



Town of

Orleans
Massachusetts

Orleans Water Quality Advisory Panel

Water Quality and Wastewater Planning

Program Status Update

August 16, 2017

Agenda

- ❖ Approval of Meeting Minutes of July 19, 2017
- ❖ Public Comment
- ❖ Tri-Town Septage Treatment Facility Demolition Update
- ❖ Non-Traditional Project Update
- ❖ Landfill Nitrogen Investigations and Next Steps

BREAK

- ❖ Summary of Board of Selectmen Review and Decisions
- ❖ Financial Plan Update
- ❖ Status of Non-Traditional Technologies in MassDEP Watershed Permits
- ❖ Freshwater Ponds Remediation Update
- ❖ Public Comment





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Tri-Town Septage Treatment Facility Demolition Update

Tri-Town Septage Treatment Facility Demolition Update

❖ July and August

- Contractor Submittals - Review and Approval Ongoing
- Pre-Construction Meeting – August 9, 2017
 - Attended by the Contractor, Orleans Town Administrator, Orleans DPW Director, the Eastham representative to the Board of Managers, the demolition contractor, and AECOM
 - Project schedule, utility disconnects, site security, and vibration monitoring were discussed

❖ On-Site Activities – End of September

- Disconnect Existing Utilities
- Install Temporary Fencing and Windscreen
- Install Erosion Control
- Pump-out Existing Tanks of Any Liquids and/or Solids
- Collect Hazardous Materials and Package for Disposal

❖ October 2017 through April 2018 – Demolition and Site Restoration





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Non-Traditional Project Update

Non-Traditional Project Update Aquaculture – Lonnie's Pond Management Plan

❖ Draft Shellfish Management Plan Prepared and Submitted August 4, 2017

- Summarizes work to date and plan for remainder of Year 2 and Year 3
- Identifies oyster viability considerations and mitigation measures
- Discusses considerations for full scale implementation at Lonnie's Pond
- Outlines MassDEP Watershed Permitting Process

❖ Lonnie's Pond Demonstration Year 3

- Recommended to continue current design, with potential expansion in area to further validate nitrogen removal by direct oyster uptake
- Details of layout, including oyster number and size, currently under review with Shellfish and Waterways Committee
- Costs for Year 3 being refined for recommendation to Selectmen for Fall Town Meeting
- SMAST to continue to evaluate nitrogen removal via denitrification, although Plan focuses on full-scale scenario to meet TMDL/MEP WITHOUT consideration of denitrification



Non-Traditional Project Update Aquaculture – Lonnie’s Pond Management Plan (cont.)

❖ Next Steps/Issues to Resolve for Long-term Implementation

- Options for annual disposition of oysters grown for one year for long-term
- Potential for grow-out of year one oysters by a commercial grower
- Increased town staffing needs if long-term implementation by town versus commercial grower
- Issues to discuss with MassDEP: details of watershed permit and compliance requirements for town vs commercial grower



Non-Traditional Project Update (cont.) Eldredge Park PRB

❖ Quarterly Sampling Occurred on June 28, 2017 and July 29, 2017 (Seven Months Post Injection)

- 24 Monitoring Wells Were Sampled and Analyzed for Nitrate and Other Key Parameters at 24 Monitoring Wells
- Water Levels Were Recorded at These Wells and 10 Additional Wells

❖ Quarterly Report, Including Data Analysis, is Expected to be Finalized Within the Next 2 Weeks

❖ Next Quarterly Sampling Event is Currently Scheduled for the First Week in September



Non-Traditional Project Update (cont.) NRB “Layer Cake”

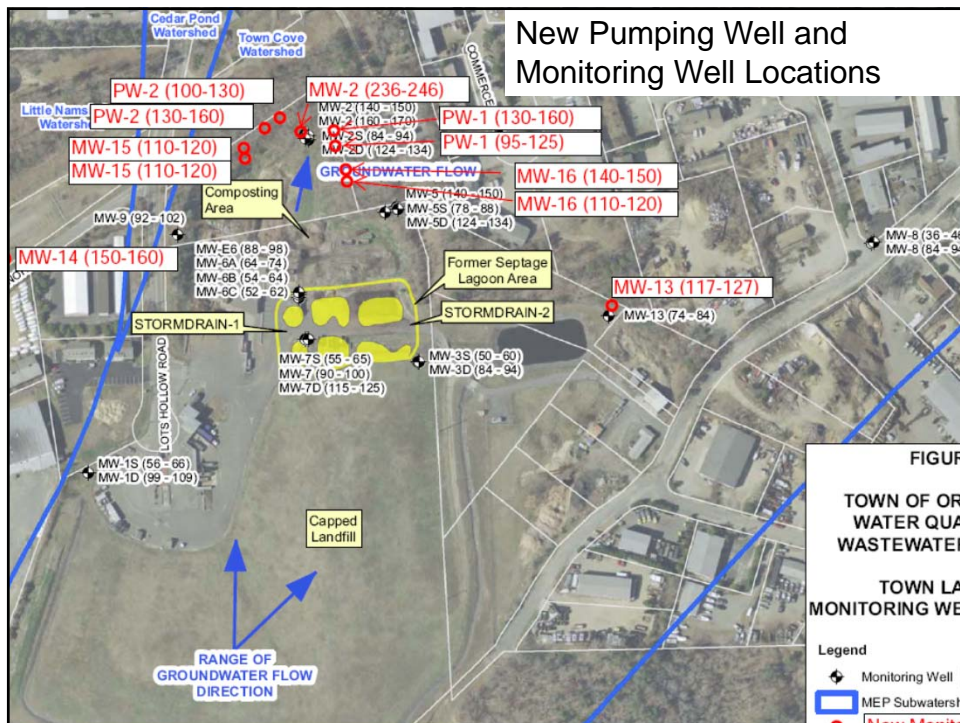
- ❖ **No Viable Sites Identified Located Outside of the Proposed Sewer Service Areas**
- ❖ **Reviewing Sites Located Within the Proposed Sewer Service Areas**
 - Reviewed recently approved Sewage disposal system construction permits. Developed list for BoH to send letters inquiring if the property owners are interested in participating or finding out more about the program.
 - Met with member of the business community to investigate if there was interest in participating in the program for a site redevelopment project in the downtown area
- ❖ **Working with County On-Site Test Center for Design and Monitoring Plans**
- ❖ **Perform Quarterly Sampling and Analysis and Prepare Quarterly Report Pending Site Identification and Implementation**



Landfill Nitrogen Investigations and Next Steps

Landfill Nitrate Plume Status Update

- ❖ Completed Phase 1 Field Investigation Plan
- ❖ Completed Phase 1 Field Investigation Report
- ❖ Completed Field Investigation and Risk Evaluation for 1,4-Dioxane
- ❖ Completed Phase 2 Field Investigation Report Ongoing Coordination with UMass Dartmouth's School for Marine Science & Technology (SMST)
- ❖ Conducting Pump Tests and Supplemental Investigations



Landfill Draft Action Plan for Nitrogen Control

- ❖ **Modify Salt Shed and Materials Area to Include Impermeable Pavement over Septage Lagoons**
- ❖ **Replace Leaching Drainage Swale on North Side of Landfill Cap with Swale or Culvert with Impermeable Base**
- ❖ **Add Stormwater Nitrate Treatment to Infiltration Ponds**



The slide features a blue and green gradient background. In the top left corner is the seal of the Town of Orleans, Massachusetts. In the top right corner, the text "Town of Orleans Massachusetts" is displayed, with "Orleans" in a large, stylized font. The word "Break" is written in a large, white, sans-serif font in the center of the slide.



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Summary of Board of Selectmen Review and Decisions

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- ❖ **Groundwater Discharge Site Selection**
 - Meetings with MEPA, MassDOT
 - BOS voted to recommend proceeding with Exit 12 and MassDOT Agreement
- ❖ **Collection System Preliminary Design Results**
 - AECOM recommends hybrid system (Gravity and Low Pressure System)
 - Initiated discussion of implications for bidding; continued to August 17, 2017
- ❖ **Wastewater and Septage Treatment Preliminary Design**
 - Recommending septage receiving component of new WWTF
 - Substantial cost-reduction to Orleans rate-payers
 - Easily accommodated at new WWTF
 - Compliant with Commission DRI and needed by Orleans residents
- ❖ **Traditional or Design-Build-Operate Implementation Review**
 - Presentation to BOS on risks, advantages and disadvantages
 - BOS to continue consideration on August 17, 2017





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Financial Plan Update and Next Steps

Financial Plan Update Past Status/Objectives

- ❖ **Develop Functional Financial Model to Allow Inputs and Inform Town Decisions**
- ❖ **Allow Rate Payers to See Annual Wastewater Costs for Their Property**
- ❖ **Provide “Built-in Flexibility” to Allow Changes to Cost Allocations to User Groups to Produce Fair Financial Plan**
- ❖ **Provide Tool that Town Can Continue to Use in the Future**



Financial Plan Update (cont.) Enhancements

- ❖ **“De-couple” Septage Revenue from Septage Construction and Operation and Maintenance Costs: Ability to Utilize Revenue for Properties Who Continue to Utilize On-Site System**
- ❖ **Ability to Change Distribution of Operation and Maintenance Costs: By User Group and Revise Distribution of Costs**
- ❖ **Incorporate Minimum and Maximum Calculations with Input via the User Selection Tab: All Properties and Address Very High and Low Cost Allocations**
- ❖ **Incorporate Possible New Tax Revenue Source: Proposed Short Term Rental Tax to Off-set Operation and Maintenance Costs**
- ❖ **Ability to Better Represent the Per-parcel Results in Graphical or Table Format: Based on Input from BOS and Finance Committee Workshops**



Financial Plan Update (cont.) Cost Allocation Assumptions

- ❖ **Capital Costs- WWTF and Collection System**
 - Case 1 – 100% Tax Rate
 - Case 2 – 50% Tax Rate, 50% Downtown Area/MHP Special Assessment
- ❖ **Capital Costs Effluent Disposal and NT - 100% Tax rate**
- ❖ **O&M&R&M - 100% User Fees Allocated to respective**
- ❖ **Financing**
 - 30-year 0% SRF
 - 10% Grant
 - Short Term Rental Tax (\$200,000)
 - Septage Revenue (\$584,000 annually)
 - 15% Contingency for Capital/ Replacement Costs
- ❖ **Non-traditional and Septic Only costs do not include individual owner costs to pump and maintain on-site septic systems**



Financial Model Flow Chart

Input Selections								
Cost Estimate Sheets	Financing	Downtown Area	Downtown Area Special Assessment Breakdown	Meetinghouse Pond Area	Non-Traditional Technology Area	Septic System Only Area	Discounts, Offsets, and Additional Funds	Financial Model Outputs
Upload Files	Type (SRF or Conventional)	Special Assessment Percentage	Same for Residential, and Non-Residential/Mixed Use Properties	Special Assessment Percentage	Property Taxes Percentage	Property Taxes Percentage	Grant(s) Percentage	Project Complete "All in Year 1" - Average Property Costs
Number of WWTFs	Term (Years)	Property Tax Assessment	Residential Percentage	Property Tax Assessment			Design/Build Savings Percentage	Program Phased over 40-Years - Average Property Costs
Folder for Saving Files	Interest Rate		Non-Residential/Mixed Use Percentage				Design/Build/Operate Savings Percentage	Program Phased over 40-Years - Per Property Costs
							Local Tax Options Percentage	
							Annual Septage Revenue	



Financial Plan Update (cont.) Next Steps

- ❖ **Apply Updated Program Costs Developed as Part of the Downtown Area Preliminary Design Report**
 - Reduction in Capital Costs for WWTF
 - Reduction in Capital Costs for Downtown Area Collection System
- ❖ **Presenting Cost Allocation and Financial Management Plan to Finance Committee and Board of Selectmen on August 17, 2017**
- ❖ **Prepare a Financial Model User Manual**



Financial Plan Update (cont.) Next Steps

- ❖ Review Cost Allocation Methodology with Department of Revenue to Confirm Details of Application
- ❖ Review Billing Mechanisms with Water Department and Assessor's Office
- ❖ Review Affordability Pending Final Cost Numbers at Bid Phase



Freshwater Ponds Remediation Update

Freshwater Ponds Remediation Update

- ❖ Freshwater Ponds Work Group incorporated into Marine & Fresh Water Quality Committee
- ❖ Uncle Harvey's Pond and Pilgrim Lake Prioritized for 2018
- ❖ Field Investigations for Remediation Plan for Uncle Harvey's Pond in Final Stages
- ❖ Alternatives Workshops for Uncle Harvey's Pond on July 25, 2017 and August 8, 2017
- ❖ Reviewed Full Range of Alternatives with SMAST
- ❖ Conducted Two Stage Screening to Shortlist (See Matrix)



Uncle Harvey's Pond – Results of Preliminary Screening August 8, 2017

Water Quality Management Alternatives
Uncle Harvey's Pond
August 8, 2017

Criteria (1)	Criteria Weight (Importance) (2)	Management Alternatives (1,2)															
		Enhanced Circulation		Aeration		Dredging		Phosphorus Inactivation		Watershed Phosphorus Reduction		Floating Constructed Wetlands		Microbial Competition (Gala Process)			
		Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating		
Reliability of Technology (WQS)	10	9	90	9	90	9	90	9	90	9	90	3	30	3	30		
Ease of Implementation	4	8	32	8	32	5	20	7	28	5	20	5	20	8	32		
Life-Cycle Cost	8	5	40	4	32	2	16	5	40	4	32	5	40	5	40		
Permitting Requirements	10	8	80	8	80	2	20	6	60	8	80	8	80	5	50		
Owner Acceptance	9	5	45	3	27	10	90	7	63	9	81	3	27	2	18		
Environmental Risks	10	8	80	8	80	7	70	7	70	10	100	7	70	2	20		
Town Management Requirements	8	5	40	5	40	9	72	9	72	3	24	3	24	3	24		
Sustainability	9	7	63	7	63	10	90	9	81	9	81	7	63	6	54		
Aesthetics	3	9	27	7	21	10	30	10	30	10	30	7	21	9	27		
Total Score:			497		465		498		534		538		375		295		

- Notes: 1. See "Watershed Controls" Spreadsheet, SMAST, July 2017
 2. See "CSP/SMAST, Preliminary Review, Uncle Harvey's Pond Water Quality Management Options" July 20, 2017
 3. Scoring Methodology:
 Criteria Weight: 1 - 10 1 = Poor 10 = Excellent
 Alternative Score: 1 - 10 1 = Low 10 = High
 4. Weights or Scores in bold red indicate need for additional information or consideration



Freshwater Ponds Remediation Update (cont.)

❖ Explanation of Results to Date:

- SMAST sediment, phytoplankton, mussel and other data will be used to refine evaluation and select preferred alternative
- May carry forth "Watershed Phosphorus Reduction" with other short-term remediation option
- Stormwater management, fertilizer reduction, remediation of failing of-non-compliance on-site systems and other means to reduce phosphorus will be done in any case.
- Red Scores on spreadsheet indicate points of uncertainty for which more information or more discussion are required

❖ Next Meeting on August 21, 2017 to Identify Preferred Alternative(s) to Carry Forward

❖ Recommendations for Fall Special Town Meeting Warrant Article by September 8, 2017



Status of Non-Traditional Technologies in MassDEP Watershed Permits

Status of Non-Traditional Technologies in MassDEP Watershed Permits

- ❖ In discussions with MassDEP and Cape Cod Commission on framework for permitting NT technologies
- ❖ Provided preliminary guidance from MassDEP on watershed-based permit requirements (included in information package)
- ❖ Water Management Agencies (WMAs) will draft their own proposed permit using MassDEP guidance
- ❖ Using Lonnie's Pond as the pilot for watershed-permit that includes aquaculture
- ❖ Working with Pleasant Bay Alliance, which is the watershed being used for piloting watershed-based permit by MassDEP
- ❖ Developing questions for discussion with MassDEP/Cape Cod Commission to define permit requirements and issues



Other Items and Public Comment

Other Items and Public Comment

❖ Recent and Proposed Public Information Activities

- Regulatory Meetings
 - MEPA – August 2, 2017
 - MassDOT – August 9, 2017
- Board of Selectmen and Finance Committee
 - DBO Workshop – August 9, 2017
 - Financial Model Workshop and DBO Workshop – August 17, 2017
 - BOS Meeting on August 23
- OWQAP - September 20, 2017 and October (Date TBD)
- Marine & Fresh WQ Committee Meeting: August 21
- Shellfish and Waterways Improvement Advisory Committee
 - Management Plan - September 12, 2017
- Special Town Meeting – October 16, 2017

❖ Warrant Articles for Fall STM Prepared by September 15, 2017



Thank You