

**Municipality/Organization:** Orleans, MA

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**EPA NPDES Permit Number:** MAR041146

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**MaDEP Transmittal Number:** W- 035744

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**Annual Report Number  
& Reporting Period:** No. 9: May 1, 2011-April 30, 2012

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## NPDES PII Small MS4 General Permit Annual Report

### Part I. General Information

**Contact Person:** Mark Budnick **Title:** Manager, Highway Department

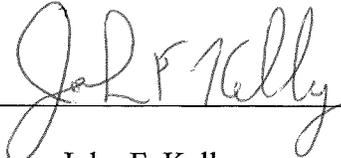
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**Telephone #:** 508-240-3700 ext. 470 **Email:** mbudnick@town.orleans.ma.us

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Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

**Signature:** 

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**Printed Name:** John F. Kelly

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**Title:** Town Administrator

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**Date:** 5/1/12

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## **Part II. Self-Assessment**

The Town of Orleans has completed the required self-assessment and has determined that our municipality is in compliance with all permit conditions, except for the following provisions: modifications were made to the schedule for obtaining measurable goals, as discussed in the applicable sections of this report.

### ***Notable Accomplishments in Permit Year 9:***

#### ***Water Quality Task Force & Comprehensive Wastewater Management Plan***

The Town of Orleans continues to develop significant ongoing programs to improve marine and fresh water quality and work towards the goals of the Phase II Permit and the final TMDLs for pathogens and nutrients. The efforts of the Marine and Fresh Water Quality Task Force, past and planned BMP construction projects and the development of the December 2010 Comprehensive Wastewater Management Plan (CWMP) have or will result in significant water quality and habitat improvements. The 2010 CWMP provides recommendations for wastewater treatment capital improvements to address failing septic systems and significantly reduce nitrogen loading to the local bays and impoundments, which represent the majority of the pollutant load. The CWMP received final approval from the MA DEP on February 14, 2012. The Town supported a “peer review” of the Mass. Estuaries Project water quality modeling to determine if it was sufficiently robust to support wastewater management planning decisions. In 2012, the Town contracted with Weston & Sampson to develop full lifecycle costs for the CWMP and for a small pipe (STE) collection system. Funding for Phase 1 design will be sought at the Fall 2012 Town Meeting.

In addition to the efforts to reduce nitrogen loading from septic sources, the Town of Orleans continues to implement BMPs to reduce the use of fertilizers and pesticides. The Pleasant Bay Alliance developed a fertilizer and pesticide use policy for municipal properties and the Town approved the policy in April 2012. The purpose of the policy is to: a) reduce or eliminate nutrient loading resulting from the application of fertilizers on Town owned properties; and b) reduce or eliminate the use of pesticides or herbicides on Town property. In support of these efforts, the Town has a robust public education campaign to inform residents and businesses about the proper use of and alternatives to fertilizers. For example, the Orleans Pond Coalition hosted a fertilizer awareness day on April 14, 2012 in collaboration with the Association to Preserve Cape Cod and over 15 other local businesses and resource groups. The event featured demonstrations and educational presentations for soil testing, for example.

As discussed in the Year 8 Annual Report, the Town and its consultant reviewed the draft Phase II permit for Interstate, Merrimack and South Coastal Watersheds and developed an outline of program needs over the 5-year permit term, as well as budget estimates for each year of the permit. The Town anticipates using this information and the results from other activities (e.g., CWMP, BMP projects) to develop an appropriate strategy to address the requirements related to TMDLs and impaired water bodies, as part of the Stormwater Management Plan (SWMP) development under the final permit (once issued).

### Public Education & Involvement Activities

The Town of Orleans conducted the following major events to promote awareness of water resources and engage the community:

- Operation Orleans - Restoration of Local Water Conservation Sites: the Barnstable County AmeriCorps Cape Cod, the Town of Orleans Tree Department, and the Orleans Conservation Trust hosted a week of activities from May 9 to 13, 2011 where volunteers planted native bushes and shrubs, cleared out overgrown invasive species, built and installed benches and learned about the importance of maintaining conservation land. The event engaged 175 community volunteers and students, resulting in the removal of 21 tons of invasive species and the planting of over 600 native shrubs, grasses and trees.
- Celebrate Our Waters Event: the Orleans Pond Coalition hosted a “Celebrate Our Waters” event on September 24 and 25, 2011. The event included presentations on water quality protection and awareness of the water resources around the Town of Orleans. There was no formal attendance taken but it was felt that the event was successful and well attended.

### Stormwater BMP Design & Construction

In August 2010, the Town was awarded a grant from the Natural Resources Conservation Service (NRCS) for 75% of the costs for the design and construction of stormwater BMPs at 5 locations to address key outfalls and water quality concerns. The project focuses on water quality, habitat and aquaculture improvements to Pochet Inlet, Nauset Inlet, Meetinghouse River and Pleasant Bay. Construction of all projects was completed in 2011 at a cost of approximately \$500,000.

In June 2011, the Town constructed a stormwater BMP for the collection and attenuation of stormwater from the front yard area of the Highway Department Garage facility to protect water quality of Ells Pond.

In the Spring of 2011, the Town constructed stormwater BMPs to remediate 3 stormwater outfalls by removing suspended solids and attenuating pollutants from Locust Road into Cedar Pond. This project is part of a focused effort by the Orleans Water Quality Task Force to monitor and address water quality issues in Cedar Pond.

The Town completed the design for stormwater BMPs to address a stormwater outfall off Tar Kiln Road. The BMPs will remediate a direct discharge to the upland marsh leading to Pleasant Bay through the use of new deep sump catch basins and modifications to drainage patterns to increase overland flow and decrease flow to the storm drain system.

The Town began designing a stormwater BMP project for the Barley Neck Road stormwater discharge to protect water quality in the Meeting House River. The Town anticipates final design in 2012 and hopes to complete construction in 2013.

### Part III. Summary of Minimum Control Measures

#### 1. Public Education and Outreach

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9	Planned Activities – Next Permit Term
A.1 Revised	Develop and Broadcast Via PA CATV Storm Water Video	Mark Budnick, Highway Manager	One per year – in conjunction with County Group # website hits/views for video	<p>The video “After the Storm” is available through an internet media player on the Highway Department’s web page.</p> <p>The video was broadcast on a regular basis on the Town’s cable channel during the permit year. The video is also available on-demand on the Highway Department’s webpage. The Town cannot track viewing through regular broadcast.</p>	<p>Continue broadcasting “After the Storm” video on local cable.</p> <p>Evaluate methods for tracking the number of video views/hits on website. Consider using local cable to broadcast pertinent presentations and Selectmen meetings relating to stormwater management.</p>
A.2 Revised	Household Hazardous Waste Control	Mark Budnick, Highway Manager	Annual HHW Collection # residents participating	<p>Collection days were held in Eastham on July 16<sup>th</sup> and in Orleans on September 17, 2011. 173 Orleans households participated and a total of ~7,600 lbs and 1938 gallons of Household hazardous waste were collected from Orleans residents and removed from the waste stream. Event organizers tracked the effectiveness of the various advertisement methods and ~ 45% of participants heard of the events through the brochure, 20% heard of the event through the newspaper and the remainder through other methods</p> <p>The Orleans Transfer station offers semi-annual paint collections and offers collection of waste gasoline, waste oil and waste antifreeze free to Transfer Station ticket holders. In 2011 the Transfer Station collected and disposed of ~ 850 gallons of paint products, 1,500 gallons of waste oil, 495 gallons of waste gasoline and 250 gallons of waste antifreeze.</p>	<p>Continue reciprocal HHW collections with the Town of Eastham. Continue tracking resident participation and results. Consider promoting the HHW collection events using additional methods.</p>

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 9</b>	<b>Planned Activities – Next Permit Term</b>
A.3	Education Flyers	Mark Budnick, Highway Manager	Distribute 2 per year at Transfer Station	Two different flyers were made available at the Transfer Station and Town Facilities.	Continue to distribute educational flyers and/or other materials and track materials taken.
Revised			# flyers taken by residents	Additional flyers from EPA sample materials were developed and distributed at the Transfer Station and Town Facilities addressing HHW and stormwater management.	Consider alternative methods to provide public education and outreach addressing HHW collection and stormwater management concepts.

### 1a. Additions

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 9</b>	<b>Planned Activities – Next Permit Term</b>
A.4	Web Page Information	Mark Budnick, Highway Manager & Peter VanDyck, IT Coordinator	Short Article – one per year	As discussed under BMP A.1, the video “After the Storm” is linked through the Highway Department’s webpage. The webpage also links to EPA’s NPDES Stormwater Program web page and the Town’s stormwater bylaws.	Continue to maintain existing web pages related to stormwater and water quality. Evaluate additional web page links and begin tracking the number of hits. Consider short articles or topics that can be posted annually on web pages.
Revised			# website hits	Agendas, meeting minutes, and additional information are posted on a webpage for the Marine and Fresh Water Quality Task Force. The Town also maintains a webpage for reports, meeting minutes and other documents related to the CWMP.  The Orleans Pond Coalition developed a website in 2011 <a href="http://www.orleanspondcoalition.org">www.orleanspondcoalition.org</a> that provides general awareness of water bodies in Orleans, as well as educational information regarding the Town’s efforts to protect and improve water quality.	Evaluate methods to integrate stormwater program information and educational opportunities between the Town web pages and the website maintained by the Orleans Pond Coalition.

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 9</b>	<b>Planned Activities – Next Permit Term</b>
A.5	Other Public Education In Year 9	Mark Budnick, Highway Manager		Copies of “The Orleans Blue Pages” water quality protection booklet (50+ pages) developed by the Orleans Pond Coalition were made available at no cost for residents at Town Hall.	Continue existing public awareness activities and evaluate methods to track materials taken, posters, displays and audience (number) reached.
Revised	Other Public Education Activities in Year 9		# copies of “Orleans Blue Pages” taken by residents  # posters displayed & handouts	<p>The Pleasant Bay Alliance developed a fertilizer and pesticide use policy for municipal properties and the Town approved the policy. This policy was developed through a public process and an article discussing its approval was posted in the Cape Codder on April 13, 2012.</p> <p>The Orleans Pond Coalition hosted a fertilizer awareness day on April 14, 2012 in collaboration with the Association to Preserve Cape Cod and over 15 other local businesses and resource groups. The event featured demonstrations and educational presentations for soil testing, for example.</p> <p>The Highway Department distributed stormwater management and other informational materials at the September 2011 “Celebrate Our Waters” event.</p>	
A.6	Storm Drain Stenciling	Mark Budnick, Highway Manager	Stencil storm drains leading to critical priority outfalls.	No storm drain stenciling occurred during the permit term.	Continue storm drain stenciling activities at highly visible areas and areas that drain directly to priority outfalls and waterways. Solicit volunteers through the Marine and Fresh Water Quality Task Force or with schools.
Revised		Marine & Fresh Water Quality Task Force	# stenciled drains per year		

## 2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9	Planned Activities – Next Permit Term
B.1	Water Quality Monitoring Program	Marine & Fresh Water Quality Task Force	Ongoing	Water quality monitoring was performed over the permit year for select estuaries and freshwater bodies. The Marine & Fresh Water Quality Task Force met once per month to review monitoring activities and results related to priority water bodies and potential improvement projects.	Evaluate priorities and continue monitoring water quality and tracking which program results were most effective. Use monitoring results to develop remediation plans for high priority areas. Continue to support Task Force and hold monthly meetings.
Revised		Town Administrator & Board of Selectmen	# samples collected, water bodies assessed each year & water quality improvements	<p>The <i>Pleasant Bay Alliance Water Quality Monitoring Program: Statistical Analysis of Multi-year Water Quality Monitoring Data</i> was published in October 2010 and continues to be a resource for the Town. Implementation of remediation plans continued for the following high priority areas: Cedar Pond, Meetinghouse Pond, Meetinghouse River, Town Cove, and inland ponds and estuaries.</p>	
B.2	Estuaries Program	Director of Planning and Development	Ongoing	The Town’s Comprehensive Wastewater Management Plan (CWMP) received final approval from the MA DEP on February 14, 2012. The Town supported a “peer review” of the Mass. Estuaries Project water quality modeling, to determine if it was sufficiently robust to support wastewater management planning decisions. The Town contracted with Weston & Sampson to develop full lifecycle costs for the CWMP and for a small pipe (STE) collection system. The goal of the program is to meet the TMDL for Pleasant Bay, the anticipated TMDLs for the Nauset system and Rock Harbor, and help protect 8 priority ponds. Multiple public hearings were held to review the program and provide input.	Funding for Phase 1 design will be sought at a Fall 2012 Town Meeting.
Revised	Estuaries Program & Comprehensive Wastewater Management Plan		Regulatory review of CWMP.  Assessment of potential cost-saving alternatives.		Continue to promote the CWMP and implement recommendations and strategies. Continue to incorporate elements of the CWMP into the SWMP to meet the new permit requirements, as appropriate.

## 2a. Additions

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9	Planned Activities – Next Permit Term
B.3	Storm Drain Stenciling	Mark Budnick, Highway Manager	Stencil storm drains in downtown area and other at systems leading to critical priority outfalls.	Refer to BMP A.6.	Refer to BMP A.6.
Revised		Volunteers	# stenciled drains per year & # volunteers		
B.4	Outfall Monitoring	Mark Budnick, Highway Manager	Perform dry weather outfall monitoring of all outfalls that were initially observed to have flow during the GIS locating.	Highway Department staff inspected 10 critical priority outfalls throughout the permit term and received training on data collection during catch basin cleaning activities. No dry weather flows were noted at any of the outfalls that were monitored.	Continue to support the efforts of the Marine & Fresh Water Quality Task Force to perform dry weather monitoring and coordinate with BMP C.4.
Revised	Volunteer Outfall Monitoring Program	Marine & Fresh Water Quality Task Force	# volunteer participants	The results of inspection activities were reviewed and incorporated into the prioritization scheme for future improvement projects.	Continue to coordinate efforts with the Orleans Pond Coalition volunteers.
B.5	Maintain Animal Waste Collection Bags in Key Areas of Concern	Orleans Pond Coalition		“Mutt Mitts” animal waste collection bags were maintained by volunteers from the Orleans Pond Coalition at key areas of concern for residents to properly dispose of waste. Town Departments assisted with proper waste disposal. Approximately 30,000 bags were used at all of the collection stations.	Continue maintenance of “Mutt Mitts” program and ensure proper disposal of wastes. Continue to track the number of bags taken and evaluate if high occurrences of improper disposal warrant a targeted education campaign.
Revised		Mark Budnick, Highway Manager			
B.6	Water Day Celebration	Orleans Pond Coalition	List of activities & participants	The Orleans Pond Coalition hosted a “Celebrate Our Waters” event on September 24 and 25, 2011. Refer to “Notable Accomplishments” for further description of the event.	Organize another “Celebrate Our Waters” event with the Orleans Pond Coalition. Consider approaching additional partners/sponsors to assist hosting the event.
Revised					

## 2a. Additions (continued)

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 9</b>	<b>Planned Activities – Next Permit Term</b>
B.7	Operation Orleans	Orleans Tree Dept. & Conservation Trust	List of activities & participants	The Barnstable County AmeriCorps Cape Cod, the Town of Orleans Tree Department, and the Orleans Conservation Trust hosted a week of activities from May 9th to 13, 2011 to restore local water conservation sites. Refer to “Notable Accomplishments” for further description of the event.	
Revised					

### 3. Illicit Discharge Detection and Elimination

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 9</b>	<b>Planned Activities – Next Permit Term</b>
C.1	Storm Water System Mapping and Database Development	Mark Budnick, Highway Manager	Comprehensive town-wide survey by year 2 – as funding allows	The GIS database for the MS4 was updated to include stormwater outfall mapping results and drainage modifications associated with BMP projects.	Continue to update the drainage system base map as needed.  Provide more in depth training and annual refresher training to select Highway staff on the use of the GIS system for stormwater management.
Revised					
C.2	Review Existing By-Laws	Director of Planning and Development	Review existing by-laws and adopt storm water ordinance FY06	<p>The Floor Drain Regulation to prohibit improper connections and discharges to the MS4 was adopted by the Board of Health on February 4, 2010 and went into effect on July 1, 2010. Properties within Municipal well Zones 1 and 2 were notified of the bylaw and found to be in compliance. In accordance with the bylaw, other areas will be notified and evaluated in the future.</p> <p>The Town also has requirements to prohibit dumping and improper pet waste disposal that are enforced by the Board of Health. The Highway Department began drafting an Illicit Discharge Bylaw to be considered by the Board of Selectmen.</p>	Continue to monitor and enforce local requirements related to floor drains, dumping, and pet waste control.  Determine if additional regulatory controls (i.e., illicit discharge bylaw) are necessary.
Revised					

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 9</b>	<b>Planned Activities – Next Permit Term</b>
C.3	Identify and Document Illicit Connections	Mark Budnick, Highway Manager	Review C.1 results, finalize database by Year 4	The Highway Department inspects all catch basins during cleaning operations and completes a form to document the condition and any potential illicit discharges (refer to BMP B.4).	Identify the source of the two unknown connections to the MS4 and remove/disconnect, as appropriate.
Revised	Identify & Remove Illicit Connections & Discharges		# discharges identified, removed within 1 year of discovery	No new unknown connections to the MS4 were identified.	Continue to review mapping results with catch basin, pipe cleaning and inspection information. Incorporate existing procedures into future IDDE procedures and the O&M Plan under Control Measure 6.

### 3a. Additions

<b>BMP ID #</b>	<b>BMP Description</b>	<b>Responsible Dept./Person Name</b>	<b>Measurable Goal(s)</b>	<b>Progress on Goal(s) – Permit Year 9</b>	<b>Planned Activities – Next Permit Term</b>
C.4	Comprehensive Wastewater Management Plan	Director of Planning and Development	Progress towards a final CWMP	As discussed under BMP B.2, the CWMP received final approval from the MA DEP on February 14, 2012. The Town anticipates incorporating the results of the CWMP into the SWMP update based on new permit requirements.	Continue to monitor how elements from the CWMP and SWMP overlap to identify any practices that could satisfy requirements of both.
Revised					
C.5	Public Education for Illicit Discharges	Mark Budnick, Highway Manager		As outlined in BMPs A.1 through A.6 and B.5, various entities have incorporated information regarding illicit discharges into existing public education and public involvement activities.	Continue to incorporate illicit discharge information into existing public education and involvement activities and evaluate results.
Revised					

#### 4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9	Planned Activities – Next Permit Term
D.1	Review Existing By-Laws	Director of Planning and Development	Review existing by-laws and adopt construction ordinance	As discussed in the Year 6 Annual Report, the Town adopted the Drainage and Erosion and Sediment control bylaw at Town meeting in May 2008.	Continue to enforce bylaws and document actions.
Revised				The Highway Department identified multiple sites with erosion issues and worked with the Town Administrator to address the issue in accordance with the bylaw.	
D.2	Propose amendments and articles at Town Meeting	Director of Planning and Development	Spring 06	As discussed in the Year 6 Annual Report, the Town adopted the Drainage and Erosion and Sediment control bylaw at Town meeting in May 2008. No amendments were deemed necessary at this time.	Continue to evaluate effectiveness of bylaws and amend if necessary.
Revised			Ongoing		

#### 4a. Additions

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9	Planned Activities – Next Permit Term
D.3	Establish a Procedure for Receipt of Information by Public	Mark Budnick, Highway Manager	# calls received & record of corrective actions	The Highway Department received a few calls related to construction sites and all issues were addressed.	Continue to respond to calls regarding construction site erosion and sediment issues. Improve recordkeeping and documenting calls and actions by all departments by standardizing forms and improved sharing of information.
Revised					

## 5. Post-Construction Stormwater Management in New Development and Redevelopment

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9	Planned Activities – Next Permit Term
E.1	Review Existing By-Laws	George Meservey, Director of Planning and Development	Review existing by-laws and adopt Runoff Control Ordinance	As discussed in the Year 6 Annual Report, the Town adopted the Drainage and Erosion and Sediment control bylaw at Town meeting in May 2008.	Continue to enforce bylaw and review plans through Site Plan Review committee.
Revised				Any plans for significant development are reviewed for compliance through the Site Plan Review committee.	
E.2	Propose amendments and articles at Town Meeting	George Meservey, Director of Planning and Development		Refer to BMP E.1.  No amendments were deemed necessary at this time.	Continue to evaluate effectiveness of bylaws and amend if necessary.
Revised			Ongoing		

### 5a. Additions (none at this time)

## 6. Pollution Prevention and Good Housekeeping in Municipal Operations

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9	Planned Activities – Next Permit Term																												
F.1	Street Sweeping	Mark Budnick, Highway Manager	Sweep as part of annual winter cleanup and as needed	<p>There are 54 miles of street in the Town and all streets were swept at least once during the permit year. Additional streets are swept 2-3 times during the year including known areas of high sediment/sand accumulation, downtown areas, and paved areas that discharge to environmentally sensitive areas.</p> <p>Approximately 1,013 tons of street sweepings were collected during the year and reused in accordance with the existing BUD.</p>	Continue annual street sweeping program and focus additional sweeping efforts on needed and environmentally sensitive areas.																												
Revised						F.2	Catch Basin Cleaning	Mark Budnick, Highway Manager	Clean all basins in town on yearly rotating schedule	<p>All 900+ basins were cleaned or inspected once and some were cleaned more than once. Approximately 283 tons of catch basin cleanings were collected during the year. In addition, all existing stormwater BMPs were inspected and if necessary cleaned of sediment. Materials were reused in accordance with the existing BUD.</p>	Continue annual catch basin cleaning Program. Consider evaluating drainage areas to prioritize cleaning efforts as appropriate.	Revised				F.3	Develop Drainage System Improvement Plan	Mark Budnick, Highway Manager	Prepare Capital Plan Article for FY10	<p>Ongoing Capital Plan includes an allotment of \$150,000 for water quality related drainage improvements. A construction plan for water quality improvements projects is maintained annually based on the results and input from the Marine and Fresh Water Quality Task Force.</p> <p>See “Notable Accomplishments” for a more detailed description of activities and projects related to this BMP.</p>	<p>Continue funding the drainage system components of the Capital Plan to remediate outfalls and construct stormwater BMPs.</p> <p>Consider adding improvements to the Capital Plan that specifically address the Town’s TMDL responsibilities.</p>	Revised			Prepare Capital Plan Article for FY11	F.4	Propose Amendments and Articles at Town Meeting	Mark Budnick, Highway Manager	Spring 06	<p>Consistent with the efforts under BMP F.3, The Town continued to appropriate \$150,000 for the design and construction of stormwater BMPs throughout the year.</p>	Continue to fund water quality improvement projects annually.	Revised	
F.2	Catch Basin Cleaning	Mark Budnick, Highway Manager	Clean all basins in town on yearly rotating schedule	<p>All 900+ basins were cleaned or inspected once and some were cleaned more than once. Approximately 283 tons of catch basin cleanings were collected during the year. In addition, all existing stormwater BMPs were inspected and if necessary cleaned of sediment. Materials were reused in accordance with the existing BUD.</p>	Continue annual catch basin cleaning Program. Consider evaluating drainage areas to prioritize cleaning efforts as appropriate.																												
Revised						F.3	Develop Drainage System Improvement Plan	Mark Budnick, Highway Manager	Prepare Capital Plan Article for FY10	<p>Ongoing Capital Plan includes an allotment of \$150,000 for water quality related drainage improvements. A construction plan for water quality improvements projects is maintained annually based on the results and input from the Marine and Fresh Water Quality Task Force.</p> <p>See “Notable Accomplishments” for a more detailed description of activities and projects related to this BMP.</p>	<p>Continue funding the drainage system components of the Capital Plan to remediate outfalls and construct stormwater BMPs.</p> <p>Consider adding improvements to the Capital Plan that specifically address the Town’s TMDL responsibilities.</p>	Revised			Prepare Capital Plan Article for FY11	F.4	Propose Amendments and Articles at Town Meeting	Mark Budnick, Highway Manager	Spring 06	<p>Consistent with the efforts under BMP F.3, The Town continued to appropriate \$150,000 for the design and construction of stormwater BMPs throughout the year.</p>	Continue to fund water quality improvement projects annually.	Revised			Prepare Capital Plan Articles Annually								
F.3	Develop Drainage System Improvement Plan	Mark Budnick, Highway Manager	Prepare Capital Plan Article for FY10	<p>Ongoing Capital Plan includes an allotment of \$150,000 for water quality related drainage improvements. A construction plan for water quality improvements projects is maintained annually based on the results and input from the Marine and Fresh Water Quality Task Force.</p> <p>See “Notable Accomplishments” for a more detailed description of activities and projects related to this BMP.</p>	<p>Continue funding the drainage system components of the Capital Plan to remediate outfalls and construct stormwater BMPs.</p> <p>Consider adding improvements to the Capital Plan that specifically address the Town’s TMDL responsibilities.</p>																												
Revised			Prepare Capital Plan Article for FY11			F.4	Propose Amendments and Articles at Town Meeting	Mark Budnick, Highway Manager	Spring 06	<p>Consistent with the efforts under BMP F.3, The Town continued to appropriate \$150,000 for the design and construction of stormwater BMPs throughout the year.</p>	Continue to fund water quality improvement projects annually.	Revised			Prepare Capital Plan Articles Annually																		
F.4	Propose Amendments and Articles at Town Meeting	Mark Budnick, Highway Manager	Spring 06	<p>Consistent with the efforts under BMP F.3, The Town continued to appropriate \$150,000 for the design and construction of stormwater BMPs throughout the year.</p>	Continue to fund water quality improvement projects annually.																												
Revised			Prepare Capital Plan Articles Annually																														

**6a. Additions**

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9	Planned Activities – Next Permit Term
F.5 Revised	Maintain Animal Waste Collection Bags in Key Areas of Concern	Orleans Pond Coalition		<p>“Mutt Mitts” animal waste collection bags were maintained by volunteers from the Orleans Pond Coalition at key areas of concern for residents to properly dispose of waste. Town Departments assisted with proper waste disposal and more than 30,000 bags were used at all of the collection stations. Mutt Mitt dispensers were added at six more locations in Year 9.</p>	<p>Continue maintenance of “Mutt Mitts” program and ensure proper disposal of wastes. Continue to track the number of bags taken and evaluate if high occurrences of improper disposal warrant a targeted education campaign.</p>
F.6 Revised	Nutrient Loading Reductions	Paul Fulcher, Parks and Beaches Superintendent	Implement Organic Based Land Management Program	<p>The Organic Based Land Management Program continued for Town properties, consistent with NOFA guidelines. Organic compost was purchased in April 2011 and applied during the permit year. The program focuses on reducing nutrient loads through the use of cultural land management practices and organic enhancements for healthy turf and native vegetation.</p> <p>Modified mowing practices continued at the Town Cove conservation viewing areas to reduce the need for rigorous turf management. The Town has used limited organic-based pesticides for the last 5 years.</p> <p>As discussed under BMP A.5, the Pleasant Bay Alliance developed a fertilizer and pesticide use policy for municipal properties and the Town approved the policy in April 2012. The purpose of the policy is to: a) reduce or eliminate nutrient loading resulting from the application of fertilizers on Town owned properties; and b) reduce or eliminate the use of pesticides or herbicides on Town property.</p>	<p>Continue organic based land management program to minimize nutrient loading. Evaluate methods to estimate the quantity of nutrients reduced through this program.</p> <p>Continue turf and pesticide management practices at Town Cove and other locations to reduce the need for chemical applications.</p> <p>Begin implementation of the fertilizer and pesticide use policy for municipal properties.</p>

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9	Planned Activities – Next Permit Term
F.7	Trash Management	Mark Budnick, Highway Manager & Paul Fulcher, Parks and Beaches Superintendent	Maintain a proactive trash collection program	Town Departments maintained the active Trash collection program at appropriate town properties with waste receptacles. A dumpster is also maintained by the Harbor Master for fishing fleet waste at the Town harbor. The program provides a means of waste disposal at public areas to discourage littering.	Continue to service litter receptacles at appropriate locations around the Town.  Evaluate whether a “carry in/carry out” policy would reduce improper waste disposal.
Revised					
F.8	Inventory of BMP Locations & Needs	Mark Budnick, Highway Manager	Ongoing inventory of BMP locations and needs to address water quality issues	The locations of stormwater BMPs are maintained to develop projects for water quality improvement. This BMP supports BMPs F.3 and F.4.  Stormwater BMP projects were added at nine discharge locations during the permit year, bringing the total to 30.	Continue to maintain and update the BMP inventory and develop projects with the Marine & Fresh Water Quality Task Force.
Revised					
F.9	Stormwater Training for Highway Staff	Mark Budnick, Highway Manager	Annual training on various topics, record of training attendance & materials	Highway Department staff are trained annually for the inspection and maintenance of the drainage system.  Staff responsible for cleaning catch basins were trained on how to identify potential illicit discharges.	Continue to train staff annually and begin maintaining copies of curriculum and attendance sheets. Review the stormwater training for Highway staff to determine if targeted educational topics could more effectively address current stormwater management needs.
Revised					

**7. BMPs for Meeting Total Maximum Daily Load (TMDL) Waste Load Allocations (WLA) <<if applicable>>**

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9	Planned Activities – Next Permit Term
Revised					

**7a. Additions (none at this time)**

**7b. WLA Assessment**

As discussed in this annual report, the Town of Orleans continues to develop significant ongoing programs that improve marine and fresh water quality and meet compliance responsibilities with the Phase II Permit and the pathogen and nutrient TMDLs. The efforts of the Marine and Fresh Water Quality Task Force, past and planned BMP construction projects and the planned work under the approved Comprehensive Wastewater Management Plan (CWMP) have or will result in significant water quality and habitat improvements. As part of the development of the CWMP, the necessary waste load reduction and environmental impact related to structural wastewater improvements and non-structural BMPs have been assessed. The Town supported a “peer review” of the Mass. Estuaries Project water quality modeling to determine if it was sufficiently robust to support wastewater management planning decisions. In 2012, the Town contracted with Weston & Sampson to develop full lifecycle costs for the CWMP and for a small pipe (STE) collection system. Funding for Phase 1 design will be sought at the Fall 2012 Town Meeting.

As discussed in the Year 8 Annual Report, the Town and its consultant reviewed the draft Phase II permit for Interstate, Merrimack and South Coastal Watersheds and developed an outline of program needs over the 5-year permit term, as well as budget estimates for each year of the permit. The Town anticipates using this information and the results from other activities (e.g., CWMP, BMP projects) to develop an appropriate strategy to address the requirements related to TMDLs and impaired water bodies, as part of the Stormwater Management Plan (SWMP) development under the final permit (once issued).

**Part IV. Summary of Information Collected and Analyzed**

Beach monitoring was performed by the Town of Orleans Health Department in Permit Year 9. Additional water quality data was collected for various water bodies in Permit Year 9. This data is available upon request through the Marine & Fresh Water Quality Task Force and the Town Planner.

**Part V. Program Outputs & Accomplishments (OPTIONAL)**

**Programmatic**

Stormwater management position created/staffed	(y/n)	
Annual program budget/expenditures	(\$)	\$170,000

## Education, Involvement, and Training

Estimated number of residents reached by education program(s)	(# or %)	100%
Stormwater management committee established	(y/n)	N
Stream teams established or supported	(# or y/n)	N
Shoreline clean-up participation or quantity of shoreline miles cleaned	(y/n or mi.)	
Household Hazardous Waste Collection Days		
▪ days sponsored	(#)	2
▪ community participation	(%)	173 homes
▪ material collected	(tons or gal)	3.8T, 1,938 G
School curricula implemented	(y/n)	
Note: *The Town also collected waste oil, gasoline, antifreeze and paint products at the Transfer Station that resulted in a total of 3,095 gallons.		

## Legal/Regulatory

	In place prior to Phase II	Under Review	Drafted	Adopted
Regulatory Mechanism Status (indicate with "X")				
▪ Illicit Discharge Detection & Elimination				X*
▪ Erosion & Sediment Control				X
▪ Post-Development Stormwater Management				X
Accompanying Regulation Status (indicate with "X")				
▪ Illicit Discharge Detection & Elimination				X*
▪ Erosion & Sediment Control				X
▪ Post-Development Stormwater Management				X
Note: * The Floor Drain Regulation to prohibit improper connections and discharges to the MS4 was adopted by the Board of Health on February 4, 2010 and went into effect on July 1, 2010. The Town also has requirements to prohibit dumping and improper pet waste disposal that are enforced by the Board of Health. The sample Illicit Discharge Bylaw reviewed by the Highway Department remained under consideration and during the next permit term, the Town will determine if additional regulatory controls (i.e., illicit discharge bylaw) are necessary.				

## Mapping and Illicit Discharges

Outfall mapping complete	(%)	100%
Estimated or actual number of outfalls	(#)	60
System-Wide mapping complete	(%)	75%
Mapping method(s)		
▪ Paper/Mylar	(%)	40%
▪ CADD	(%)	
▪ GIS	(%)	60%
Outfalls inspected/screened	(# or %)	100%
Illicit discharges identified	(#)	2*
Illicit connections removed	(#) (est. gpd)	
% of population on sewer	(%)	0
% of population on septic systems	(%)	100
Note: *2 potential illicit connections to the MS4 were identified in Year 7 and remain under investigation.		

## Construction

Number of construction starts (>1-acre)	(#)	
Estimated percentage of construction starts adequately regulated for erosion and sediment control	(%)	
Site inspections completed	(# or %)	
Tickets/Stop work orders issued	(# or %)	
Fines collected	(# and \$)	
Complaints/concerns received from public	(#)	

## Post-Development Stormwater Management

Estimated percentage of development/redevelopment projects adequately regulated for post-construction stormwater control	(%)	
Site inspections completed	(# or %)	
Estimated volume of stormwater recharged	(gpy)	

## Operations and Maintenance

Average frequency of catch basin cleaning (non-commercial/non-arterial streets)	(times/yr)	1-2
Average frequency of catch basin cleaning (commercial/arterial or other critical streets)	(times/yr)	1
Total number of structures cleaned /inspected	(#)	900
Storm drain cleaned	(LF or mi.)	0 LF
Qty. of screenings/debris removed from storm sewer infrastructure	(lbs. or tons)	283 tons
Disposal or use of sweepings (landfill, POTW, compost, recycle for sand, beneficial use, etc.)		BUD
Cost of screenings disposal	(\$)	~\$3,000

Average frequency of street sweeping (non-commercial/non-arterial streets)	(times/yr)	1
Average frequency of street sweeping (commercial/arterial or other critical streets)	(times/yr)	2-3
Qty. of sand/debris collected by sweeping	(lbs. or tons)	1,013 tons
Disposal of sweepings (landfill, POTW, compost, beneficial use, etc.)	(location)	BUD
Cost of sweepings disposal	(\$)	~\$3,000
Vacuum street sweepers purchased/leased	(#)	
Vacuum street sweepers specified in contracts	(y/n)	

Reduction in application on public land of: (“N/A” = never used; “100%” = elimination)		
▪ Fertilizers	(lbs. or %)	100%
▪ Herbicides	(lbs. or %)	100%
▪ Pesticides	(lbs. or %)	100%

Anti-/De-Icing products and ratios	% NaCl	50%
	% Sand	50%
Pre-wetting techniques utilized	(y/n)	N
Manual control spreaders used	(y/n)	Y
Automatic or Zero-velocity spreaders used	(y/n)	N
Estimated net reduction in typical year salt application	(lbs. or %)	Unknown
Salt pile(s) covered in storage shed(s)	(y/n)	Y
Storage shed(s) in design or under construction	(y/n)	N