Intersection of Oaklawn & Wilbur Drainage Assessment

Cranston, RI

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Office of Stormwater
Environmental Division

RI DOT
Driven to get you there

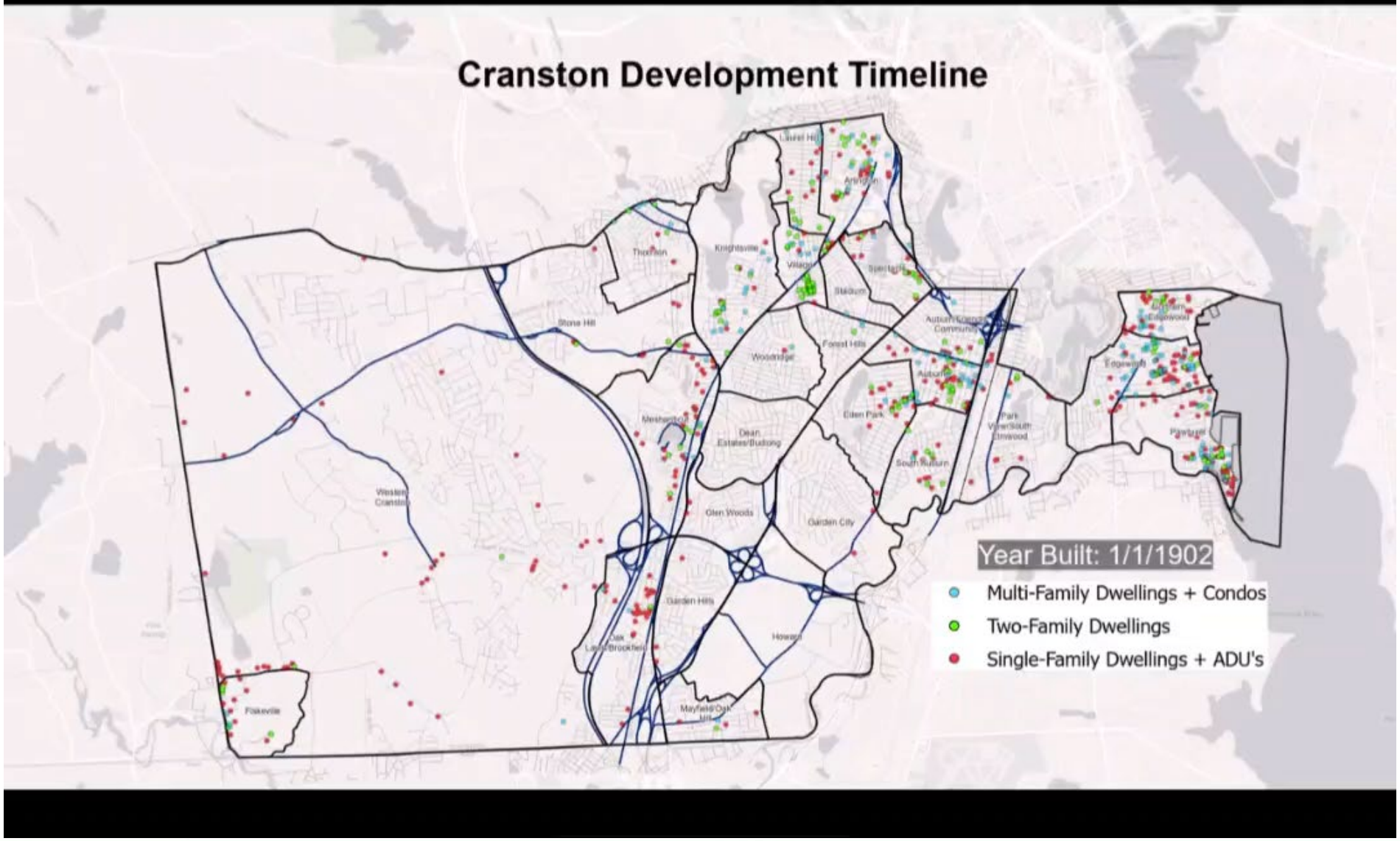


Flooding at Oaklawn & Wilbur on July 21, 2026 (Photo credit WJAR)

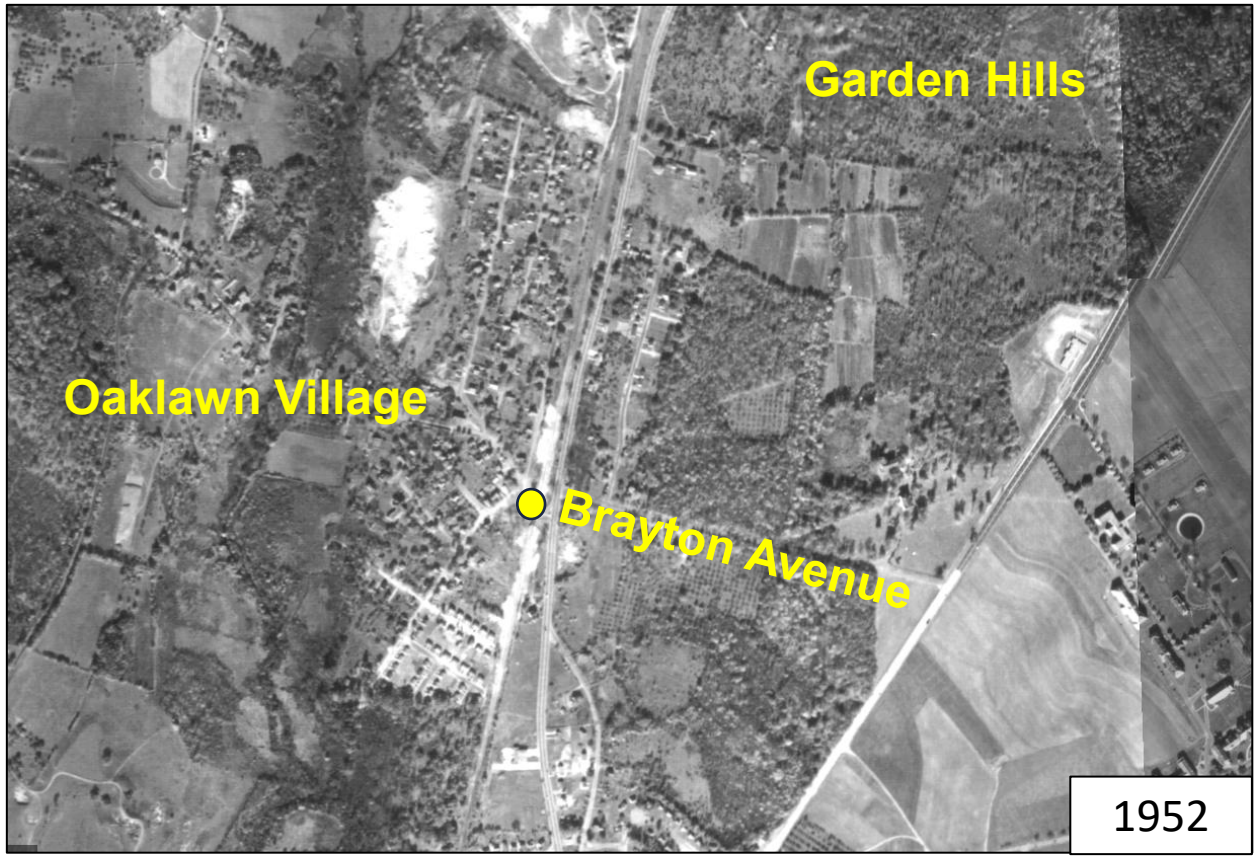
Outline

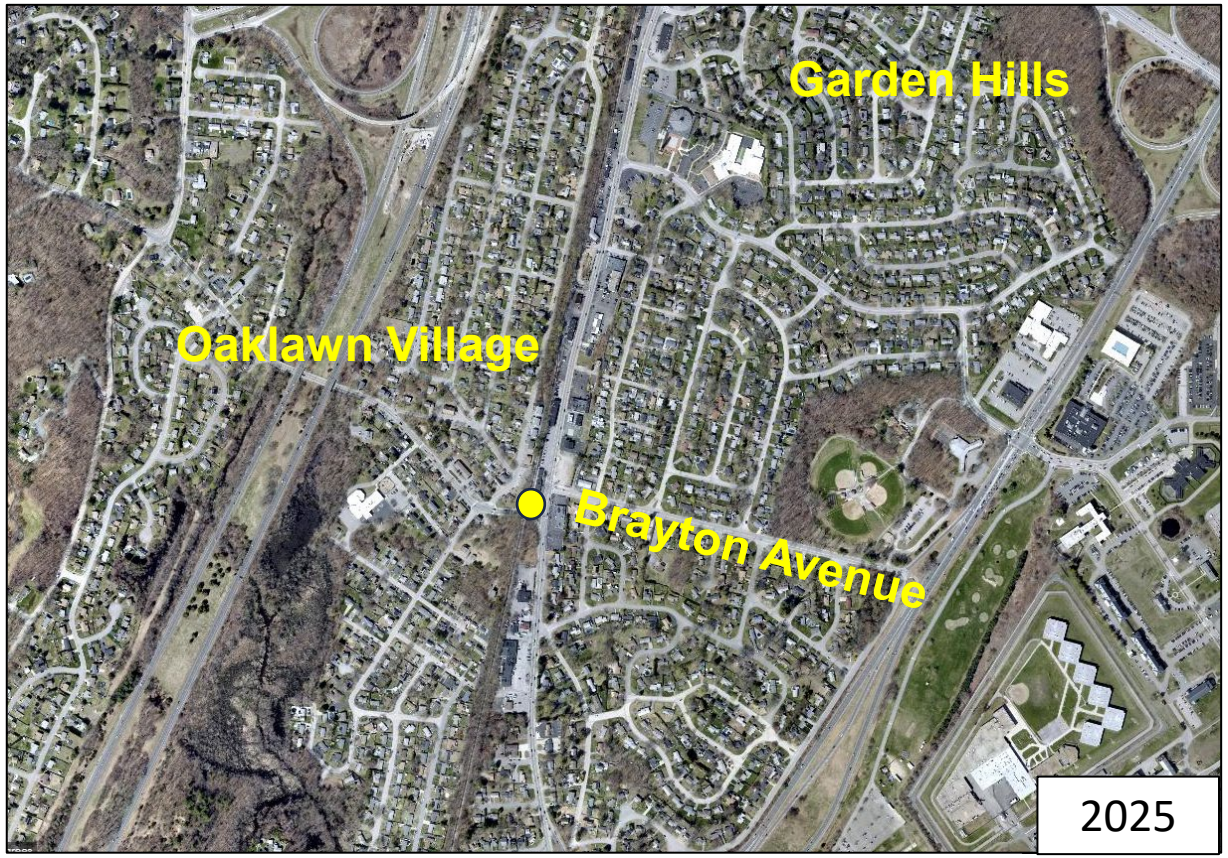
- History of the Oaklawn & Wilbur Watershed
- Existing Conditions
- Alternatives – Potential Improvements
- Expectations & Next Steps
- Questions

City of Cranston Planning Department, October 2026



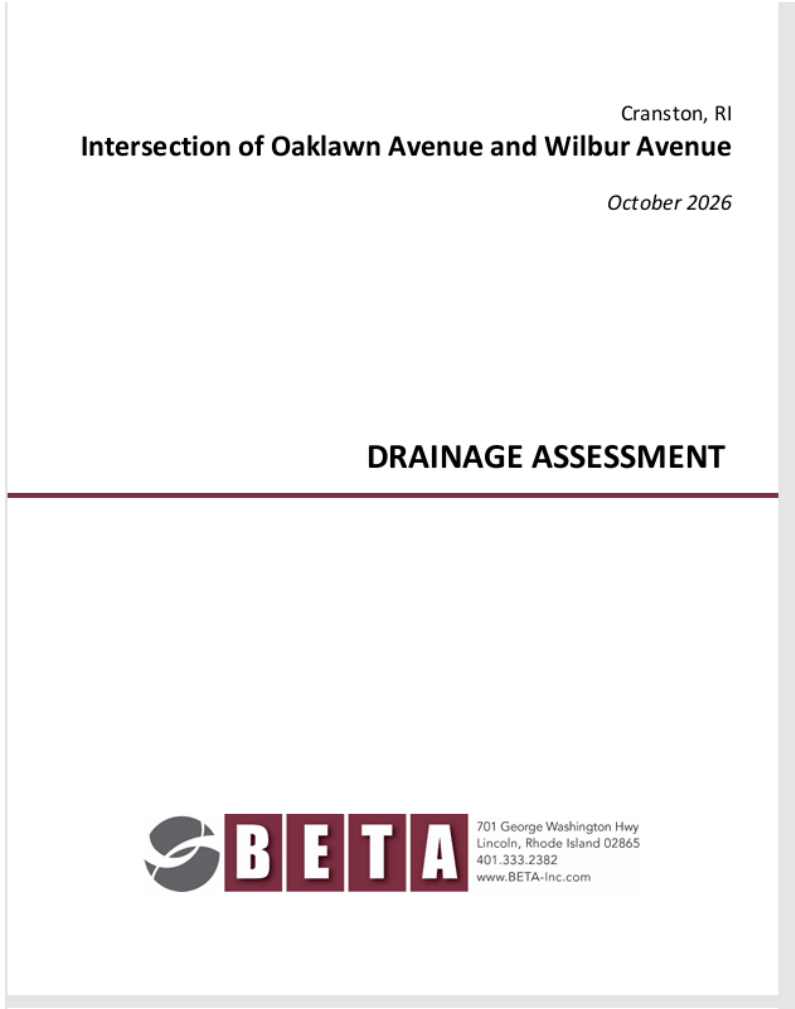
Historical Aerial Imagery (RIDEM)





Drainage Assessment

- **October 2025.** RIDOT Office of Stormwater Management commissioned a drainage assessment of the Intersection of Oaklawn Avenue and Wilbur Avenue in Cranston, RI
  - Funded with 100% federal State Planning and Research (SPR) funds
  - Identify the entire catchment/contributing area to the intersection
  - Identify the capacity of the existing RIDOT drainage system, and the downstream conveyance to the outfall
  - Provide conceptual improvements to address identified issues
- **October 2026.** Report finalized, available on RIDOT Stormwater website
  - Intersection is vulnerable to flooding due to large contributing watershed, significant bypass of undersized drainage infrastructure


Cranston, RI

Intersection of Oaklawn Avenue and Wilbur Avenue

October 2026

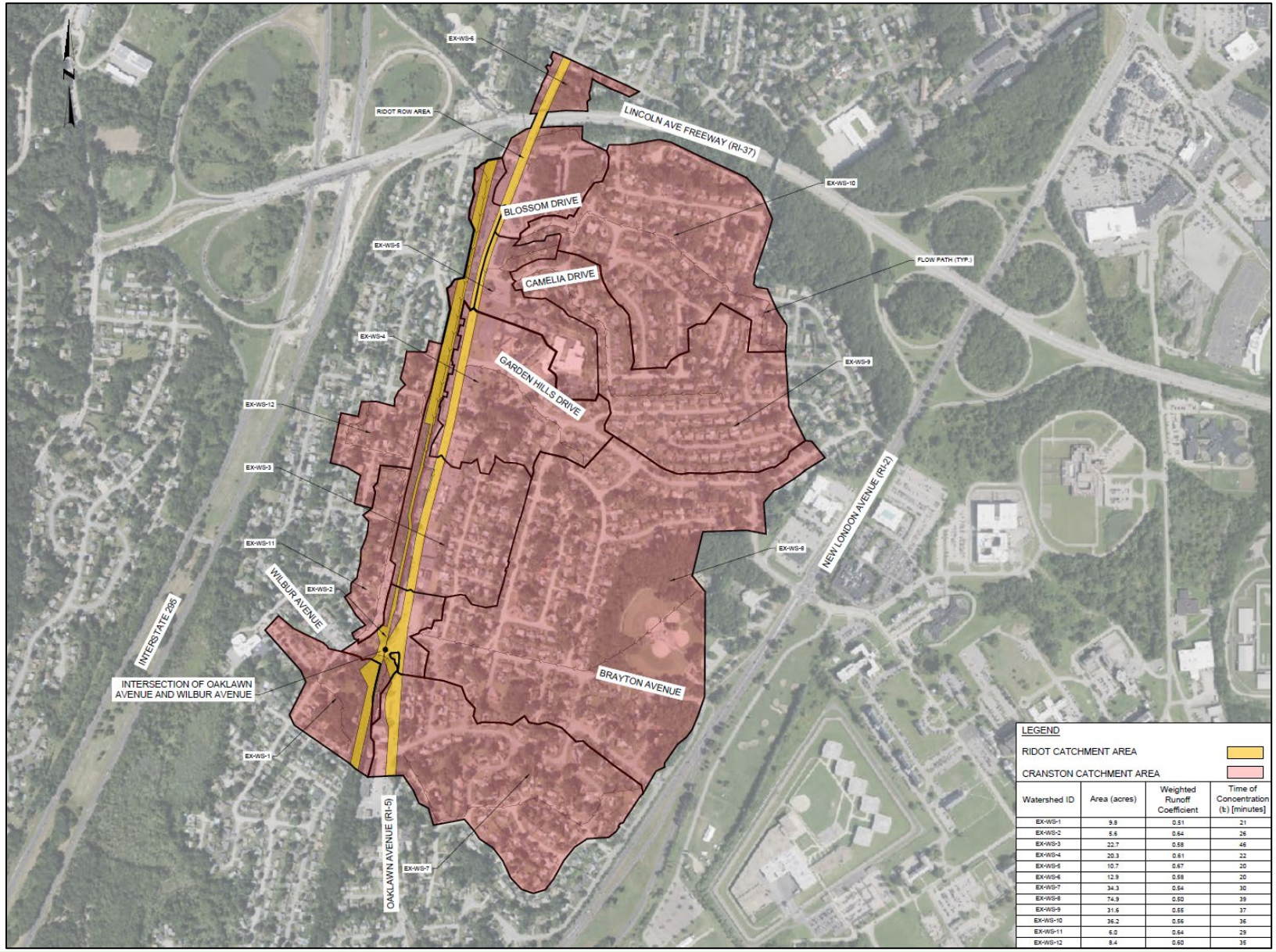
DRAINAGE ASSESSMENT

BETA

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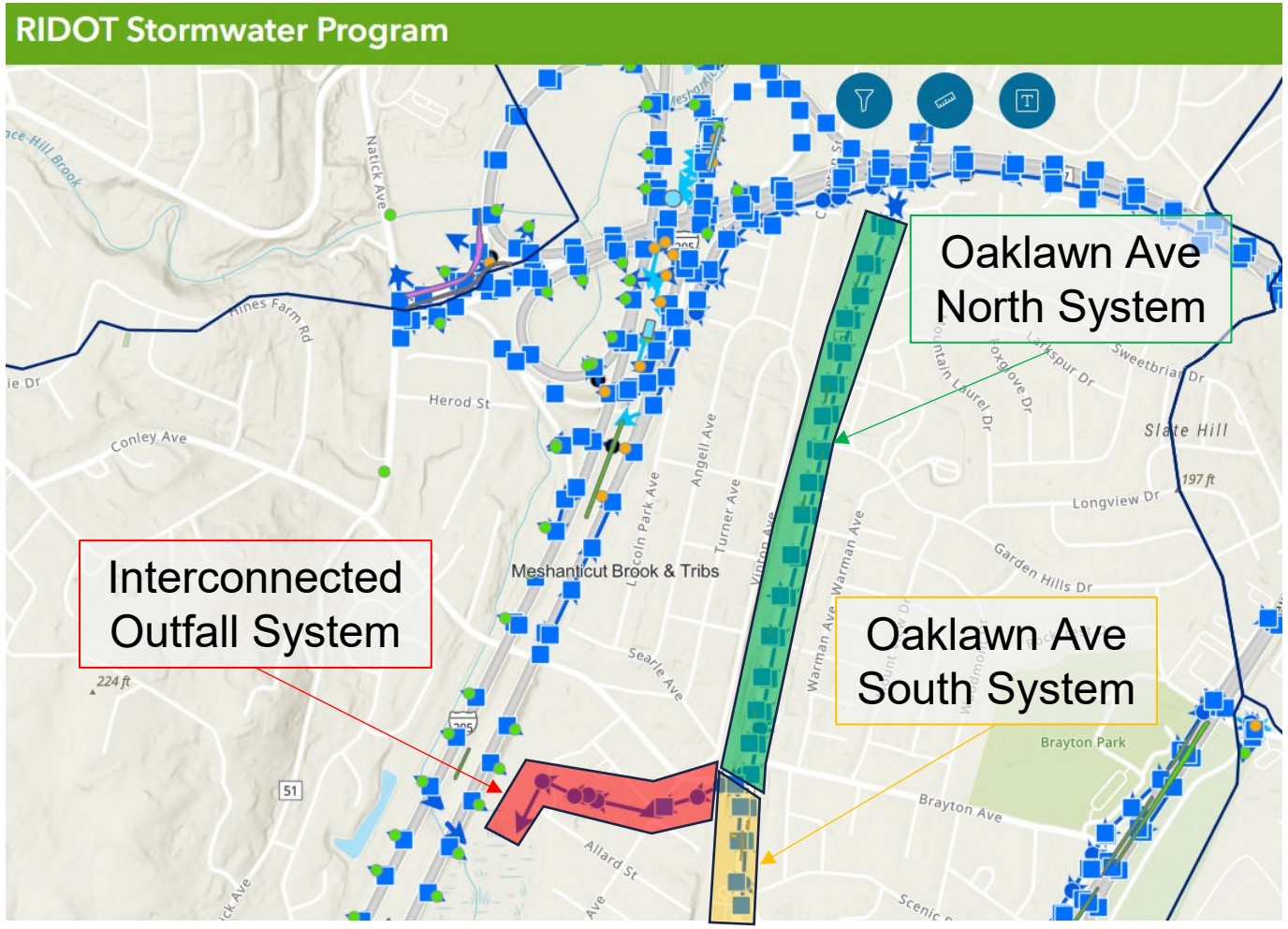
Watershed Overview

- Watershed Stats:
  - Total area 273 acres
  - RIDOT covers 13.1 acres or 4.8% of total watershed
  - % Impervious: 50.5%
  - RIDOT controls 8.9 acres or 6.5% of total impervious
- Oaklawn Avenue and its drainage system constructed 1930's
  - Series of inlets and drainage pipes to convey water
  - 36" Outfall at Meshanticut Brook
- Other sub-catchment areas are designated based on City drainage systems and interconnection points into the RIDOT drainage system



Watershed ID	Area (acres)	Weighted Runoff Coefficient	Time of Concentration (tc) [minutes]
EX-WS-1	9.8	0.51	21
EX-WS-2	5.6	0.64	26
EX-WS-3	22.7	0.59	46
EX-WS-4	20.3	0.61	22
EX-WS-5	10.7	0.67	20
EX-WS-6	12.9	0.59	20
EX-WS-7	34.3	0.54	30
EX-WS-8	74.9	0.50	39
EX-WS-9	31.6	0.55	37
EX-WS-10	36.2	0.56	36
EX-WS-11	6.0	0.64	29
EX-WS-12	8.4	0.60	35

Existing Drainage Systems





Cranston Drainage (Approximated)

Existing Flow Conditions

Table 3.2-2 : RIDOT Generated Flows vs. Capacity

Rainfall Event Frequency	Peak Flow Rate (CFS)	Outfall Capacity (CFS)
1-Year	20.3	57.9
2-year	27.1	
10-year	49.6	
25-year	64.5	
100-Year	88.7	

Table 3.2.1 : Existing System Peak Flows vs. Capacity

Rainfall Event Frequency	Peak Flow Rate (CFS)	Outfall Capacity (CFS)
1-Year	165.0	57.9
2-year	203.0	
10-year	319.3	
25-year	391.1	
100-Year	502.7	

- The Oaklawn Avenue drainage system has the capacity to handle a 10- to 25-year storm event for Oaklawn Avenue, similar to when it was constructed in the 1930's
- Accounting for the development outside of the Oaklawn Avenue corridor, the system does not have sufficient capacity for routine storm events
- System is vulnerable to high-intensity rainfall such as heavy downpours

Source: Drainage Assessment of the Intersection of Oaklawn Ave and Wilbur Ave – BETA Group, Inc. 2026.

Reduce the flooding Severity, Duration, Frequency

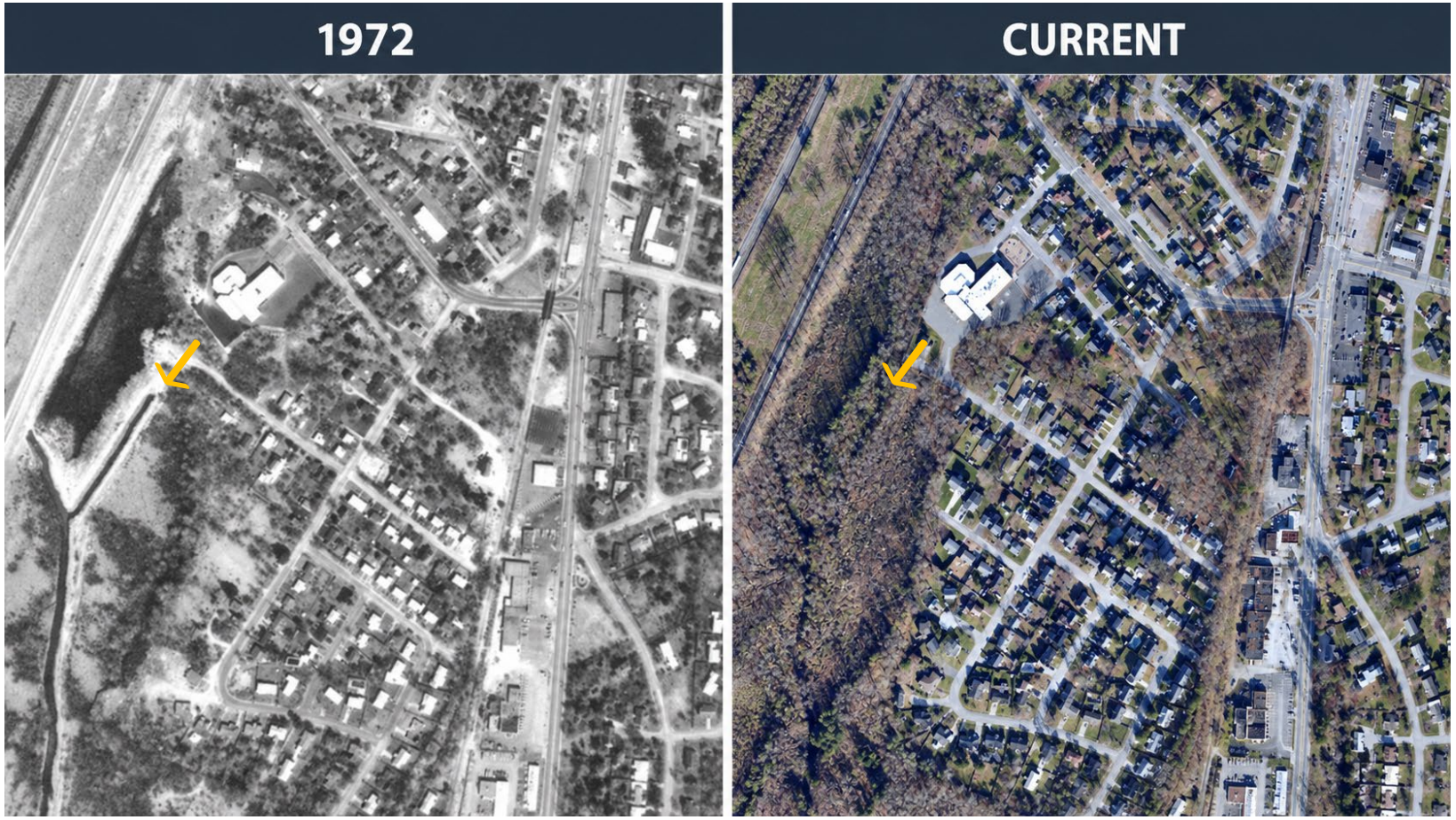
- Immediate Term
  - Improvements to existing drainage pipes and outfall
  - Continued system maintenance and inspection
  - City has re-activated the advanced warning system at the intersection
- Moderate Term
  - Focus on alternatives with high impact and high likelihood of feasibility
  - Stormwater Treatment Unit Alternatives
- Long Term
  - Alternatives that require additional investigation confirm concepts are feasible, have substantial costs, potential downstream and construction impacts
  - Additional drainage system capacity
- Continued monitoring to assess the impacts of improvements
- **All improvements are subject to funding, permitting, and right-of-way coordination**



Immediate Improvements

Improvements to downstream conditions

- RIDOT is working with BETA Engineering to prepare permitting and construction plans to:
  - Clean and restore the outfall area (noted with arrow) located to the south of Oaklawn Elementary School
  - Introduce a redundant outfall pipe at the end of Allard Street
- City of Cranston will continue assessments of city infrastructure



Immediate Improvements





3, 00:12:49, 0.18ft
Miscellaneous General Observation / cctv of pipe to see root removal progress

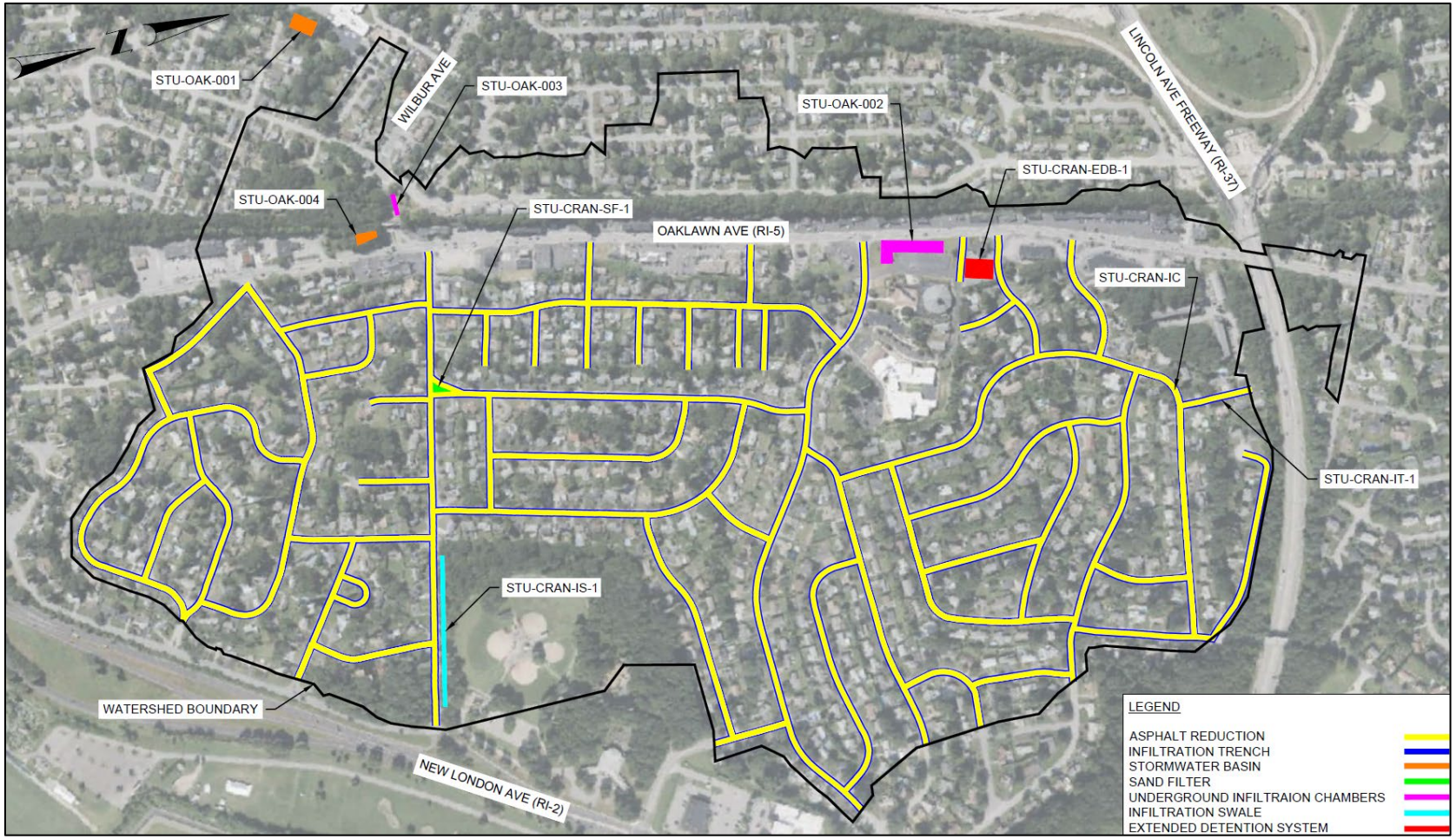
RIDOT

- Continue routine maintenance and inspection along Oaklawn Avenue
- Remediate issued identified through inspections
  - Localized pipe repairs, tree root removals, cleaning
  - Make localized repairs as needed
- Perform system preservation where appropriate

City of Cranston

- Continue routine maintenance and inspection of City drainage systems
- City of Cranston has reactivated the advanced warning system for roadway users approaching the intersection

Stormwater Treatment Unit (STU) Alternatives



FEMA BRIC Grant Application

- RIDOT applied for a Building Resilient Infrastructure Communities (BRIC) grant in the summer of 2026
- If awarded, the grant of $1.035 million will fund one of the identified STU Alternatives, an Underground Infiltration Chamber (UIC) system at the intersection of Oaklawn Avenue and Garden Hills Drive (STU-OAK-002)
- Provides flood storage, Effective Impervious Reduction (12.7 acres), and Water Quality Improvements
- State funds included in grant match is $345,000
- Expect to hear back by end of November 2026
- Project duration approximately 36 months from funding award, roughly between March 2027 and March 2030
    - Requires on-site investigations (soils, utilities, etc), Right-of-Way coordination, permitting, design and construction

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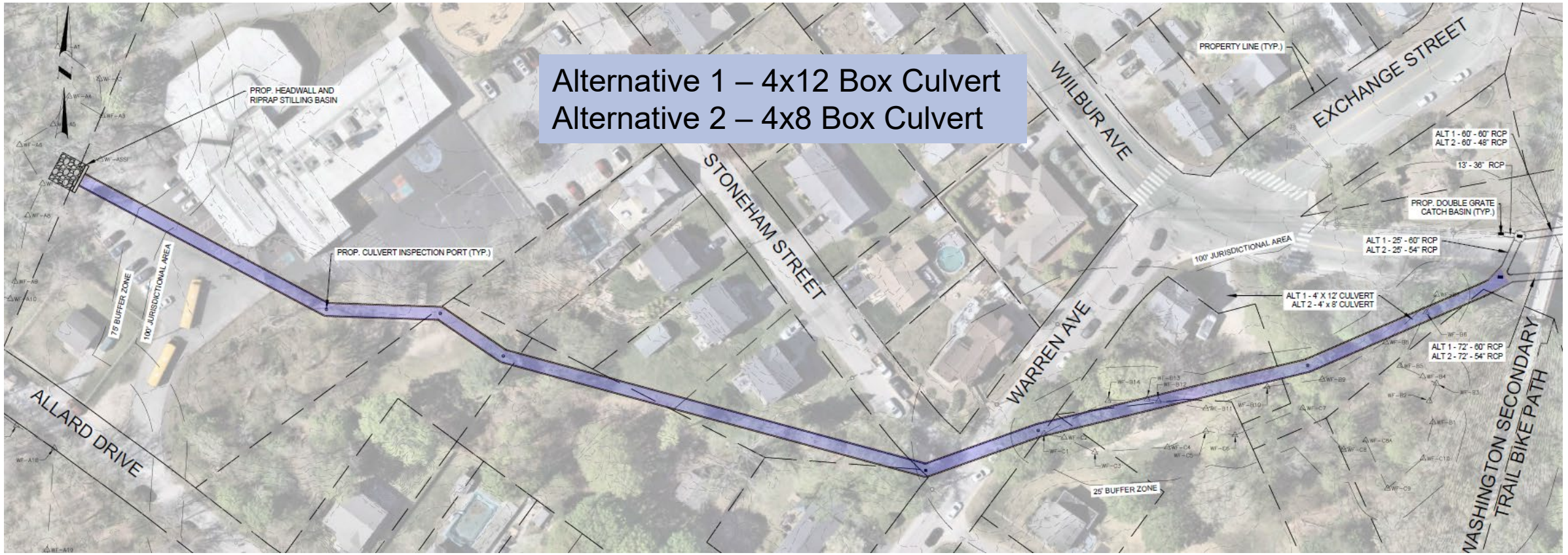
Additional STU Alternatives

- Drainage Assessment Report identified several other Stormwater Treatment Unit alternatives
  - Underground or Infiltration Systems to provide
    - Flood storage volume
    - Effective reduction of Impervious Cover
    - Water Quality Benefits
  - Potential locations
    - Wilbur Avenue/Exchange Street intersection
    - Oaklawn Elementary School
    - South side of Oaklawn Avenue/Wilbur Avenue intersection
    - Along Brayton Avenue
- These may be advanced subject to available funds, and may be candidates for grant opportunities

Drainage System Capacity Improvements



Drainage System Capacity Improvements



Note: Follows similar alignment to existing drainage system, exact layout to be determined

Drainage System Capacity Improvements

Table 3.3.2 : Alternative 1 – Peak Flows vs. Capacity

Rainfall Event Frequency	Peak Flow Rate (CFS)	Outfall Capacity (CFS)
1-Year	149.3	543.9
2-year	186.7	
10-year	301.2	
25-year	372.1	
100-Year	479.8	

- Construct new parallel drainage system along Oaklawn Avenue with new 4’ x 12’ culvert outfall
- No runoff reduction or Water Quality benefits
- Sized to convey the 25-year design storm

Table 3.3.3 : Alternative 2 – Peak Flows vs. Capacity

Rainfall Event Frequency	Peak Flow Rate (CFS)	Outfall Capacity (CFS)
1-Year	125.1	335.2
2-year	156.8	
10-year	254.3	
25-year	314.6	
100-Year	408.4	

- Construct new parallel drainage system along Oaklawn Avenue with new 4’ x 8’ culvert outfall
- Impervious Cover reduction within City neighborhoods
- Sized to convey the 25-year design storm

Reduce the flooding Severity, Duration, Frequency

- Each alternative can be implemented independently
- Oaklawn Avenue Project has been included in the State Transportation Improvement Plan (Project ID 9561)
- RIDOT and City of Cranston will continue to identify potential grant opportunities
- Flooding may persist under larger, intense storm or when downstream constraints limit drainage
- Specific benefits depend on the specific alternatives advanced and the actual values derived
- Even if all alternatives under consideration are implemented, residual flooding could still occur



A Path Forward for Oaklawn at Wilbur

- RIDOT Drainage Assessment will be used as the plan for improvements moving forward
- RIDOT is working with BETA on phase 2 to make improvements to the downstream outfall
- RIDOT has applied for a federal BRIC grant to advance one of the stormwater improvement alternatives
- RIDOT will be completing a full CCTV inspection of its drainage system along the Oaklawn Avenue and initiating repairs aimed at system functionality
- RIDOT and the City are coordinating to keep residents, business owners updated
- City will continue to provide technical assistance
- City restored functionality of flood warning sign system at intersection, traffic control as needed
- City will continue to clean and maintain municipal drainage system per required maintenance intervals

Questions?

Office of Stormwater Management
Joseph D. Baker, P.E., PMP

Department of Public Works
Frank Corrao, P.E.

Please use this QR code to visit the RIDOT Stormwater website

- Drainage Assessment Report
- October 22, 2026 Presentation Slides
- Form for submitting Questions & Comments