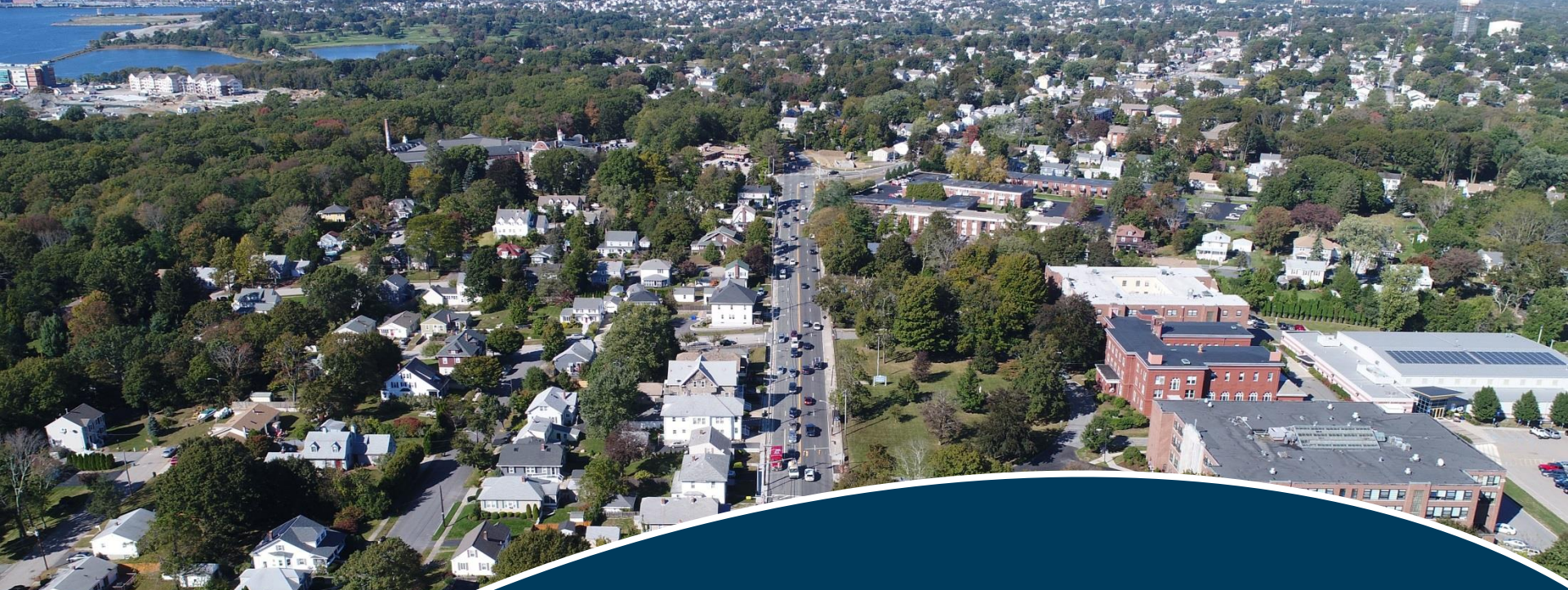

Bristol County Water Authority

Transmission System Improvements for Emergency Supply

Pawtucket Pipeline Phase I

BETA

April 2019

Project Background

Providence Water Supply Board

- Both BCWA and East Providence get their water from Providence Water through separate cross-bay pipelines
- Neither water system has a backup water supply, as both are completely reliant upon Providence Water
- Insufficient system redundancy

East Providence

- (2) 32” steel water mains crossing the Providence River, installed in 1967
- Pipes are sitting on the bottom of the river

BCWA

- 24” steel main installed in bedrock in 1998

Existing Interconnection

- 16” interconnection
  - Insufficient size to meet either systems water demand
  - Not a transmission main

BETA

Why is Redundancy Important?

Water Main Break - Providence

- Significant impacts to both E. Providence and BCWA Water Systems
- Both systems could be without water due to nature of break

Water Main Break – E. Providence or BCWA River Crossing

- Significant impacts to the water system break occurs in
- Water system likely without water due to nature of the break
- Extremely difficult repair to complete

Water Main Break

BETA

PROJECT GOALS

Project Goals – Create water system redundancy to ensure a continued supply of water should something happen to the supply from Providence Water or the cross-bay pipelines.

- *Phase 1 – Establishes an interconnection between BCWA and E. Providence water systems.*
  - *Allows for the inspection and condition assessment of the cross bay pipelines.*
  - *Allows for the rehabilitation of the pipelines if needed.*

- *Phase 2 – Establishes an interconnection with Pawtucket's water system, providing for a second water supply to both BCWA and E. Providence.*
  - *Allows for the continued supply of water to both E. Providence and BCWA in the event of a major supply interruption in Providence, Pawtucket or the cross-bay pipelines.*

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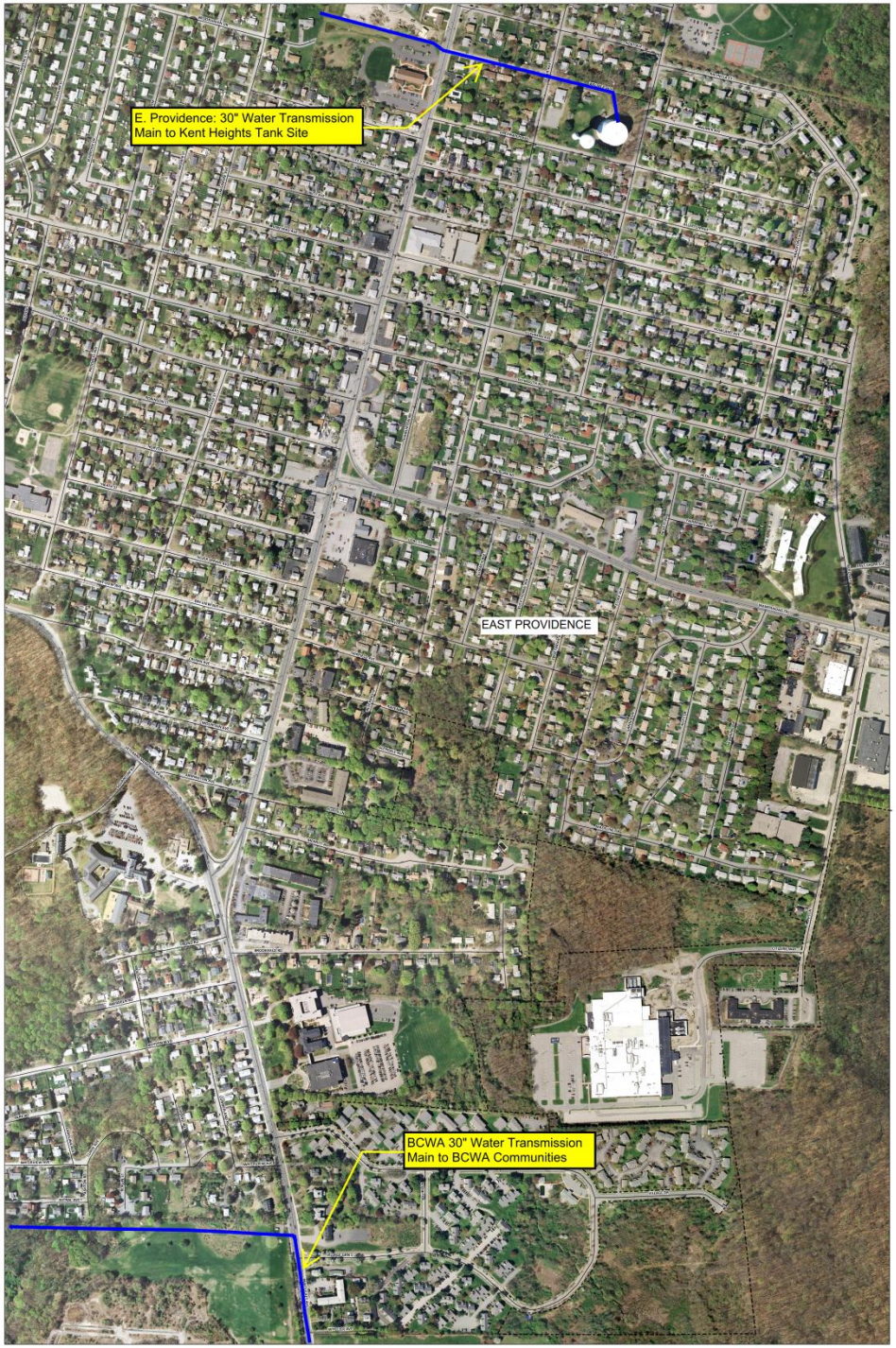


Phase 1 Alternatives

- BETA evaluated numerous alternatives for the routing of a new dedicated 24” water transmission main that will connect the BCWA and East Providence water systems.
- BETA and BCWA met with E. Providence in early 2018 to discuss a number of these alternatives.
- The two most viable alternatives will be discussed today.
- Decide on a routing alternative and move forward with the project.

BETA

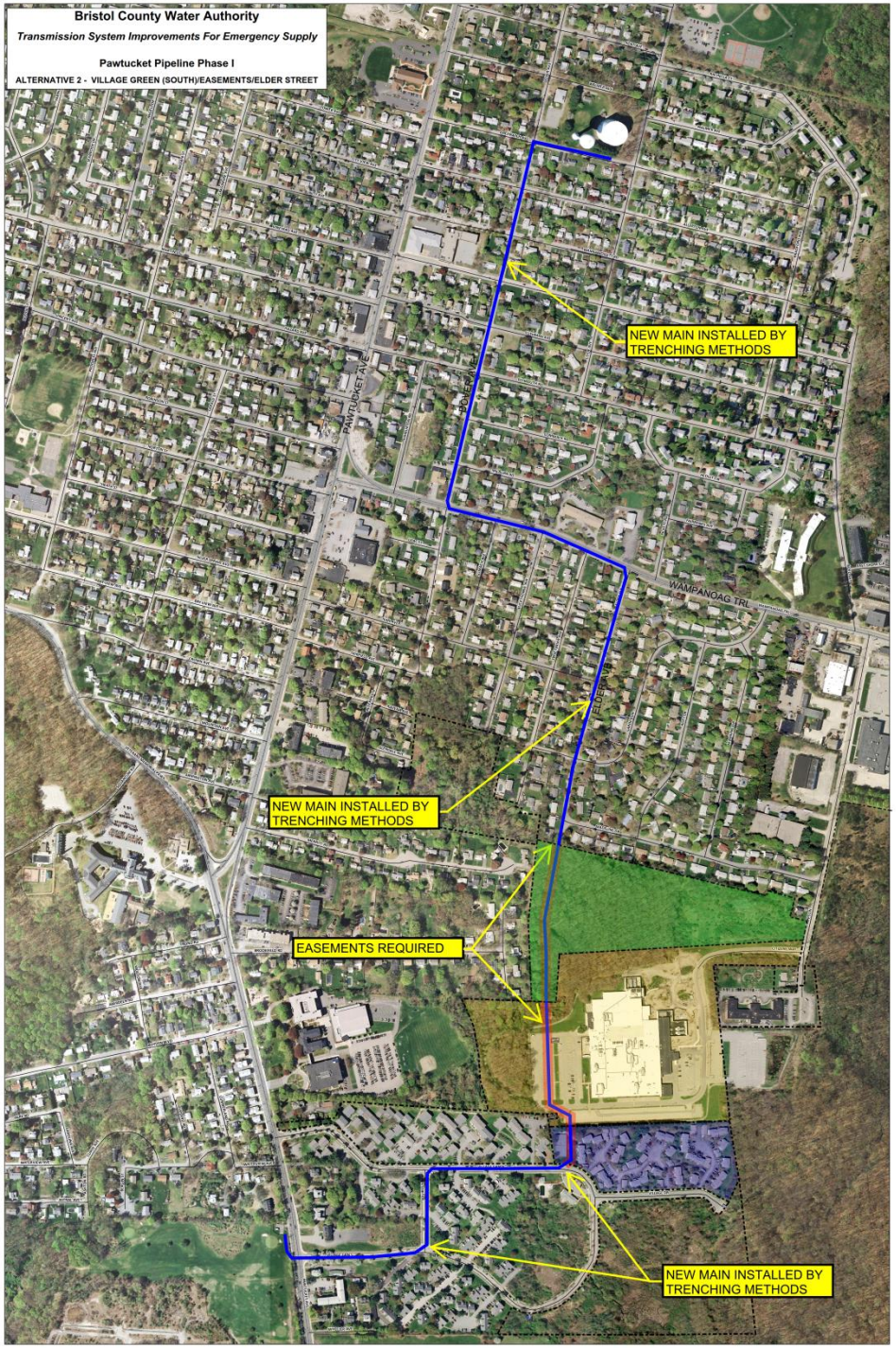
Alternative 1 - Open Trench Methods

- Pawtucket Ave
- Wampanoag Trail
- Dover Ave

PROS	CONS
Shortest path	Required depth of pipe due to existing utilities (± 10 ft. – Top of Pipe)
Pipe remains in the R.O.W	Utility Coordination/Impacts/Relocations
	Impacts to traffic
	Impacts to businesses
	Roadway Restoration
	Environmental Concerns
	Permitting - DOT (Pawtucket Ave & Wampanoag Trail)
	State Road Work Hour Restrictions
	Rock/Ledge

Approx. Pipe Length (ft.)	Approx. Construction Cost
6,700	$ 5,100,000
	$ 761/ft

BETA



Alternative 2 - Open Trench Methods

- Pawtucket Ave
- Village Green (South)
- Easements (3)
- Elder Street

PROS	CONS
Minimizes exposure on Pawtucket Avenue	Additional pipe length (20%)
Minimizes conflicts with existing utilities	Permitting - DOT (Pawtucket Ave)
Majority of pipe to be in Exist. R.O.W	Permitting - DOT (Wampanoag Trail)
Fewer traffic impacts than Alt. 1	Easement Required - Village Green Apartment
	Easement Required - Citizens Bank
	Easement Required - City of East Providence

Approx. Pipe Length (ft.)	Approx. Construction Cost
8,300	$ 4,750,000
	$ 572/ft

BETA

Summary of Alternatives

BCWA - TRANSMISSION SYSTEM IMPROVEMENTS FOR EMERGENCY SUPPLY
PAWTUCKET PIPELINE PHASE I
EVALUATION OF ALTERNATIVES

ALTERNATIVE	DESCRIPTION	Approx. Pipe Length (ft.)	Approx. Construction Cost
1	Pawtucket Avenue - Wamponaog Trail - Dover Avenue (Trenching Methods)	6,700	$ 5,100,000.00 $ 761/ft
2	Village Green (South) - Citizens Banks Property - Elder Avenue - Wampanoag Trail- Dover	8,300	$ 4,750,000.00 $ 572/ft

- *The administration and council representative at the time preferred the Pawtucket Avenue route.*
- *BETA proceeded with the preliminary design of Alternative 1*

Alternative 1 Preliminary Design

- Geotechnical: Rock/Ledge (± 5’-8’ deep) for much of Pawtucket Avenue
- Existing Pavement: Avg. 5” Pavement on top of 9” Reinforced Concrete
- Water Main: Avg. depth of 10’ to top of main due to existing Utilities
- Environmental Concerns: Multiple gas stations and dry cleaners
  - Shallow groundwater at Wampanoag Trail
- State Road work hour restrictions
- Anticipated production of 20-feet/day due to above limitations
- Work within State Road anticipated to take 200 working days
- Impacts to businesses and traffic
- Impacts to existing utilities/utility relocations
- Impacts to School (Bay View Academy)

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Alternative 2 Summary

- Minimizes exposure on Pawtucket Avenue
  - Traffic Impacts
  - Business Impacts
  - DOT Work Hour Restrictions
- Minimizes conflicts with existing utilities within easements
- Pipe can be buried at shallower depths within the easements
- Construction Duration – quicker installation
- Easements required

Recommended Alternative

Looking North from Apartment Complex

Looking South from woods into Citizens Parking Lot

Looking South from Elder Street

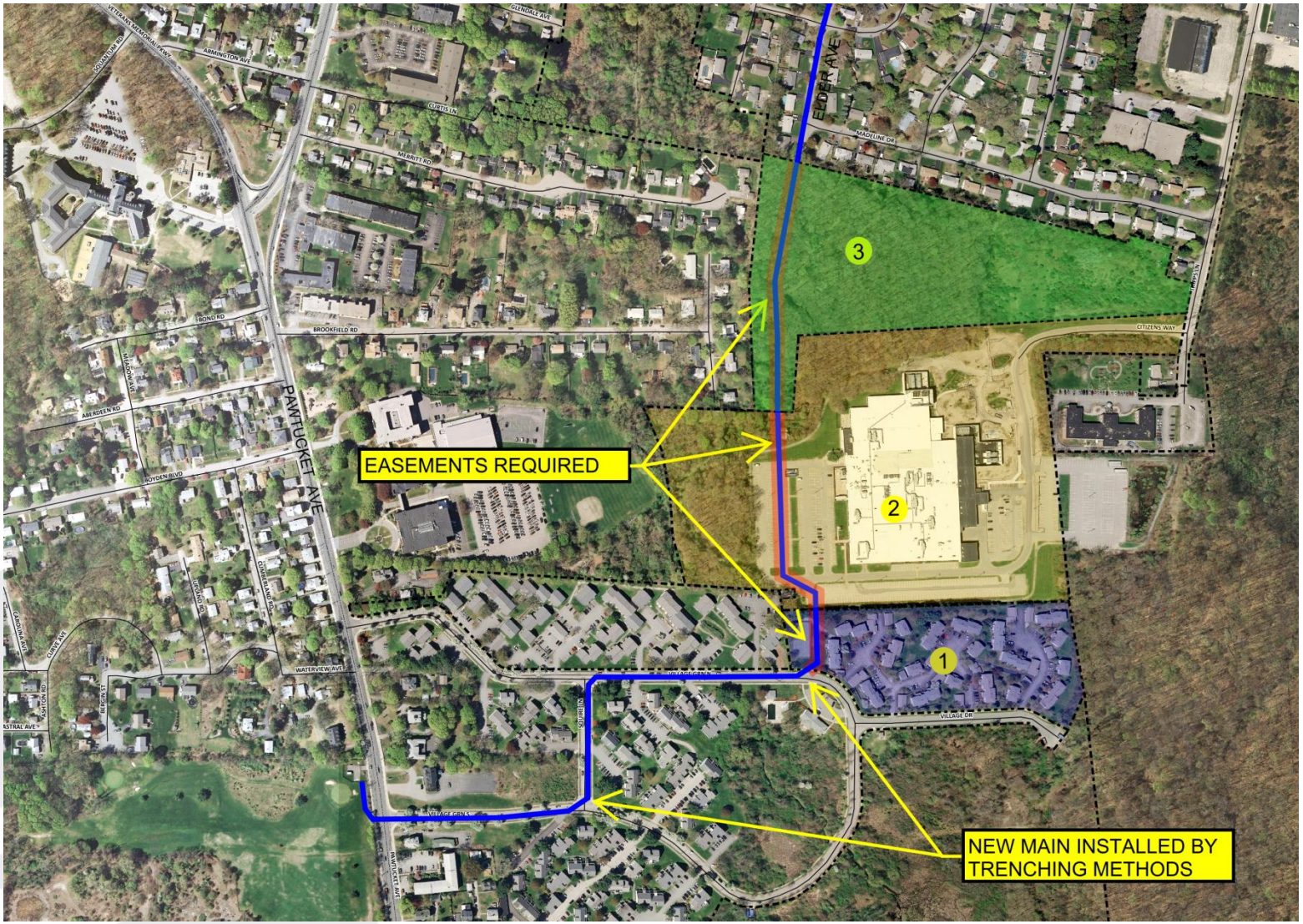
Looking South from woods

BETA

Updates

- Started communication with Citizens Bank regarding Survey and Easement
  - Initial discussion – amenable to easement
  - Completed Drone portion of the survey
  - Completing Land survey on Citizens Bank Property this week
- Existing East Providence sewer easement adjacent to the tennis court at Village Green Apartments

Easements


EASEMENTS REQUIRED
NEW MAIN INSTALLED BY TRENCHING METHODS
1
2
3
PAWTUCKET AVE
ELDER AVE
BROOKFIELD RD
VILLAGE DR
CITIZENS WAY