Comprehensive Wastewater Management Plan

Public Hearing

September 6, 2023

Kevin Olson, PE
Adam Higgins, PE

WRIGHT-PIERCE
Engineering a Better Environment

Presentation Overview

- Project Team
- Reasons for Comprehensive Wastewater Management Plan (CWMP)
- Phase 1 Overview
- Phase 2 Overview
- Phase 3 Overview
- Funding/Financing
- Questions & Discussion

WRIGHT-PIERCE
Engineering a Better Environment

Project Team – Town of Rockland

Board of Sewer Commissioners

Chuck Heshion

Daniel E. DuRoss

Sherri Vallie

Project Team – Veolia

Veolia Staff, WWTP and PS Operations

Rick Kotouch
Project Manager

Megan Lynch
Asst. Project Manager

Project Team – Wright-Pierce Engineers

Kevin Olson

kevin.olson@wright-pierce.com
978.416.8900

Adam Higgins

adam.higgins@wright-pierce.com
978.416.8020

Reasons for the CWMP

Town-Wide Planning
- 20-year period
- Unsewered areas
- Proposed developments
- Key areas of protection and environmental concern

Wastewater Collection System
- Existing pipes
- Pump stations
- Capacity
- I/I Control

Wastewater Treatment Plant
- New NPDES Permit
- Aging equipment
- Current building code requirements
- Capacity

Project Financing
- 0/2 % SRF Loan
- 20 or 30-year Loan
- Other requirements

Town, Veolia, EPA and MassDEP involvement throughout project: Workshops, Meetings, Reviews

WRIGHT-PIERCE
Engineering a Better Environment

Comprehensive Wastewater Management Plan Approach

1 Phase 1 – Existing Conditions, Problem Identification and Needs Assessment

2 Phase 2 – Alternatives Identification and Screening

3 Phase 3 – Detailed Evaluation of Alternatives and Recommended Wastewater Management Plan

Rockland's Overall CWMP Approach

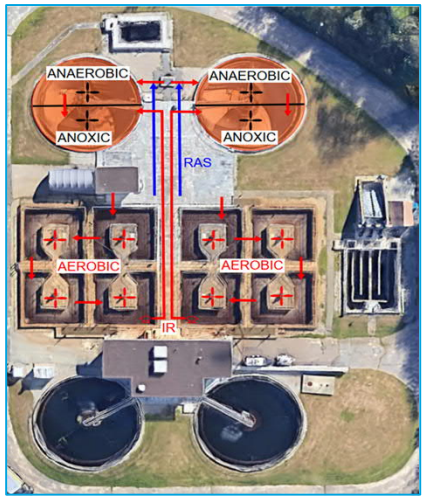
1 Phase 1 – Assessment of Existing Conditions

2 Phase 2 – Alternatives Identification and Screening

3 Phase 3 – Evaluation of Short-Listed Alternatives in Phase 2 and Develop a Recommended Wastewater Management Plan

WRIGHT-PIERCE
Engineering a Better Environment

Previous Planning/Studies/Projects



WWTP Assessment

WP evaluated the WWTP and provided recommendations to improve the WWTP, including secondary and tertiary treatment solutions. Completed Spring 2021.

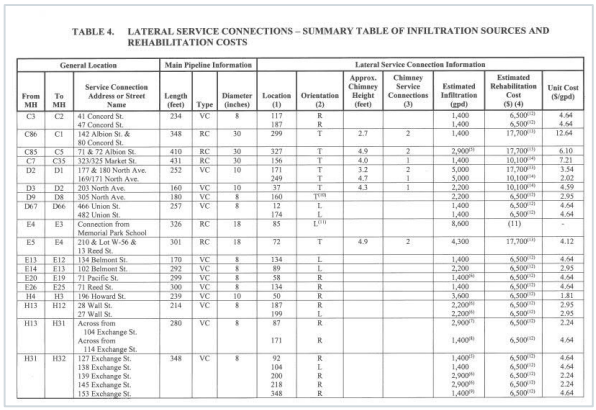
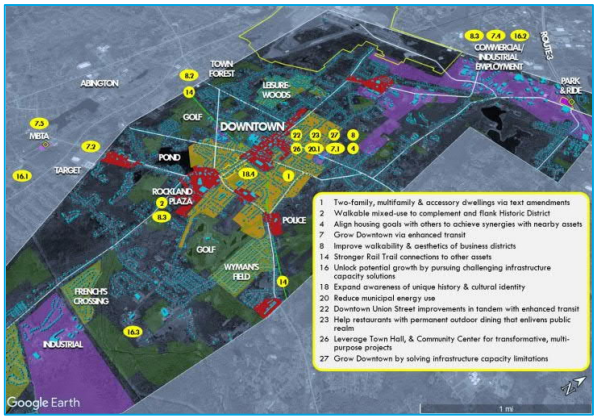


TABLE 4. LATERAL SERVICE CONNECTIONS – SUMMARY TABLE OF INFILTRATION SOURCES AND REHABILITATION COSTS

General Location			Main Pipeline Information			Lateral Service Connection Information						
From MH (gpd)	To MH	Service Connection Address or Street Name	Length (feet)	Type	Diameter (inches)	Location (1)	Orientation (2)	Approx. Chimney Height (feet)	Chimney Service Connections	(3)	Estimated Infiltration (gpd)	Estimated Rehabilitation Cost ($) (4)	Unit Cost ($/gpd)
C3	C2	41 Concord St.	234	VC	8	117	R				1,400	6,500[12]	4.64
		47 Concord St.				187	R				1,400	6,500[12]	4.64
C86	C1	142 Albion St. & 80 Concord St.	348	RC	30	299	T	2.7	2		1,400	17,700[13]	12.64
C85	C5	71 & 72 Albion St.	410	RC	30	327	T	4.9	2		2,900[15]	17,700[13]	6.10
C7	C35	323/325 Market St.	431	RC	30	156	T	4.0	1		1,400	10,100[14]	7.21
D2	D1	177 & 180 North Ave. 169/171 North Ave.	252	VC	10	171	T	3.2	2		5,000	17,700[13]	3.54
						249	T	4.7	1		5,000	10,100[14]	2.02
D3	D2	203 North Ave.	160	VC	10	37	T	4.3	1		2,200	10,100[14]	4.59
D9	D8	305 North Ave.	180	VC	8	160	T[10]				2,200	6,500[12]	2.95
D67	D66	466 Union St.	257	VC	8	12	L				1,400	6,500[12]	4.64
		482 Union St.				174	L				1,400	6,500[12]	4.64
E4	E3	Connection from Memorial Park School	326	RC	18	85	L[11]				8,600	(11)	-
E5	E4	210 & Lot W-56 & 13 Reed St.	301	RC	18	72	T	4.9	2		4,300	17,700[13]	4.12
E13	E12	134 Belmont St.	170	VC	8	134	L				1,400	6,500[12]	4.64
E14	E13	102 Belmont St.	292	VC	8	89	L				2,200	6,500[12]	2.95
E20	E19	71 Pacific St.	299	VC	8	58	R				1,400[16]	6,500[12]	4.64
E26	E25	71 Reed St.	300	VC	8	134	R				1,400	6,500[12]	4.64
H4	H3	196 Howard St.	239	VC	10	50	R				3,600	6,500[12]	1.81
H13	H12	28 Wall St.	214	VC	8	187	R				2,200[16]	6,500[12]	2.95
		27 Wall St.				199	L				2,200[16]	6,500[12]	2.95
H13	H31	Across from 104 Exchange St. Across from 114 Exchange St.	280	VC	8	87	R				2,900[17]	6,500[12]	2.24
						171	R				1,400[18]	6,500[12]	4.64
H31	H32	127 Exchange St.	348	VC	8	92	R				1,400[15]	6,500[12]	4.64
		138 Exchange St.				104	L				1,400	6,500[12]	4.64
		139 Exchange St.				200	R				2,900[16]	6,500[12]	2.24
		145 Exchange St.				218	R				2,900[16]	6,500[12]	2.24
		153 Exchange St.				348	R				1,400[18]	6,500[12]	4.64

Infiltration/Inflow (I/I) and Sewer System Evaluation Survey (SSES)

I/I and SSES work previously completed and ongoing. 2021 SSES included recommendations to reduce I/I. Sewer rehabilitation project and flow monitoring completed in Summer 2023



Master Plan of 2030

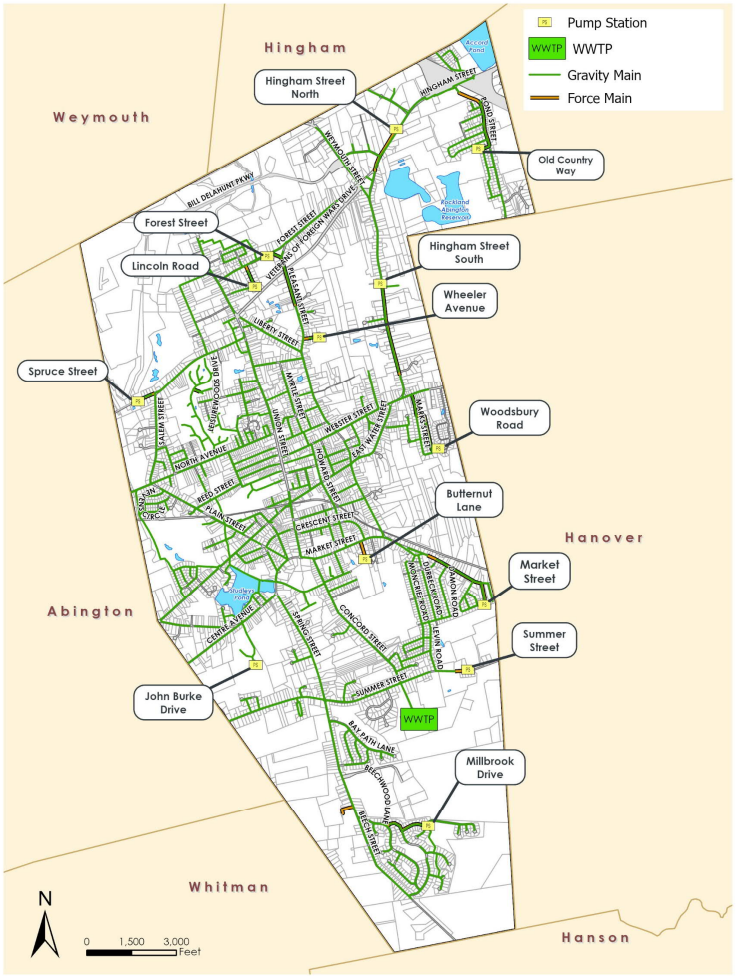
The Town of Rockland's roadmap for planning from 2020 to 2030 to achieve the Town's long-term goals and objectives for the community.

WRIGHT-PIERCE
Engineering a Better Environment

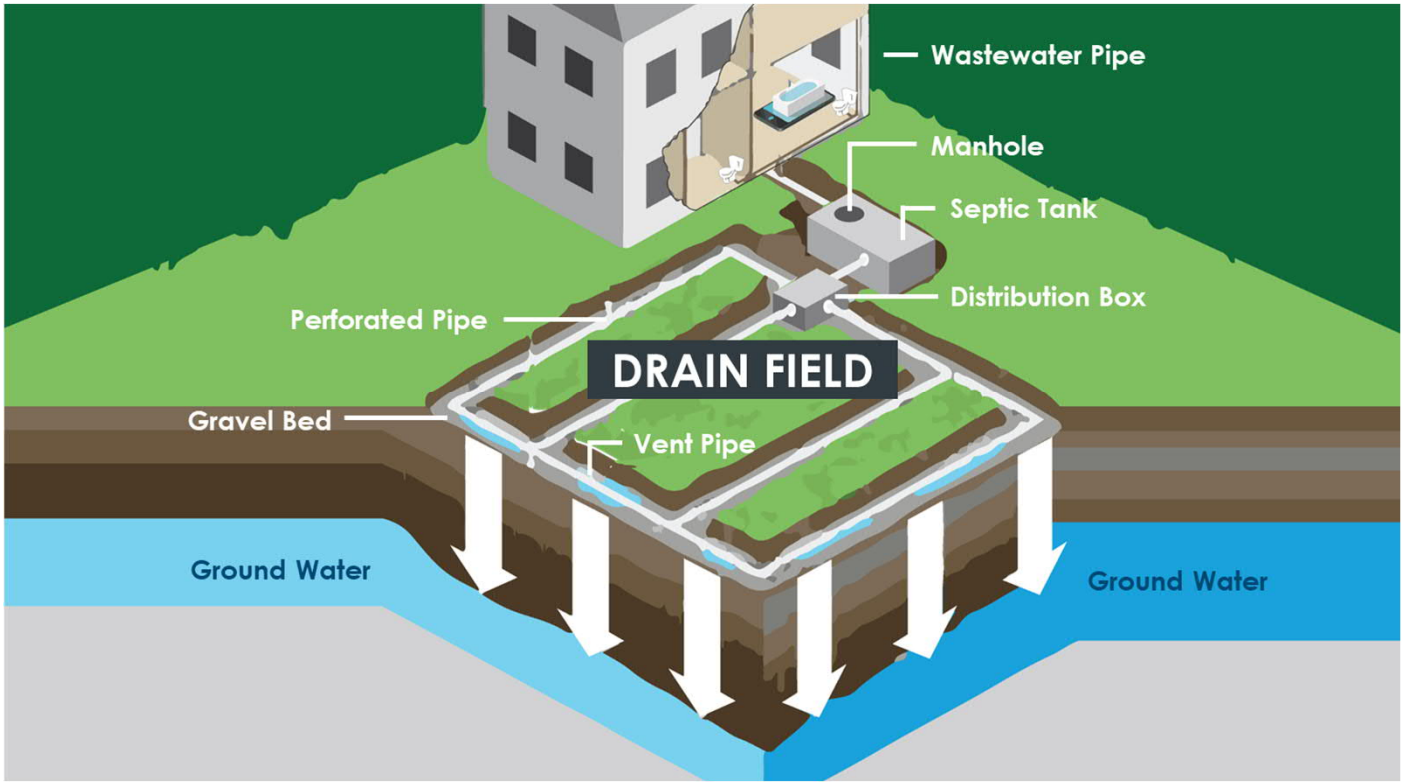
Phase 1 CWMP

- Existing conditions
  - Town metrics
  - Planning area
  - Wastewater collection & treatment
  - Water treatment & distribution
- Develop Study Areas
- Perform wastewater needs assessment

Existing Wastewater Collection System



Onsite Subsurface Wastewater Disposal Systems

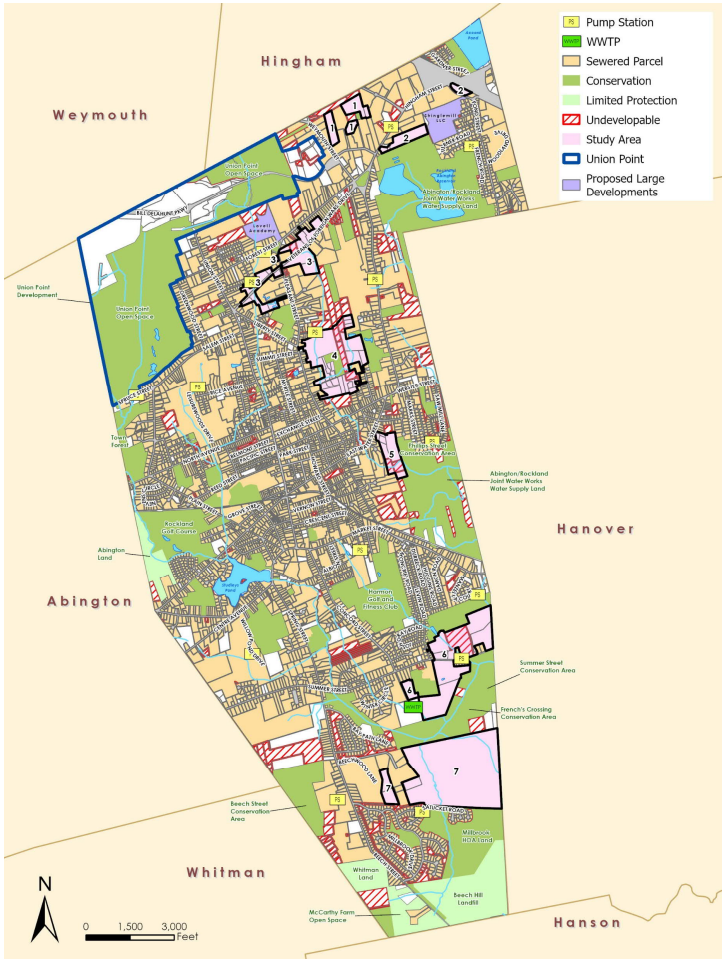


- Few residents serviced by onsite systems
- Septic systems typically include
  - Septic tank
  - Distribution box
  - Leach/drain field
- Cost-effective solution
  - Need
    - Ideal soils
    - Adequate depth to groundwater/bedrock
    - Spatial parcel sizes
    - Separation from drinking water supplies

Determination of Study Areas for Non-Sewered Areas

7 Study Areas

- Areas determined by
  - Environmental criteria
  - Topography
  - Major roads
- Parcels removed
  - Protected open space
  - Non-developable area (wetlands, etc.)
  - Town-owned land
  - Planned large developments



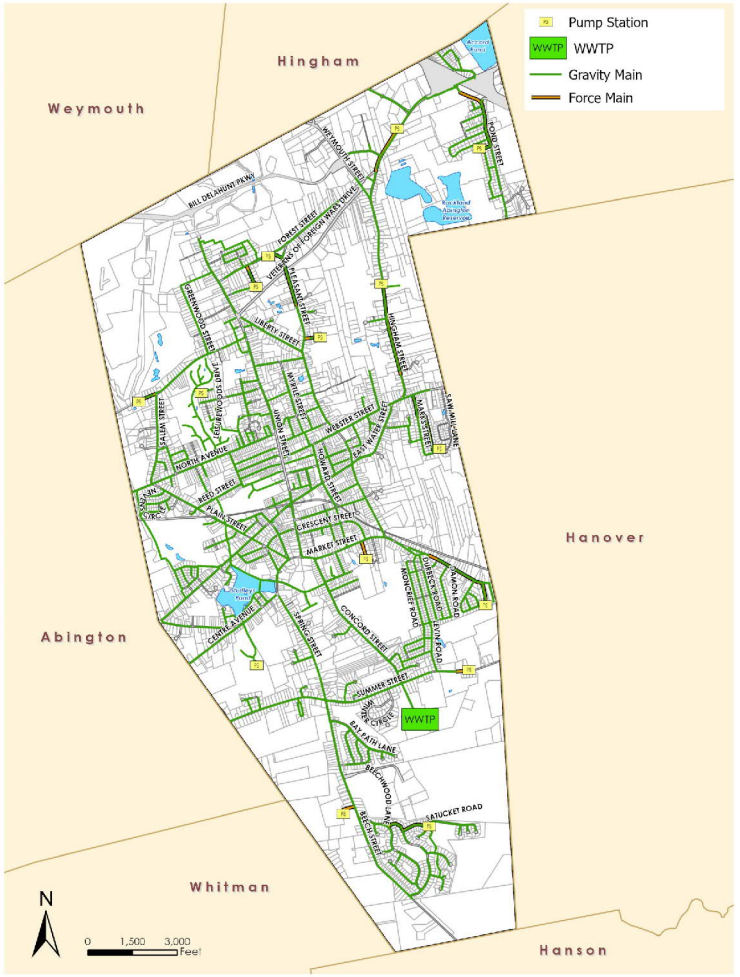
WRIGHT-PIERCE
Engineering a Better Environment

Scoring of Study Areas

Study Area		Primary Criteria (Ranking 0 to 10)						Secondary Criteria (Ranking 0 to 5)						Total Score	Study Area Ranking
No.	Name	Soils Drainage Class	Depth to Water Table	Depth to Bedrock	Parcel Sizes	Private Wells	*Primary Total*	Drinking Water Protection District	Areas Within Regulated Setbacks	Flood Plains	Priority/Established Habitat Areas	Historic District	*Secondary Subtotal*		
1	Weymouth Street	6	8	3	1	0	*18*	3	2	4	0	0	*9*	27	High
2	Pond Street	5	4	0	1	0	*10*	5	3	4	0	0	*12*	22	Avg
3	VFW	4	3	0	3	0	*10*	3	3	0	0	0	*6*	16	Low
4	Liberty Street	5	5	0	1	2	*13*	0	2	2	0	0	*4*	17	Low
5	East Water Street	8	7	0	1	0	*16*	0	2	2	0	0	*4*	20	Avg
6	Summer Street	8	6	0	0	0	*14*	0	2	3	0	0	*5*	19	Low
7	Industrial Way	7	6	0	0	0	*13*	3	2	4	0	0	*9*	22	Avg

Existing Wastewater Infrastructure

- Approximately 57 miles of gravity sewer and 4 miles of force main
- 13 pump stations
- Serves approximately 18,000 customers from Rockland and small parts of Abington
- 1 WWTP with NPDES Permit flow limit of 2.5 MGD with new strict seasonal TP Limit of 0.1 mg/L



WRIGHT-PIERCE
Engineering a Better Environment

Collection System Evaluation

Pump Stations Evaluation

WWTP Evaluation

WWTP Upgrade Drivers

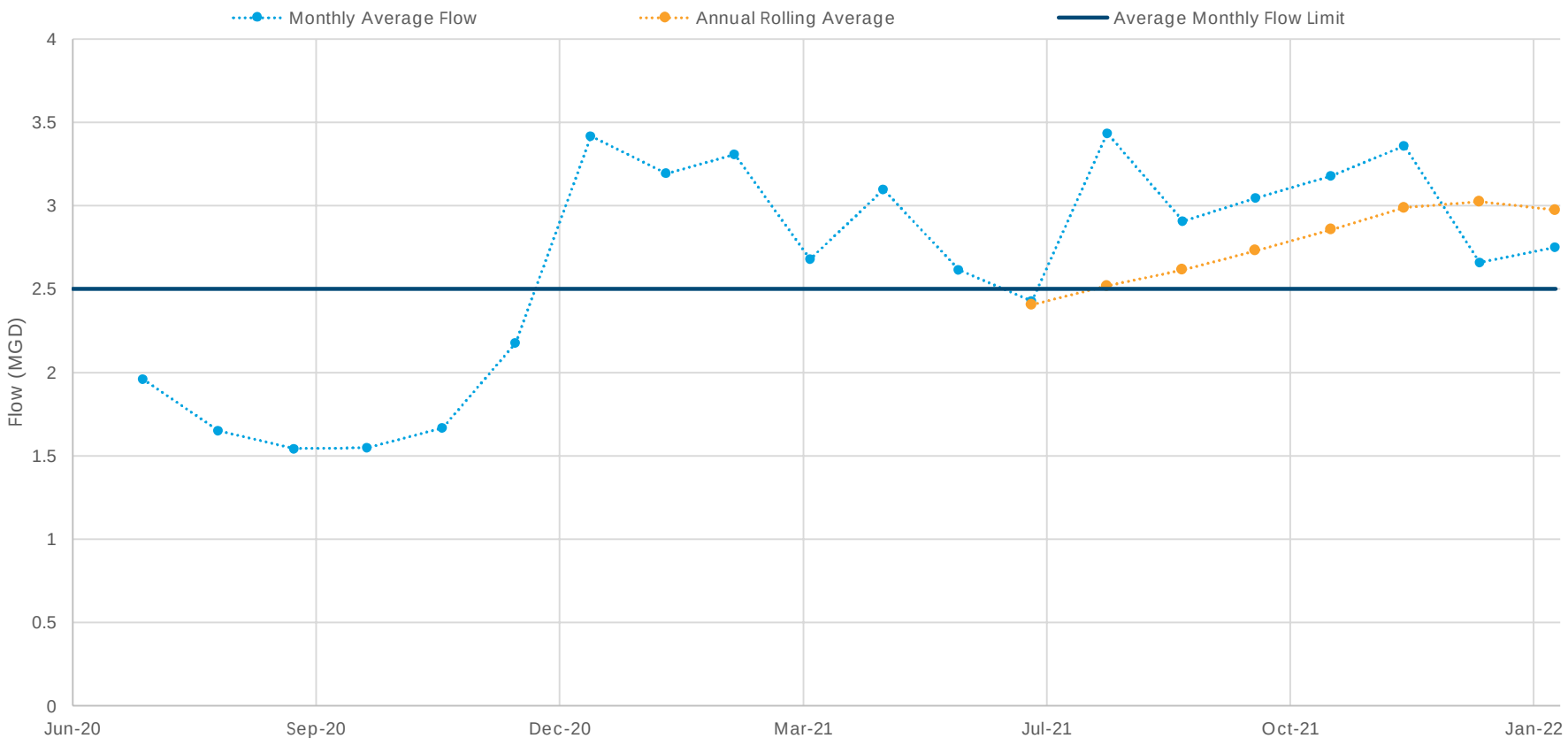
WWTP Upgrade Drivers

WWTP Upgrade Drivers

WWTP Upgrade Drivers

Parameter	Limitation	Sample Frequency
BOD_5 Removal	>85%	1/month
TSS removal		
Escherichia coli	Average Monthly = 126 cfu/100 mL Maximum Daily = 409 cfu/100 mL	3/week, grab
Total Phosphorous (TP)	Average Monthly: Apr 1 - Oct 31 = 0.1 mg/L Nov 1 - Mar 31 = 1.0 mg/L Maximum Daily = Report	 2/week, 24-hour composite 2/week, 24-hour composite
Dissolved Oxygen	> 7.4 mg/L	1/day, grab
Total Copper	Average Monthly = 12 µg/L Maximum Daily = 19 µg/L	1/month, 24-hour composite
Total Aluminum	Average Monthly = 87.2 µg/L Maximum Daily = Report	1/month, 24-hour composite
PFAS compounds	Maximum Daily = Report	1/quarter composite

WWTP Upgrade Drivers



WRIGHT-PIERCE
Engineering a Better Environment

EPA Order

- Reduce flows to WWTF
  - I/I reduction
  - Peak flow reduction
- TP Compliance
- Evaluate “Flow Shedding” options
  - Groundwater discharge
- Alternative Surface Water Discharge

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1

IN THE MATTER OF	)	**DOCKET NO. CWA-AO-R01-FY22-05**
	)	
Town of Rockland, Massachusetts	)	**FINDINGS OF VIOLATION**
NPDES Permit No. MA0101923	)	
	)	**AND**
Proceedings Under Sections 308(a) and	)	
309(a)(3) of the Clean Water Act,	)	**ORDER FOR COMPLIANCE**
33 U.S.C. §§ 1318(a) and 1319(a)(3)	)	
	)	

STATUTORY AUTHORITY

The following FINDINGS are made, and ORDER issued pursuant to Section 308(a) and Section 309(a)(3) of the Clean Water Act, (the “Act”), 33 U.S.C. §§ 1318, 1319(a)(3). Section 309(a)(3) of the Act grants the Administrator of the U.S. Environmental Protection Agency (“EPA”) the authority to issue orders requiring persons to comply with Sections 301, 302, 306, 307, 308, 318 and 405 of the Act and any permit condition or limitation implementing any of such sections in a National Pollutant Discharge Elimination System (“NPDES”) permit, issued under Section 402 of the Act, 33 U.S.C. § 1342. Section 308(a) of the Act, 33 U.S.C. § 1318(a), authorizes EPA to require the submission of any information required to carry out the objectives of the Act. These authorities have been delegated to the EPA Region 1 Administrator, and, in turn, to the EPA, Region 1 Director of the Enforcement and Compliance Assurance Division (the “Director”).

Rockland's Overall CWMP Approach

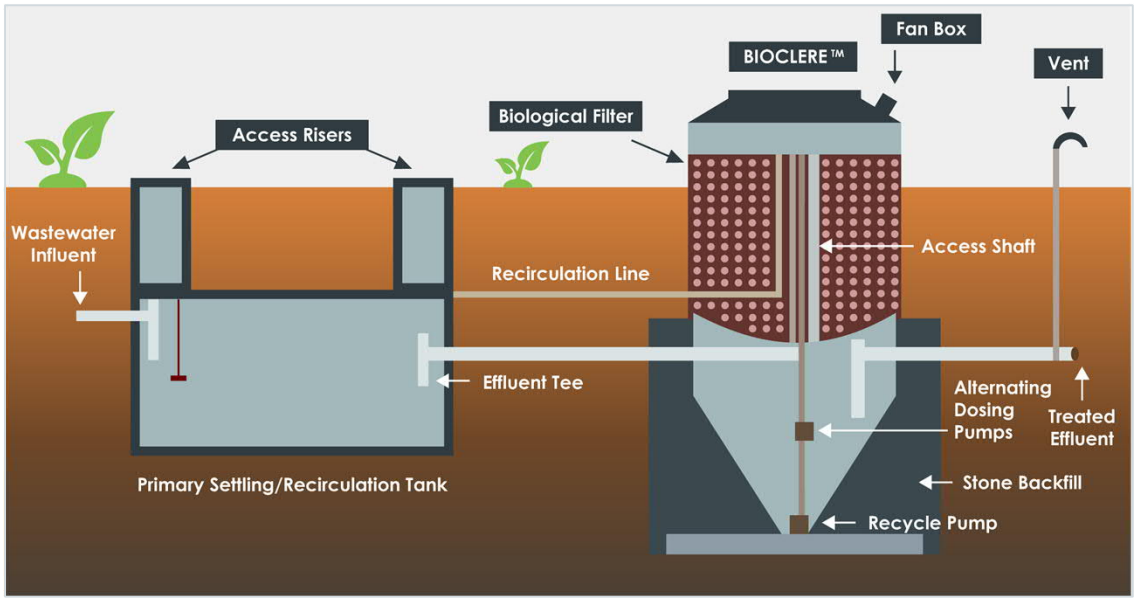
1 Phase 1 – Assessment of Existing Conditions

2 Phase 2 – Alternatives Identification and Screening

3 Phase 3 – Evaluation of Short-Listed Alternatives in Phase 2 and Develop a Recommended Wastewater Management Plan

WRIGHT-PIERCE
Engineering a Better Environment

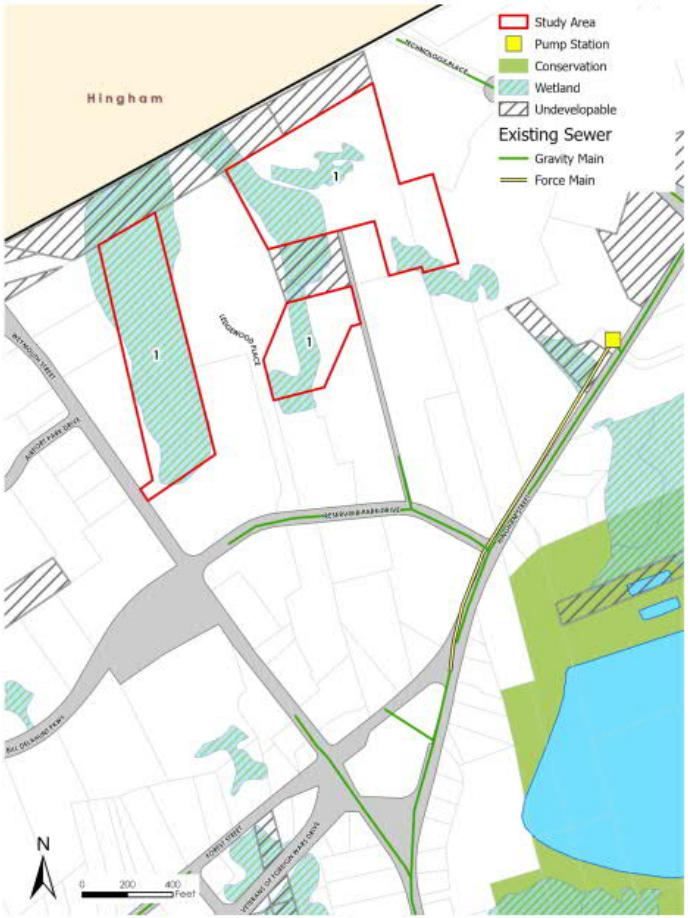
Phase 2 Goals



- Evaluate wastewater management alternatives for high needs area 1
  - Onsite systems
  - Innovative/Alternative (I/A) Systems
  - Decentralized WWTF
  - Collection system extension
- Evaluate groundwater discharge locations
- Shortlist alternatives to move into Phase 3

High Needs Area 1 – Weymouth Street

- 4 Parcels
- Northern part of Town
- High groundwater
- Near existing sewer system and Union Point Development



WRIGHT-PIERCE
Engineering a Better Environment

Needs Area Grading Results

Treatment Alternative	Primary Criteria (Scoring from 0 to 10)						Secondary Criteria (Scoring from 0 to 5)						Total Score
	Level of Treatment	Nutrient Treatment	Land/Site Requirements	Capital / Construction Costs	Ease of Operation	*Primary Criteria Subtotal*	Public Acceptance	Regulatory	Legal	O&M Costs	Environmental	*Secondary Criteria Subtotal*	
On-site													
Conventional Septic Systems	8	9	5	1	2	*25*	0	1	0	1	4	*6*	31*
I/A Systems	6	6	4	3	4	*23*	1	2	1	2	3	*9*	32*
Decentralized													
Shared Septic Systems	8	9	6	4	3	*30*	3	1	2	2	4	*12*	42
Shared I/A Systems	6	6	7	5	5	*29*	3	2	2	3	3	*13*	42
Decentralized WWTF	1	2	8	7	6	*24*	1	3	3	4	1	*12*	36*
Collection System Extensions													
Town of Rockland	0	2	2	3	1	*8*	1	5	5	2	2	*15*	23*

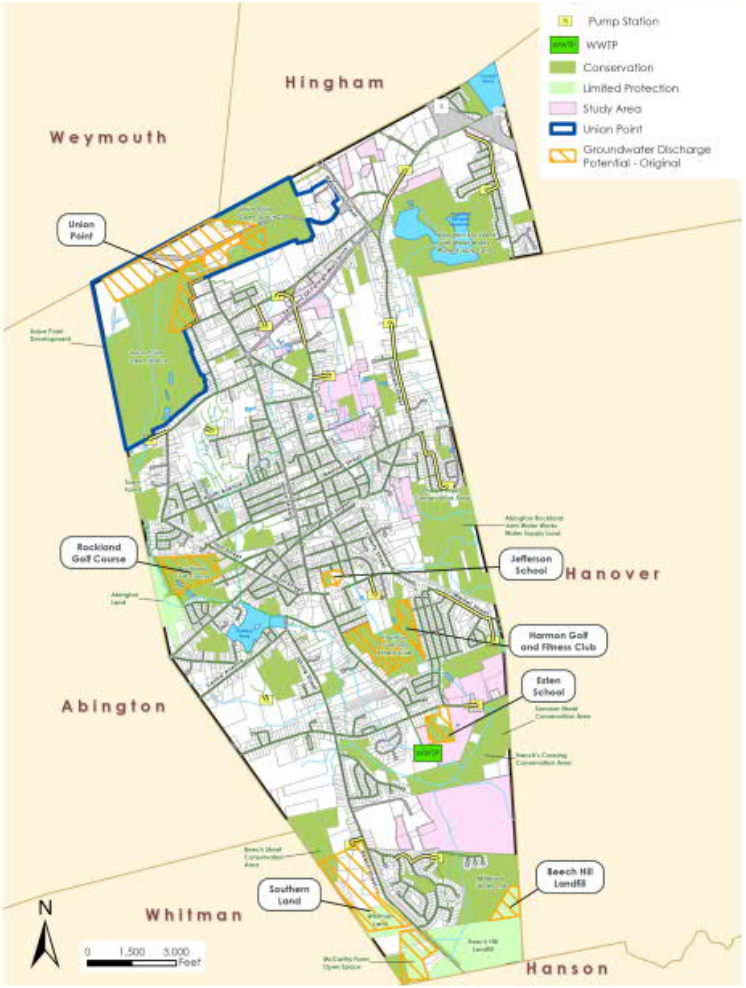
*Indicates Shortlisted Alternative

Needs Area Flow Estimates

Study Area	Potential Existing Flow	+	Estimated Build-out Flow	+	Estimated Flow from I/I	=	Total Future Flow Estimate
1 – Weymouth Street	0	+	34,800	+	1,100	=	35,900

Groundwater Discharge Alternatives

- Open Space
- Not protected
- Not wetland
- Town-owned is best



WRIGHT-PIERCE
Engineering a Better Environment

Rockland's Overall CWMP Approach

1 Phase 1 – Assessment of Existing Conditions

2 Phase 2 – Alternatives Identification and Screening

3 Phase 3 – Evaluation of Short-Listed Alternatives in Phase 2 and Develop a Recommended Wastewater Management Plan

WRIGHT-PIERCE
Engineering a Better Environment

Shortlisted Alternatives for Needs Area 1

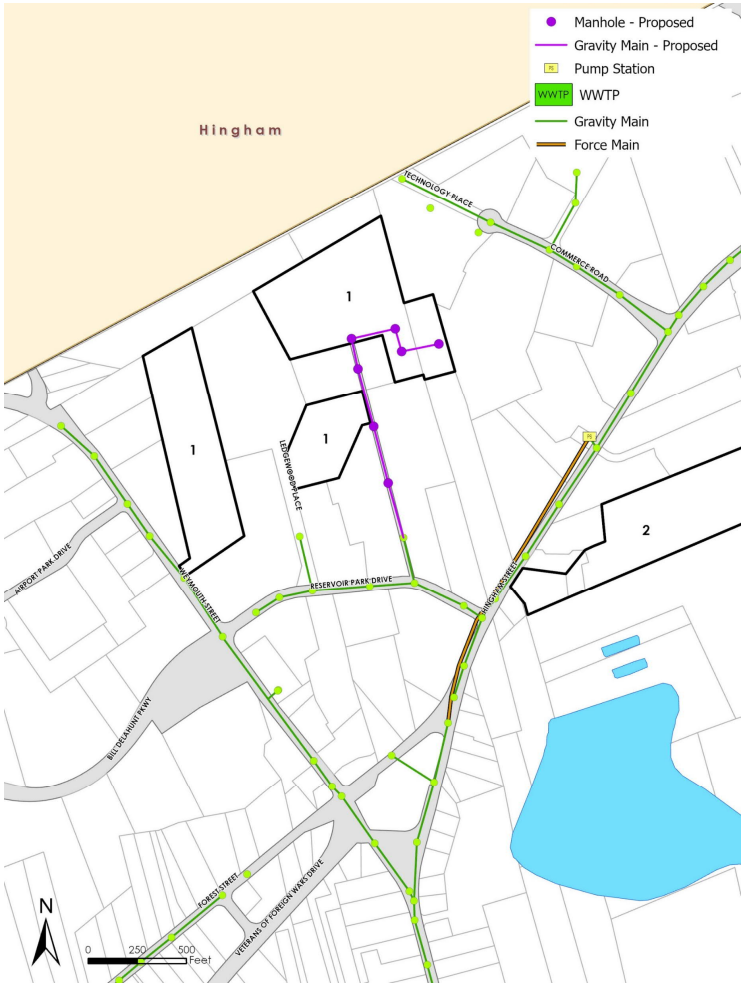
Shortlisted Alternatives

- Septic systems
- I/A systems
- Collection system extension
- Decentralized WWTF

Needs Area Description

- Northeastern part of Rockland
- 22 acres, 4 parcels
- Varies between very good and very poor soils, and wetlands

Collection System Extension for Needs Area 1



Present Worth Cost Estimates

Summary of Cost Estimates for Needs Area 1

Cost Estimate	Treatment Alternatives		
	Septic System	Innovative/Alternative System	Collection System Extension
Initial Capital Cost	$ 0	$ 0	$1,560,000
Present Worth of Future Capital Costs	$ 309,000	$ 380,000	-
Present Worth of O&M Costs	$ 20,000	$ 190,000	$ 0
Total Present Worth	$ 329,000	$ 570,000	$ 1,560,000

Collection System I/I Control Plan

- Work completed to date
- I/I Control Plan recommendations
  - Phase 1 Sewer System Evaluation Survey (SSES) Tasks ongoing
- Recommended schedule
- Cost estimate

I/I Control Plan Cost Estimate & Schedule

Fiscal Year	Calendar Year/Month	Project Name	Scope	Subarea(s)	Sewer Length (lf)	Manholes	Estimated Cost[2]
FY 2023	Spring 2023	Year 1 Program	Town-wide metering program and GIS-based Depth-to-Groundwater Analysis	-	-	-	$150,000
Phase 1							
FY 2024	Spring 2024	Year 2 Infiltration	Manhole inspections and television inspections	-	34,000	170	$150,000
FY 2025	Spring 2025	Year 3 Infiltration	Manhole inspections and television inspections	-	34,000	170	$155,000
FY 2026	Spring 2026	Year 4 Infiltration	Manhole inspections and television inspections	-	34,000	170	$160,000
FY 2027	Summer 2026 – Spring 2027	Year 2 to 4 Inflow	Smoke testing, dye testing/flooding with TV, and building inspections	-	102,000	-	$200,000
FY 2028	Design – Summer 2027 Bid – Fall/Winter 2027 Construction – Spring 2028	Year 2 to 4 Rehabilitation	Sewer System Rehabilitation – cost effective and structural defective rehabilitation	-	TBD	TBD	$1,500,000[1]

WRIGHT-PIERCE
Engineering a Better Environment

1. Estimated costs includes construction and engineering
2. Estimated unit cost is based on 3-4% increase from previous year

	Infiltration
	Inflow
	Rehab/Construction

I/I Control Plan Cost Estimate & Schedule

Fiscal Year	Calendar Year/Month	Project Name	Scope	Subarea(s)	Sewer Length (lf)	Manholes	Estimated Cost[2]
Phase 2							
FY 2029	Spring 2029	Year 5 Infiltration	Manhole inspections and television inspections	-	34,000	170	$170,000
FY 2030	Spring 2030	Year 6 Infiltration	Manhole inspections and television inspections	-	34,000	170	$175,000
FY 2031	Spring 2031	Year 7 Infiltration	Manhole inspections and television inspections	-	34,000	170	$180,000
FY 2032	Summer 2031 – Spring 2032	Year 5 to 7 Inflow	Smoke testing, dye testing/flooding with TV, and building inspections	-	102,000	-	$220,000
FY 2033	Design – Summer 2032 Bid – Fall/Winter 2032 Construction – Spring 2033	Year 5 to 7 Rehabilitation	Sewer System Rehabilitation – cost effective and structural defective rehabilitation	-	TBD	TBD	$1,500,000[1]

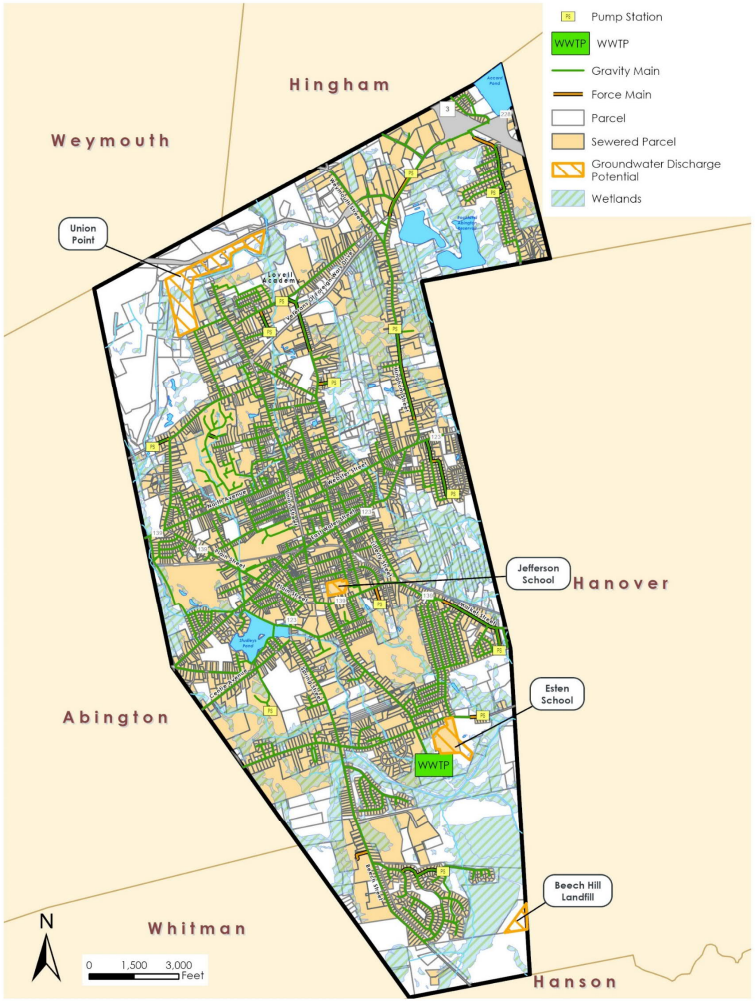
1. Estimated costs includes construction and engineering
2. Estimated unit cost is based on 3-4% increase from previous year

	Infiltration
	Inflow
	Rehab/Construction

WRIGHT-PIERCE
Engineering a Better Environment

Groundwater Discharge - Options

- Met with Stakeholders
- Shortlisted sites
  - Union Point (reduced in size)
  - Jefferson School
  - Esten School Land
  - Beech Hill Landfill
- Reduced site size with soil info

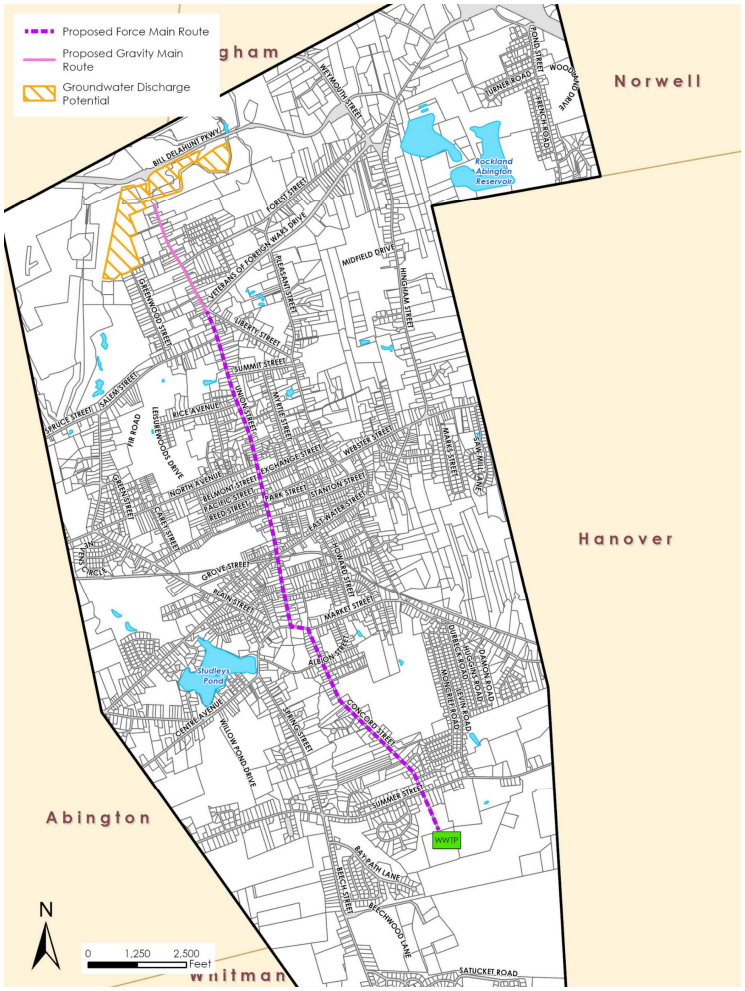


WRIGHT-PIERCE
Engineering a Better Environment

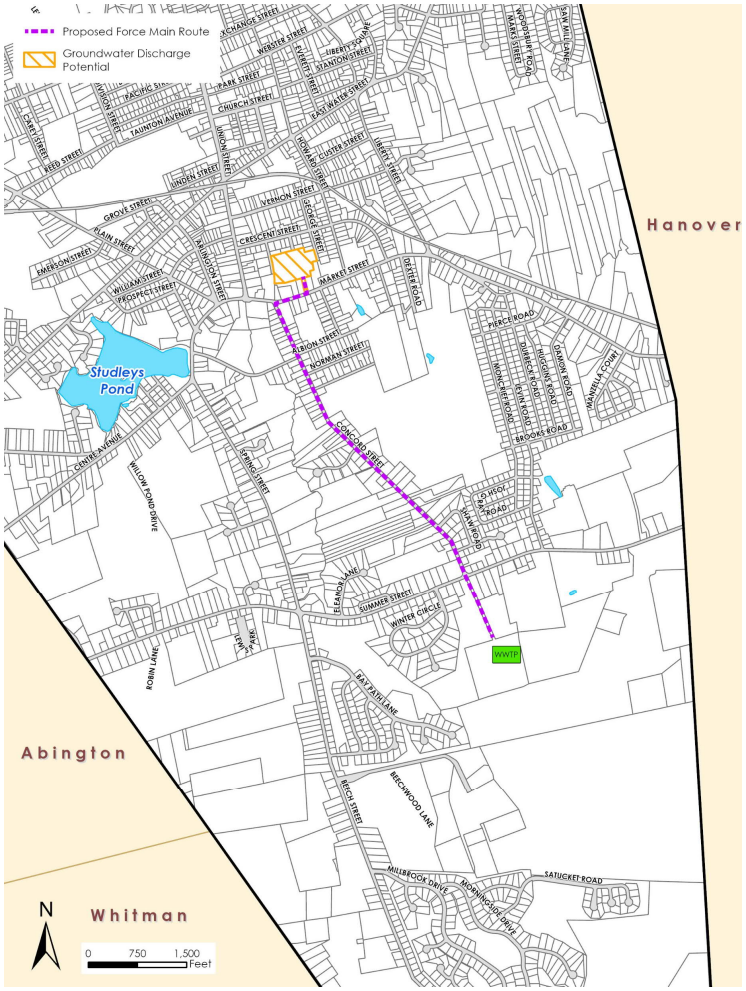
Groundwater Discharge – Effluent Disposal

Site Name	Parcel Size (acres)	Usable Disposable Area (acres)	Disposal Capacity (gpd)	
			1.5 gpd/sq ft	4 gpd/sq ft
Beech Hill Landfill	16	1.9	124,100	331,100
Esten School	19	13	849,400	2,265,100
Jefferson School	6.5	3.8	248,300	662,100
Union Point	63	42	2,744,300	7,318,100

Groundwater Discharge – Effluent Disposal: Union Point

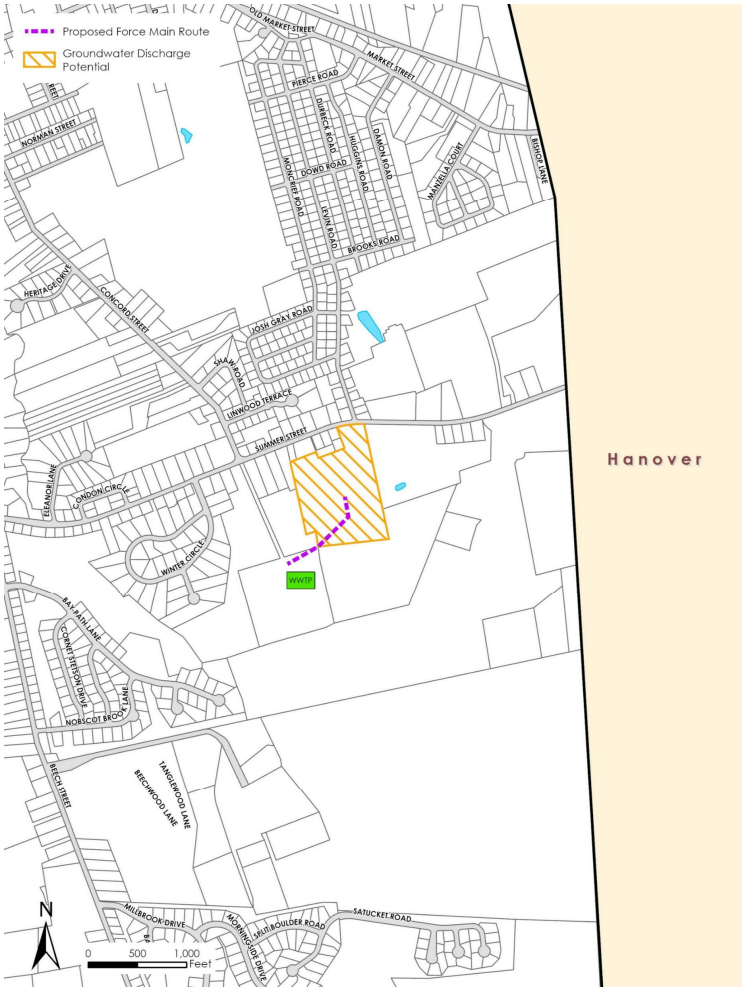


Groundwater Discharge – Effluent Disposal: Jefferson School



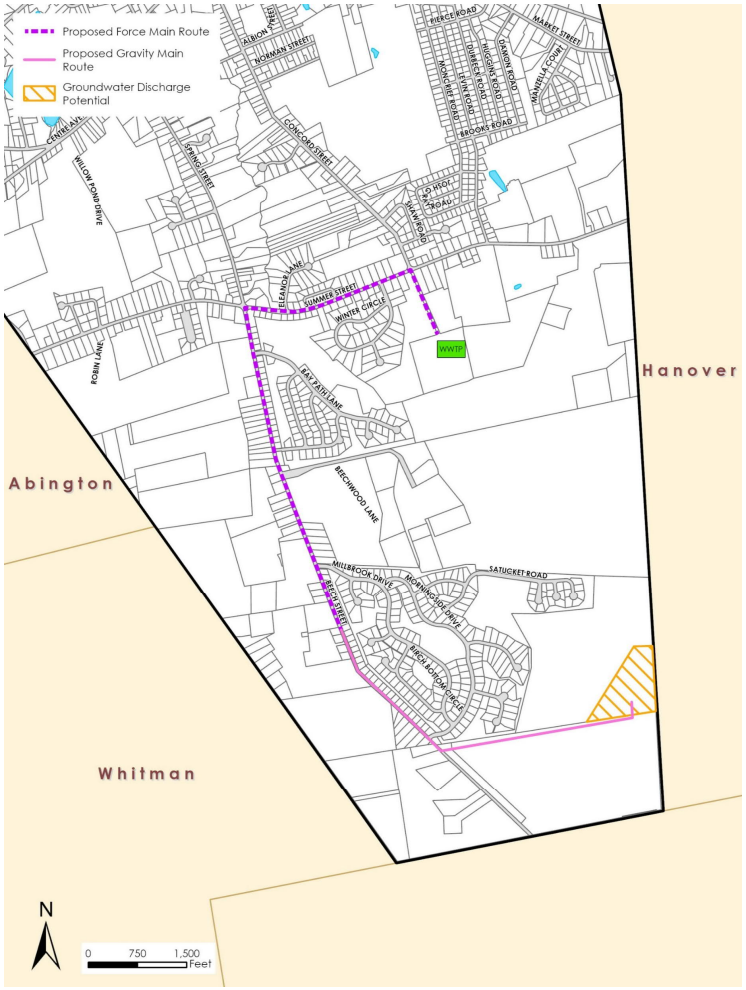
WRIGHT-PIERCE
Engineering a Better Environment

Groundwater Discharge – Effluent Disposal: Esten School



WRIGHT-PIERCE
Engineering a Better Environment

Groundwater Discharge – Effluent Disposal: Beech Hill Landfill



WRIGHT-PIERCE
Engineering a Better Environment

Groundwater Discharge – Portion of WWTP Flow Costs

	1.1 MGD Capacity	2.7 MGD Capacity	0.12 MGD Capacity	0.25 MGD Capacity	0.85 MGD Capacity
Site	Union Point		Beech Hill Landfill	Jefferson School	Esten School
Effluent Disposal Cost ($)	$10,700,000	$25,700,000	$1,800,000	$2,900,000	$8,400,000
Rockland WWTP Secondary Upgrades Costs ($)	$16,000,000	$16,000,000	$16,000,000	$16,000,000	$16,000,000
Sewer Routing Cost ($)	$18,500,000	$18,500,000	$15,000,000	$6,100,000	$1,900,000
Total Costs	$45,200,000	$60,200,000	$32,800,000	$25,000,000	$26,300,000

Groundwater Discharge – Flow Shedding

Forest Street Pump Station

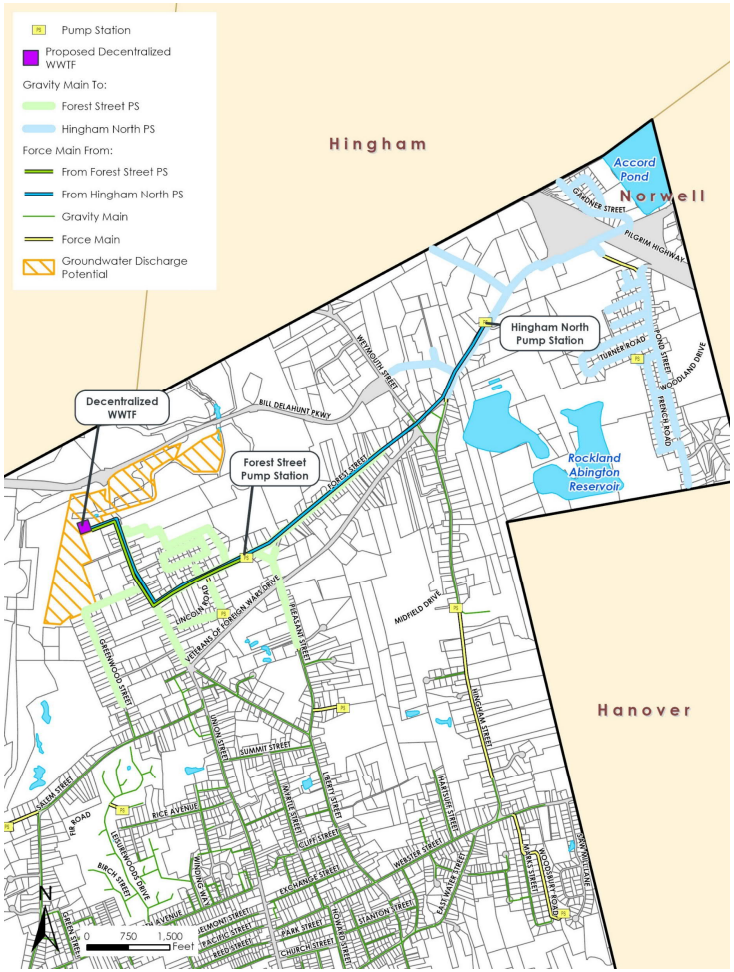
- Rated capacity of 400 gpm
- 576,000 gpd peak flow
- Average daily flow shed of 240,000 gpd

Hingham North Pump Station

- Rated capacity of 1,000 gpm
- 1,440,000 gpd peak flow
- Average day flow shed of 686,000 gpd

Combination of both

- 926,000 average gpd shed
- 1,000 – 35,000 gpd additional from Needs Area 1



WRIGHT-PIERCE
Engineering a Better Environment

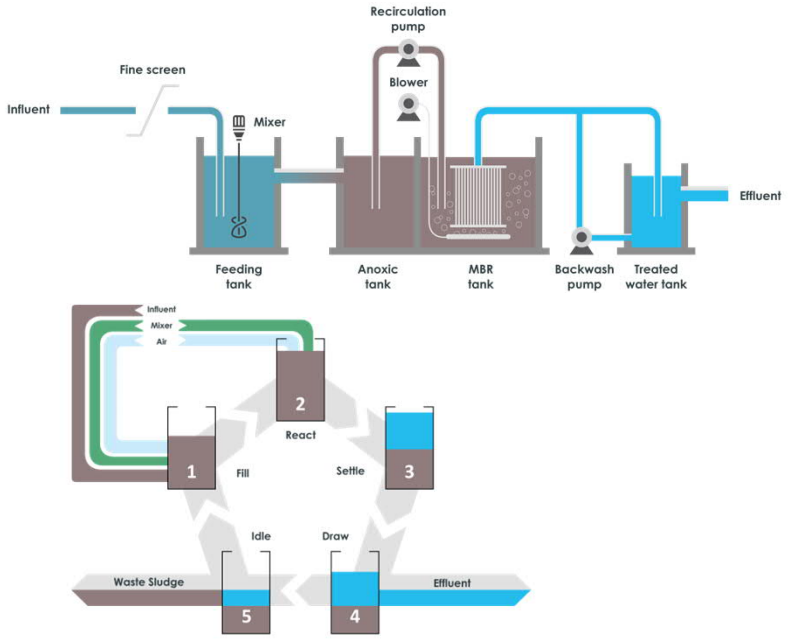
Groundwater Discharge – Decentralized WWTF

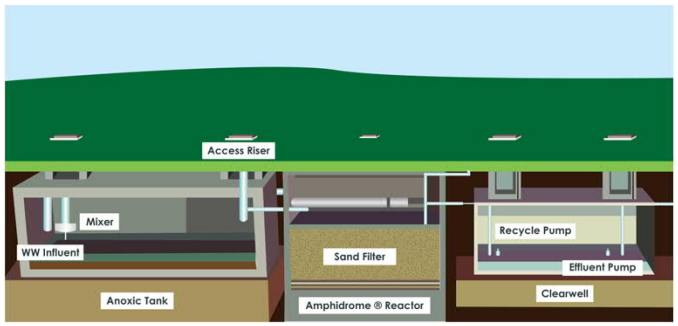
Decentralized WWTF

- 0.5-1 MGD (larger for Union Point developer flows)
- Receive flows from Forest Street and/or Hingham North Pump Station
- Approximately 1 acre needed for facility
- Biological treatment
  - Membrane Bioreactors (MBR), Sequencing Batch Reactors (SBR), or Amphidrome

Union Point Disposal Site

- 2.7-7.3 MGD disposal capacity based on loading rates from 1.5-4 gpd/SQFT





WRIGHT-PIERCE
Engineering a Better Environment

Groundwater Discharge – Decentralized WWTF Costs, Union Point

AH0

	Forest Street PS Shedding	Hingham Street, North PS Shedding	Both Pump Stations
Effluent Disposal Cost ($)	$5,900,000	$22,200,000	$31,100,000
Decentralized WWTF ($)	$26,500,000	$46,300,000	$56,500,000
Sewer Routing Cost ($)	$3,300,000	$6,700,000	$10,000,000
Total Costs	$35,700,000	$75,200,000	$97,500,000

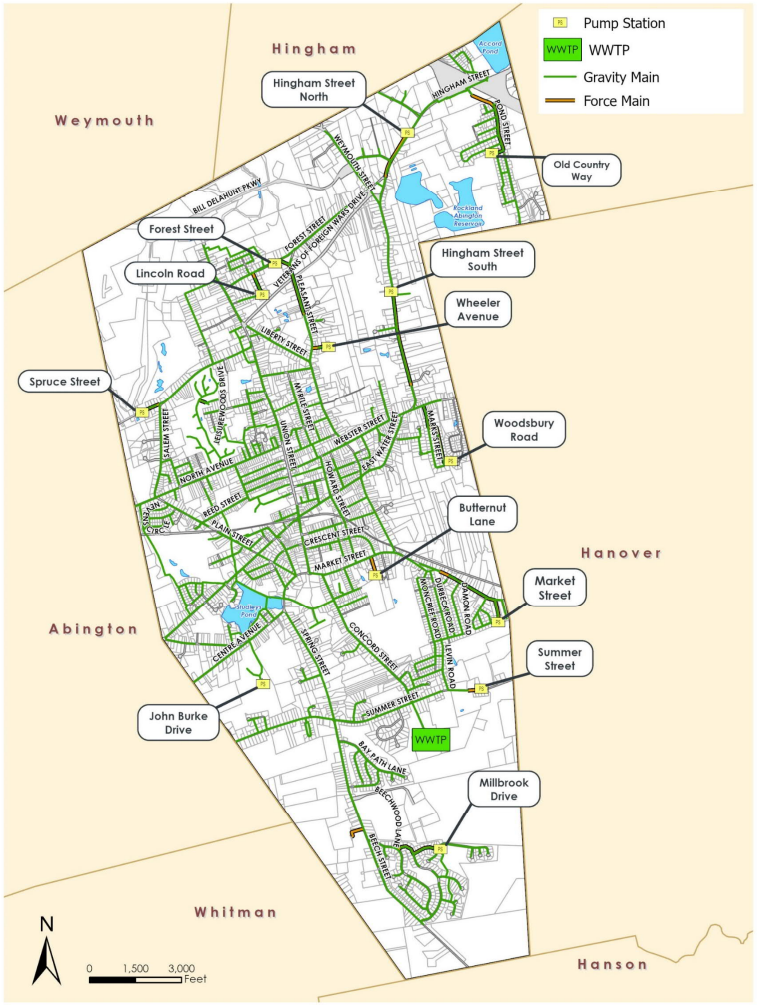
AH0 Revise slide

Adam Higgins, 2023-09-01T18:22:58.329

Pump Stations Evaluation

- Evaluated all 13 pump stations
  - Condition assessment in Phase 1
  - Developed improvements/recommendations
- Developed a capital improvement plan with costs over 20-year planning period
  - Aggressive schedule based on age of station/equipment
  - Likely going to replace equipment as it fails so Town can focus on I/I and WWTP projects

Rockland Pump Stations



WRIGHT-PIERCE
Engineering a Better Environment

Rockland Pump Station Cost Estimates

Pump Station Name	Type	Capacity (ea.)	Pump Horsepower	Year Constructed / Upgraded	Recommended Project Cost
Forest Street	Submersible	400 gpm	29	1999	$964,000
Lincoln Road	Submersible	100 gpm	7.5	1999	$618,000
Wheeler Avenue	Submersible	30 gpm	3	1999	$1,163,000
Summer Street	Submersible	40 gpm	2	1999	$1,170,000
John Burke Drive	Submersible	40 gpm	2	1999	$1,163,000
Hingham Street – North	Submersible	1,000 gpm	20	2002	$1,628,000
Hingham Street – South	Submersible	1,800 gpm	100	2002	$1,784,000
Market Street	Submersible	250 gpm	7.5	1994	$864,000
Woodsbury Road	Submersible	300 gpm	15	1994	$786,000
Millbrook Drive	Submersible	180 gpm	15	2000	$765,000
Old Country Way	Submersible	350 gpm	7.5	1980	$765,000
Spruce Street	Submersible	100 gpm	5	2024	$615,000
Butternut Lane	Submersible	100 gpm	5	2022	$618,000

Pump Stations Capital Improvement Plan

Pumping Station	Total Est. Costs Per Station	Plan Year																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Forest Street	$964,000				$964,000																
Lincoln Road	$618,000				$618,000																
Wheeler Avenue	$1,163,000			$1,163,000																	
Summer Street	$1,170,000			$1,170,000																	
John Burke Drive	$1,163,000			$1,163,000																	
Hingham Street – North	$1,628,000					$1,628,000															
Hingham Street – South	$1,784,000					$1,784,000															
Market Street	$864,000		$864,000																		
Woodsbury Road	$786,000		$786,000																		
Millbrook Drive	$765,000				$765,000																
Old Country Way	$765,000	$765,000																			
Spruce Street	$615,000																			$615,000	
Butternut Lane	$618,000																			$618,000	
Total for Year	$13,015,000	$765,000	$1,650,000	$3,496,000	$2,452,000	$3,412,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,240,000	$0

WRIGHT-PIERCE
Engineering a Better Environment

The average cost per year is **$981,300.**

WWTP – Scope of Improvements

Plant evaluation recommended improvements:

- New Screening and Grit Facility
- Influent Pump Station Modifications
- Primary Clarifier Modifications
- Secondary System Modifications
- Secondary Clarifier Modifications
- Tertiary System and Building
- Chemical Building
- Chlorine Contact Tanks and Effluent Pump Station
- Sludge Storage tanks
- Administration Building
- Garage and Electrical Building
- General

WRIGHT-PIERCE
Engineering a Better Environment

WWTP Recommended Improvements Cost Estimate

Project Component	Cost
Civil	$1,379,000
Architectural	$2,993,000
Structural	$2,767,000
Process	$11,063,000
HVAC/Plumbing	$1,057,000
Instrumentation	$1,085,000
Electrical	$5,416,000
Specials	$370,000
Construction Factors	$4,727,000
Subtotal	$30,858,000
Design Contingency	$6,172,000
Construction Contingency	$2,190,000
Inflation To Midpoint of Construction	$6,728,000
Estimated Construction Cost	$45,948,000
Engineering Services	$8,752,000
Materials Testing	$219,000
Legal/Administrative	$428,000
Financing	$837,000
Total Project Cost	$56,163,000*

- Recent bidding and construction climate has led to increased project costs and high inflation – planning value of $72 million is more realistic

WRIGHT-PIERCE
Engineering a Better Environment

WWTP Typical Schedule

Milestone	Timeline*
Appropriate Engineering Funds for Design	Annual Town Meeting, May 2023
Preliminary Design (30%)	8 months, following Notice-to-Proceed
Preliminary Design Begins	August 2023
MassDEP SRF Project Evaluation Form (PEF) Submitted	August 2023
MassDEP SRF Intended Use Plan (IUP) Notification Draft	January 2024
Final IUP	1 month
Final Design & Permitting	12-14 months, beginning after Preliminary Design
Appropriate Construction Funds	Annual Town Meeting, May 2024
SRF Application Submission (90% Design)	By October 15, 2024
MassDEP Project Approval Certificate (PAC)	By December 31, 2024
100% Design and Permitting Complete	December 2024
Bidding	4 months, after 100% Design complete
Prequalification of GCs and Subs	January 2025 (2 months)
Filed Sub-bids	March 2025 (4 weeks)
GC Bids	April 2025 (6 weeks)
Construction*	30 months, beginning after GC selected and NTP
Contractor Notice-to-Proceed	By June 30, 2025
Substantial Completion	December 2027
Final Completion	February 2028
One-Year Warranty Period	December 2028

*Extended construction period expected based on lead times for equipment such as generator, MCCs, switchgear, etc.

Permit Total Phosphorus Compliance Date is February 2024 to complete construction

WRIGHT-PIERCE
Engineering a Better Environment

WWTP – Design Build Phased Approach

Contract No. 1- Tertiary Treatment (Currently Under Design)

- Phosphorus removal
- Electrical updates

Contract No. 2- Hydraulic Capacity

- Alternative No. 1 - Modifications to existing facilities
- Alternative No. 2 - New screening facility
- Alternative No. 3 - New screening and grit facility

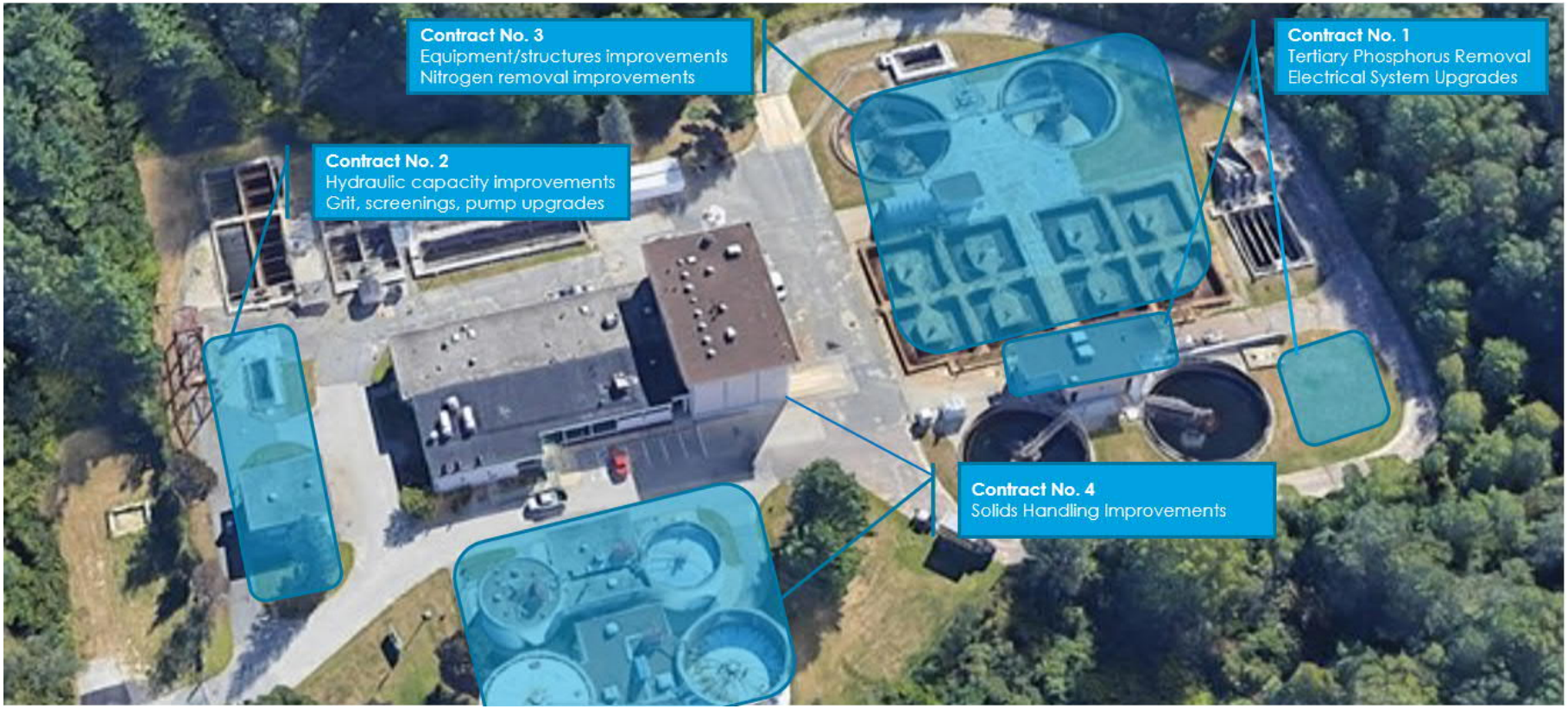
Contract No. 3- Miscellaneous Equipment and System Improvements

- Alternative No. 1 - Immediate improvement needs
- Alternative No. 2 - Process improvement and rehabilitation needs
- Alternative No. 3 - Nitrogen Removal Process Improvement and Rehabilitation Needs

Contract No. 4- Solids Handling Improvements

- Dewatering system

WWTP – Site Plan



Recommendation Summary

Needs Area

- Onsite septic systems
- Septage Management Plan

Collection System and I/I Control

- Permit and EPA Order related needs
- Age related needs
- Condition related needs

Groundwater Discharge

- Esten School for additional disposal is an option
- Partnership with Union Point developers to address flow shedding from northern collection system

WWTP

- Permit and EPA Order related needs
- Age related needs
- Condition related needs
- Design Build Approach

Implementation Plan – Years 1-10

Item	Total Est. Costs Per Item	Plan Year 1 2024	2 2025	3 2026	4 2027	5 2028	6 2029	7 2030	8 2031	9 2032	10 2033
Collection System	$6,741,000	$150,000	$155,000	$160,000	$200,000	$1,500,000	$170,000	$175,000	$180,000	$220,000	$1,500,000
Pump Stations											
Forest Street	$964,000					$964,000					
Lincoln Road	$618,000					$618,000					
Wheeler Avenue	$1,163,000				$1,163,000						
Summer Street	$1,170,000				$1,170,000						
John Burke Drive	$1,163,000				$1,163,000						
Hingham Street – North	$1,628,000						$1,628,000				
Hingham Street – South	$1,784,000						$1,784,000				
Market Street	$864,000			$864,000							
Woodsbury Road	$786,000			$786,000							
Millbrook Drive	$765,000					$765,000					
Old Country Way	$765,000		$765,000								
Spruce Street	$615,000										
Butternut Lane	$618,000										
WWTP	$72,000,000	$1,000,000	$1,115,000	$15,512,000	$641,000	$640,000	$9,395,000	$1,661,000	$1,661,000	$24,360,000	$961,000
Total	$91,644,000	$1,150,000	$2,035,000	$17,322,000	$4,337,000	$4,487,000	$12,977,000	$1,836,000	$1,841,000	$24,580,000	$2,461,000

Implementation Plan – Years 11-20

Item	Plan Year									
	11	12	13	14	15	16	17	18	19	20
	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Collection System	$191,000	$197,000	$203,000	$240,000	$1,500,000	$250,000	$250,000	$250,000	$250,000	$2,000,000
Pump Stations										
Forest Street										
Lincoln Road										
Wheeler Avenue										
Summer Street										
John Burke Drive										
Hingham Street – North										
Hingham Street – South										
Market Street										
Woodsbury Road										
Millbrook Drive										
Old Country Way										
Spruce Street										$615,000
Butternut Lane										$618,000
WWTP	$961,000	$14,093,000								
Total	$1,152,000	$14,290,000	$203,000	$240,000	$1,500,000	$250,000	$250,000	$250,000	$250,000	$3,233,000

Funding/Financing

Develop Funding/Financing Plan to Support

- WWTP Upgrade
- Collection system SSES and rehabilitation work

Potential Grant/Loan Funding Opportunities

- 0% SRF Loan for the WWTF Nutrient Upgrades?
- ~2% SRF loan for collection system rehabilitation
- Investigate other grant options
  - Congressional Earmarks
  - MVP & MassWorks

Sewer User Fees

- Rate study findings – Approximately $75 annual increase each year over next 5 years for average home

Additional Questions?

Additional Questions can be directed to Adam Higgins with Wright-Pierce via email. Questions are due by 5 PM on September 22

adam.higgins@wright-pierce.com

THANK YOU

WRIGHT-PIERCE
Engineering a Better Environment