



# Regional Wastewater Treatment Consolidation Study – Phase 2

Workshop #5 – Final Report and Development of  
Recommended Plan

June 8, 2021

Naugatuck Valley  
Council of Governments



**BLACK & VEATCH**

# Agenda

Introduction & Roles

Project Overview: Phase 1 and Phase 2

Recommended Regional Alternative

→ Development of Recommended Alternative

→ CT SRF Grant/Loan Program

→ Regional Wastewater Authority

# Introduction & Roles

- NVCOG
- Black & Veatch
- Participating Communities
- OPM, DEEP

# Phase 1 – Long List Regional Alternatives

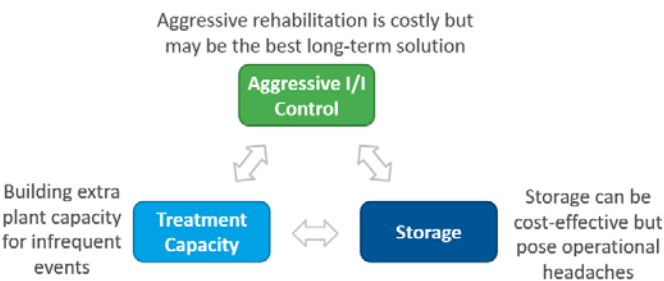
# Phase 1 – Deliverables/Activities

Flows & Loads Report

REGIONAL WASTEWATER  
TREATMENT CONSOLIDATION STUDY  
Phase 1 Report:  
Long List of Regional Wastewater  
System Alternatives

Phase 1 Report

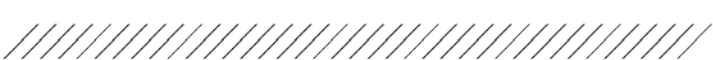
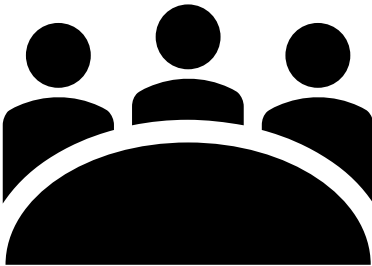
## Identification of Alternatives



Initial Condition  
Assessment Report



Workshops &  
Meetings



# Phase 1 – Long List Regional Alternatives

No.	Alternative Description
1	Beacon Falls to Naugatuck
2	Beacon Falls to Seymour
2a	Beacon Falls to Seymour, I/I Reduction
3	Derby to Ansonia
3a	Derby to Ansonia, I/I Reduction
4	Derby to Ansonia, Effluent Pumped to Housatonic
4a	Derby to Ansonia, I/I Reduction, Effluent Pumped to Housatonic
5	Derby and Seymour to Ansonia
5a	Derby and Seymour to Ansonia, I/I Reduction
5b	Derby and Seymour to Ansonia, Effluent Pumped to Housatonic
5c	Derby and Seymour to Ansonia, I/I Reduction, Effluent Pumped to Housatonic

No.	Alternative Description
6	Derby to Seymour and Ansonia
6a	Derby to Seymour and Ansonia, I/I Reduction
8	Ansonia to Derby
8a	Ansonia to Derby, I/I Reduction
9	Seymour and Ansonia to Derby
9a	Seymour and Ansonia to Derby, I/I Reduction
10	Seymour to Ansonia, Part of Ansonia to Derby
10a	Seymour to Ansonia, Part of Ansonia to Derby, I/I Reduction
11	Beacon Falls and Seymour to Ansonia, Part of Ansonia to Derby
11a	Beacon Falls and Seymour to Ansonia, Part of Ansonia to Derby, I/I Reduction
12	Beacon Falls, Seymour, and Ansonia to Derby
12a	Beacon Falls, Seymour, and Ansonia to Derby, I/I Reduction

# Phase 2 – Development of Regional Alternatives

# Phase 2 – Deliverables/Activities

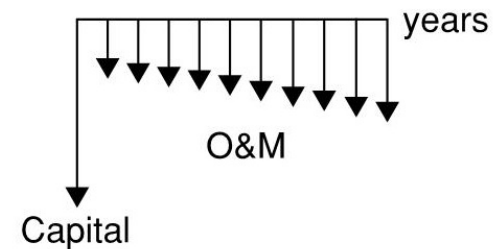
## Task 2 – Short List of Regional Wastewater Alternatives

### REGIONAL WASTEWATER TREATMENT CONSOLIDATION STUDY

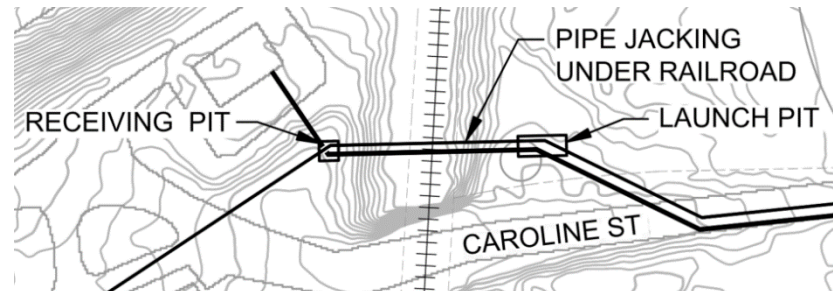
Technical Memorandum 3:  
Short List of Regional Wastewater  
Alternatives

## Task 3 - Final Recommendation

### Net Present Worth Analysis



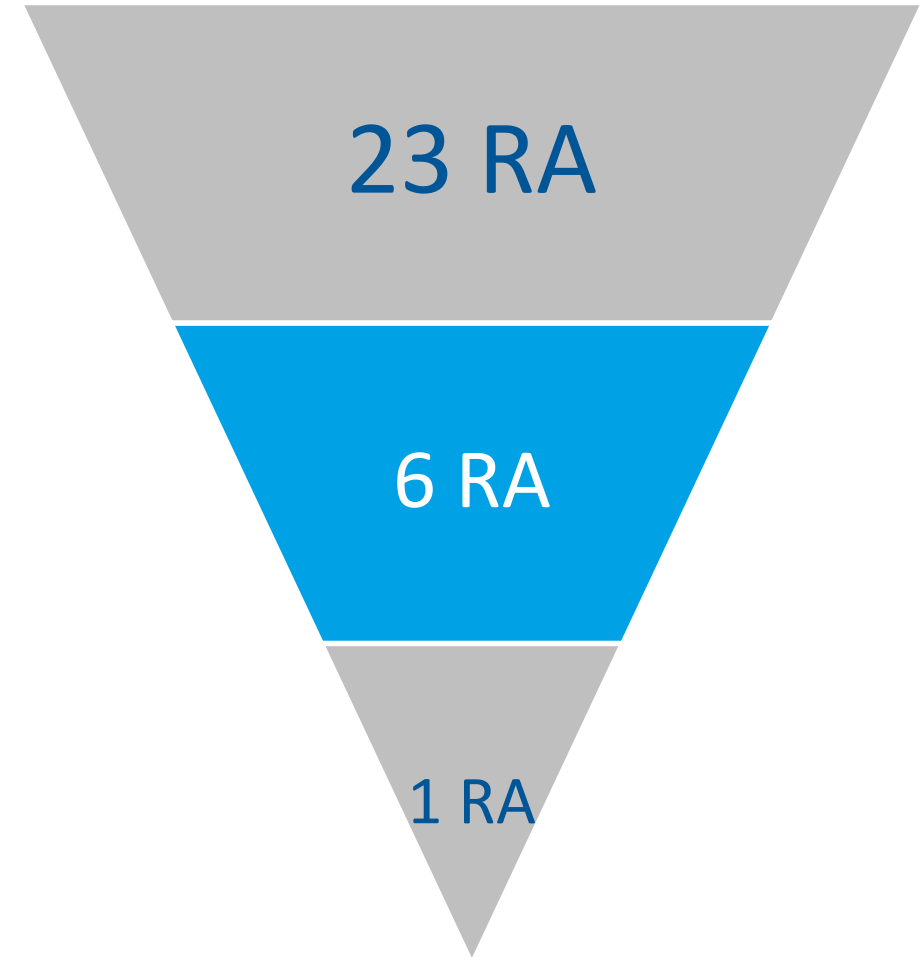
## Task 4 - Final Report & Development of Recommended Plan





# Task 2 Report Summary

- Phase I Long List of Regional Alternatives were Developed and Screened out
- The result – Six short-list Regional Wastewater Alternatives
  - Aggressive I/I alternatives screened out
  - Alternatives from Beacon Falls to Naugatuck & to Seymour screened out



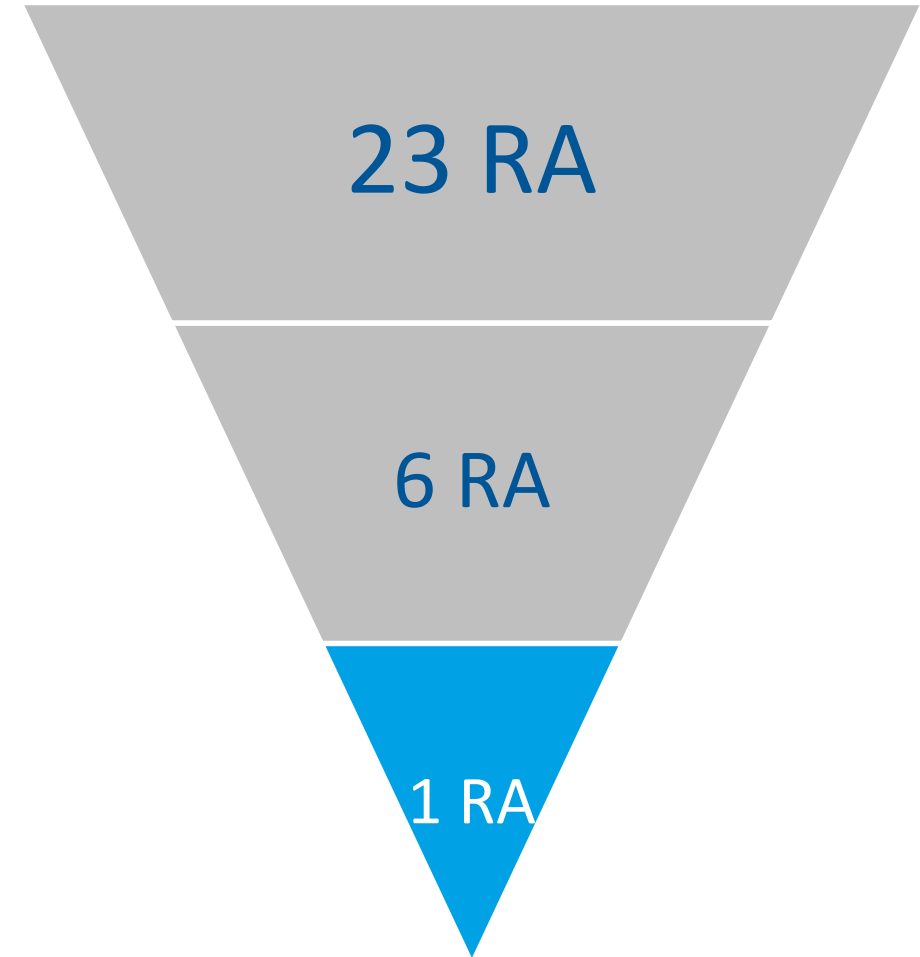
# Short List of Regional Alternatives

No.	Alternative Description
<i>Ansonia Regional Alternatives</i>	
3	Derby to Ansonia
4	Derby to Ansonia, Effluent Pumped to Housatonic River
5	Derby and Seymour to Ansonia
5b	Derby and Seymour to Ansonia, Effluent Pumped to Housatonic River
<i>Derby Regional Alternatives</i>	
8	Ansonia to Derby
9	Seymour and Ansonia to Derby



# Task 3 Report Summary

- Task 2 Short List Regional Alternatives were developed further
- Present Worth Cost Analysis compared Regional Alternatives and Base Case Scenarios
  - Derby Regional Alternatives have the highest present worth costs, thus eliminated
  - Ansonia Regional Alternatives have less cost than base case, particularly those that send treated effluent to Housatonic at Derby

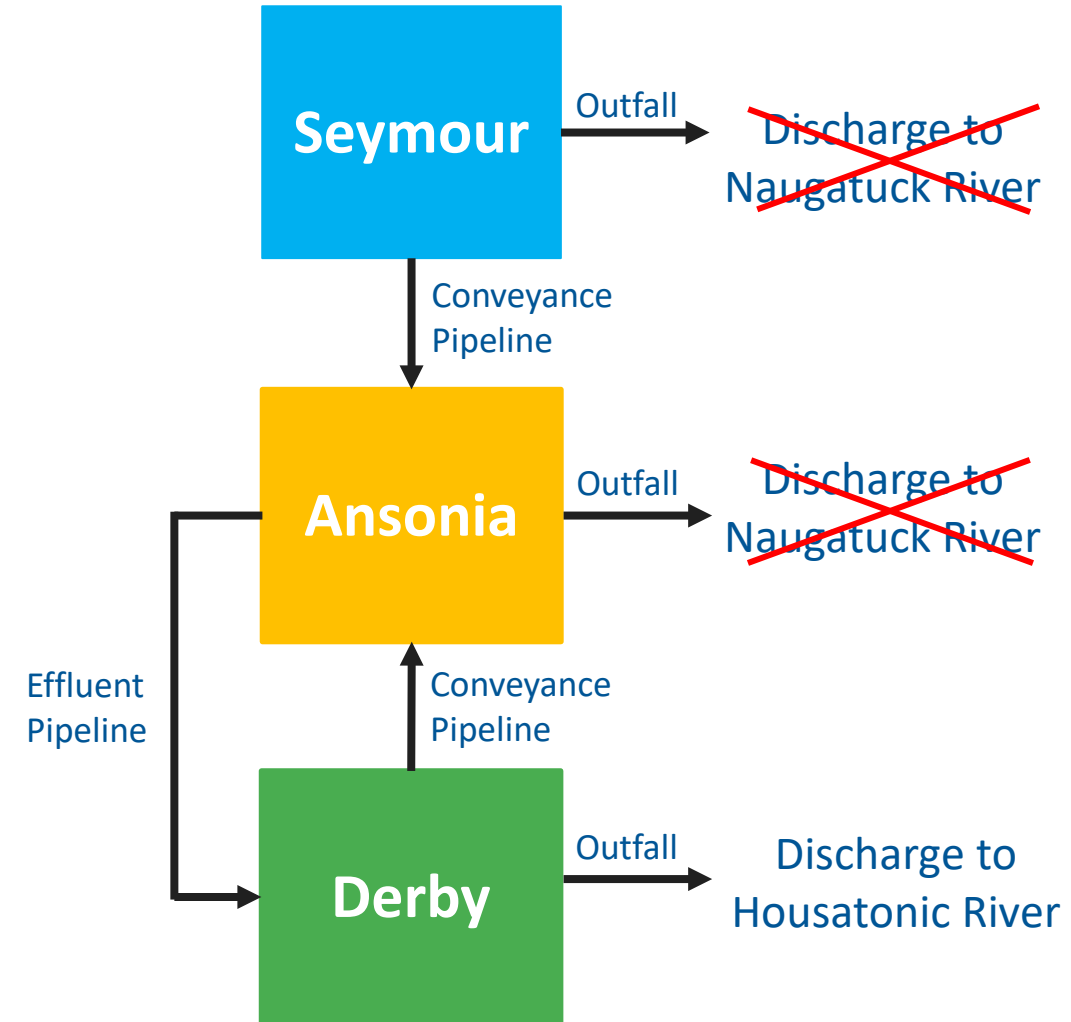


# Comparison of Base Case and Regional Alternatives

No.	Regional Alternative	Regional Alternative Costs (millions)			Base Cases	Base Case Costs (millions)			Present Worth Difference (millions)
		Capital	O&M	Total		Capital	O&M	Total	
	Ansonia Regional Alternatives								
3	Derby to Ansonia	\$78.2	\$57.5	\$135.7	Derby + Ansonia	\$85.7	\$67.9	\$153.6	\$17.9
4	Derby to Ansonia, Effluent Pumped to Housatonic River	\$71.1	\$57.1	\$128.2	Derby + Ansonia	\$85.7	\$67.9	\$153.6	\$25.4
5	Derby + Seymour to Ansonia	\$125.8	\$74.2	\$200.0	Derby + Ansonia + Seymour	\$118.1	\$95.6	\$213.7	\$13.7
5b	Derby + Seymour to Ansonia, Effluent Pumped to Housatonic River	\$117.9	\$73.8	\$191.7	Derby + Ansonia + Seymour	\$118.1	\$95.6	\$213.7	\$22.0
	Derby Regional Alternatives								
8a	Ansonia to Derby (BioMag)	\$109.2	\$59.3	\$168.5	Derby + Ansonia	\$85.7	\$67.9	\$153.6	(\$14.9)
8b	Ansonia to Derby (IFAS)	\$111.9	\$55.4	\$167.3	Derby + Ansonia	\$85.7	\$67.9	\$153.6	(\$13.7)
9a	Seymour + Ansonia to Derby (BioMag)	\$157.2	\$76.8	\$234.0	Derby + Ansonia + Seymour	\$118.1	\$95.6	\$213.7	(\$20.3)
9b	Seymour + Ansonia to Derby (IFAS)	\$163.3	\$71.7	\$235.0	Derby + Ansonia + Seymour	\$118.1	\$95.6	\$213.7	(\$21.3)

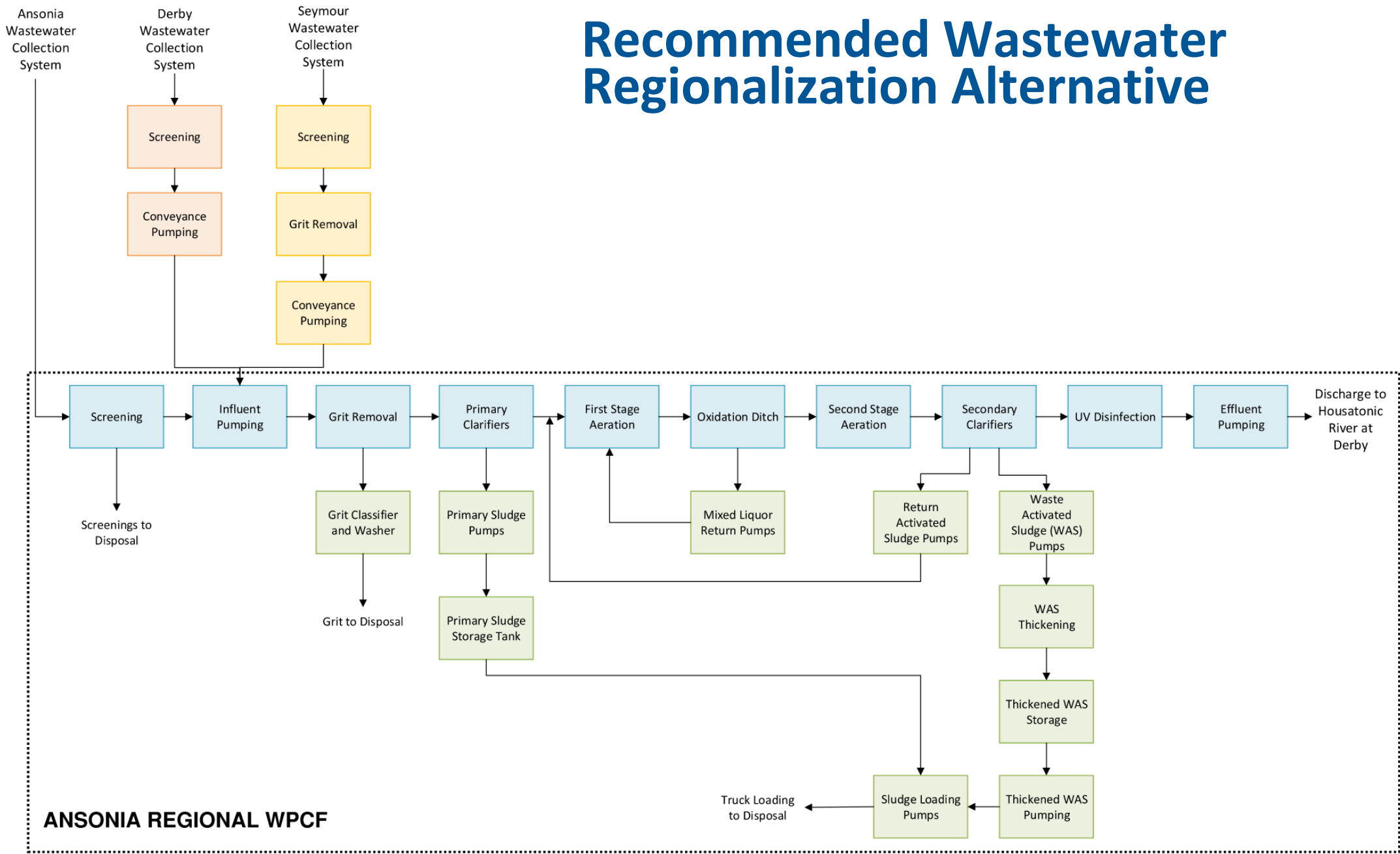
# Recommended Alternatives

- Ansonia Regional Alternatives are more financially attractive than the Derby Regional Alternatives and Base Case Scenarios
- Alternatives 4 and 5b are the most financially attractive
  - Derby to Ansonia, Effluent pumped to Housatonic – more financially attractive
  - Derby and Seymour to Ansonia, Effluent pumped to Housatonic – added advantage of eliminating two WWTP outfalls



# Task 4 –Development of Recommended Regional Alternative

# Recommended Wastewater Regionalization Alternative



# Ansonia Regional WPCF Expansion/Upgrade

NAUGAUTUCK RIVER

NEW ODOR CONTROL

NEW VORTEX GRIT CHAMBER

OXIDATION DITCH NO. 1

OXIDATION DITCH NO. 2

NEW ODOR CONTROL

NEW VORTEX GRIT CHAMBER

HEADWORKS

NEW VORTEX GRIT CHAMBER

OLD ODOR CONTROL

PRIMARY CLARIFIER #1

PRIMARY CLARIFIER #2

PRIMARY CLARIFIER #3

PRIMARY CLARIFIER #4

NEW PRIMARY CLARIFIER #5

SERVICE BUILDING

SERVICE BUILDING CONTINUATION

NEW SLUDGE HANDLING FACILITY

NEW SECONDARY CLARIFIER NO. 3

NEW PRIMARY CLARIFIER

SECONDARY CLARIFIER NO. 1

SECONDARY CLARIFIER NO. 2

NEW UV DISINFECTION CHANNEL NO. 1

NEW UV DISINFECTION CHANNEL NO. 2

ANIMAL SHELTER

PLANT EFFLUENT CHANNEL

FIRST STAGE ANOXIC TANK

FIRST STAGE ANOXIC TANK

FIRST STAGE ANOXIC TANK

FIRST STAGE ANOXIC TANK

BLOWER BUILDING

SECOND STAGE ANOXIC TANKS NO. 1

SECOND STAGE ANOXIC TANKS NO. 2

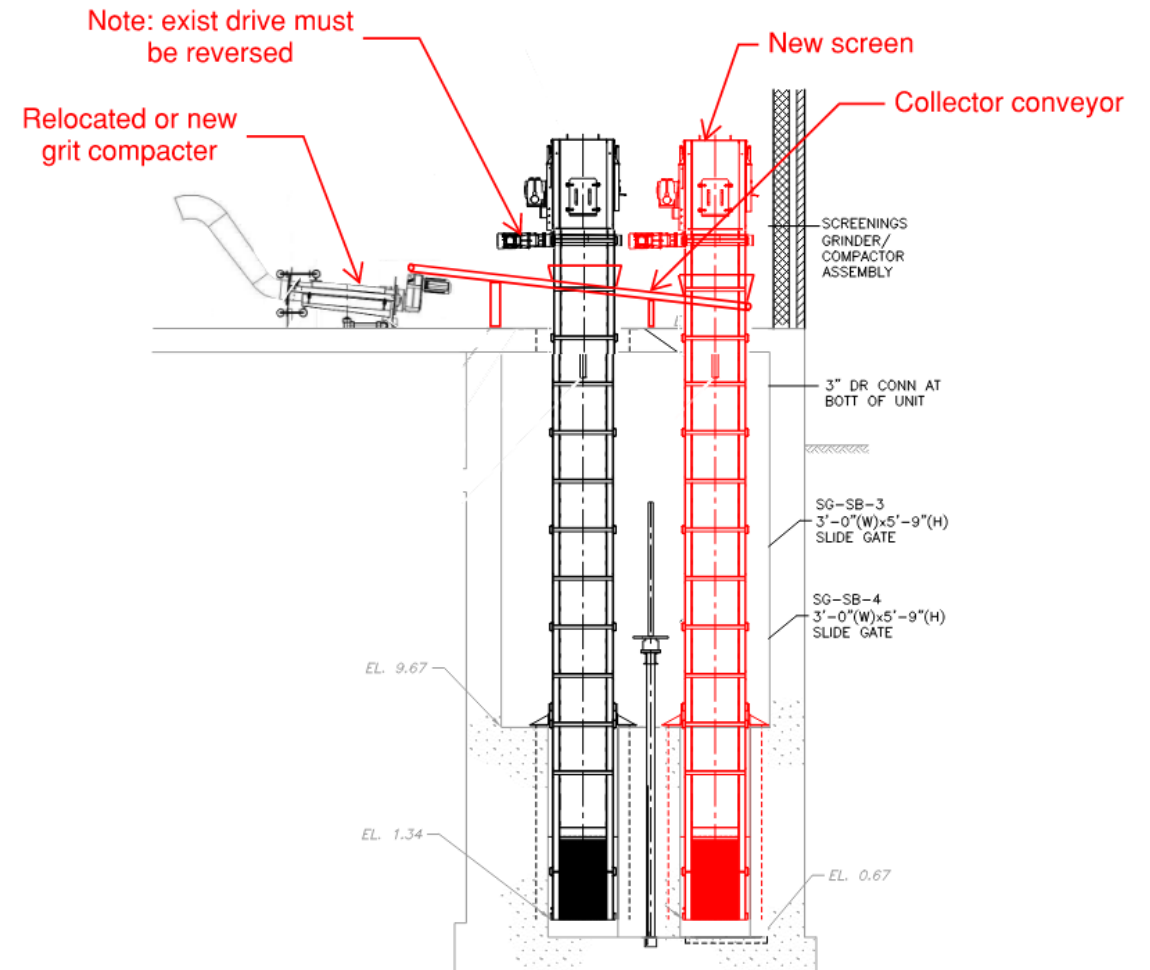
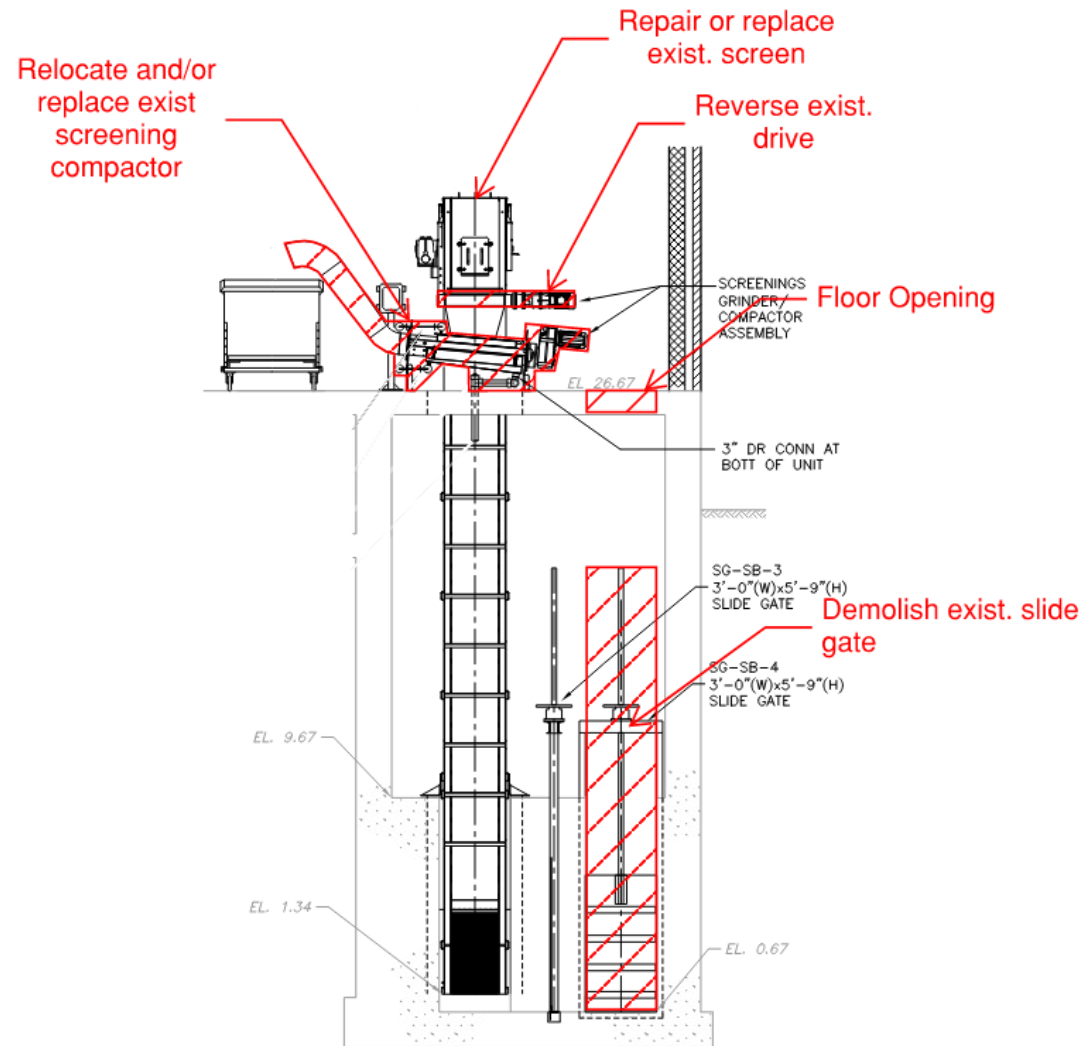
LEGEND

- PROPERTY LINE
- CHAIN LINK FENCE
- V VAULT
- T TRANSFORMER PAD
- P PUMP
- DP DISTRIBUTION BOARD
- NEW FACILITIES

SHEET 1 OF 1



# Ansonia Regional WPCF - Screenings Removal System Expansion



# Ansonia Regional WPCF Expansion/Upgrade

NAUGAUTUCK RIVER

NEW ODOR CONTROL

NEW VORTEX GRIT CHAMBER

OXIDATION DITCH NO. 1

OXIDATION DITCH NO. 2

NEW VORTEX GRIT CHAMBER

NEW ODOR CONTROL

NEW ODOR CONTROL

NEW VORTEX GRIT CHAMBER

HEADWORKS

SERVICE BUILDING

SERVICE BUILDING CONTINUATION

NEW VORTEX GRIT CHAMBER

PRIMARY CLARIFIER #1

PRIMARY CLARIFIER #2

PRIMARY CLARIFIER #3

PRIMARY CLARIFIER #4

NEW PRIMARY CLARIFIER #5

OLD ODOR CONTROL

ELEC

PLANT EFFLUENT CHANNEL

FIRST STAGE ANOXIC TANK

FIRST STAGE ANOXIC TANK

FIRST STAGE ANOXIC TANK

FIRST STAGE ANOXIC TANK

BLOWER BUILDING

SECOND STAGE ANOXIC TANKS NO. 1

SECOND STAGE ANOXIC TANKS NO. 2

UV DISINFECTION CHANNEL NO. 1

NEW UV DISINFECTION CHANNEL NO. 2

SECONDARY CLARIFIER NO. 1

NEW SECONDARY CLARIFIER NO. 3

NEW SLUDGE HANDLING FACILITY

NEW PRIMARY CLARIFIER

SECONDARY CLARIFIER NO. 2

ANIMAL SHELTER

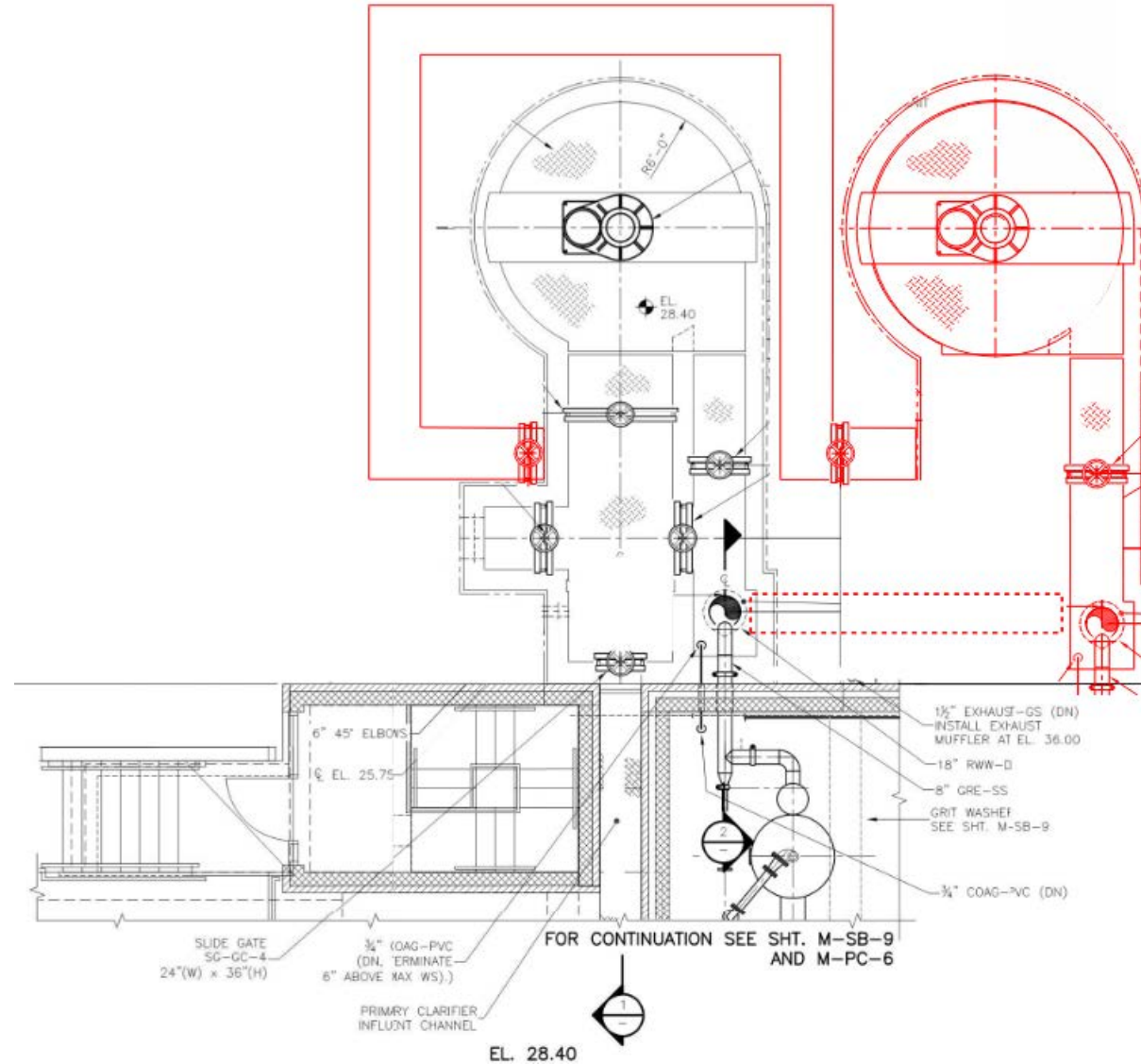
NEW UV DISINFECTION CHANNEL

LEGEND

- PROPERTY LINE
- CHAIN LINK FENCE
- V VAULT
- T TRANSFORMER PAD
- P PUMP
- DP DISTRIBUTION BOARD
- NEW FACILITIES

SHEET 1 OF 1

# Ansonia Regional WPCF - Grit Removal System Expansion



# Ansonia Regional WPCF Expansion/Upgrade

NAUGAUTUCK RIVER

NEW ODOR CONTROL

NEW VORTEX GRIT CHAMBER

OXIDATION DITCH NO. 2

OXIDATION DITCH NO. 1

NEW VORTEX GRIT CHAMBER

NEW ODOR CONTROL

SERVICE BUILDING

SERVICE BUILDING CONTINUATION

HEADWORKS

NEW VORTEX GRIT CHAMBER

OLD ODOR CONTROL

PRIMARY CLARIFIER #1

PRIMARY CLARIFIER #2

PRIMARY CLARIFIER #3

PRIMARY CLARIFIER #4

NEW PRIMARY CLARIFIER #5

P

V

PLANT EFFLUENT CHANNEL

FIRST STAGE ANOXIC TANK

FIRST STAGE ANOXIC TANK

FIRST STAGE ANOXIC TANK

FIRST STAGE ANOXIC TANK

BLOWER BUILDING

SECOND STAGE ANOXIC TANKS NO. 1

SECOND STAGE ANOXIC TANKS NO. 2

UV DISINFECTION CHANNEL NO. 1

DB

NEW UV DISINFECTION CHANNEL NO. 2

SECONDARY CLARIFIER NO. 1

SECONDARY CLARIFIER NO. 2

NEW SLUDGE HANDLING FACILITY

NEW SLUDGE HANDLING FACILITY

GENERATOR

SWB

SWGR

NEW SECONDARY CLARIFIER NO. 3

NEW PRIMARY CLARIFIER

ANIMAL SHELTER

NEW UV DISINFECTION CHANNEL

**LEGEND**

- PROPERTY LINE
- - - CHAIN LINK FENCE
- V VAULT
- T TRANSFORMER PAD
- P PUMP
- DP DISTRIBUTION BOARD
- NEW FACILITIES

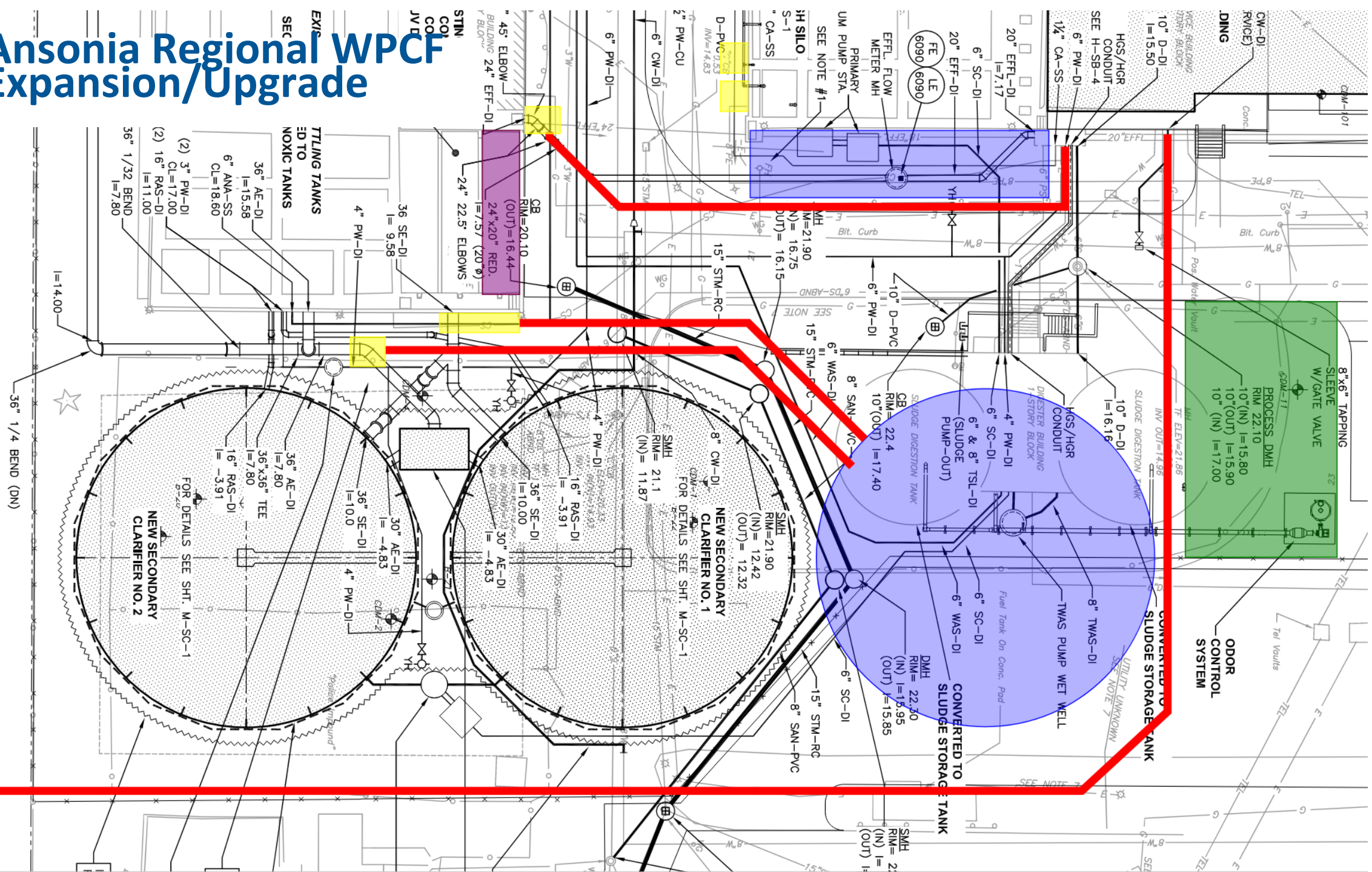
**RWPCD**

**NVCOG**

SHEET 1 OF 1



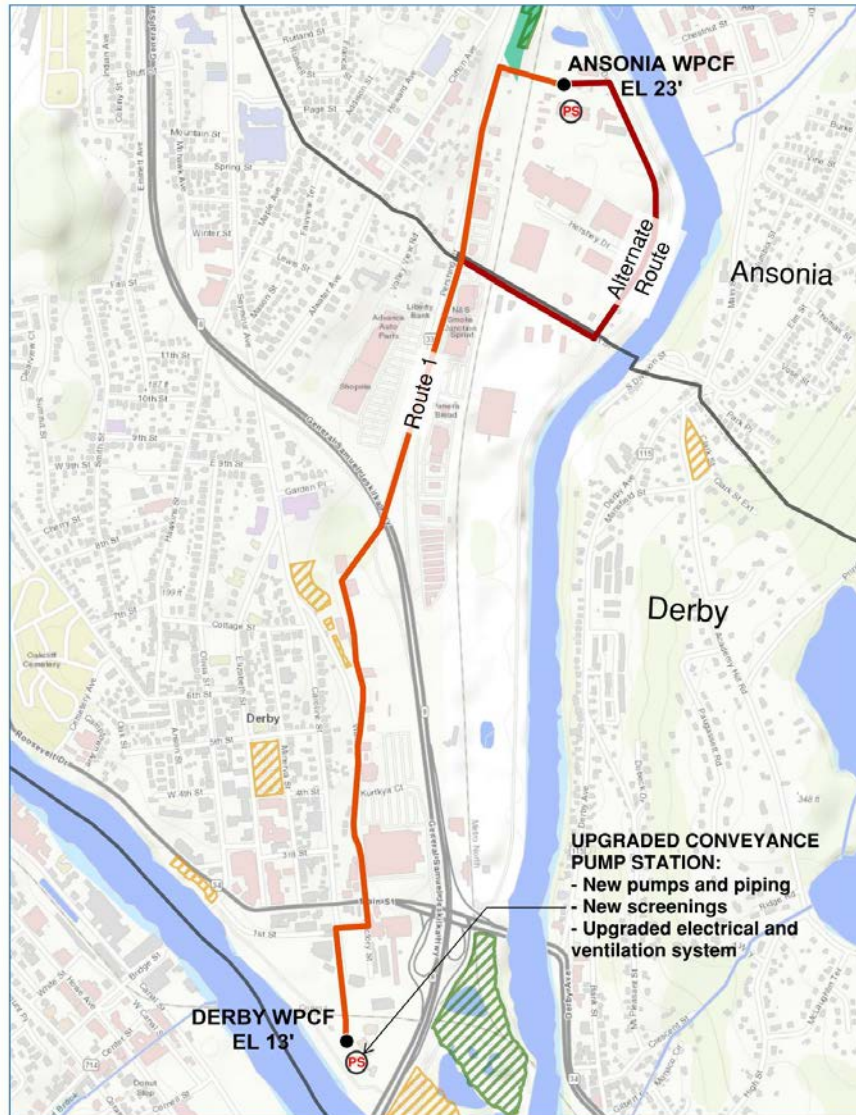
# Ansonia Regional WPCF Expansion/Upgrade



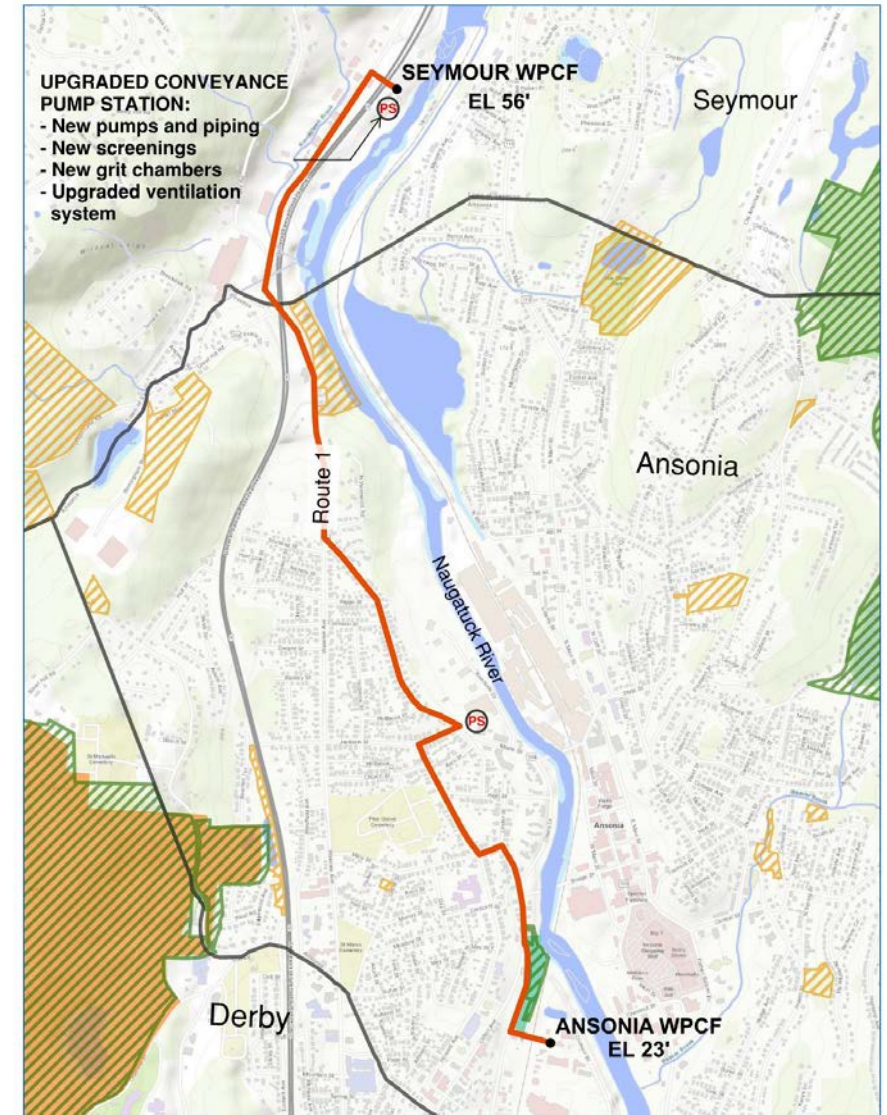


# Conveyance Pumping & Preliminary Treatment

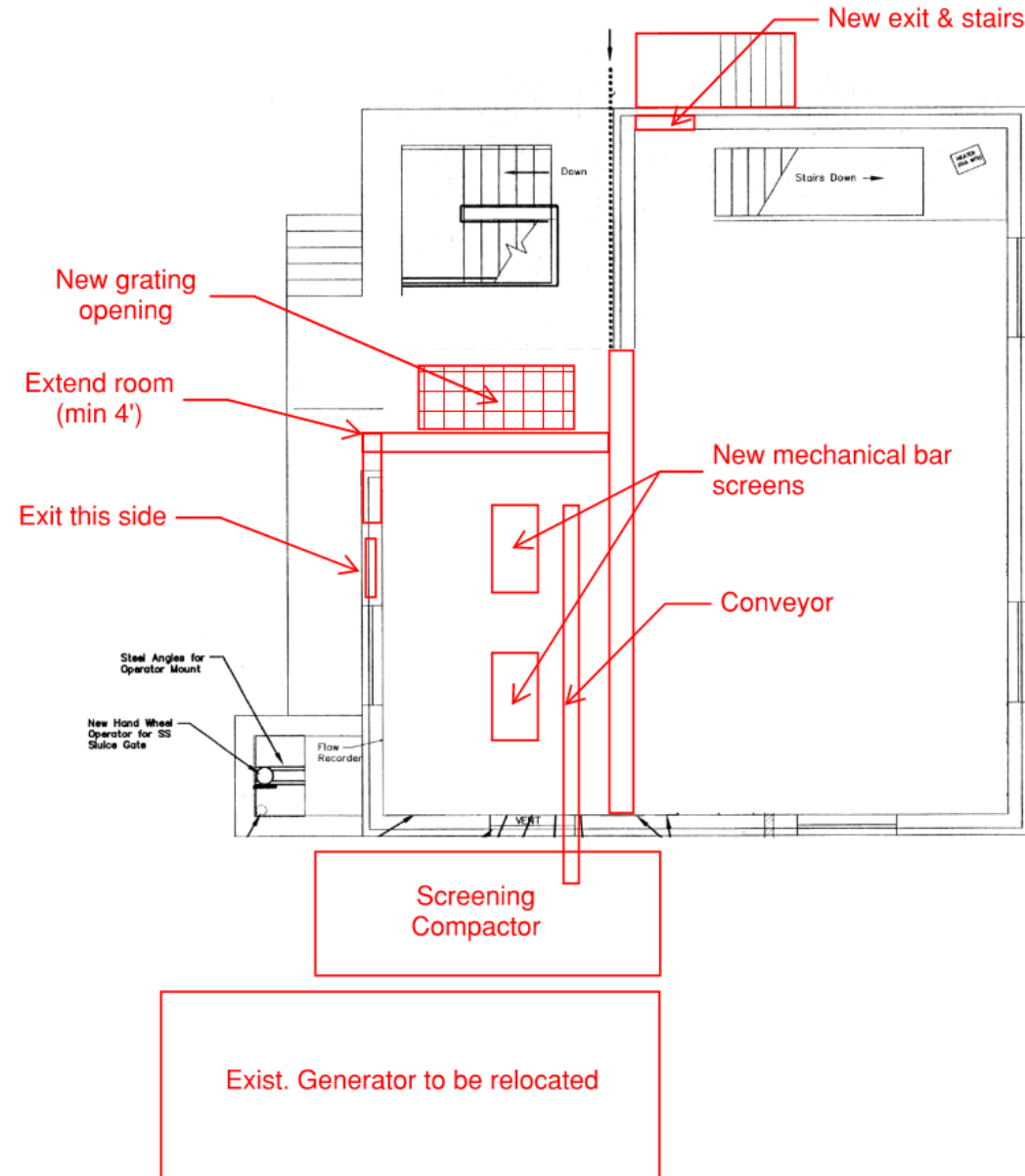
## DERBY



## SEYMOUR



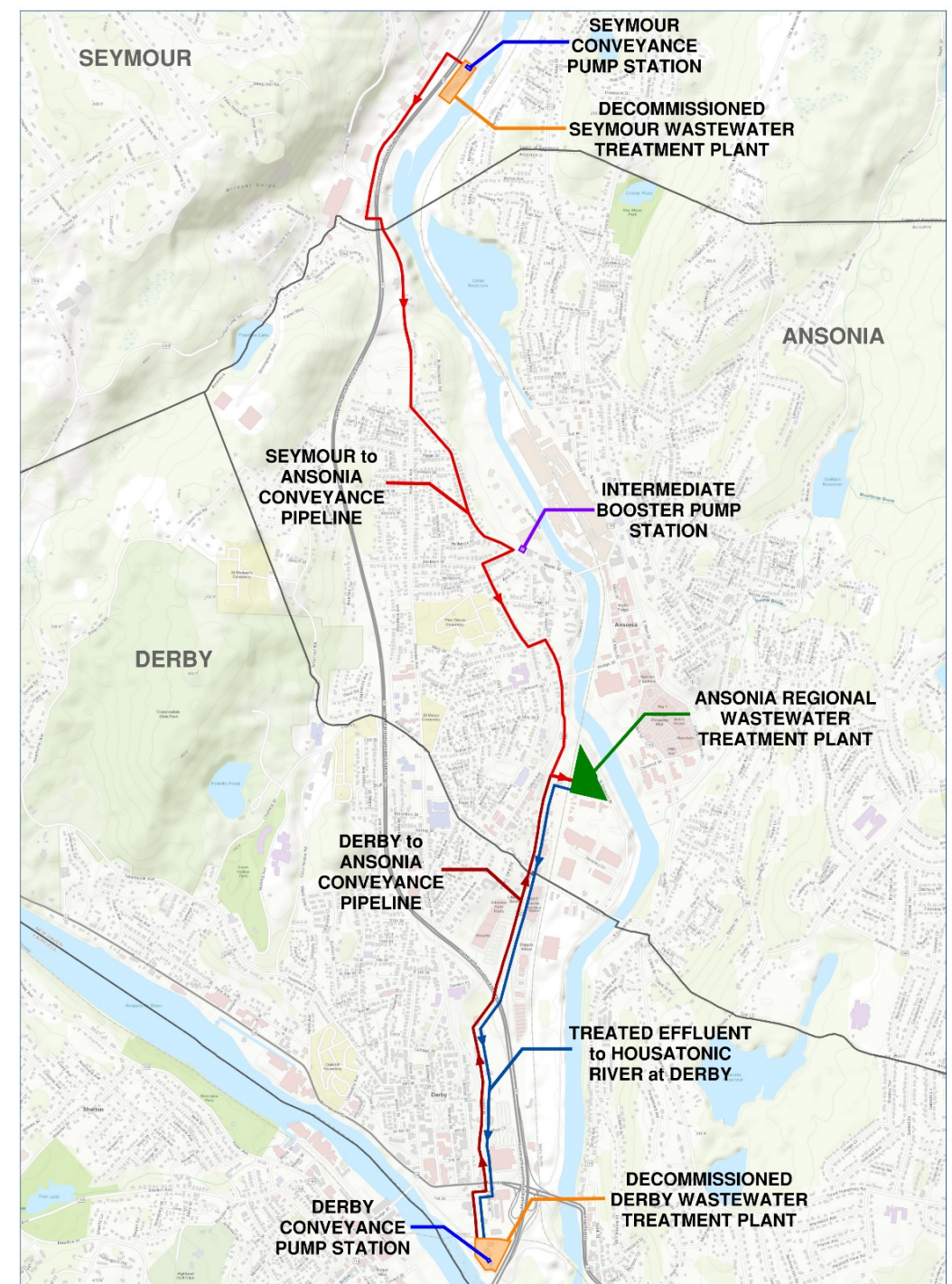
# Derby Preliminary Treatment – Raw Wastewater Screening Upgrade





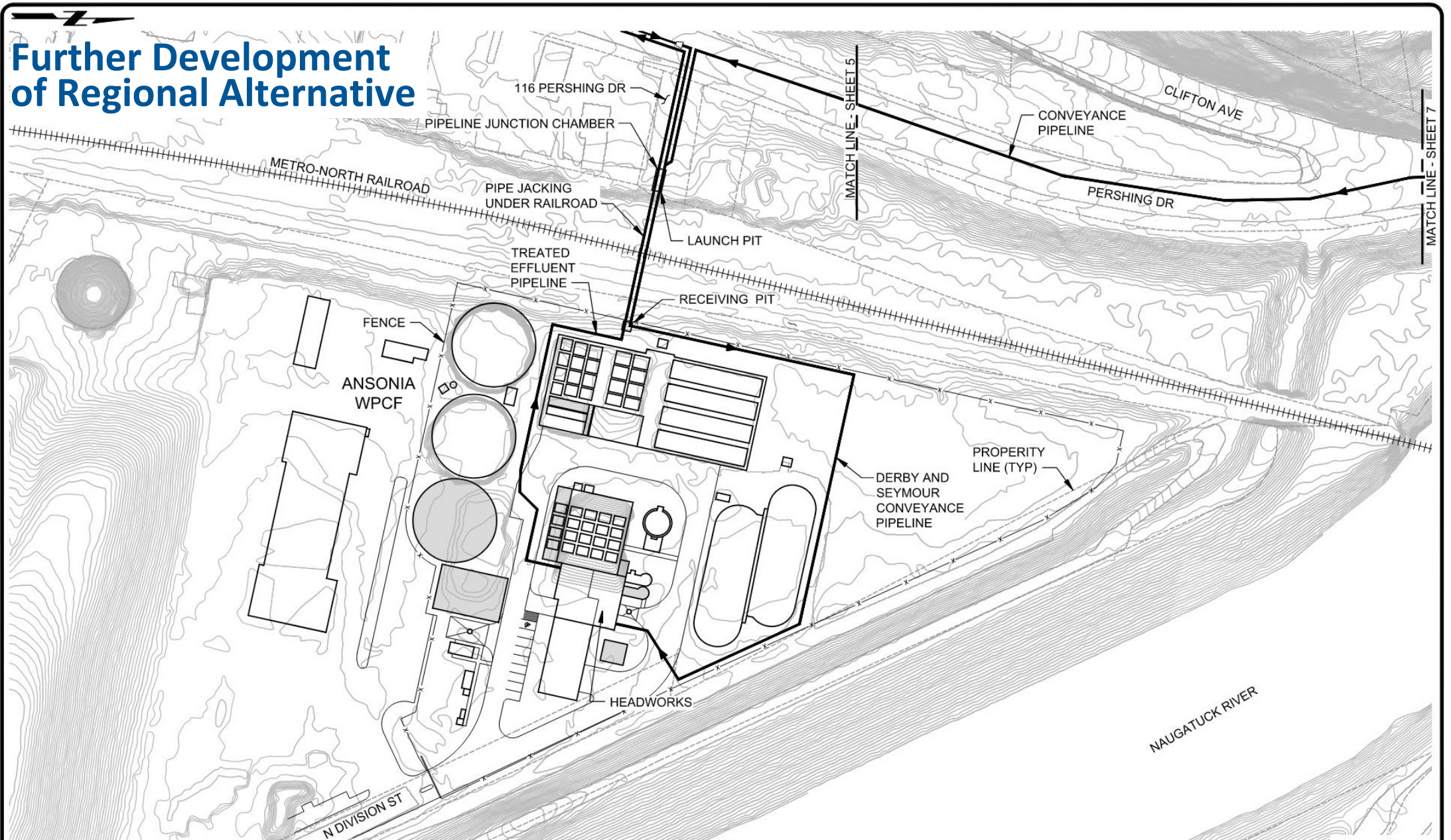
# Conveyance Pipeline Routing

- Seymour intermediate booster pump station
- Trenchless crossings – Jack and Bore
  - Route 8 crossings
  - Railroad crossings
- Property easements and acquisitions
- Effluent Discharge to Housatonic

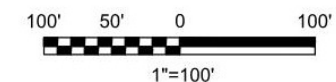




# Further Development of Regional Alternative

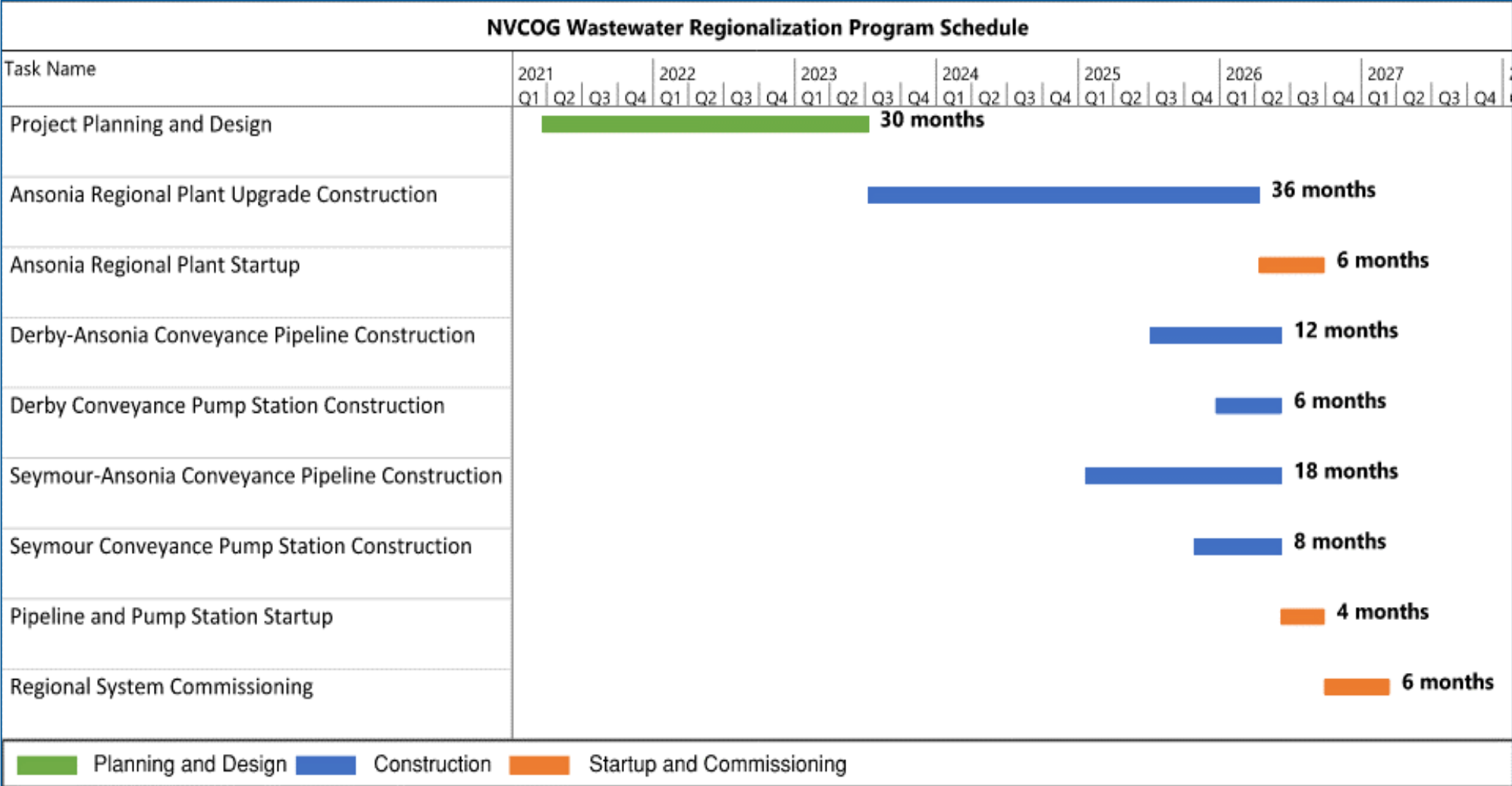


**WASTEWATER REGIONALIZATION STUDY**  
 CONVEYANCE PIPELINE - DERBY AND SEYMOUR  
 TERMINAL AT ANSONIA  
 TREATED EFFLUENT PIPELINE - ANSONIA TO DERBY



SHEET 6 OF 14

# Overall Schedule



# CT SRF Grant/Loan Program

- A combination of Grant & Low-interest loans for eligible wastewater capital project
- Eligible Municipal Projects receive:
  - 20% Grant
  - 80% Low-Interest Loan

## The Clean Water Fund Financial Assistance for Municipal Projects

The Clean Water Fund is the mechanism through which CT DEEP provides financial assistance to municipalities for projects addressing wastewater needs.

Due to resource constraints, municipalities should allocate a minimum of 90 calendar days from the date of submission to CT DEEP for the review and comment or approval of any document submitted related to the Clean Water Fund. These documents may include, but are not limited to, funding applications, engineering reports, plans and specifications, and professional services contracts.

**Implementation or execution of such documents without prior written approval by CT DEEP will result in loss of funding eligibility for the subject of the document.**

### Reports Regarding CWF

- [Clean Water Fund Annual Reports to the Governor](#)
- [The Clean Water Fund Dilemma, Increasing Demands with Diminishing Fiscal Resources:](#)  A Report from the Clean Water Fund Advisory Workgroup to DEEP Commissioner Gina McCarthy



# Regional Wastewater Authority – Pursuant to C.G.S Section 22a-500

- Involving - Regional WPCF, conveyance pipelines and collection systems
- Benefits:
  - Higher grant percentage (25%) for initial eligible project
  - Greater population served and WQ benefits – often more fundable
- Recommend Regional Wastewater Authority – CGS Section 22a-500
  - Full ownership
  - Greater accountability and compliance with federal, state, local laws governing wastewater infrastructure and treatment



# Comparison of Base Case and Recommended Regional Alternatives with Grants

No.	Regionalization Alternative	Regional Alternative Costs (\$M)			Base Case, No Regionalization	Base Case (\$M)			Present Worth Savings in Regionalization (\$M)
		Capital	O&M	Total		Capital	O&M	Total	
3	Derby to Ansonia	\$58.7	\$57.5	\$116.2	WPCF's Remain in Derby, Ansonia	\$68.6	\$67.9	\$136.5	\$20.3
4	Derby to Ansonia; Effluent Pumped to Housatonic	\$53.3	\$57.1	\$110.4	WPCF's Remain in Derby, Ansonia	\$68.6	\$67.9	\$136.5	\$26.1
5	Derby & Seymour to Ansonia	\$94.4	\$74.2	\$168.6	WPCF's Remain in Derby, Ansonia, Seymour	\$94.5	\$95.6	\$190.1	\$21.5
5b	Derby & Seymour to Ansonia; Effluent Pumped to Housatonic	\$88.4	\$73.8	\$162.2	WPCF's Remain in Derby, Ansonia, Seymour	\$94.5	\$95.6	\$190.1	\$27.9



