

Comprehensive Wastewater Management Plan



Town of Marion, Massachusetts

Informational Public Meeting

May 23, 2022

Marion CWMP Agenda

- Introductions
- CWMP Goals & Drivers
- CWMP Process & Structure
- Marion's Wastewater System
- Wastewater Needs
- Wastewater Alternatives
- Developing the Recommended Plan
- Questions & Comments



Marion CWMP Introductions

- Town Manager
 - James McGrail
- Select Board
 - Carlton Burr Jr., Norman Hills, Randy Parker,
 - John Waterman (Former Selectman)
- WPCF Staff
 - Nathaniel Munafo, Frank Cooper, Rebecca Tilden, Meghan Davis
- CAC (Citizen's Advisory Committee)
 - Don Anderson, Margherita Baldwin, Dot Brown, Ray Cullum, Sherman Briggs
- Weston & Sampson
 - Kent Nichols, Laurie Toscano, Gina Cortese



Marion CWMP

Town of Marion's Goals

CWMP = Roadmap for Wastewater Management

- Driven by:
 - Environmental Resource Protection
 - Aging Infrastructure & Modernization
 - System Resiliency
 - Regulatory Requirements
 - System Expansion
 - Possible Regionalization
 - Public Input



Marion CWMP

CWMP Basics

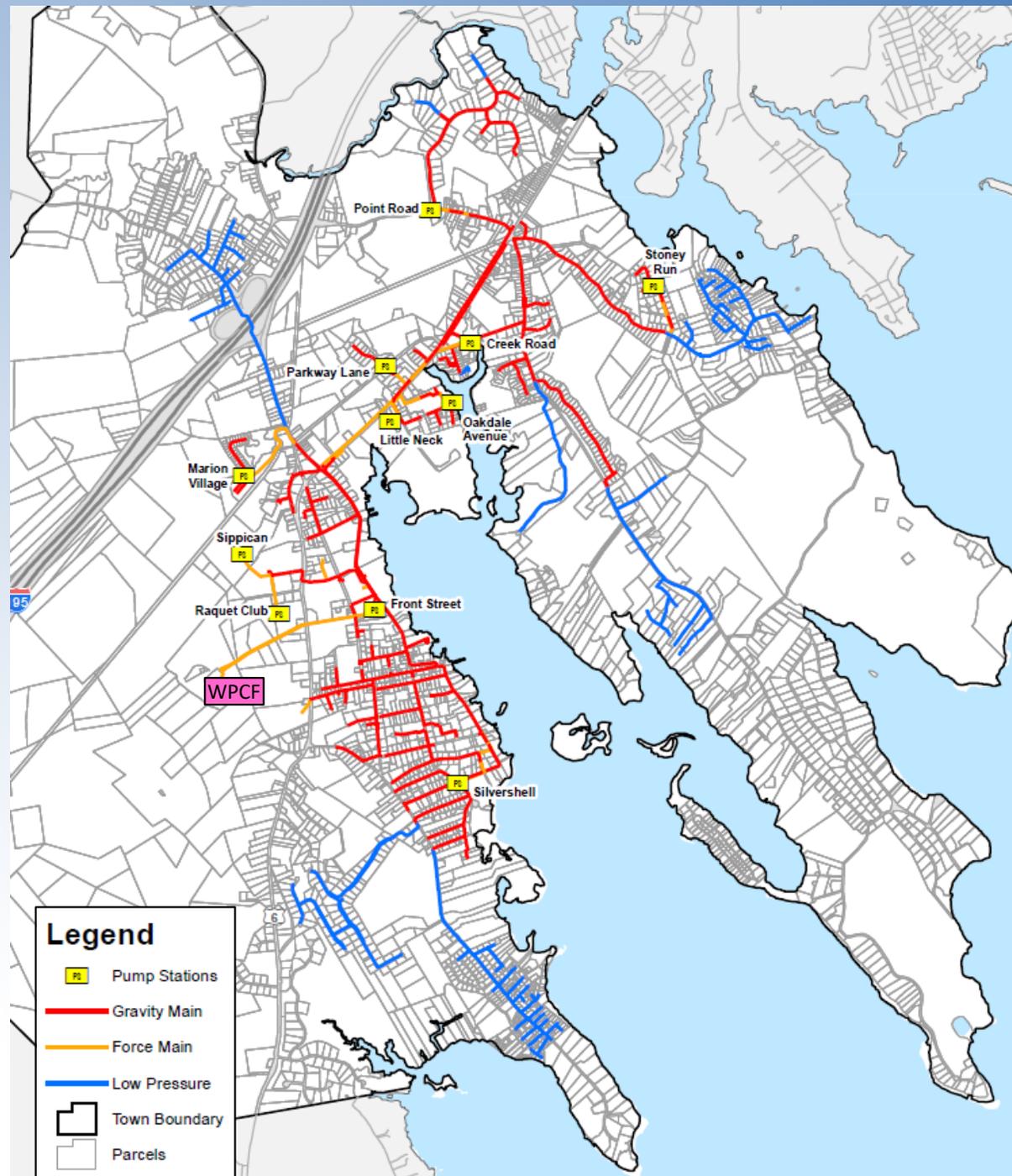
- Update 2001 CWMP
 - Reevaluate Needs Areas from 2001 Sewer Needs Analysis
- Address Capacity Needs to Support Planning and Economic Development
- Incorporate Existing Sewer System & PS Rehab. Needs
- Evaluate WPCF & Lagoons Supplemental Future Needs
- Review & Incorporate the Regional Alternative



Marion CWMP

Marion Wastewater Systems

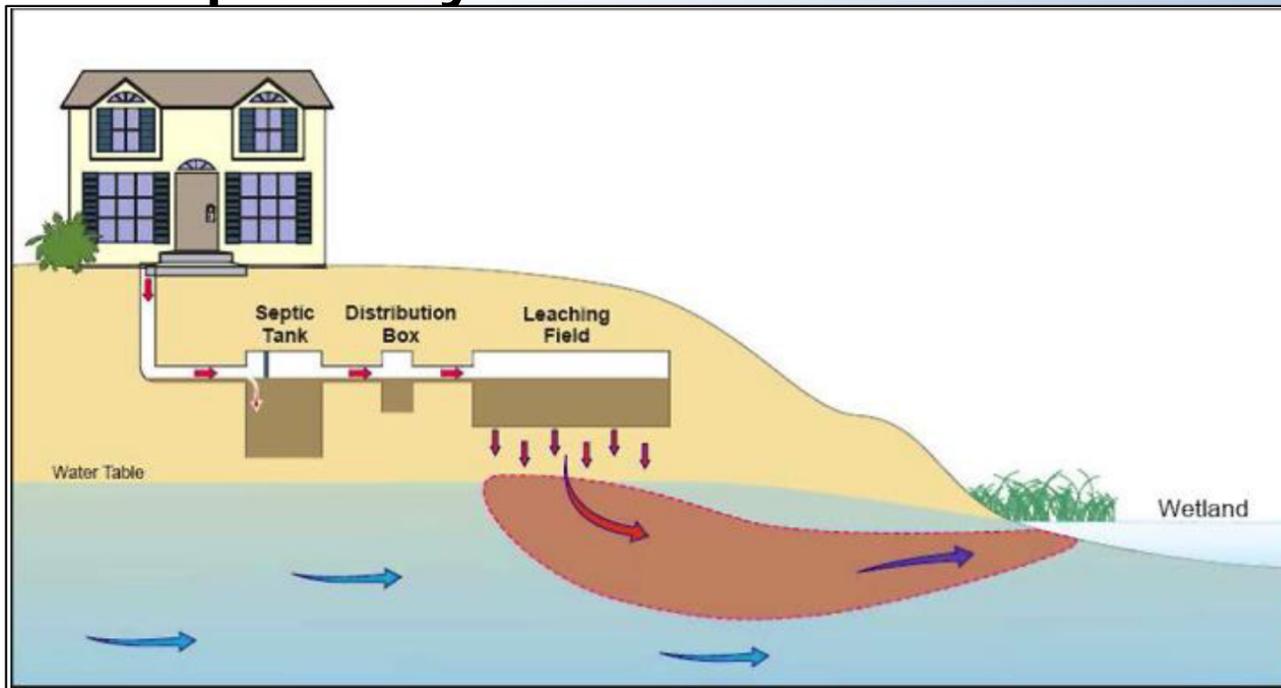
- On-site Septic Systems
- ~32 mi of Sewer
- 8 Town-Owned Pump Stations
- ~1680 Connections
- 0.588 MGD WPCF



Marion CWMP Unsewered Areas

On-Site Systems

- ~900 on-site septic systems (~1/3 developed properties)
- Septic System Denitrification Regulations



SECTION 4.180: SEPTIC SYSTEM DENITRIFICATION REGULATION

4.180.1: AUTHORITY

The following Marion Sanitary Code regulation is adopted pursuant to the Marion Board of Health in accordance with the provisions of MGL c. 111, section 31.

4.180.2: PURPOSE

The purpose of this regulation is to ensure that new and expanded flows from septic systems are not discharging excessive amounts of new nitrogen which contributes to the ongoing degradation of the Town's coastal waters.

4.180.3: STATEMENT OF PURPOSE

In connection with, and for the purpose of, adoption of this regulation the Board of Health makes the following findings pursuant to Massachusetts General Laws (MGL) Chapter 111, section 31 and all other enabling authority.

4.180.3.1: The presence of excess nitrogen in the town of Marion's water resources contributes to the growth of undesirable algae, that causes reducing dissolved oxygen and water clarity, and impairing habitat, and degrading the waters for shellfishing, recreation, and other public purposes.

4.180.3.2: On-site septic systems are a primary source of nitrogen to our coastal waters.

4.180.3.3: On-site septic systems remove no more than 25% of the nitrogen in our wastewater.

4.180.3.4: The installation of On-site septic systems adds new nitrogen to the town's nitrogen sensitive coastal waters.

4.180.3.5: On-site septic system technologies exist that can reduce nitrogen by at least 50%.

4.180.4: DEFINITIONS

Unless otherwise defined in the Marion Sanitary Code, all terms used shall have the definitions stipulated in 310 CMR 15.000 State Environmental Code, Title 5.

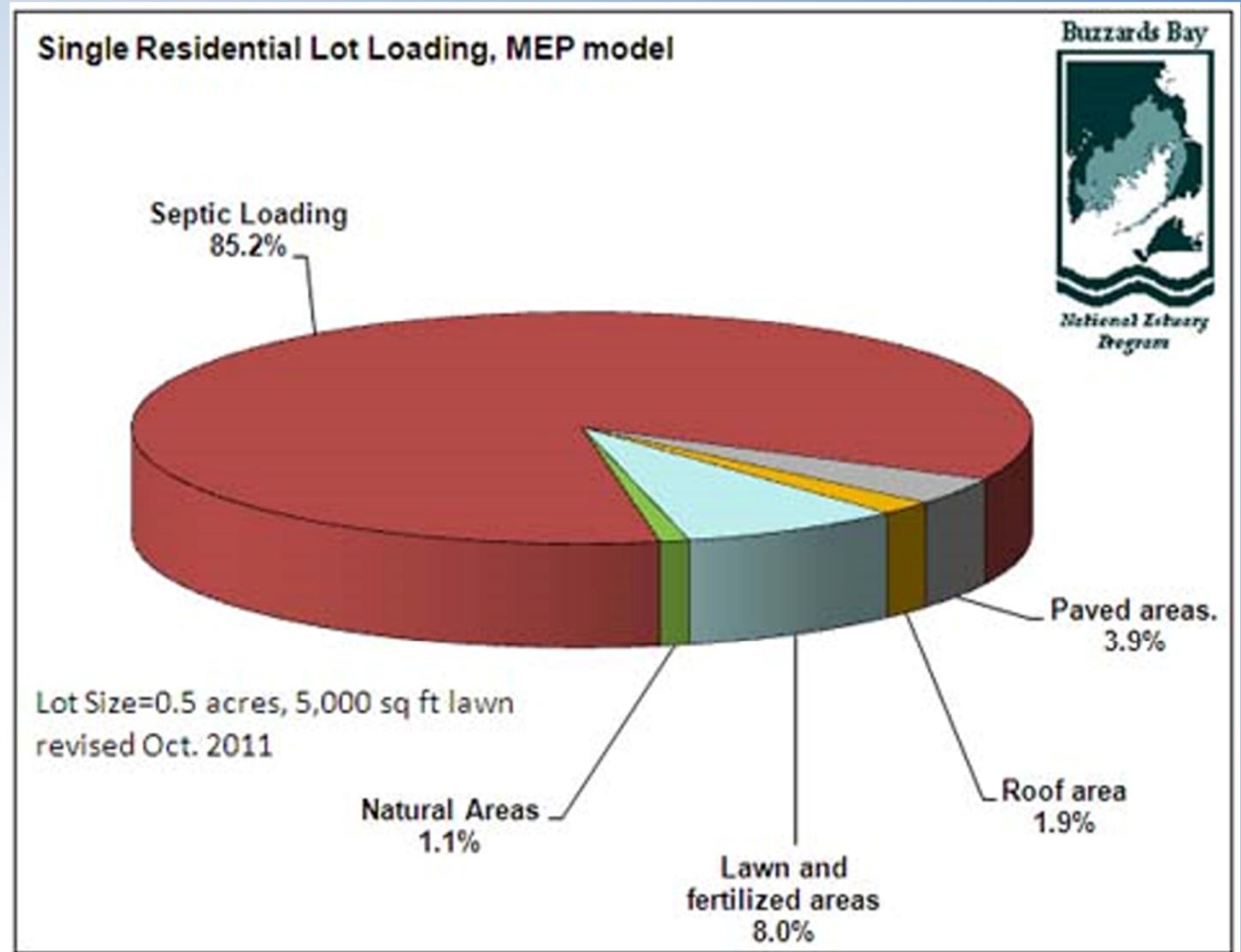
Alternative System - A Massachusetts Department of Environmental Protection approved system designed to provide or enhance the removal of nitrogen in on-site sewage disposal.

Cesspool - A pit with open-jointed linings or holes in the bottom and/or sidewalls into which raw sewage is discharged, the liquid portion of the sewage being disposed of by seeping or leaching into the surrounding soils, and the solids or sludge being retained in the pit. Cesspools are a nonconforming system.

Marion CWMP Unsewered Areas

On-Site Systems – Sources of Nitrogen from Individual Homes

Source: Buzzards Bay
National Estuary
Program



Marion CWMP Marion's Existing Collection System

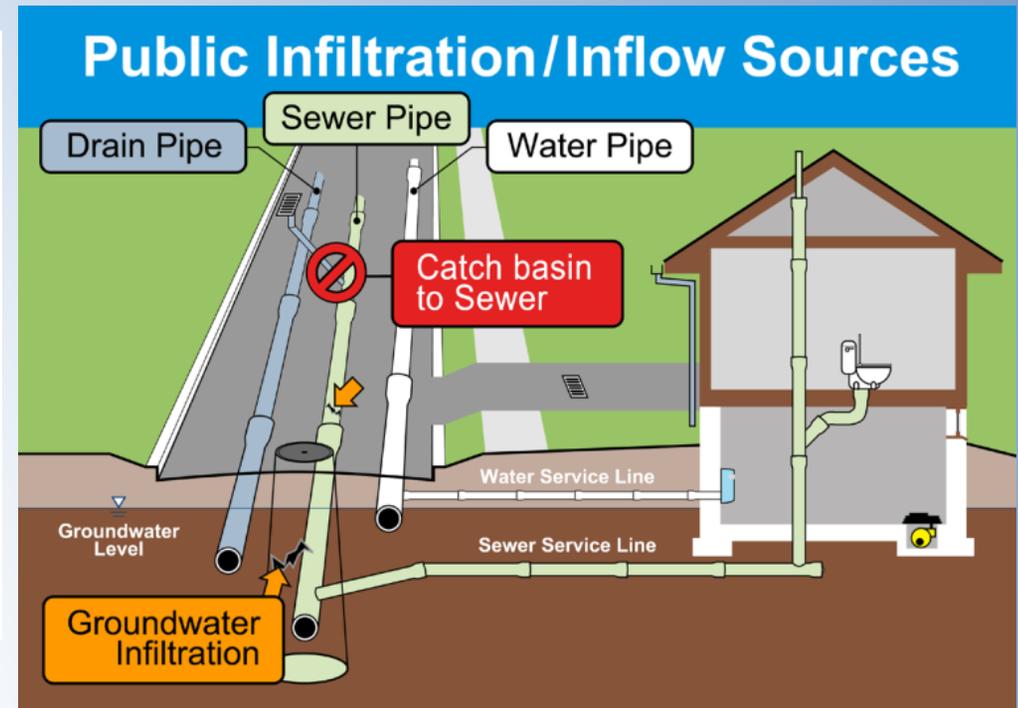
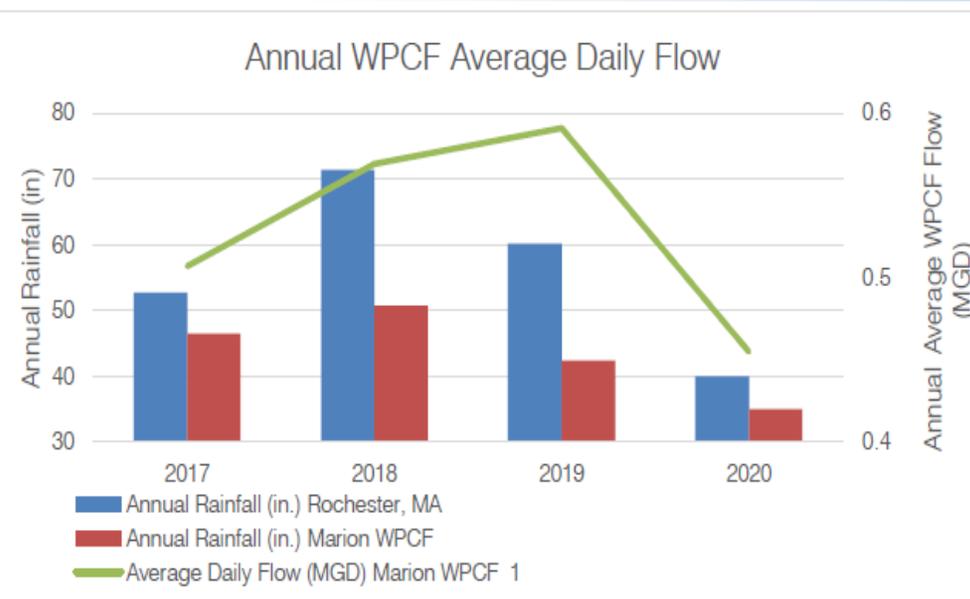
Pipeline Infrastructure – Inflow & Infiltration



Broken Pipe



Infiltration



Marion CWMP

Existing Collection System Program

Ongoing Annual Program to Remove Infiltration & Inflow

- Goal is restoration of capacity in collection system and WPCF through repair and rehabilitation
- Continuing work in Year 3 of 10-year program for I/I mitigation
- ~\$200,000 spent on I/I Program in 2021
- Work prioritized based on known problem areas and physical characteristics



Marion CWMP Pump Stations



Front Street Pump Station



Creek Road Pump Station



Silvershell Pump Station



Point Road Pump Station



Littleneck Pump Station



Oakdale Pump Station Wet Well



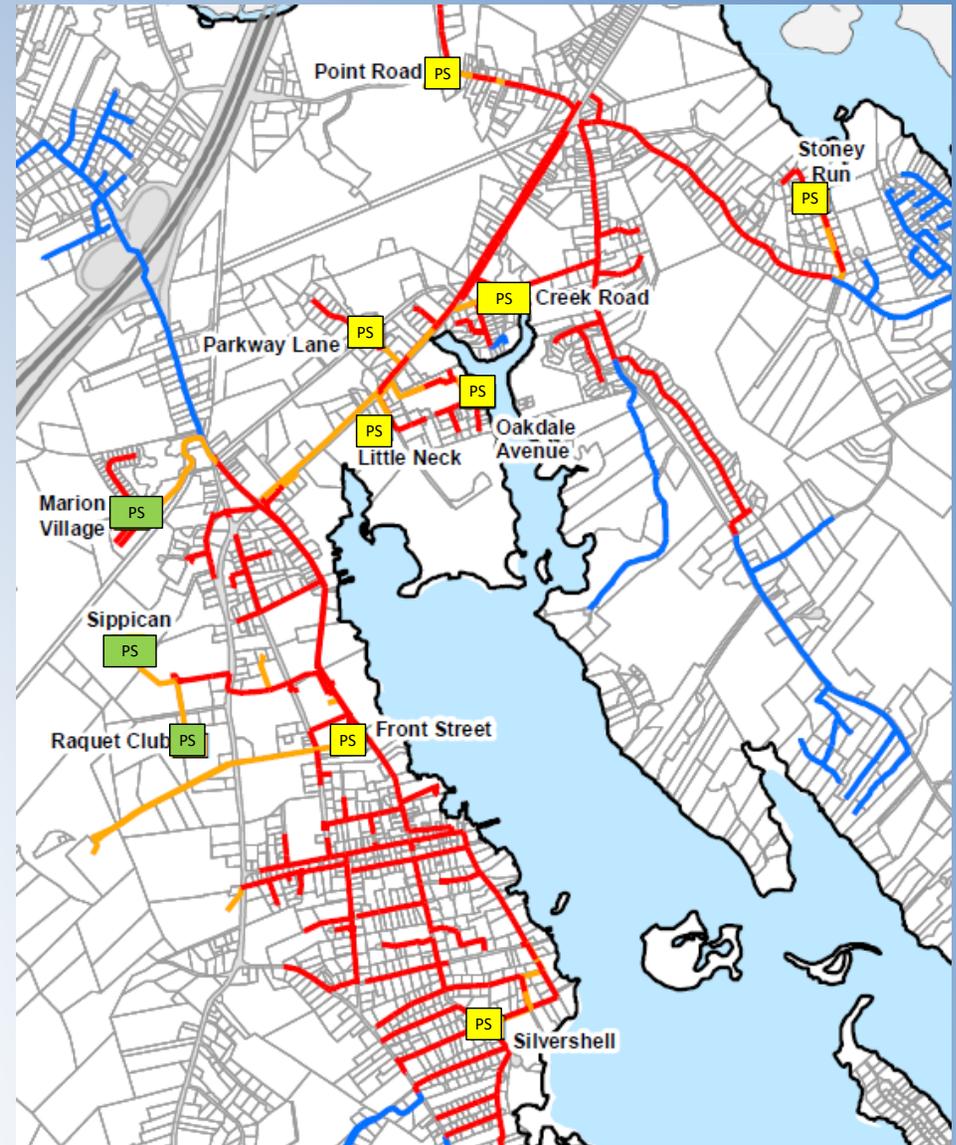
Stoney Run Pump Station Hatches



Parkway Lane Pump Station Wetwell

Marion CWMP Pump Stations

Pump Station	Approx. Age (years)	Approx. No. Properties Served
Front Street	50 *2005 Update	1,700
Creek Road	50	500
Silvershell	60	500
Oakdale Avenue	30	70
Littleneck	10	10
Parkway Lane	35	15
Point Road	50	70
Stoney Run	25	30



Marion CWMP Marion's WPCF

- WPCF located on Benson Brook Road
- NPDES Permitted Discharge
 - 0.588 MGD Avg. Daily Flow
 - Peak Capacity of ~1.1 MGD
 - Lagoon System Handles Wet Weather Flow



Marion CWMP Marion's WPCF



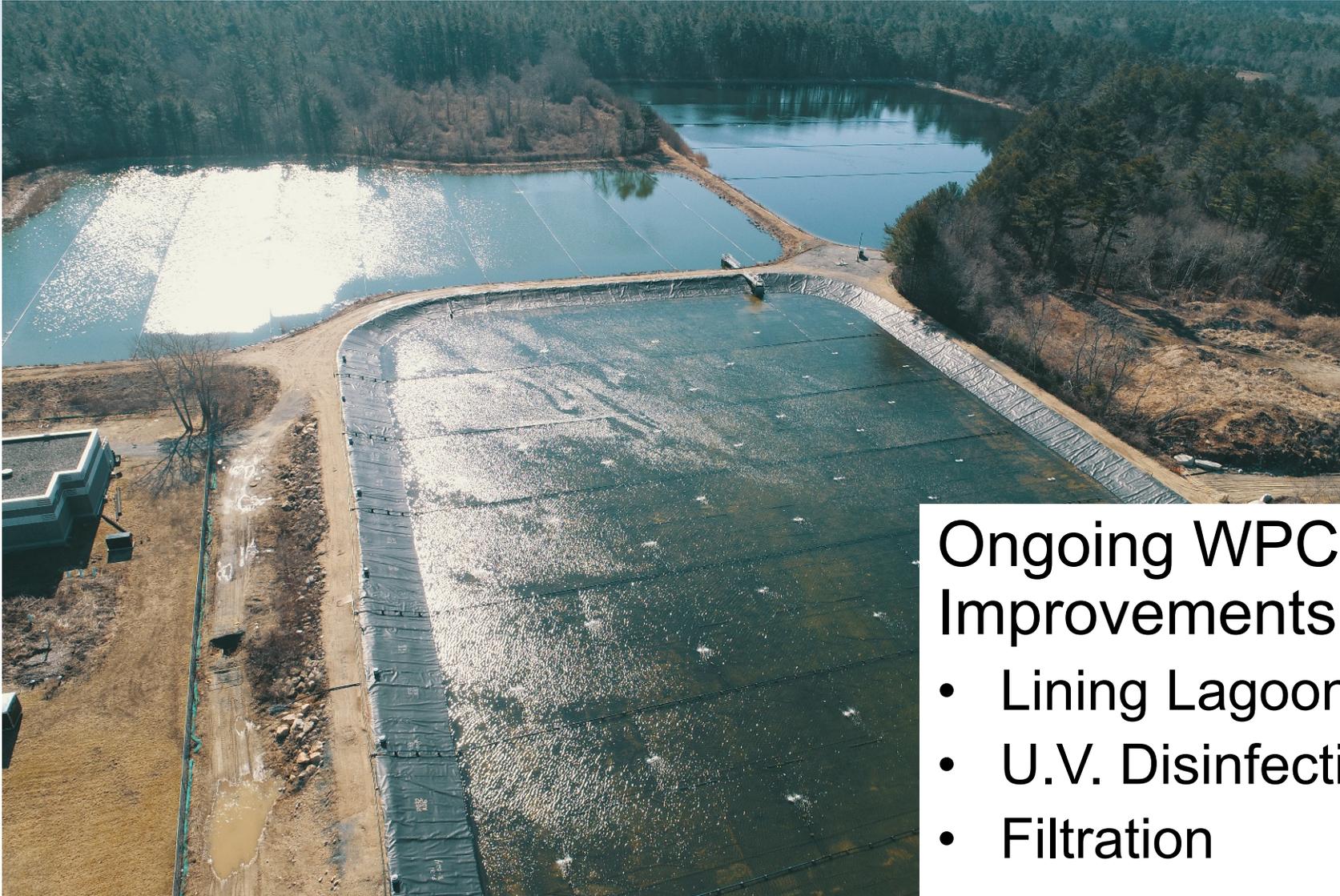
Marion CWMP Marion's WPCF

Permitting & Regulatory Items

- NPDES Permitted Discharge
 - Capacity
 - Nitrogen
 - Phosphorus
 - Metals
 - Lagoons
- Consent Orders



Marion CWMP Marion's WPCF



Ongoing WPCF Improvements Project

- Lining Lagoon No. 1
- U.V. Disinfection
- Filtration

Marion CWMP

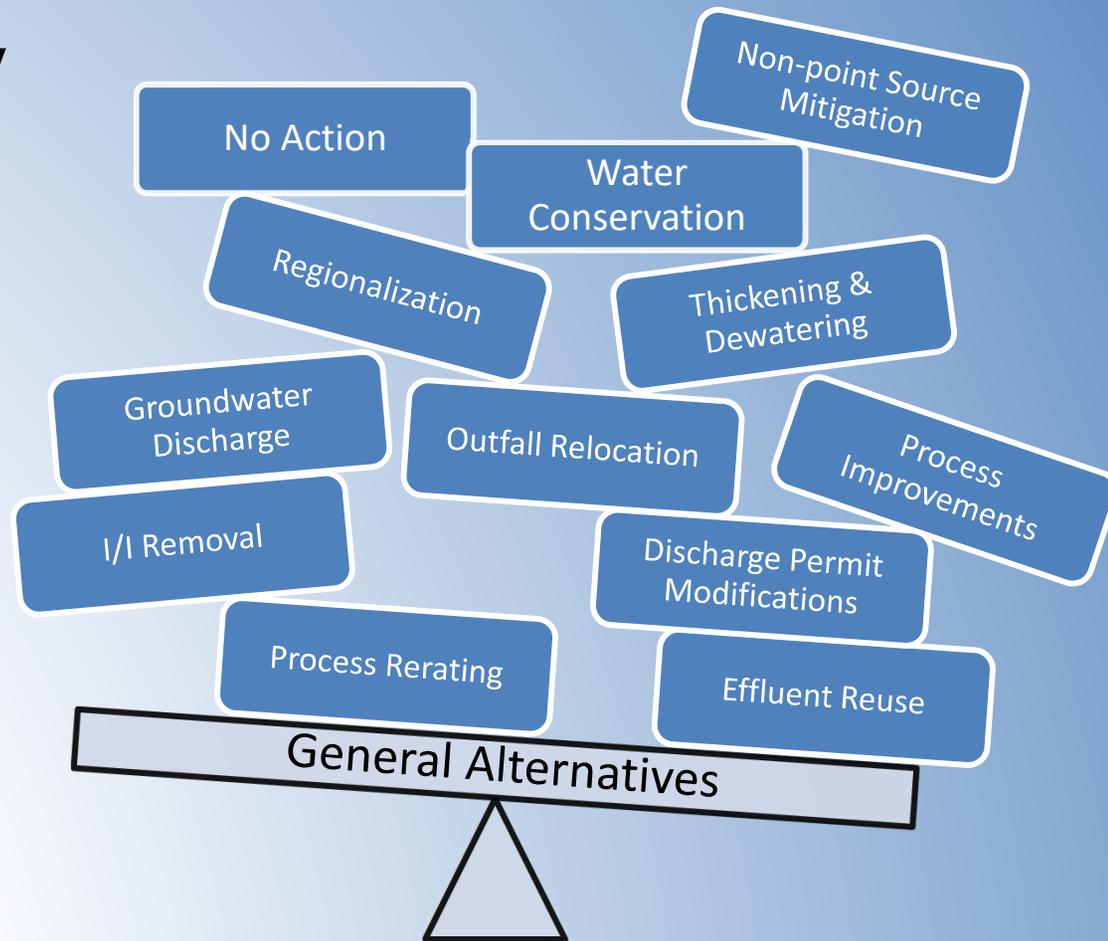
Marion WPCF Needs

- Nature of WPCF Needs
 - Modernization Needs (Condition, Technology, etc.)
 - Capacity Needs
 - Regulatory and Permit Needs
 - Sustainability (Resiliency/Efficiency/Safety) Needs
- WPCF Needs Categories
 - ‘Big Picture’ Needs
 - Specific Needs (Process, System, or Structure)

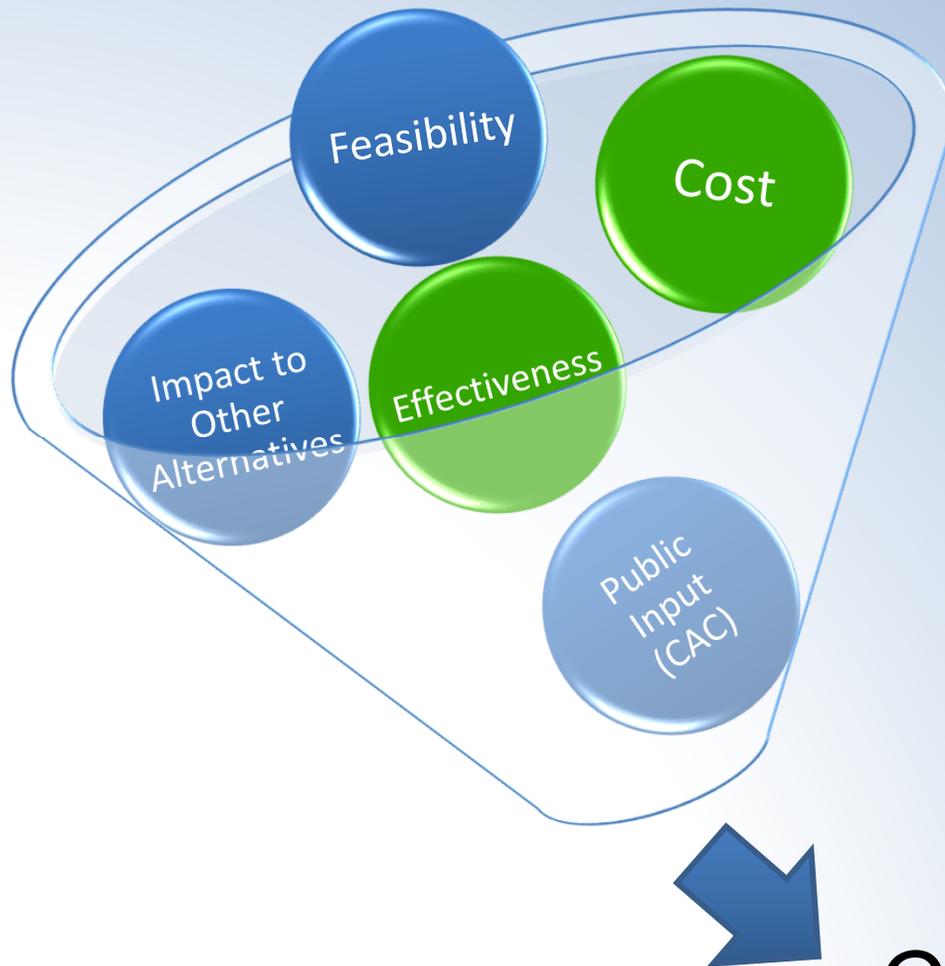


Marion CWMP WPCF Needs & Alternatives

- General Needs
 - Treatment Capacity
 - Nitrogen Removal
 - Phosphorus Removal
 - Copper Removal
 - Biosolids Management



Marion CWMP WPCF Needs & Alternatives



Evaluate all alternatives against broad criteria to filter for preferred alternatives

Comparable Alternatives



Marion CWMP WPCF Needs & Alternatives

Alternative	WPCF Needs Met	Total Capital Cost ¹	Feasibility
A1 – Process Improvements - Optimization	✓	\$11 M	High Feasibility
A2 – Process Improvements - 3rd SBR	✓	\$13 M	High Feasibility
B1 – Groundwater Discharge - Supplemental Discharge	✓	\$16 M	Moderate Feasibility
B2 – Groundwater Discharge - All Flows	✓	\$17 M	Low Feasibility
C1 – Outfall Relocation to Salt Marsh	✓	\$16 M	Moderate Feasibility
C2 – Outfall Relocation to Outer Aucoot Cove	✓	\$56 M	Low Feasibility
D – Regionalization with Wareham	✓	\$76 M	Moderate to Low Feasibility

¹Development of costs are detailed in the CWMP Report. They are used in this presentation for comparison purposes only.



Marion CWMP WPCF Capacity

- Capacity at WPCF remains limited, is a current and future need



Marion CWMP

Collection System & Pump Station Needs

- Inflow & Infiltration work prioritized
 - Known Problem Areas
 - Sewers within Village Area
 - Areas within Flood Zone
- Policy Needs
 - Grinder Pumps
 - Private Sewers
- Pump Station & Collection System Needs
 - Modernization (Age/Condition) & Resiliency Needs



Front Street Pump Station



Marion CWMP

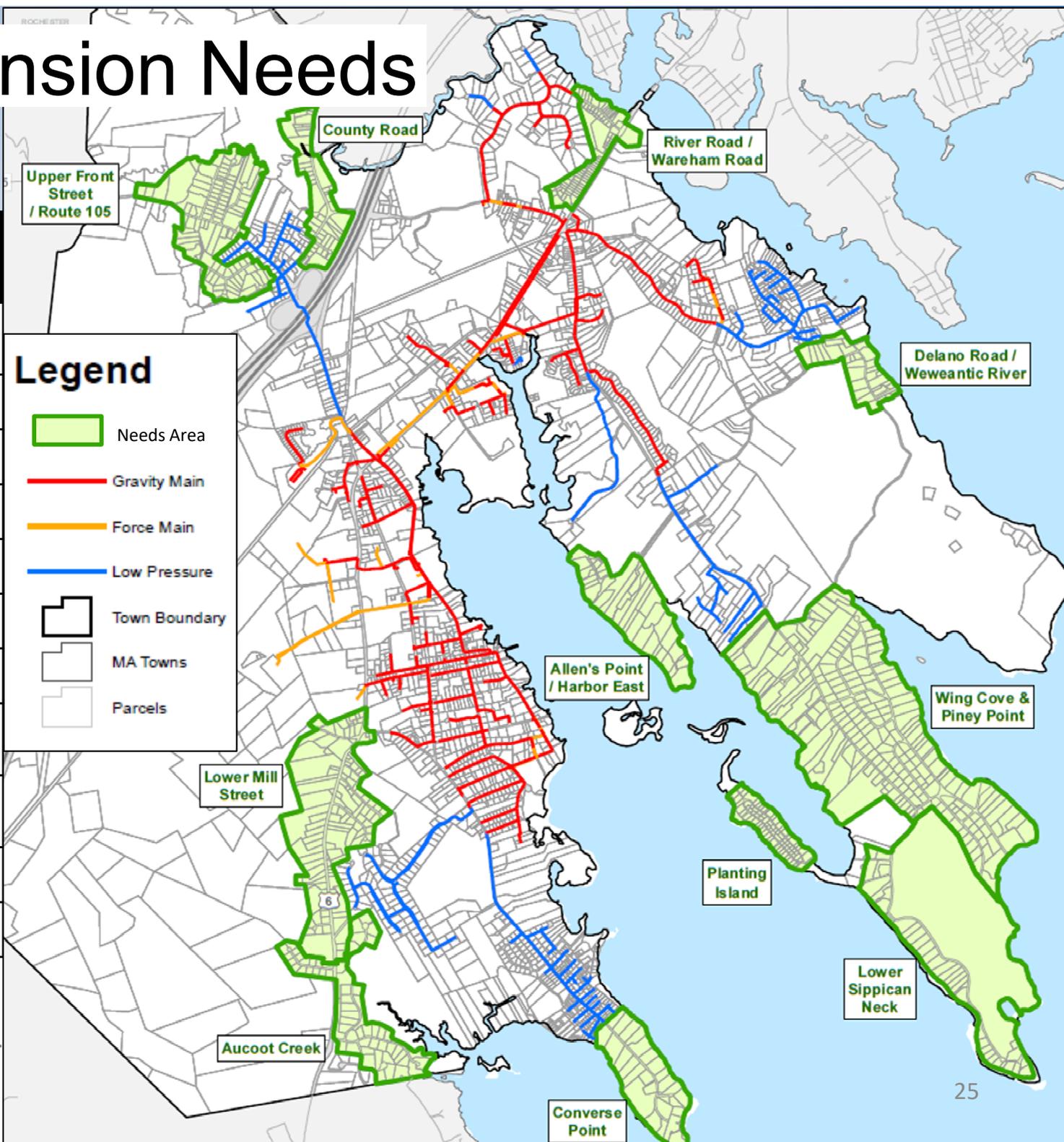
Pump Station Alternatives

Pump Station	No Action	Minor Renovation	Major Renovation	Complete Replacement	Eliminate/Abandon
Front Street			✓	✓	
Creek Road			✓	✓	
Silvershell			✓	✓	
Oakdale Avenue			✓	✓	
Littleneck	✓	✓			
Parkway Lane			✓	✓	✓
Point Road		✓	✓		
Stoney Run	✓	✓			

Sewer Expansion Needs

Unsewered Needs Areas

River Road/ Wareham Road
Delano Road/ Weweantic River
Wings Cove/ Piney Point
Lower Sippican Neck
Planting Island
Allens Point/ Harbor East
Converse Point
Aucoot Creek
Lower Mill Street
Upper Front Street/ Route 105
County Road



Marion CWMP

Unsewered Areas Prioritization

Needs Area	Priority Criteria	Priority Score	Priority Rank
Planting Island	<ul style="list-style-type: none"> ➤ Nitrogen Loading & Impairments ➤ BOH Variances ➤ Lot Size ➤ Soil Characteristics ➤ Flood Plains ➤ Other 	45	High
Lower Sippican Neck		39	High
Upper Front Street		35	High
Aucoot Creek		33	High
River Road/ Wareham Street		28	High
Lower Mill Street		32	Medium
County Road		29	Medium
Wings Cove/ Piney Point		28	Medium
Delano Road/ Weweantic River		26	Low
Allens Point/ Harbor East		18	Low
Converse Point		17	Low

Marion CWMP

Unsewered Areas Alternatives

Needs Area	No Action	Enhanced On-site Program	Localized Treatment	Sewer Extension
Planting Island		✓	✓	✓
Lower Sippican Neck		✓	✓	✓
Upper Front Street	✓	✓		✓
Aucoot Creek		✓		✓
River Road/ Wareham Street		✓		✓
Lower Mill Street		✓		✓
County Road	✓	✓		✓
Wings Cove/ Piney Point	✓	✓		✓
Delano Road/ Weweantic River	✓	✓		✓
Allens Point/ Harbor East	✓	✓		✓
Converse Point	✓	✓		✓

Marion CWMP

CAC/ Select Board Preferred Alternatives

Needs Area	Preferred Alternative
Planting Island	Sewer Extension
Lower Sippican Neck	Sewer Extension
Upper Front Street	Enhanced On-Site Program
Aucoot Creek	Sewer Extension
River Road/ Wareham Street	Sewer Extension
Lower Mill Street	Sewer Extension
County Road	Enhanced On-Site Program
Wings Cove/ Piney Point	Sewer Extension
Delano Road/ Weweantic River	Enhanced On-Site Program
Allens Point/ Harbor East	Enhanced On-Site Program
Converse Point	Enhanced On-Site Program

Marion CWMP

Future Flow Considerations

Flow Description	Average (MGD)
Existing Flows ¹ (Avg. 2017 – 2021)	0.515
Infill & Growth in Sewered Areas	0.050
Sewer Extensions (Recommended)	0.091
Planned/Anticipated Development	0.030
Proposed Future Average Daily Flow to WPCF - TOTAL	0.686

¹Existing Flow includes those contributed by Tabor Academy and existing inflow/infiltration.

Marion CWMP

Developing the Recommended Plan

- Actions Needed
 - Collection System Improvements/ I&I Mitigation
 - Policy Revisions (Grinder Pumps & Private Sewer Systems)
 - Pump Station Modernization & Resiliency Improvements
 - WPCF Modernization & Resiliency Improvements
 - Sewer Extensions
 - WPCF Capacity & Permit Compliance



Marion CWMP

Developing the Recommended Plan

- Overview of Components (& Cost)

Alternative	Capital Cost	Annual Cost Impact	20 year Present Worth
A1 – Process Improvements - Optimization	\$11 M	\$220,000	\$13.5 M
A2 – Process Improvements - 3rd SBR	\$13 M	\$220,000	\$15.5 M
B1 – Groundwater Discharge - Supplemental Discharge	\$16 M	\$260,000	\$18.8 M
C1 – Outfall Relocation to Salt Marsh	\$16 M	\$140,000	\$17.3 M
D – Regionalization with Wareham	\$76 M	\$1,480,000	\$98.0 M



Public Involvement

What will the Town do to address nitrogen loadings on its waters from septic systems?

Public Involvement

Is there a preference for advanced on-site (septic) systems with enhanced nitrogen removal over sewer extensions?

Public Involvement

Can the Town choose to 'do nothing'?

Public Involvement

Recognizing that sewer extensions or advanced septic systems will have a significant cost, what is the appropriate time for the Town to take actions?

Public Involvement

Considering treatment and the Marion WPCF, does the Town prefer regional options to local despite the higher costs?

Marion CWMP



Questions/ Comments?



Weston & SampsonSM

Thank You

