMIT YEAR 9 ACHIEVEMENTS	STATUS																							
	Spring 03	Summer 03	Fall 03	Winter 03-04	Spring 04	Summer 04	Fall 04	Winter 04-05	Spring 05	Summer 05	Fall 05	Winter 05-06	Spring 06	Summer 06	Fall 06	Winter 06-07	Spring 07	Summer 07	Fall 07	Winter 07-08					Goals	Comments																						
5.1: Public Education & Outreach																																																
1a																											Current Educational Brochures	Brochures available at Town buildings and distributed at Stormwater events. Earth Day Events.																				
1b																											Development Review	Continue to enforce stormwater and erosion regulations during development review.																				
1c																											Public Display of Stormwater Mgmt Plan	Displayed on Town web site and at Public Library.																				
1d																											Public Meeting	Held Public Meeting. Updated Board of Selectmen on SMP - BoS endorsed continuation.																				
1e																											Proposed Educational Brochure	Continue to distribute brochures and educational information.																				
1f																											Outfall & Catch Basin ID & Mapping	GIS Drainage Layer is complete. Continue drainage updates.																				
1g																											Web Site Information	SMP is displayed on web site. Future Stormwater information to be displayed on web.																				
1h																											Educational Festival	Participated in Water Festivals at Elementary Schools w/ County and AmeriCorps.																				
1i																											Educate DPW Employees	Educated DPW employees about disposal and containment of hazardous wastes																				
1j																											Educational Video	AmeriCorps Cape Cod w/ Stormwater video in Sandwich complete																				
1k																											Catch Basin Stencils	Placing approx 100 CB markers & 500 door hangers in Town Neck area during summer.																				
1l																											Stormwater Posters	Displayed 4 stormwater posters in several Town offices.																				
1m																											Student Involvement	Assisted Environmental Science Classes at High School.																				
1n																											Stormwater Committee	Project Storm team continues to meet to discuss stormwater and implement Phase II Regs																				
1o																											Environmental Expo Review Team	Member of Environmental Expo Review Team for Sandwich High School																				
5.2: Public Involvement & Participation																																																
2a																											Development Review	Continue to enforce stormwater and erosion regulations during development review.																				
2b																											Public Meeting	Held Public Meeting. Updated Board of Selectmen on SMP - BoS endorsed continuation.																				
2c																											Public Display of Stormwater Mgmt Plan	Displayed on Town web site and at Public Library.																				
2d																											Proposed Educational Brochure	Continue to distribute brochures and educational information.																				
2e																											Illicit Discharge Identification	Continued inspection of potential illicit connections.																				
2f																											Outfall & Catch Basin ID & Mapping	W/ AmeriCorps, identified over 2,500 CB's and outfalls w/ GPS. Report is available. GIS complete.																				
2g																											Water Monitoring Program	Health Dept performs annual sampling.																				
2h																											Educational Video	AmeriCorps Cape Cod w/ Stormwater video in Sandwich complete																				
2i																											Educational Festival	Participated in Water Festivals at Elementary Schools w/ County and AmeriCorps.																				
2j																											Student Involvement	Taught HS class, interacted w/ students on projects & involved them with data collection.																				
2k																											Stormwater Committee	Formed Cape-wide group w/ CCC to develop & distribute educational info related to stormwater																				
5.3: Illicit Discharge Detection & Elimination																																																
3a																											Household Hazardous Waste Program	Continue to distribute info and schedule household hazardous waste collection days w/ County.																				
3b																											Sandwich Village Stormwater Assessment	Cont'd using Town funds/grants to mitigate stormwater. Completed construction of 319 grant.																				
3c																											Illicit Discharge & Dumping Identification	Continued inspections of illicit discharges. Inspected and issued notices to sump pump owners.																				
3d																											Catch Basin Cleaning	Continue to clean & monitor CB conditions. GIS drainage layer complete.																				
3e																											Outfall & Catch Basin ID & Mapping	W/ AmeriCorps, identified over 2,500 CB's and outfalls w/ GPS. Report is available. GIS complete.																				
3f																											Educational Information	Displayed posters & distributed brochures to public & developers. Earth Day Activities.																				
3g																											Allowable Non-Stormwater Discharges	Will continue to search for non-stormwater discharges that may be significant polluters.																				
3h																											Town Bylaw - Illegal Disposal	Town By-law includes illegal disposal law and fines. Will continue to update regs as necessary																				
3i																											Water Sampling	Town continues sampling to monitor water quality improvements and to use for stormwater grants.																				

Note: Many of the BMP's above will continue beyond the initial 5-year permit period.
 = Goals completed in the season & year shown above. Words in Red = goals not accomplished under the five year permit.



BMP ID #	PERMIT YEAR ONE				PERMIT YEAR TWO				PERMIT YEAR THREE				PERMIT YEAR FOUR				PERMIT YEAR FIVE				PERMIT YEAR 6 ACHIEVEMENTS	PERMIT YEAR 7 ACHIEVEMENTS	PERMIT YEAR 8 ACHIEVEMENTS	PERMIT YEAR 9 ACHIEVEMENTS	STATUS	
	Spring 03	Summer 03	Fall 03	Winter 03-04	Spring 04	Summer 04	Fall 04	Winter 04-05	Spring 05	Summer 05	Fall 05	Winter 05-06	Spring 05	Summer 05	Fall 05	Winter 05-06	Spring 07	Summer 07	Fall 07	Winter 07-08					Goals	Comments
5.4: Const. Stormwater Runoff Control																										
4a																									Town Bylaw - Driveway Regulation	Continue to enforce driveway regulations to minimize stormwater impacts.
4b																									Existing Laws & Regulations	Continue to enforce stormwater and erosion regulations and will evaluate need for updates.
4c																									Educational Info & Public Participation	Distributed & displayed educational information. Earth Day Activities. Water & Sewer article.
4d																									Development Review	Continue to enforce stormwater and erosion regulations during development review.
4e																									Consideration of Public Information	Public notifies DPW of drainage issues via GIS. Town will solicit input on SMP and from web site.
4f																									Site Inspections	Town officials continue to inspect & enforce regulations related to stormwater & erosion control.
4g																									Recommended BMP's	Required BMP's thru development review. Town will complete BMP List for developers.
4h																									Zoning Bylaw - Erosion Control	Erosion control law in place and being enforced by site visits. Update as necessary.
4i																									Erosion Control Guidelines	Will include with recommended BMP List for distribution. Old version is being updated.
4j																									Subdivision Rules & Regulations	Made changes to stormwater regs in the Subdivision Rules & Regulations. Update as necessary.
4k																									Water Sampling	Health Department/County sample water quality annually. DPW sampled Mill Creek for 319 Grant.
4l																									Stormwater Posters	Displayed 4 Stormwater posters in Town buildings.
5.5: Post-Construction Stormwater Management																										
5a																									Growth Incentive Zones - Stormwater Plans	Working with CCC on Growth Centers and Local Comprehensive Plan to address these issues.
5b																									Existing Laws and Regulations	Continue to enforce stormwater and erosion regulations and will evaluate need for updates.
5c																									Educational Info & Public Participation	Distributed & displayed educational information. Earth Day Activities. Water & Sewer article.
5d																									Development Review	Continue to enforce stormwater and erosion regulations during development review.
5e																									Catch Basin Cleaning	Continue to clean & monitor CB conditions. Will include Maintenance Plan on GIS.
5f																									Recommended BMP's	Required BMP's thru development review. Town will complete BMP List for developers.
5g																									Zoning Bylaw - Erosion Control	Erosion control law in place and being enforced by site visits. Will update w/ BMP focus
5h																									Erosion Control Guidelines	Will include with recommended BMP List for distribution. Old version is being updated.
5i																									Subdivision Rules & Regulations	Made changes to stormwater regs in the Subdivision Rules & Regulations. Update as necessary.
5j																									Water Sampling	Health Department and County continue to sample water quality and report to DPW.
5k																									Stormwater Posters	Displayed 4 Stormwater posters in Town buildings.
5.6: Pollution Prevention & Good Housekeeping in Municipal Operations																										
6a																									Stormwater Mitigation w/ BMP's	Cont'd using Town funds/grants to mitigate stormwater. Completed construction of 319 Grant
6b																									Pollution Control & Mitigation Measures	Installed fuel spill cleanup kit. Will continue pollution control at DPW and Town buildings.
6c																									BMP Projects on Town-Owned Land	Will continue to implement BMP's at townwide projects.
6d																									DPW: On-Site Stormwater Containment	DPW inspects Transfer Station drainage facilities quarterly and entire site annually.
6e																									DPW Environmental Audit - EPA Program	Constructed Salt Shed and Interior washing area in DPW Garage.
6f																									DPW Maintenance Program	DPW uses GIS to assist w/ catch basin maintenance records
6g																									DPW Training	Employees are trained about stormwater impacts. DPW attends stormwater seminars
6h																									Tree Planting Program	Town has completed a Tree Inventory and Management Plan for Sandwich Village.
6i																									DPW Brochures	DEP and other agency brochures/FAQ are made available to employees/public. On web.

Note: Many of the BMP's above will continue beyond the initial 5-year permit period.
 = Goals completed in the season & year shown above. **Words in Red** = goals not accomplished under the five year permit.

DEPARTMENT OF PUBLIC WORKS SANDWICH HARBOR STORMWATER MITIGATION SANDWICH, MASSACHUSETTS

JULY 2011

THIS DESIGN FUNDED BY A NRCS/ARRA GRANT

SHEET NO.	TITLE
1	COVER SHEET
2	LEGEND, ABBREVIATIONS & GENERAL NOTES
3	SITE #1
4	SITE #9, #10 & #11
5	SITE #12 & #13
6	SITE #14
7	SITE #25
8	DETAILS



SCALE: 1:25000

Tighe & Bond
Consulting Engineers

100 YEARS
1911-2011



COMPLETE SET 8 SHEETS

GENERAL NOTES:

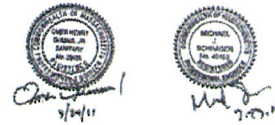
- UTILITIES SHOWN ARE APPROXIMATE ONLY AND ALL UTILITIES MAY NOT BE SHOWN. PER MASSACHUSETTS LAW, CONTRACTOR SHALL CALL 1-888-380-SAFE AND THE TOWN OF SANDWICH PRIOR TO ANY UNDERGROUND EXCAVATION ON SITE. THE DIG-SAFE SERVICE WILL FIELD LOCATE AND MARK UNDERGROUND UTILITIES IN THE FIELD.
- ALL EXCAVATION MUST FOLLOW OSHA, MASSACHUSETTS, AND LOCAL REGULATIONS FOR SAFETY. ALL TRENCH EXCAVATIONS EXCEEDING 3 FEET OF DEPTH WILL REQUIRE A TRENCH PERMIT FROM THE LOCAL TOWN OR CITY PRIOR TO ANY EXCAVATION.
- ALL MATERIALS REMOVED FOR CONSTRUCTION OF THESE IMPROVEMENTS SHALL BE PROPERLY TRANSPORTED AND DISPOSED OF LEGALLY.
- FIELD VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION. IF FIELD CONDITIONS ARE OBSERVED THAT VARY SIGNIFICANTLY FROM THOSE SHOWN ON THESE DRAWINGS, IMMEDIATELY NOTIFY THE ENGINEER IN WRITING FOR RESOLUTION OF THE CONFLICTING INFORMATION.
- ALL FUEL, OIL AND OTHER HAZARDOUS MATERIALS SHALL BE STORED WITHIN A SECURED SECONDARY CONTAINMENT STRUCTURE WHEN NOT IN USE.
- PLACE SILT SACK OR APPROVED EQUAL, UNDER CATCH BASIN GRATES IN MONITY OF CONSTRUCTION ACTIVITIES.
- LOAM AND SEED ALL DISTURBED AREAS UNLESS OTHERWISE NOTED.
- BOLD LINES AND TEXT INDICATE PROPOSED WORK.
- LIGHT LINES AND TEXT INDICATE APPROXIMATE EXISTING CONDITIONS.
- TOPOGRAPHY AND EXISTING CONDITIONS DEPICTED ARE THE RESULT OF AN ON THE GROUND FIELD SURVEY CONDUCTED BY ROMANELLI ASSOCIATES IN FEBRUARY AND MARCH 2011.
- THE WETLAND DELINEATION SHOWN WAS CONDUCTED BY ROMANELLI ASSOCIATES IN FEBRUARY AND MARCH 2011.
- THE HORIZONTAL COORDINATE SYSTEM USED WAS ASSUMED. THE VERTICAL DATUM IS NAVD 88.
- THE AREAS MARKED AS A PROTECTED AREA IS AN UNDEVELOPED COASTAL BARRIER THAT IS AN OTHERWISE PROTECTED AREA AS SHOWN ON THE MAP ENTITLED "1000 INSURANCE RATE MAP, TOWN OF SANDWICH, MASSACHUSETTS BARNSTABLE COUNTY, PANEL 2 OF 11" DATED JULY 2, 1992.
- REFERENCE PLANS:
 - PLAN ENTITLED "PLOT PLAN - 12 HARBOR STREET" DRAWN BY FALMOUTH ENGINEERING DATED MARCH 1, 2007
 - PLAN ENTITLED "SITE PLAN 15 CANARY STREET" DRAWN BY DAVID C. THULIN, PE, PLS DATED SEPTEMBER 22, 2010
 - PLAN ENTITLED "SITE PLAN - PROPOSED SITE IMPROVEMENTS 2 BOARDWALK ROAD" DRAWN BY DAVID C. THULIN, PE, PLS DATED NOVEMBER 8, 2010
 - PLAN ENTITLED "PLAN TO ACCOMPANY N.O.I. 33 JARVIS STREET" DRAWN BY DAVID C. THULIN, PE, PLS DATED SEPTEMBER 16, 2009
 - PLAN ENTITLED "PROPOSED SITE PLAN 86 WOOD AVENUE" DRAWN BY DAVID C. THULIN, PE, PLS DATED FEBRUARY 15, 2009
- GROUND WATER ELEVATIONS ARE ESTIMATED SEASONAL HIGH GROUND WATER BASED UPON DIRECT OBSERVATIONS MADE IN THE FIELD.
- ALL PAVEMENT CUTS ARE TO BE MADE BY SAW CUTTING ONLY.
- FIELD FABRICATED CONNECTIONS OF CMP ARE PROHIBITED. ONLY MANUFACTURED CONNECTIONS WILL BE ACCEPTED: SHOP DRAWINGS WILL BE REQUIRED FOR EACH CONNECTION.
- CONTRACTOR TO VERIFY THAT THERE ARE NO SEPTIC SYSTEMS WITHIN 50' OF INFILTRATION BASINS.

LEGEND

	PROPERTY LINE
	TREE LINE
	LIMIT OF CLEARING
	UNDERGROUND ELECTRIC
	EXISTING WATER MAIN
	PROPOSED WATER MAIN
	50'-FOOT BUFFER ZONE
	100'-FOOT BUFFER ZONE
	INDEX CONTOUR
	INTERMEDIATE CONTOUR
	PROPOSED CONTOUR
	EXISTING FENCE
	PROPOSED FENCE
	EROSION CONTROL BARRIER
	APPROXIMATE WETLAND LIMIT LINE
	PROPOSED BITUMINOUS CONCRETE PAVEMENT
	PROPOSED FLEXIBLE POROUS PAVEMENT
	UTILITY POLE
	CATCH BASIN
	WETLAND RESOURCE AREA
	BOUNDARY FLAG
	WETLAND AREA
	PROPOSED HYDRANT
	EXISTING HYDRANT
	EXISTING WATER GATE
	PROPOSED WATER GATE
	TEST PIT LOCATION
	IRON PIN FOUND
	PROPERTY BOUND

ABBREVIATIONS

BIT	BITUMINOUS
BND	BOUND
C	CONDUIT
CAMP	CONGREGATED ALUMINUM METAL PIPE
CB	CATCH BASIN
CI	CAST IRON PIPE
CL	CLASS
CONC	CONCRETE
DH	DRILL HOLE
DI	DUCTILE IRON PIPE
DIA	DIAMETER
DMH	DRAIN MANHOLE
EL	ELEVATION
EW	EACH WAY
FT	FOOT
HTD	HYDRANT
IB	INFILTRATION BASIN
INV	INVERT
MIN.	MINIMUM
ON CENTER	ON CENTER
PVC	POLYVINYLCHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
REINF.	REINFORCED
REQ'D	REQUIRED
ROW	RIGHT OF WAY
SCH	SCHEDULE
TYP	TYPICAL
UP	UTILITY POLE
WG	WATER GATE



TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, JUDGEMENT, AND RELIEF, THESE CONSTRUCTION DRAWINGS AND SPECIFICATIONS MEET APPLICABLE NRCS STANDARDS AND SPECIFICATIONS.

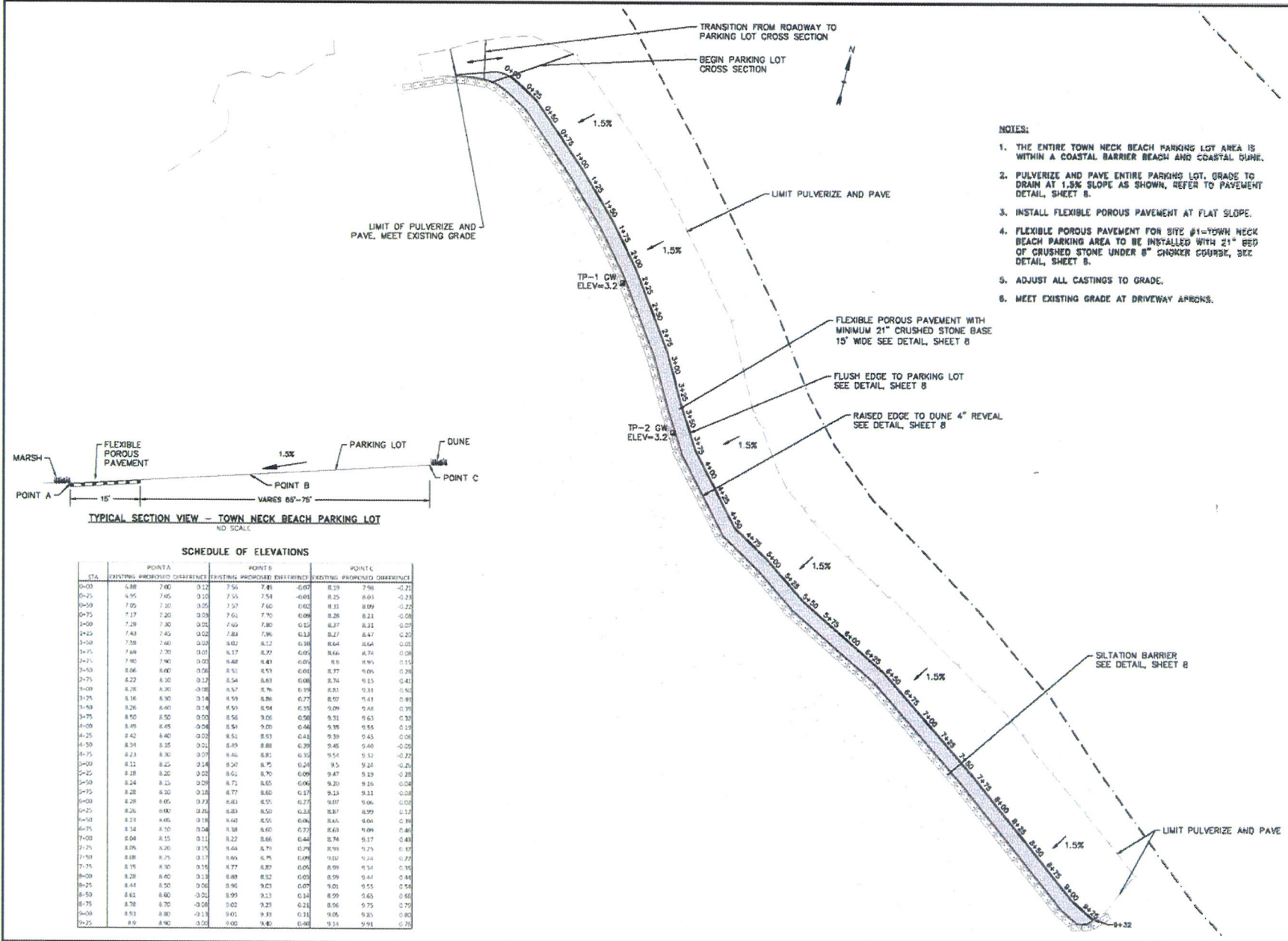


Town of Sandwich

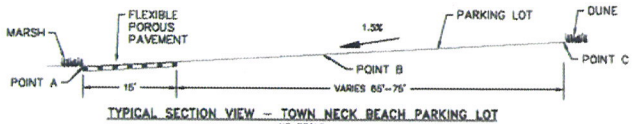
Sandwich Harbor Stormwater Mitigation

Sandwich, Massachusetts

DATE	DESCRIPTION
PROJECT NO.	5848
FILE	LEGNOTES
DRAWN BY	MNEY
CHECKED	MNEY
APPROVED BY	CHC
LEGEND, ABBREVIATIONS AND GENERAL NOTES	
SCALE: NO SCALE	
SHEET 2 OF 8	



- NOTES:**
1. THE ENTIRE TOWN NECK BEACH PARKING LOT AREA IS WITHIN A COASTAL BARRIER BEACH AND COASTAL DUNE.
 2. PULVERIZE AND PAVE ENTIRE PARKING LOT. GRADE TO DRAIN AT 1.5% SLOPE AS SHOWN, REFER TO PAVEMENT DETAIL, SHEET 8.
 3. INSTALL FLEXIBLE POROUS PAVEMENT AT FLAT SLOPE.
 4. FLEXIBLE POROUS PAVEMENT FOR SITE #1-TOWN NECK BEACH PARKING AREA TO BE INSTALLED WITH 21" BED OF CRUSHED STONE UNDER 8" CHOKER COURSE, SEE DETAIL, SHEET 8.
 5. ADJUST ALL CASTINGS TO GRADE.
 6. MEET EXISTING GRADE AT DRIVEWAY APRONS.



SCHEDULE OF ELEVATIONS

STA.	POINT A		POINT B		POINT C				
	EXISTING PROPOSED DIFFERENCE	EXISTING PROPOSED DIFFERENCE	EXISTING PROPOSED DIFFERENCE	EXISTING PROPOSED DIFFERENCE	EXISTING PROPOSED DIFFERENCE	EXISTING PROPOSED DIFFERENCE			
0+00	6.88	7.00	0.12	7.56	7.48	-0.07	8.19	7.98	-0.21
0+25	6.95	7.05	0.10	7.55	7.54	-0.01	8.25	8.01	-0.24
0+50	7.05	7.20	0.15	7.57	7.60	0.03	8.31	8.09	-0.22
0+75	7.17	7.20	-0.03	7.61	7.70	0.09	8.28	8.21	-0.08
1+00	7.29	7.30	0.01	7.64	7.80	0.16	8.37	8.22	-0.15
1+25	7.43	7.45	0.02	7.68	7.96	0.28	8.27	8.47	0.20
1+50	7.58	7.60	0.02	8.02	8.12	0.10	8.64	8.64	0.00
1+75	7.68	7.70	0.02	8.17	8.29	0.12	8.66	8.74	0.08
2+00	7.80	7.80	0.00	8.48	8.43	-0.05	8.8	8.96	0.16
2+25	8.06	8.00	-0.06	8.51	8.53	0.01	8.77	9.06	0.29
2+50	8.22	8.10	-0.12	8.54	8.63	0.09	8.74	9.15	0.41
2+75	8.28	8.20	-0.08	8.57	8.76	0.19	8.81	9.31	0.50
3+00	8.36	8.30	-0.06	8.59	8.86	0.27	8.80	9.41	0.61
3+25	8.26	8.40	0.14	8.59	8.94	0.35	8.99	9.44	0.45
3+50	8.50	8.50	0.00	8.56	9.06	0.50	9.31	9.63	0.32
3+75	8.49	8.45	-0.04	8.54	9.20	0.66	9.35	9.55	0.19
4+00	8.42	8.40	-0.02	8.51	8.91	0.41	9.39	9.45	0.06
4+25	8.24	8.25	0.01	8.49	8.88	0.39	9.45	9.60	0.15
4+50	8.23	8.30	0.07	8.46	8.81	0.35	9.54	9.52	-0.02
4+75	8.11	8.25	0.14	8.50	8.75	0.25	9.5	9.24	-0.26
5+00	8.18	8.20	0.02	8.61	8.70	0.09	9.47	9.19	-0.28
5+25	8.24	8.15	-0.09	8.71	8.65	-0.06	9.20	9.16	-0.04
5+50	8.28	8.10	-0.18	8.77	8.60	-0.17	9.24	9.11	-0.13
5+75	8.28	8.05	-0.23	8.81	8.55	-0.27	9.07	9.06	-0.01
6+00	8.26	8.00	-0.26	8.83	8.50	-0.33	8.87	8.99	0.12
6+25	8.23	8.05	-0.18	8.80	8.55	-0.25	8.85	9.04	0.19
6+50	8.14	8.10	-0.04	8.78	8.40	-0.38	8.83	8.99	0.16
7+00	8.04	8.15	0.11	8.22	8.66	0.44	8.74	9.17	0.43
7+25	8.06	8.20	0.14	8.44	8.71	0.27	8.91	9.21	0.30
7+50	8.08	8.25	0.17	8.65	8.76	0.11	9.00	9.24	0.24
7+75	8.16	8.30	0.14	8.77	8.87	0.10	8.99	9.34	0.35
8+00	8.28	8.40	0.12	8.89	8.92	0.03	8.99	9.41	0.42
8+25	8.44	8.50	0.06	8.96	9.23	0.27	9.01	9.55	0.54
8+50	8.61	8.40	-0.21	8.99	9.11	0.12	8.99	9.65	0.66
8+75	8.78	8.30	-0.48	9.02	9.23	0.21	8.96	9.75	0.79
9+00	8.93	8.30	-0.63	9.05	9.33	0.28	8.95	9.85	0.90
9+25	8.9	8.40	-0.50	9.02	9.40	0.38	8.94	9.91	0.97



Town of Sandwich

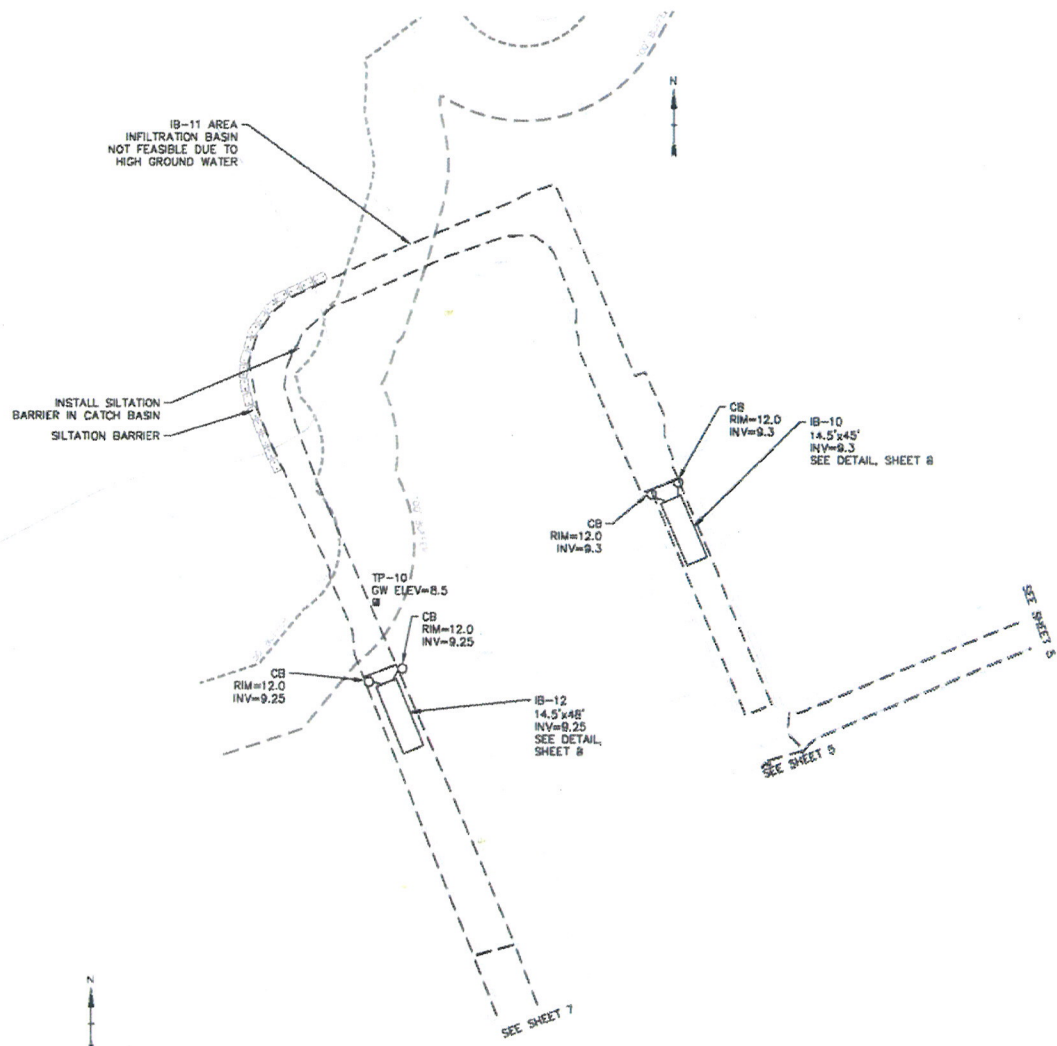
Sandwich Harbor Stormwater Mitigation

Sandwich, Massachusetts

PROJECT NO.	81508
FILE	TOWNNECK.PL
DRAWN BY	MAE1
CHECKED BY	MAE1
APPROVED BY	QED
SITE #1-TOWN NECK BEACH	
SCALE:	1"=40'
SHEET 3 OF 8	

D:\Projects\81508\TownNeck\DWG.dwg, 01/28/2011, 3:07pm, Plotter: 01

D:\Projects\3\Sandwich Harbor\DWG\DWG_01_08_2011-3_15.dwg Plotted By: mast



Professional Engineer
 State of Massachusetts
 License No. 10113
Charles J. Bond
 9/24/11

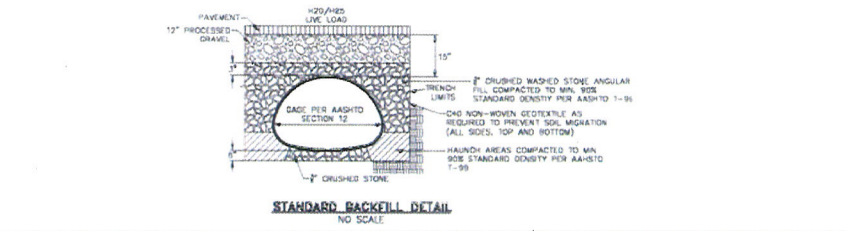
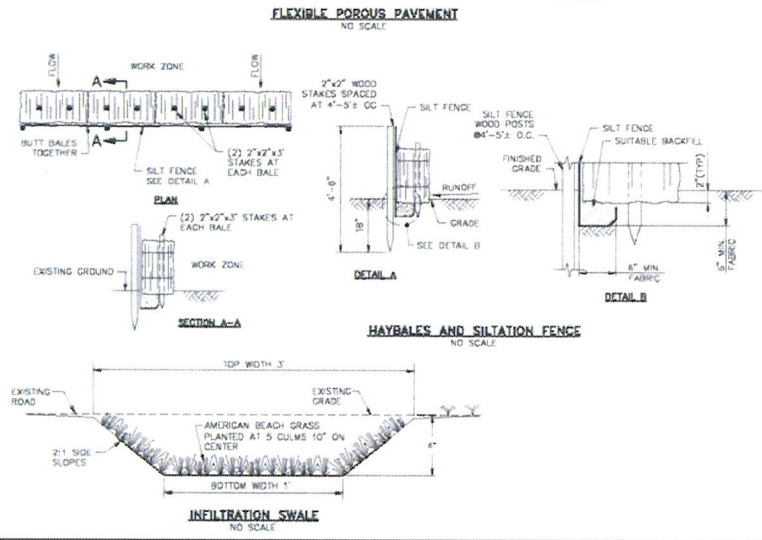
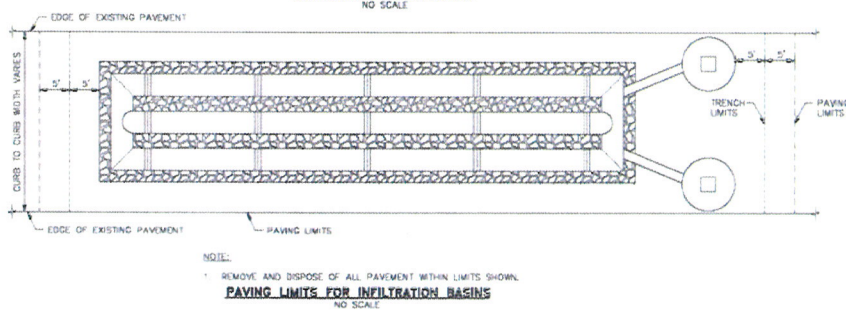
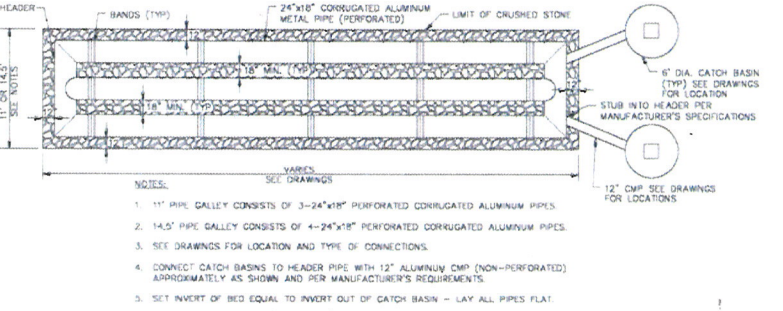
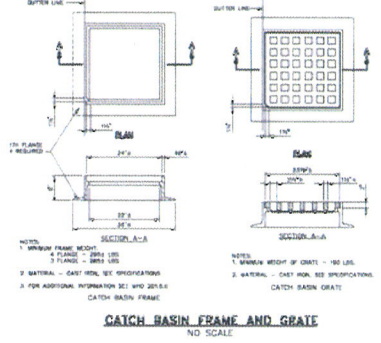
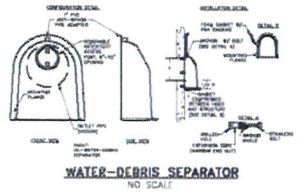
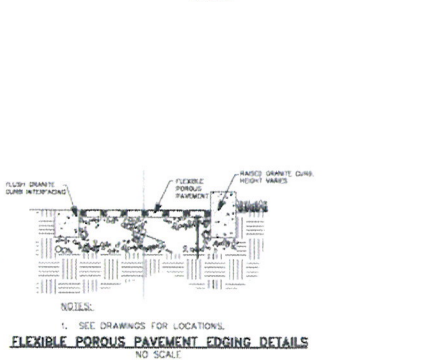
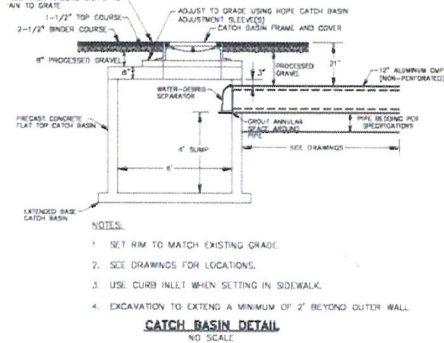
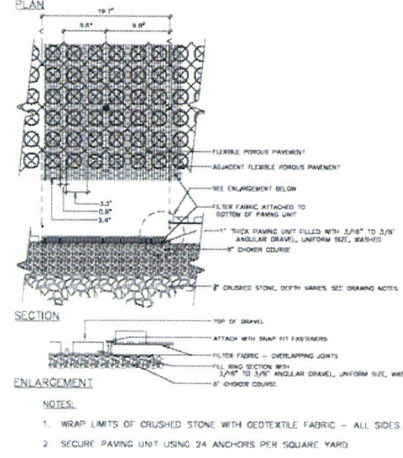
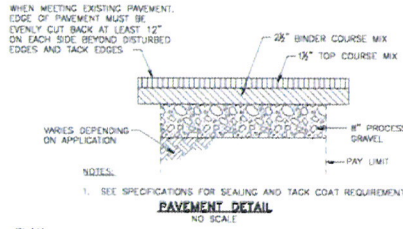
Professional Engineer
 State of Massachusetts
 License No. 10113
Walter J. Bond
 9/24/11

Town of Sandwich

Sandwich Harbor Stormwater Mitigation

Sandwich, Massachusetts

Item	Desc	Description	DATE
PROJECT NO.		31438	
FILE		NE-0103030005.PLS	
DRAWN BY		MAST	
CHECKED BY		MAST	
APPROVED BY		CHD	
SITE #16			
SCALE: 1"=40'			
SHEET 6 OF 8			



Town of
Sandwich

Sandwich Harbor
Stormwater
Mitigation

Sandwich,
Massachusetts

PROJECT NO.	0408
FILE	06181
DRAWN BY	MAE
CHECKED BY	MAE
APPROVED BY	CHD

DETAILS

SCALE: AS SHOWN

SHEET 8 OF 8

MILL CREEK STORMWATER MITIGATION
BMP INSTALLATION AT TUPPER ROAD



04/29/2011



The Town of Sandwich Massachusetts



Click HERE for Proposed Public Safety Building Website
Click HERE for Charter Review Information
Click HERE for Annual

- Town Hall Transfer Station Webcam Directory Public Documents Calendar MAPS Minutes/Agendas Inc. 1639

Departments In BOARDS & COMMITTEES

- BOARD OF APPEALS
BOARD OF ASSESSORS
BOARD OF HEALTH
BOARD OF SELECTMEN
CAPE LIGHT COMPACT
CAPITAL IMPROVEMENT
PLANNING COMMITTEE
CHARTER REVIEW COMMITTEE
COMMISSION ON DISABILITY
COMMUNITY PRESERVATION
COMMITTEE
CONSERVATION COMMISSION
CULTURAL COUNCIL
ENERGY COMMITTEE
FINANCE COMMITTEE
GOLF ADVISORY COMMITTEE
HISTORIC DISTRICT COMMITTEE
HISTORICAL COMMISSION
PERSONNEL BOARD
PLANNING BOARD
SANDWICH HOUSING
AUTHORITY
VISITOR SERVICES BOARD
WATER QUALITY ADVISORY
COMMITTEE
WESTON MEMORIAL FUND

WATER QUALITY ADVISORY COMMITTEE

Documents

- General Information
Meeting Minutes

HOME > BOARDS & COMMITTEES > WATER QUALITY ADVISORY COMMITTEE

Water Quality Advisory Committee

Mission Statement

Recognizing the sensitivity and importance of the water resources in the Town of Sandwich and Cape Cod, the Water Quality Advisory Committee shall coordinate efforts with Town Committees, Staff and abutting Communities to protect and enhance the groundwater, surface waters, watersheds and estuaries that comprise the natural value of Cape Cod.

Click HERE for link to YouTube video presentation.

Click http://www.sandwichcleanwater.com/ for link to Town's Comprehensive Water Resource Management Plan website

Click http://www.ccwpc.org/images/adminstructure/panel_presentation_11_16_11.pdf for the MEP Scientific Peer Review Presentation

Committee Members

- Mike Zylich, WQAC Chairman, Conservation Commission Representative
Linell Grundman, Board of Selectmen Representative
Sarah Regan, Planning Board Representative
Peter Thomas, Sandwich Water District Representative
Dr. Francis Sheehan, Sandwich Board of Health Representative
Ralph Vitacco, Board of Selectmen Alternate
Hank Rankov, Planning Board Alternate
Nanette Perkins, Planning Board Alternate
Christopher Sellstone, Conservation Commission Alternate

Staff

David B. Mason, RS, CHO, Director of Public Health

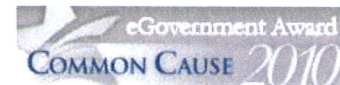
Consultant

Wright-Pierce

- Mike Giggey, PE, Senior Vice President
Edward Leonard, PE, Lead Project Engineer
Robert Steen, PE, Project Engineer



Town of Sandwich
Main Town Hall
130 Main Street, 02563
E-Mail: townhall@townofsandwich.net
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The
Town of Sandwich
Massachusetts



Click HERE for Annual
Town Meeting Warrant Click HERE
for FY13 Budget Information

2011 Transfer Station Stickers
Extended to June 30, 2012

New Annual Stickers Will Cost \$55
Effective July 1



Town Hall

Transfer Station Webcam

Directory

Public Documents

Calendar

MAPS

Minutes/Agendas

Inc.
1639

Departments In
COMMUNITY PRIDE

HOME > COMMUNITY PRIDE > CLEAN-UP INFO

➤ CLEAN-UP INFO

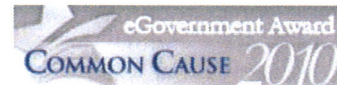
Community Pride Clean-Up Info

Community Pride Day is the 2nd Saturday prior to Memorial Day each year. But, you can contact the Department of Public Works at other times of the year at (508) 833-8002 to pick up your free clean-up supplies -- gloves, bags and safety vests -- to help keep our town clean anytime!



Town of Sandwich

Main Town Hall
130 Main Street, 02563
E-Mail: townhall@townofsandwich.net
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COLLECTION SCHEDULE

Saturday 9 am - 1 pm

April 21

Sandwich High School
365 Quaker Meetinghouse Road
East Sandwich, MA 02537

June 16

Falmouth High School
874 Gifford Street (off Brick Kiln Road)
Falmouth, MA 02540

August 18

Mashpee High School
500 Old Barnstable Road (off Route 151)
Mashpee, MA 02649

October 20

Peebles Elementary School
70 Trowbridge Road (off Bourne Rotary)
Bourne, MA 02532

** Residents/Homeowners of Bourne, Sandwich, Falmouth, Mashpee, & Air Station Cape Cod may attend any of the above listed Collection dates. **



Questions?

Contact the Barnstable County
Hazardous Materials Program
(508) 375-6699 / (800) 319-2783

Businesses must call to participate at cost.

Upper Cape Household Hazardous Products collections are funded by the towns of Bourne, Sandwich, Falmouth, and Mashpee, Covanta SEMASS, Cape Cod Cooperative Extension, and Barnstable County. Supported in part by AmeriCorps Cape Cod and Senior Environment Corps.

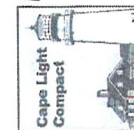


COVANTA



Cape Cod Cooperative Extension
P.O. Box 367
Barnstable, MA 02630-0367

ECRWSS
POSTAL CUSTOMER



Dehumidifier & Air Conditioner Turn-In Event
June 16th

Receive a \$35 mail-in rebate toward
an ENERGY STAR rated replacement

HOUSEHOLD HAZARDOUS PRODUCTS COLLECTIONS



2012 Schedule

Bourne • Sandwich
Falmouth • Mashpee
Air Station Cape Cod

What Are HOUSEHOLD HAZARDOUS PRODUCTS?

A wide range of materials used in homes are considered hazardous. Generally, these products are oil or solvent based, contain heavy metals such as mercury, or are caustic materials like drain cleaners.

Why should I be concerned?

Thousands of adults will visit a poison control center or emergency room this year with burns, poisonings, or eyesight damage caused by hazardous household products. Almost 1 million children under the age of six will be poisoned or injured in the home by household products, as will thousands of pets.

How can they be identified?

Read the label. If the label says *Danger*, *Poison*, *Warning*, or *Caution*, the product may be hazardous to your health or may pollute our ground and surface water.

Should I throw them away?

No! Some household products release toxic fumes or explode if they are mixed together in the trash, causing fires or injuring workers. Dumping them in landfills or sewers could contaminate our water supply or kill fish and other wildlife.

COLLECTION CHECKLIST

Cleaners & Chemicals

- Oven Cleaner
- Spot Remover
- Disinfectant
- Drain Opener
- Pool Cleaners & Chemicals
- Solvents & Degreasers
- Photo & Hobby Chemicals
- Acids

Paints, Polishes, & Stains

- **PLEASE DO NOT BRING LATEX PAINT!**
See right panel for disposal details!
- Oil & Alkyd-Based Paint/Stain
- Paint Thinner & Remover
- Solvent-Based Wood Finish
- Auto Paint
- Marine Paints & Sealers
- Metal & Furniture Polish
- Wood Preservatives

Yard Chemicals

- Driveway Sealer with Solvent
- Insecticides, Pesticides, & Rodent Poison
- Weed Killer
- Fertilizers with Weed Killer

Auto Fluids

- Brake & Power Steering Fluid
- Bug & Tar Remover
- Car Polish & Cleaner with Solvent
- Gasoline
- Radiator Flush
- Camp Fuel

Mercury Products

- Blood Pressure Gauges
- Thermometers & Thermostats*
- Switches
- Mercury in Bottles

*Mercury thermometers and thermostats can be exchanged for their digital counterparts while supplies last, compliments of Covanta SEMASS

How to... RECYCLE OTHER ITEMS

Recycle at your Transfer Station:

- Used Oil, Oil Filters, & Antifreeze
- Auto & Rechargeable Batteries
- Fluorescent Tubes & Compact Light Bulbs
- Empty Fire Extinguishers
- Propane Tanks
- Empty Cans
- Dry Paint Cans

Dispose of these items as noted:

- **Latex & Acrylic paints, Water-Based Stains & Wood Finishes** – Pour over cat litter to absorb liquid and throw away
- Alkaline Batteries – Throw away
- Ammunition, Firearms, Fireworks, & Explosives – Take to Police Department
- Sharps/Syringes – Bourne & Sandwich take to Fire Department, Mashpee take to Department of Public Works Building, Falmouth does not participate
- Safety Flares – Bourne, Sandwich, & Falmouth take to Fire Department, Mashpee take to Department of Public Works Building

Use up, Give away, or Dry out:

- Abrasive Cleaners
- Air Fresheners
- Ammonia
- Borax & Boric Acid
- Car Washes & Finishes
- Detergents
- Compounds
- Latex Glues & Caulks
- Cosmetics & Nail Polish
- Personal Care Products
- Lime & Plant Food
- Chlorine Bleach

