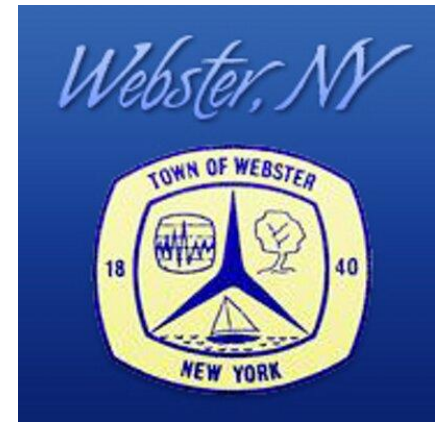


Barton & Loguidice



Town of Webster WPCF Preliminary Engineering Report - Amendment

Webster Town Board Workshop

September 13, 2018

Objectives

- Background
- PER Overviews
 - Town of Webster WPCF
 - Village of Webster WWTP
- PER Amendment
 - Town Only Option
 - Town/Village Alternative → “Regional” WWRRF
 - Follow up to Dec. 2017 Presentation
- Findings/Recommendations
 - Town Only Alternative
 - “Regional” Alternative
- Next Steps

Background

- Two Treatment Plants
 - Town WPCF
 - Village WWTP
- Single Permitted Outfall
- Both Plants Provide Secondary Treatment
- Operate Under IMA between Town/Village

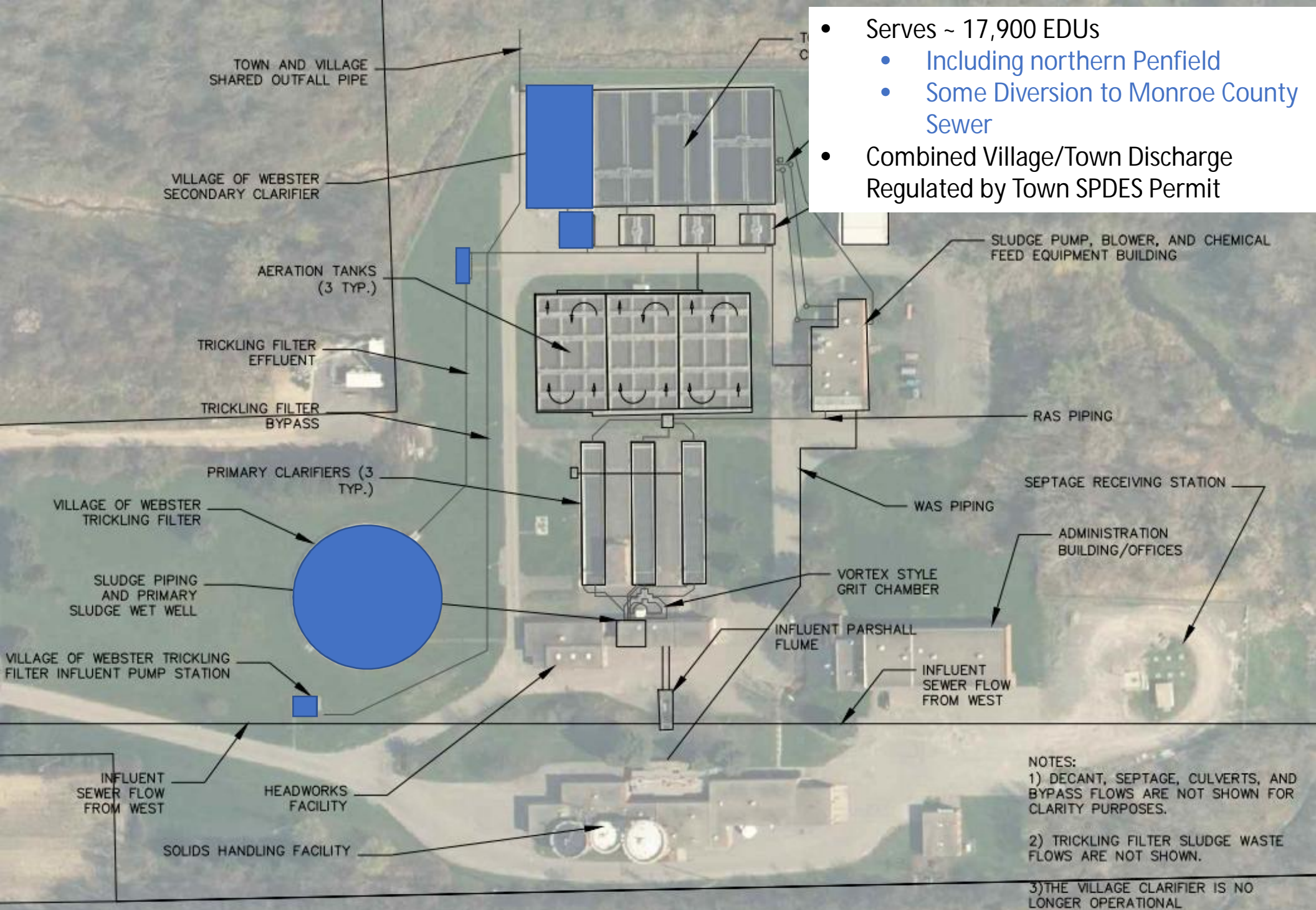


IMA Components:

- Flow Allocation:
 - Town: 5.0 MGD
 - Village: 2.5 MGD
- (V) Discharges as Significant Outside User (SOU) under IMA
- Town Provides Effluent Disinfection @ Common Outfall
- “Redundant” Village Facilities at Town WPCF – rarely used
- Cost Sharing for Select Assets at Town WPCF

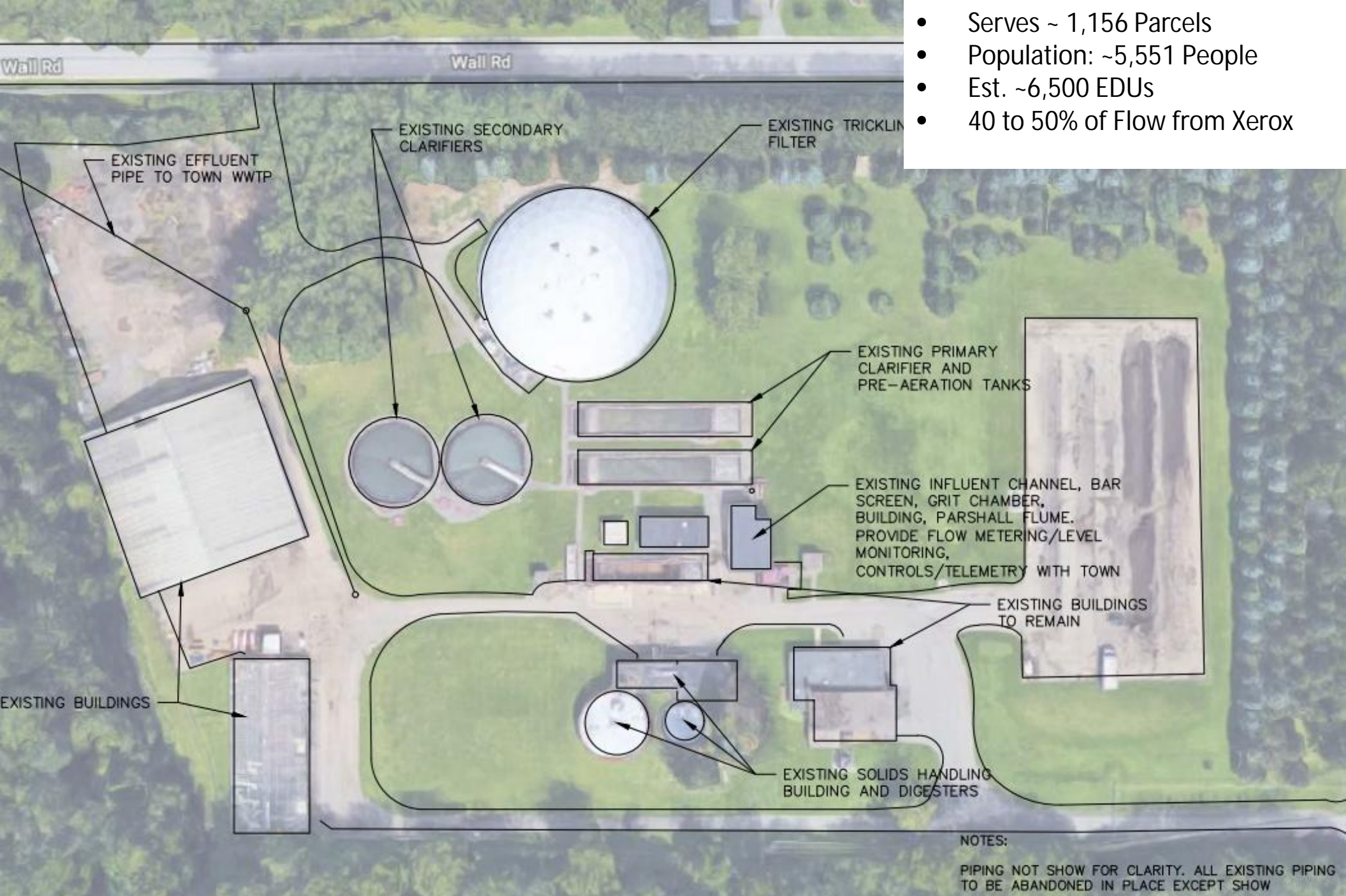
PER Amendment Components

- Design Flows/Loads
 - Town
 - Village
 - “Regional”
- Expanded Unit Process Evaluations
 - Town
 - Waste Solids Management
 - Effluent Disinfection
 - “Regional” – headworks, aeration, settling, disinfection, solids handling
- Alternatives Evaluation
 - Town – Disinfection (UV vs. Chlorination/De-chlorination)
 - *“Regional” – expanded on Town evaluations*
- Estimated Costs
 - Capital/O&M/Short Lived Assets → Net Present Value comparison
 - User Costs
 - Town
 - *“Regional” – Town & Village customers*

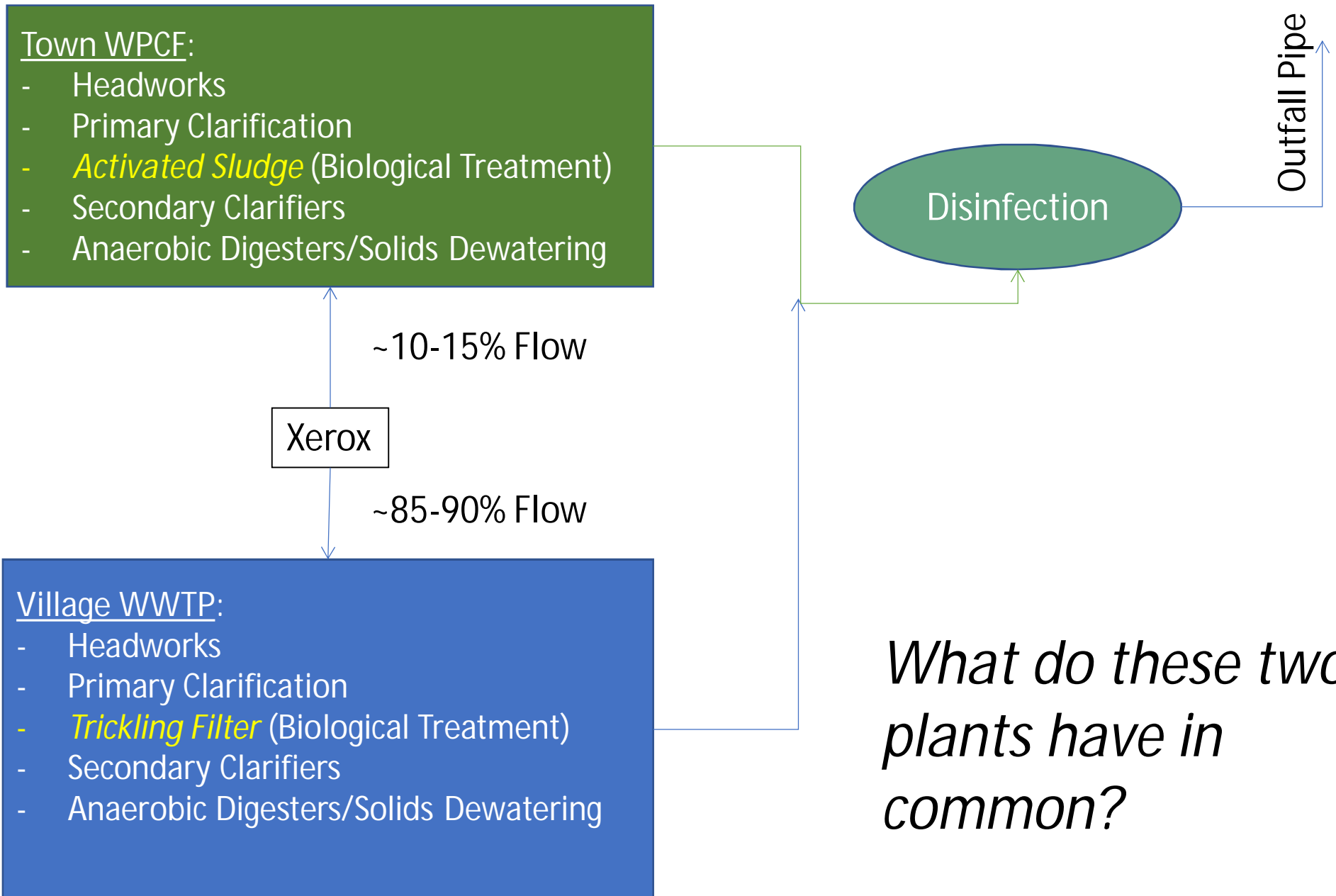


- Serves ~ 17,900 EDUs
 - Including northern Penfield
 - Some Diversion to Monroe County Sewer
- Combined Village/Town Discharge Regulated by Town SPDES Permit

- Serves ~ 1,156 Parcels
- Population: ~5,551 People
- Est. ~6,500 EDUs
- 40 to 50% of Flow from Xerox



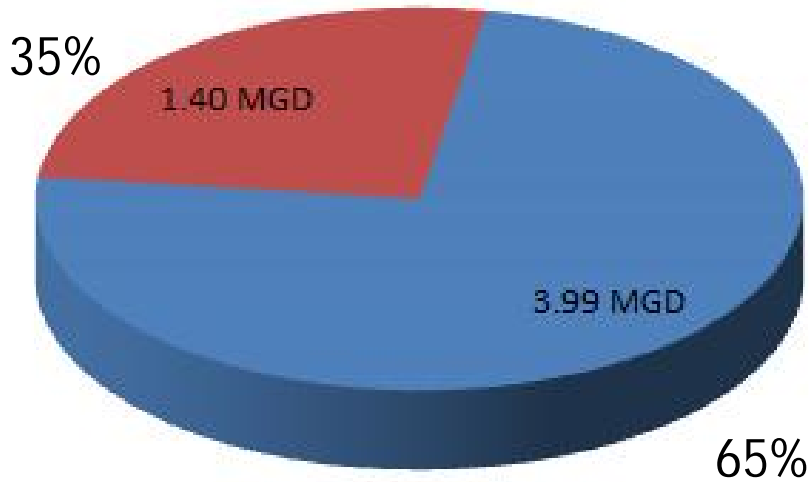
Common Unit Processes



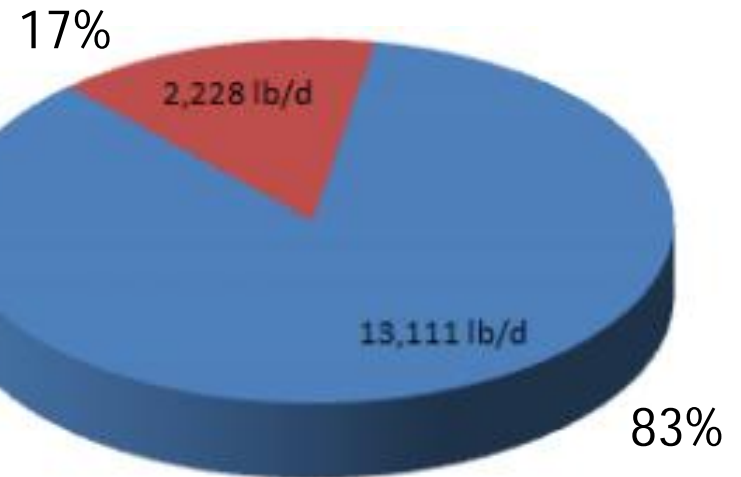
What do these two plants have in common?

Current Flows and Loads - Regional

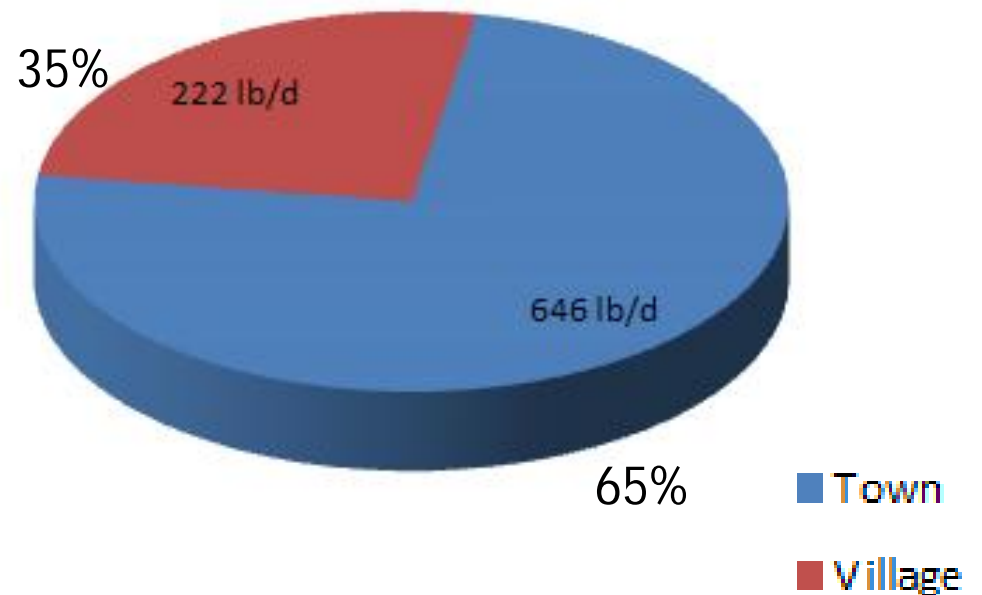
Combined Flow (MGD)



Combined BOD Loading (lb/d)



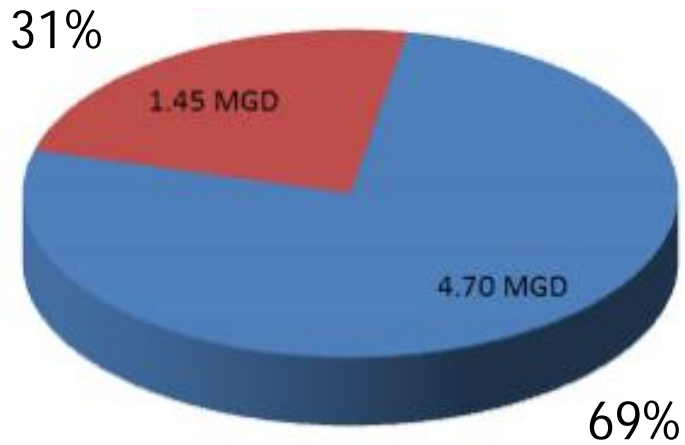
Combined NH3 Loading (lb/d)



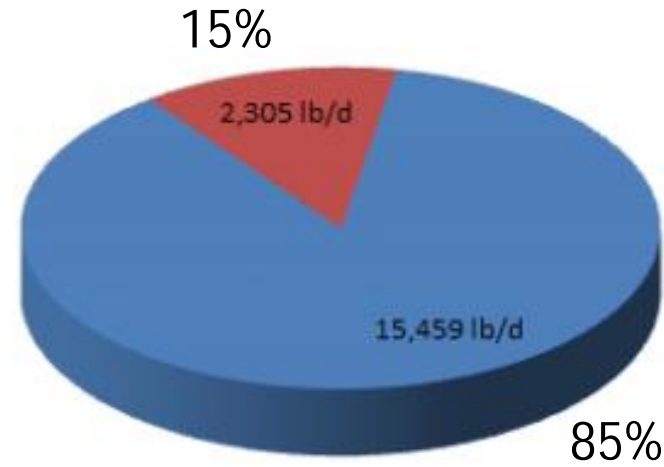
Year	Average Daily Flow (MGD)		
	Town (mgd)	Village	Combined
2013	3.78	1.38	5.16
2014	3.86	1.34	5.20
2015	3.94	1.23	5.17
2016	4.05	1.37	5.42
2017	3.97	1.59	5.57

Projected Flows and Loads – Regional

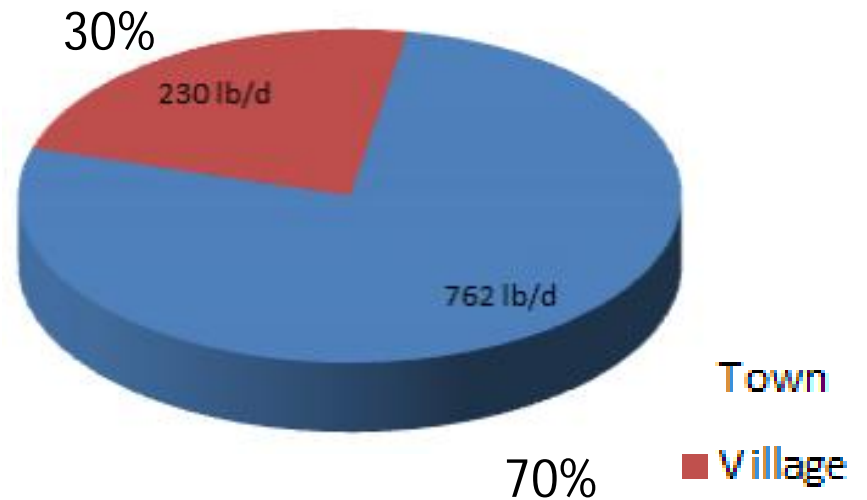
Combined Flow (MGD)



Combined BOD Loading (lb/d)

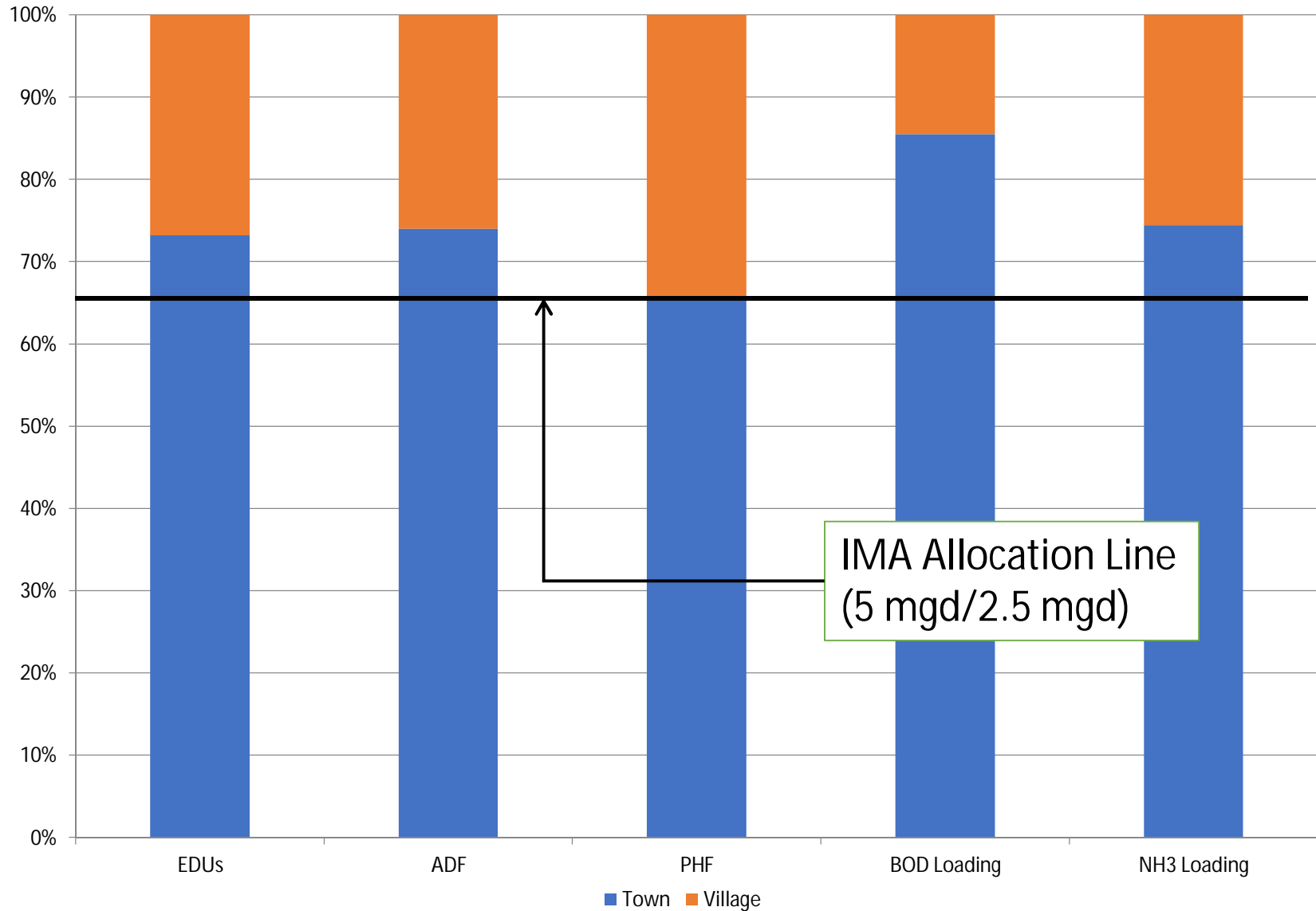


Combined NH3 Loading (lb/d)



Planning Period	Source	Projected Future Flows			
		Max Monthly (MGD)	Ave Daily (MGD)	Max Daily (MGD)	Peak Hrly (MGD)
Total Design Flows	Town	7.40	4.70	10.00	14.68
	Village	2.31	1.45	3.69	6.31
	Combined	9.71	6.13	13.7	21.0

Town/Village Contributions



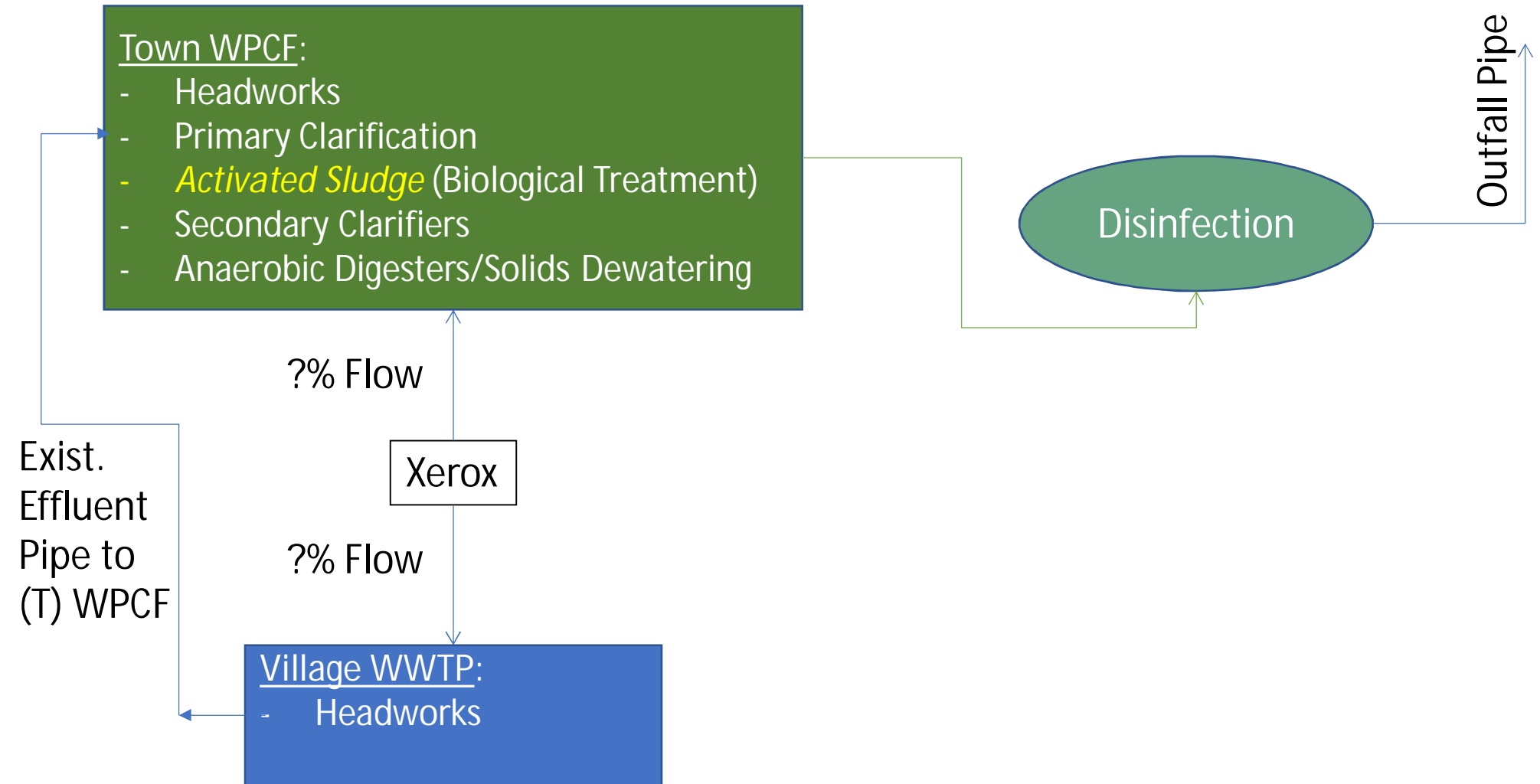
Town Only Alternative

- Includes:

- Phase I Project **-\$12,000,000** (Clarifier Upgrades):
 - Three (3) new secondary clarifiers;
 - New RAS/WAS Pumps/Controls;
 - Modifications to effluent channel; and
 - Backup Generator/Lighting.
- Phase 2 Project (Future):
 - Primary Clarifier Upgrade (1 new)
 - Convert A/S Process to MBBR
 - New Vortex Grit Removal Chamber
 - Digester Upgrades
 - Chlorine Contact Chamber

Item	Cost
New Grit Chamber	\$ 331,000
Primary Clarifier Improvements	\$ 937,000
Aeration System Improvements	\$ 3,034,000
Secondary Clarifiers, incl. RAS/WAS pumps/piping	\$ 6,955,000
Chlorination Contact Chamber	\$ 364,000
Sludge Processing Upgrades	\$ 4,817,000
Electrical Equipment, Instrumentation & Controls	\$ 1,126,000
Startup, Testing, and Training	\$ 150,000
Misc. Work Allowance	\$ 575,000
Site Improvements	
New Garage Addition	\$ 1,039,500
Misc Site Improvements	\$ 75,000.00
	Subtotal: \$ 19,403,500
Mobilization/Demobilization/General Conditions @ 10%:	\$ 1,940,350
Construction Cost Subtotal (2018 Dollars):	\$ 21,343,850
Construction Cost Subtotal (2020 Dollars @ 3% Inflation):	\$ 21,984,166
Engineering/Legal/Administrative Costs (@ 10%):	\$ 2,198,000
Project Contingency (@ 20%):	\$ 4,397,000
Village Contribution (Credit)	\$ 370,000
Estimate of Phase I Project Cost (2019)	\$ 12,000,000
Estimate of Probable (Phase II) Project Cost	\$ 16,209,000
Estimate of Total Probable Project Cost	\$ 28,209,000

Regional WRRF Concept

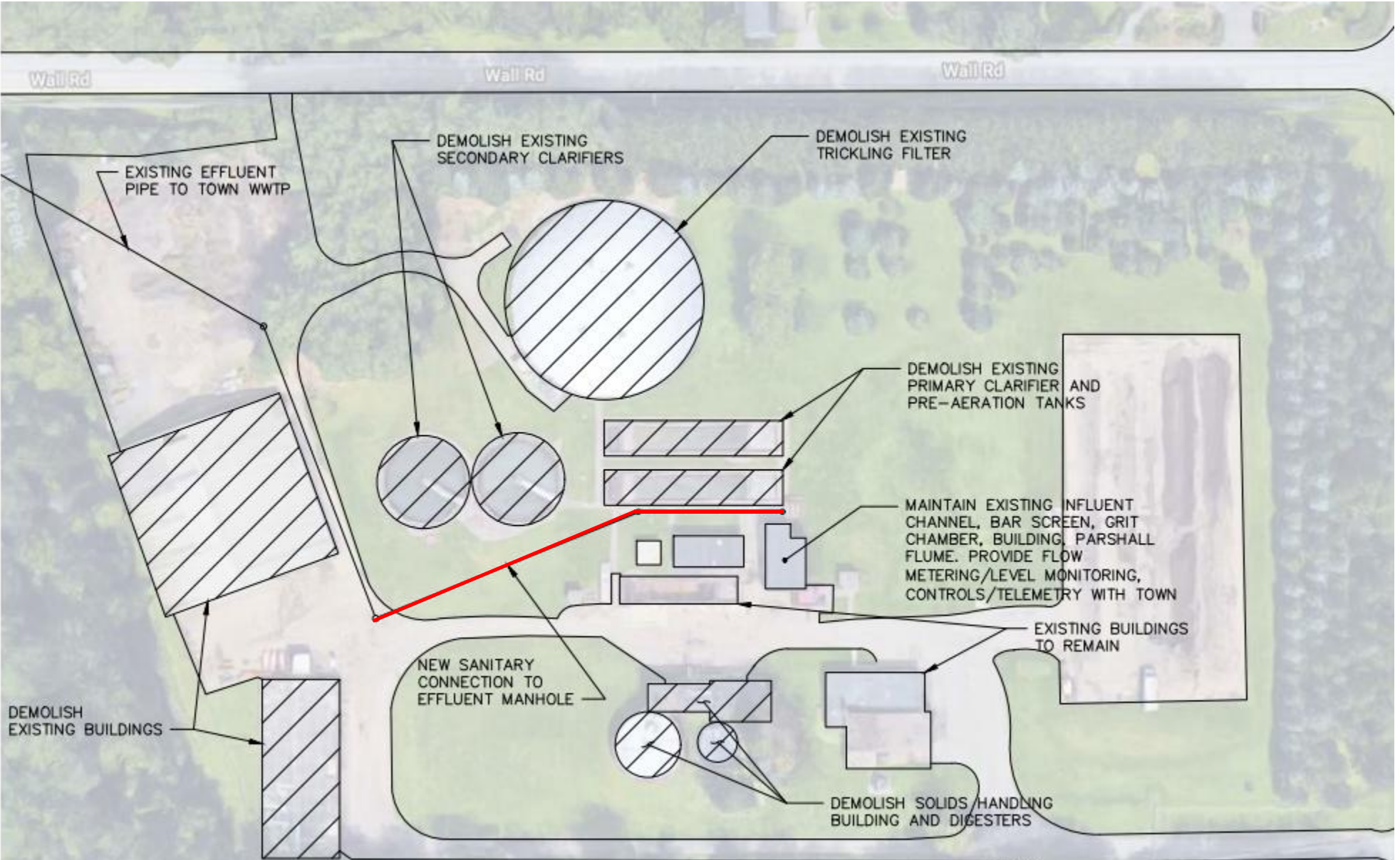


Regional Alternative - Village WWTP Improvements

- Evaluate Necessary Modifications of Village WWTP
 - Sewer Connection to Town WPCF
 - *Via existing Village Sewer*
 - Schlegel Road
 - Rte. 250
 - Village Headworks
 - Maintain/Improve as “Satellite Preliminary Treatment”
 - Demolition of Remaining Processes
 - Primary/Secondary Clarifier; Trickling Filter; Digesters, etc.

DESCRIPTION ⁽¹⁾	TOTAL PRICE
Village Headworks Modificaitons and Tie-in	\$ 355,000
Village WWTP Demolition	\$ 1,000,000
Subtotal:	\$ 1,355,000
Mobilization/Demobilization/General Conditions @ 10%:	\$ 135,500
Construction Cost Subtotal (2018 Dollars):	\$ 1,490,500
Construction Cost Subtotal (2020Dollars @ 3% Inflation):	\$ 1,535,215
Engineering/Legal/Administrative Costs (@ 10%):	\$ 154,000
Project Contingency (@ 20%):	\$ 307,000
Estimate of Probable Project Cost ⁽²⁾ :	\$ 1,996,000

Regional Alternative - Village WWTP CIP



NOTES:
PIPING NOT SHOW FOR CLARITY. ALL EXISTING PIPING TO BE ABANDONED IN PLACE EXCEPT SHOW

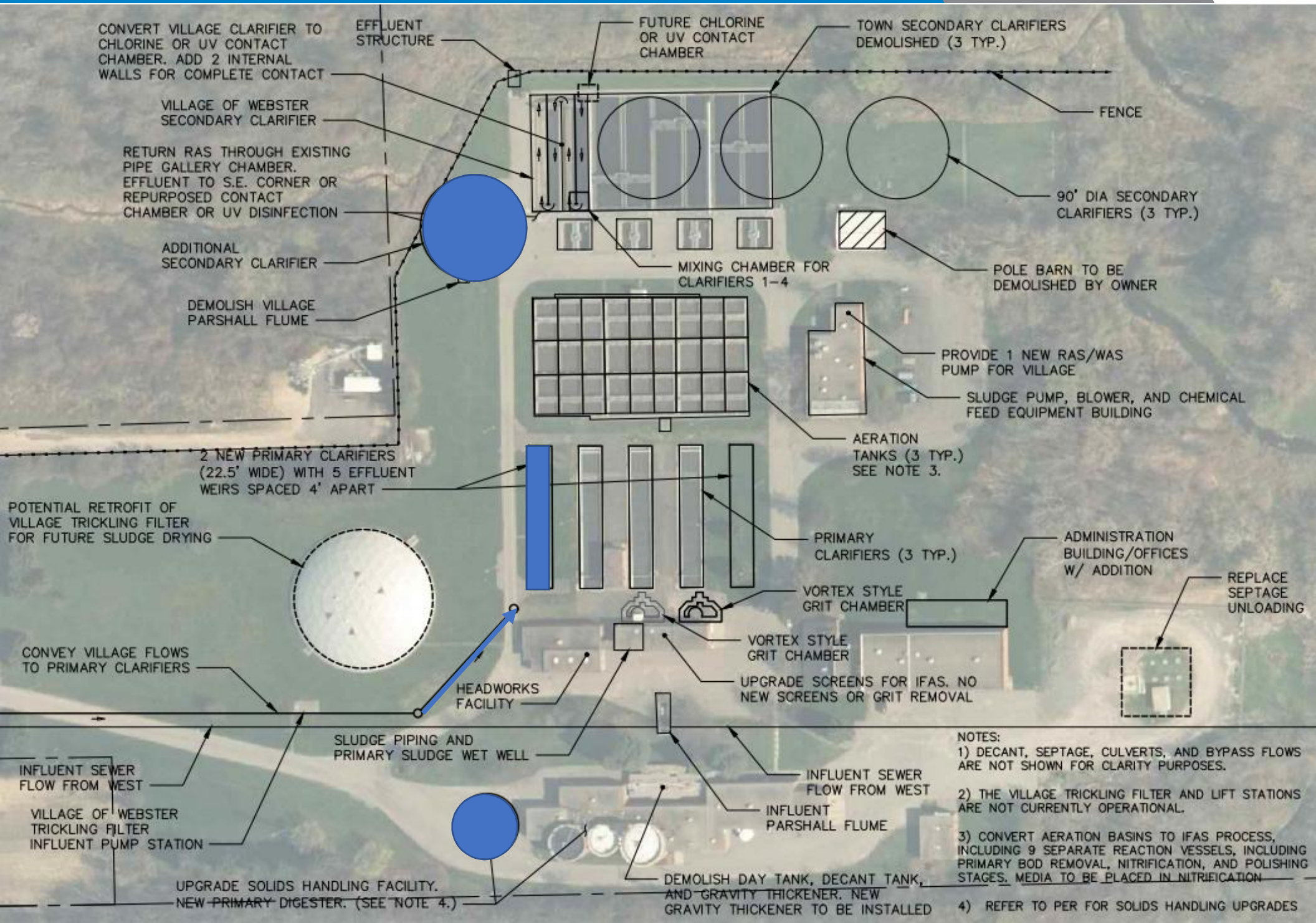
Regional Alternative Town WPCF Upgrades

• Town WPCF Improvements

- Phase I Town Project -
\$12,000,000
- Phase II Town Project
- PLUS:
 - One (1) Additional Primary Clarifier
 - One (1) Additional Secondary Clarifier
 - RAS/WAS Pumps/Piping
 - Increased Digester Capacity

DESCRIPTION ⁽¹⁾		TOTAL PRICE
New Grit Chamber Equipment & Headworks Modifications		\$ 331,000
Primary Clarifier Improvements		\$ 1,650,000
Aeration System Improvements		\$ 3,304,000
Secondary Clarifiers, incl. RAS/WAS pumps/piping		\$ 9,225,000
Chlorination Contact Chamber		\$ 389,000
Sludge Processing Upgrades		\$ 5,102,000
Electrical Equipment, Instrumentation & Controls		\$ 1,226,000
Startup, Testing, and Training		\$ 100,000
Misc. Work Allowance		\$ 300,000
Site Improvements		
	New Garage Addition	\$ 1,039,500
	Misc Site Improvements (Paving/Sidewalk/Restoration)	\$ 75,000.00
	Subtotal:	\$ 22,741,500
Mobilization/Demobilization/General Conditions @ 10%:		\$ 2,274,150
Construction Cost Subtotal (2018 Dollars):		\$ 25,015,650
Construction Cost Subtotal (2020Dollars @ 3% Inflation):		\$ 25,766,120
Engineering/Legal/Administrative Costs (@ 10%):		\$ 2,577,000
Project Contingency (@ 20%):		\$ 5,153,000
Estimate of Phase I Project Cost (2019)		\$ 12,000,000
Estimate of Probable (Phase II) Project Cost		\$ 21,496,000
Estimate of Probable Project Cost ⁽²⁾ :		\$ 33,496,000

Combined Alternative (Town)



Regional EDU Breakdown

Type	Town	Village*	Regional
Residential	14,635	2,427	18,602
Comm/Ind.	1,540		
Penfield	1,076	-	1,076
Xerox	640	4,121	4,761
Total	17,891	6,548	24,439

1 EDU ~ 60,000 gal/year

1 EDU ~ 2.2 Residents/Household

* Village PER Est. EDUs = 8,125

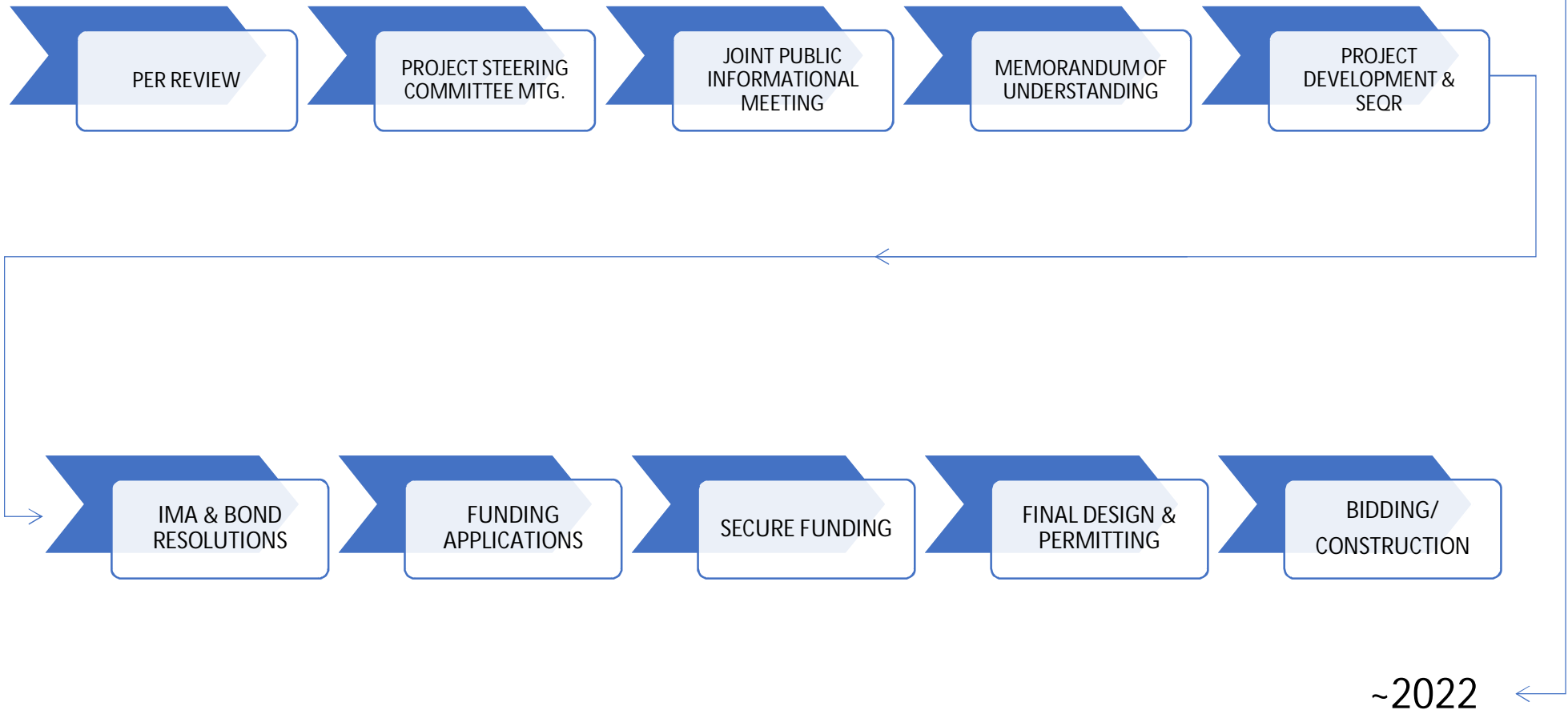
Project & User Cost Summary

CAPITAL & LIFE CYCLE COST COMPARISON – WPCF ALTERNATIVES

Net Present Value (NPV) Analysis	Town Only	Regional
Estimated Project Cost		
Phase I (Clarifiers/Generator)	\$ 12,000,000	\$ 12,000,000
Phase II Improvements	\$ 16,209,000	\$ 23,491,000
WIIA Grant	\$ -	\$ -
Town Contributions	\$ -	\$ -
Net Project Cost	\$ 28,209,000	\$ 35,491,000
Total NPV	\$ 75,640,000	\$ 90,353,000
Annual Debt Service	\$ 1,482,318	\$ 1,864,971
Estimated Debt Service/EDU	\$ 83	\$ 76
30-Year O&M and SLA NPV	\$ 47,431,301	\$ 54,862,180
Estimated Treatment Charge/User	\$ 88	\$ 75
Total Estimated Annual Charge*	\$ 171	\$ 151

Next Steps – Regional WWRF

2018



Questions?



The experience to
listen
The power to
solveSM

BartonandLoguidice.com

