

# CENTRAL WATER LINE PROJECT

*INVESTING in the Urban Drinking Water System*

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PRESENTATION TO CHARLOTTESVILLE CITY COUNCIL

June 21, 2022

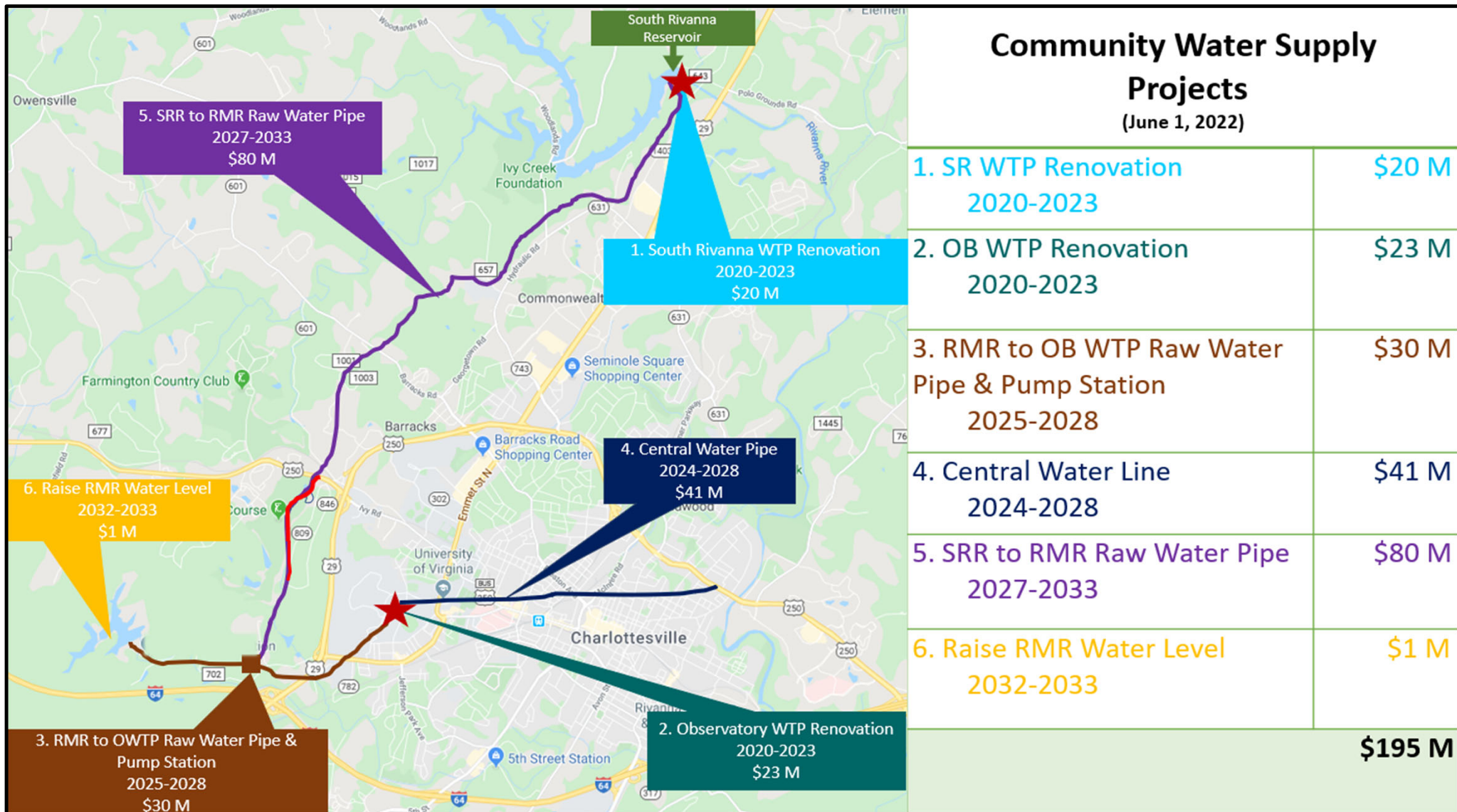
BY: RIVANNA WATER AND SEWER AUTHORITY

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# Overview of the Central Water Line Project

- Scope of Work

- Construction of 5 miles of 24"-30" water transmission main
- Installed under existing City streets in a segmented process
- Construction schedule: 2024 – 2028
- Cost allocation: 48% City, 52% ACSA

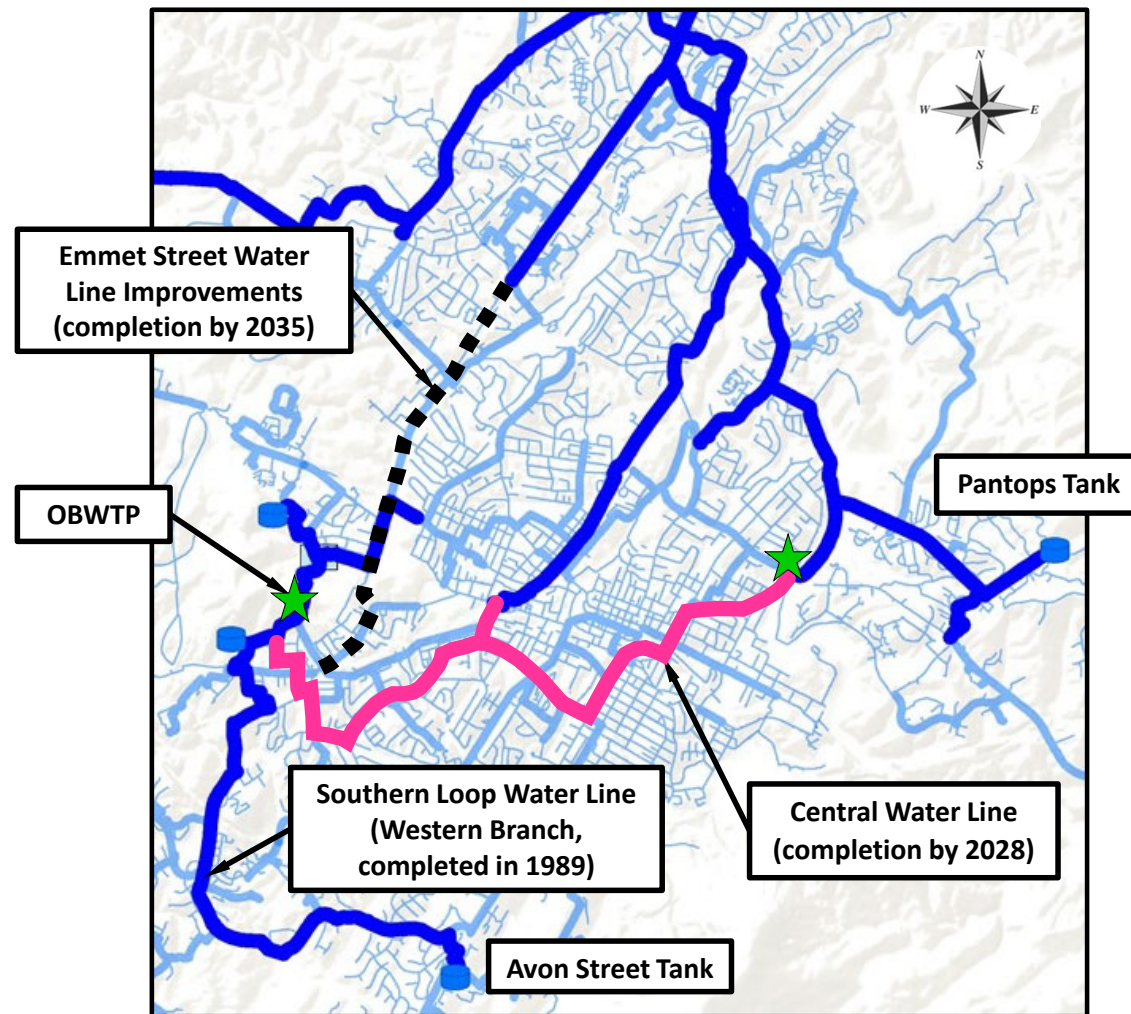
- Project History

- 1987 Southern Loop Agreement
- 2020 Observatory Water Treatment Plant Agreement
- 2021 Central Water Line Routing Study
- 2022 Urban Finished Water Master Plan



## Results of Urban Finished Water Master Plan

- Modeling shows that closing gaps in the water transmission system will help:
  - Provide consistent supply and pressure to customer faucets
  - Reduce service disruptions during water line breaks and tank maintenance
  - Support fire fighting demands
  - Improve system flexibility, efficiency, and redundancy
  - Utilize capacity of OBWTP Upgrade





# Public Outreach

## • Communications

- Presented to City Council and the RWSA Board of Directors in January 2022
- Project Website (<https://www.rivanna.org/central-water-line-project/>)
- Project Flyer mailed to 480 property owners along Southern/Cherry Avenue alignment
- Presentations to 6 Neighborhood Associations
  - Fry's Spring, Fifeville, Little High, Martha Jefferson, Belmont-Carlton & Woolen Mills

## • Considered comments from neighborhood meetings

## • Evaluated 5 primary and 5 alternate routes

**Primary** → Emmet/Rt. 250 Bypass, Northern (Preston), Middle (W. Main), Southern (Cherry) and Southern (Harris/5<sup>th</sup>)

**Alternate** → Emmet/Rt. 250 Bypass (City Park), Northern (McIntire/Rt. 250 Bypass), Southern (Shamrock), Southern (E. Water/Meade) and Southern (E. Market/Meade)

### CENTRAL WATER LINE PROJECT

**THE PROJECT**

- Construction of 5 miles of water transmission main
- Includes 24-inch and 30-inch diameter pipes
- Pipes will mostly be located under paved City streets
- Construction expected to begin in 2024, and to be completed by 2029

**WHY IS IT NEEDED**

The Central Water Line will strengthen the Urban Area community drinking water system and ensure water can more easily and efficiently be delivered to City of Charlottesville (City) and Albemarle County Service Authority (ACSA) customers for years to come.

**BENEFITS TO ALL CITY AND ACSA CUSTOMERS**

- Ensures a plentiful amount of drinking water
- Provides consistent flow and pressure to your faucets
- Aids to maintain water supply during times of drought
- Supports significant fire fighting efforts
- Provides a "backup plan" during system disruptions
- Closes existing gaps in the water transmission system

**COMMUNITY PARTNERS**

Rivanna Water and Sewer Authority (RWSA) was created in 1972 by the City and County to provide an adequate supply of drinking water and to treat wastewater for our community. RWSA treats and delivers drinking water to the ACSA and the City as its only two customers, through its water transmission system. In turn, the ACSA and the City provide water service through their respective water distribution systems to **YOU** and **YOUR** community as their retail customers.

**WHAT DO THESE TERMS MEAN ...**

**Water Transmission System** is a network of larger pipes used to convey treated water between water treatment plants and storage tanks. These pipes carry large amounts of water, much like interstates and highways carry large amounts of traffic.

**Water Distribution System** is a network of medium and smaller pipes used to provide water service directly to individual residential and commercial customers, as well as fire protection systems and hydrants. These pipes carry smaller amounts of water, much like local roads and neighborhood streets carry smaller amount of traffic to your home, workplace, or grocery store.

Our community outreach and education program will be proactive to keep you **AND** your community informed about the Central Water Line Project throughout its design and construction stages.

**ANTICIPATED PROJECT SCHEDULE**

Complete Design	Fall 2023
Start Construction	Spring 2024
Complete Construction	Spring 2029

The preliminary project cost estimate for the Central Water Line Project is \$31 Million. The City Utilities Department will support 48% of the project cost, and ACSA will support 52%.

**STAYING INFORMED** – For project updates, visit our Project Web Page: <https://www.rivanna.org/central-water-line-project/>  
**QUESTIONS OR COMMENTS?** Contact Michelle Simpson, PE at (434) 977-2970, Ext. 202 | [msimpson@rivanna.org](mailto:msimpson@rivanna.org)

**INVESTING in the Urban Drinking Water System**

**HOW THE WATER LINE ROUTE WAS CHOSEN**

RWSA, in coordination with the City Utilities and Traffic Departments, and the ACSA, evaluated a series of street alignments and their associated impacts based on criteria such as:

- constructability and accessibility
- construction cost
- traffic and parking
- neighborhoods & public spaces
- sidewalks, trails and bikeways
- railroad crossing locations
- underground & overhead utilities
- easements and permitting

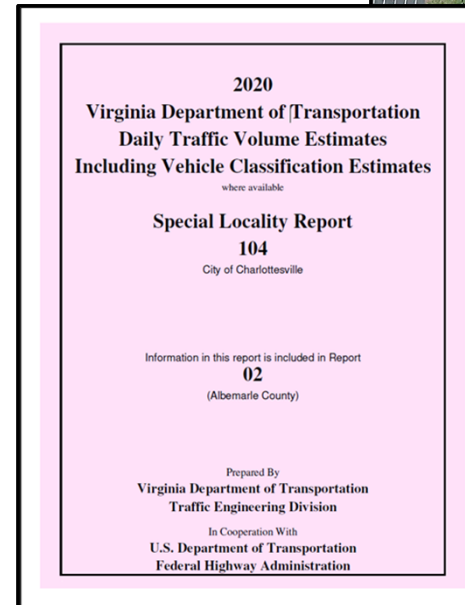
The final route for the Central Water Line was selected to provide the least amount of overall impacts to the surrounding community, in addition to the most amount of benefits for both the short-term and long-term drinking water needs. A Project Map is shown on the back. The Routing Study is located on our project website.

RWSA will continue to coordinate with City Departments during design to ensure impacts to streets, parking, sidewalks, trails, bikeways, trees, parks, and schools are minimized during construction.

**FACT SHEET**

## How Was the Evaluation Performed?

- Field Investigations/Visual Observations
- VDOT Traffic Volume Estimates
- GIS Data
- Aerial Photography
- Hydraulic Modeling



## What Were the Evaluation Criteria?

- Water Distribution Benefits
  - Tank Levels and Fire Flow
- Average Day Traffic Impacts
- Impacts to Neighborhoods/Businesses/UVA/Medical
- Average Right-of-Way Widths
- Overall Construction Cost
- Overall Pipe Length
- Major Crossings of Physical Features
  - Signalized Intersections, Bridges, Railroads and Water Bodies
- Opportunity to Coordinate with Other Work
- Tree Clearing Requirements
- Degree of Utility Congestion
- Overall Construction Duration



Jefferson Park Avenue at Immanuel Lutheran Church (looking north)



Railroad Crossing at 10<sup>th</sup> Street NE (looking north)

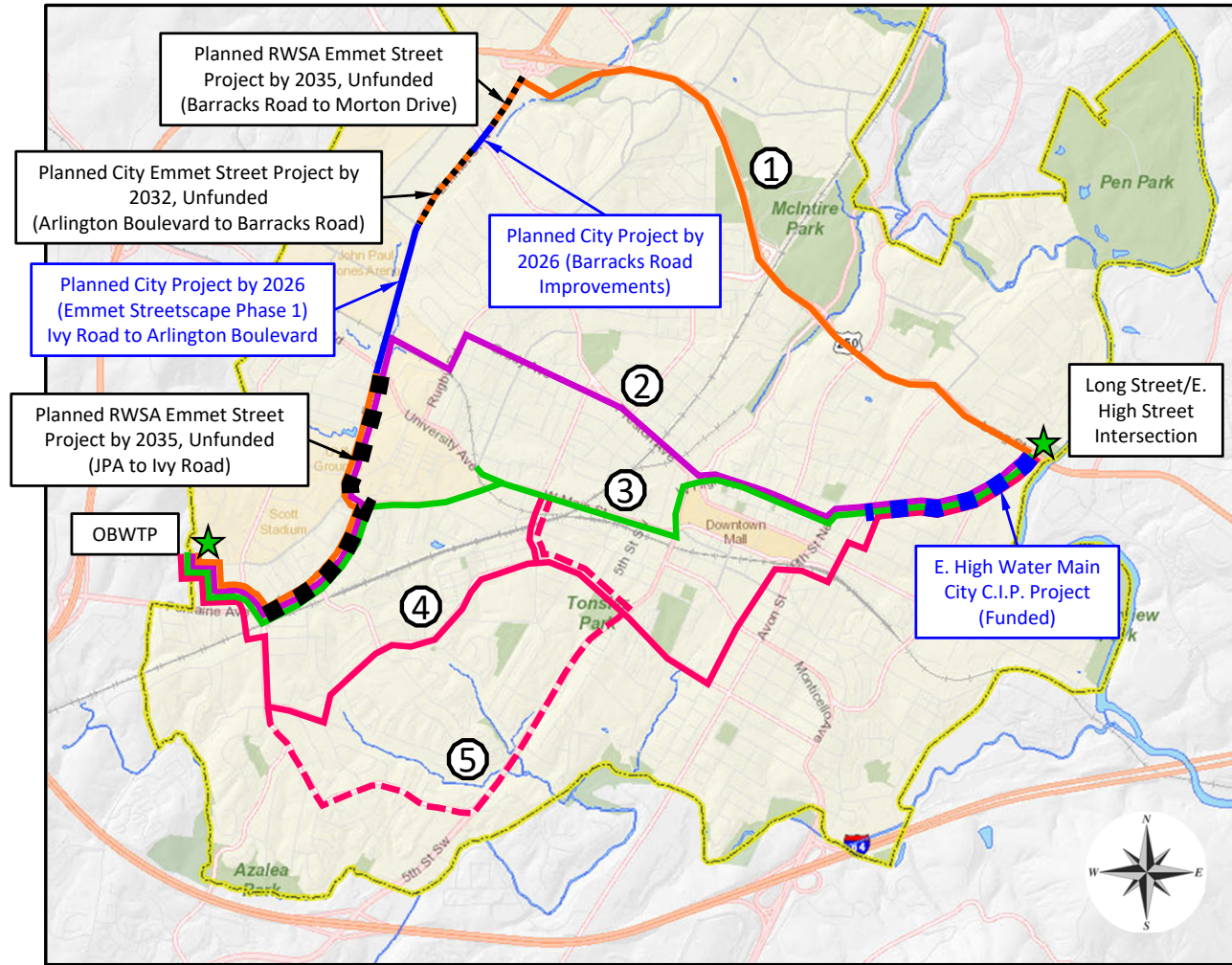


US 250 Bypass at Locust Avenue (looking east)



## Alignments Evaluated

1. Emmet/Rt. 250 Bypass ———
2. Northern (Preston) ———
3. Middle (W. Main) ———
4. Southern (Cherry) ———
5. Southern (Harris/5<sup>th</sup>) - - - -

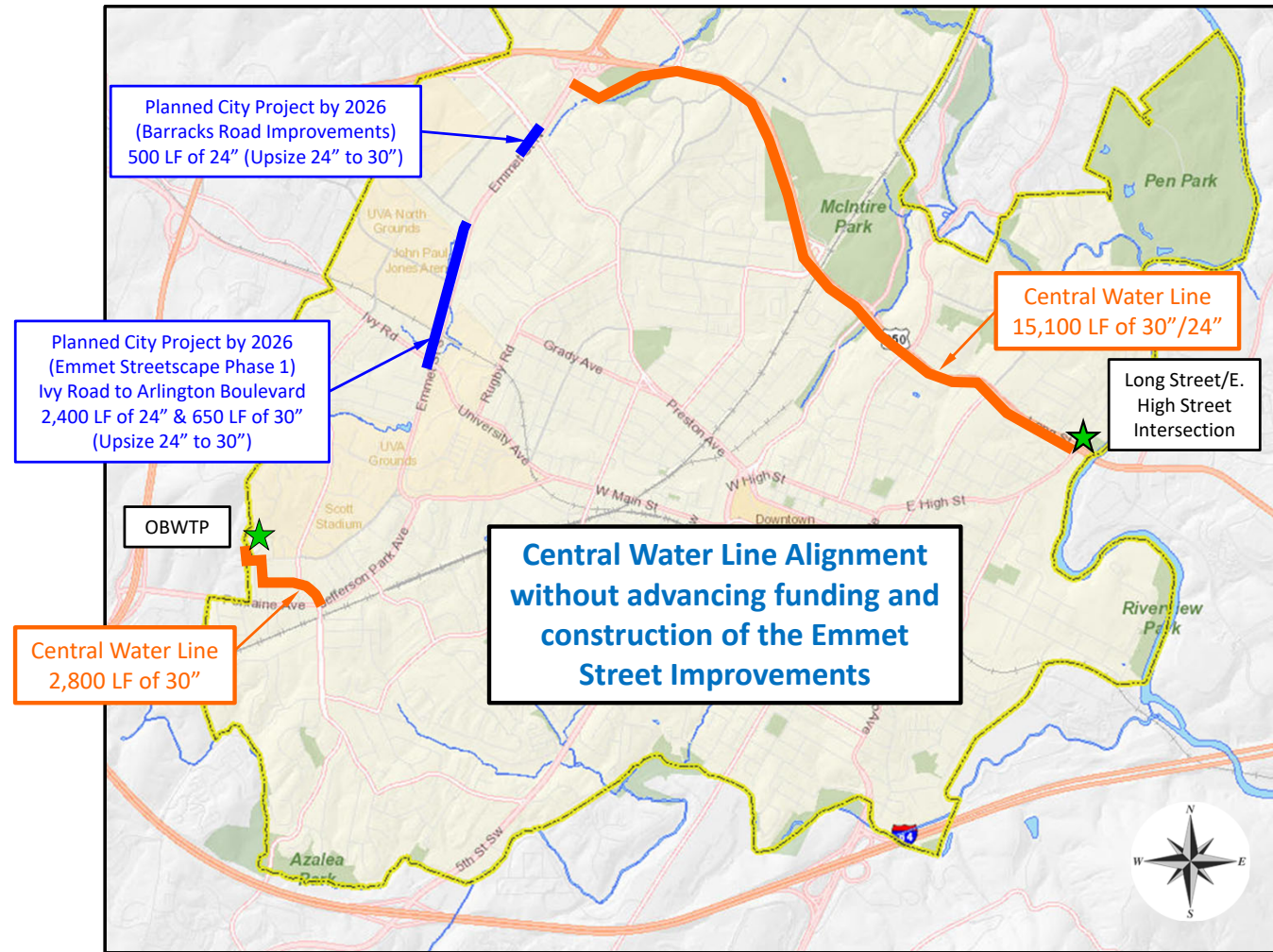




# Alignment #1

- **Emmet/Rt. 250 Bypass**

- Stadium, Piedmont, Price, Maury, JPA, Emmet, Morton, Rivanna Trail (City Garden) & Route 250 Bypass

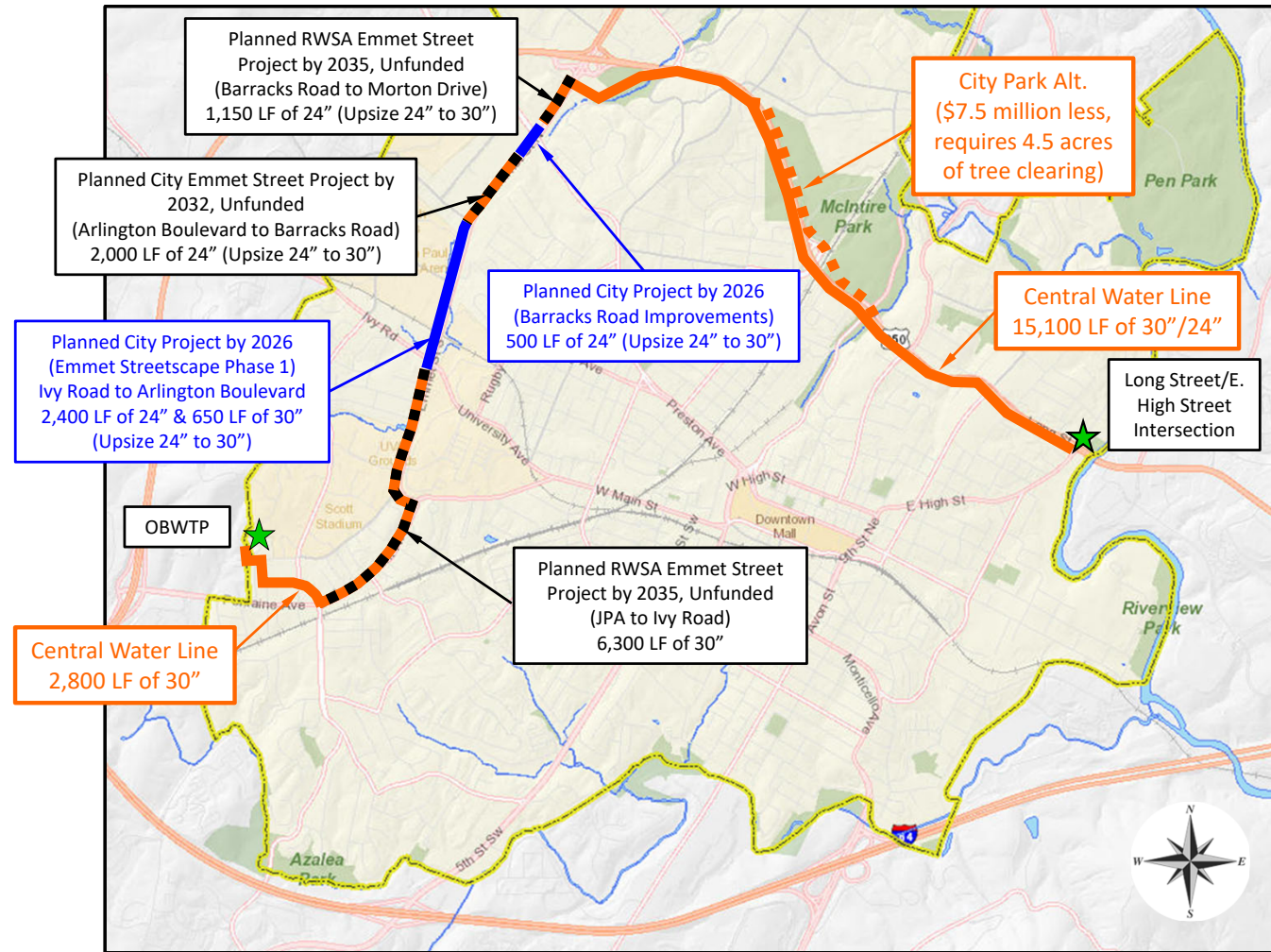


# Alignment #1

## • Emmet/Rt. 250 Bypass

- Stadium, Piedmont, Price, Maury, JPA, Emmet, Morton, Rivanna Trail (City Garden) & Route 250 Bypass
- Night work required on Rt. 250 Bypass
- Unfunded work on Emmet Street is required for the CWL Project
- Cost ≈ \$60 Million

## • Emmet/Rt. 250 Bypass Alternate (thru McIntire Park)





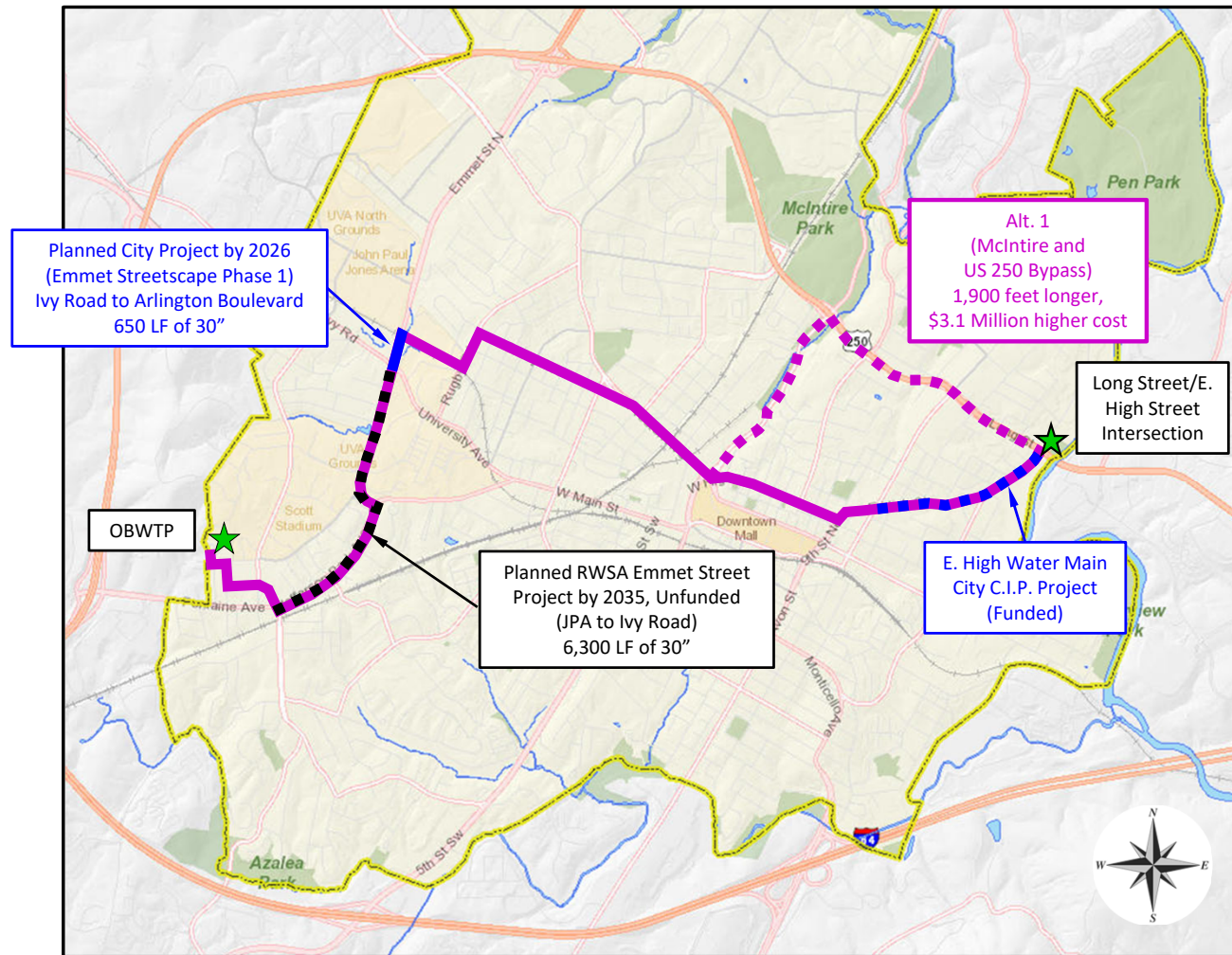
## Alignment #2

### • Northern (Preston)

- Stadium, Piedmont, Price, Maury, JPA, Emmet, Lambeth Field, Rugby, Grady, Preston, W. High & E. High
- Cost ≈ \$39 Million

### • Northern (McIntire/Rt. 250 Bypass) Alternate

- Uses McIntire & Route 250 Bypass instead of W. High & E. High
- Night work required on Rt. 250 Bypass

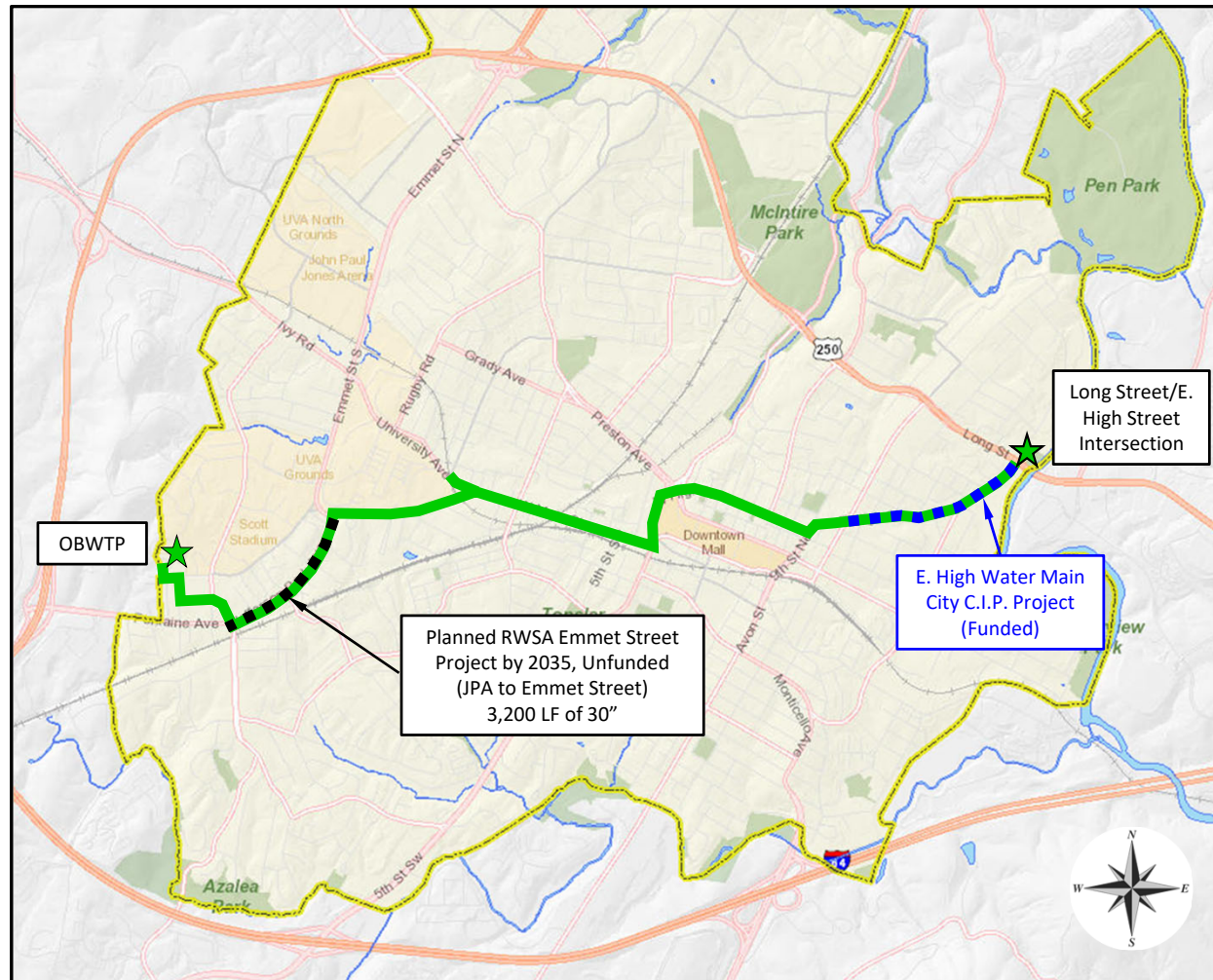




## Alignment #3

- **Middle (W. Main)**

- Stadium, Piedmont, Price, Maury, JPA, W. Main, Ridge McIntire, Preston, W. High & E. High
- UVA/University Hospital/medical center route
- Cost ≈ \$39 Million



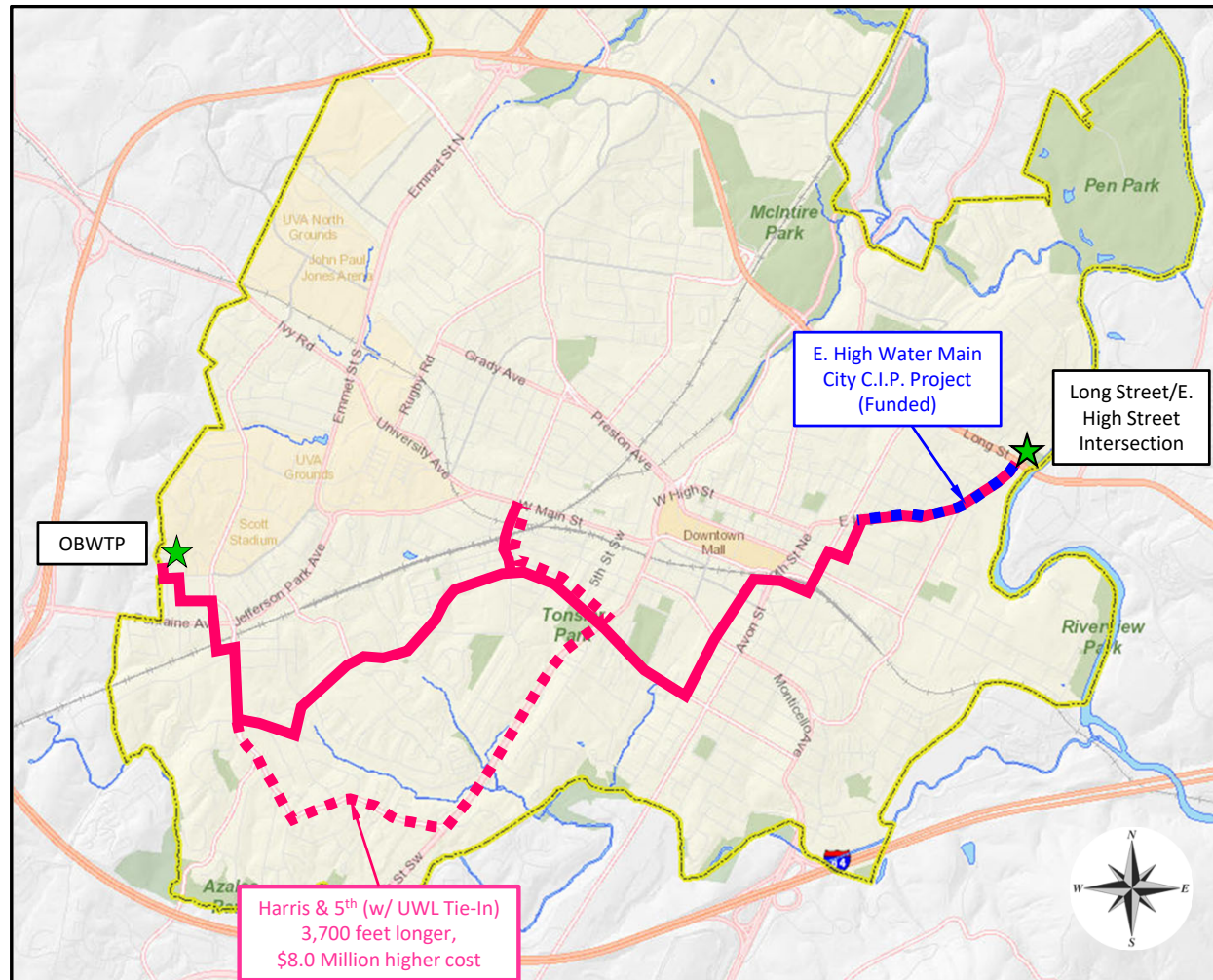
## Alignments #4 & #5

### • #4 - Southern (Cherry)

- Stadium, Piedmont, Price, Lewis, JPA, Cleveland, Cherry, Elliott, 6th SE, Avon, 10th NE, E. Jefferson, 11th NE, E. High & Roosevelt Brown Connector
- Cost ≈ \$41 Million

### • #5 - Southern (Harris/5<sup>th</sup>)

- Stadium, Piedmont, Price, Lewis, JPA, Harris, 5th SW, Elliott, 6th SE, Avon, 10th NE, E. Jefferson, 11th NE, E. High & Roosevelt Brown Connector
- Cost ≈ \$49 Million





- **Southern (Shamrock) Alternate**

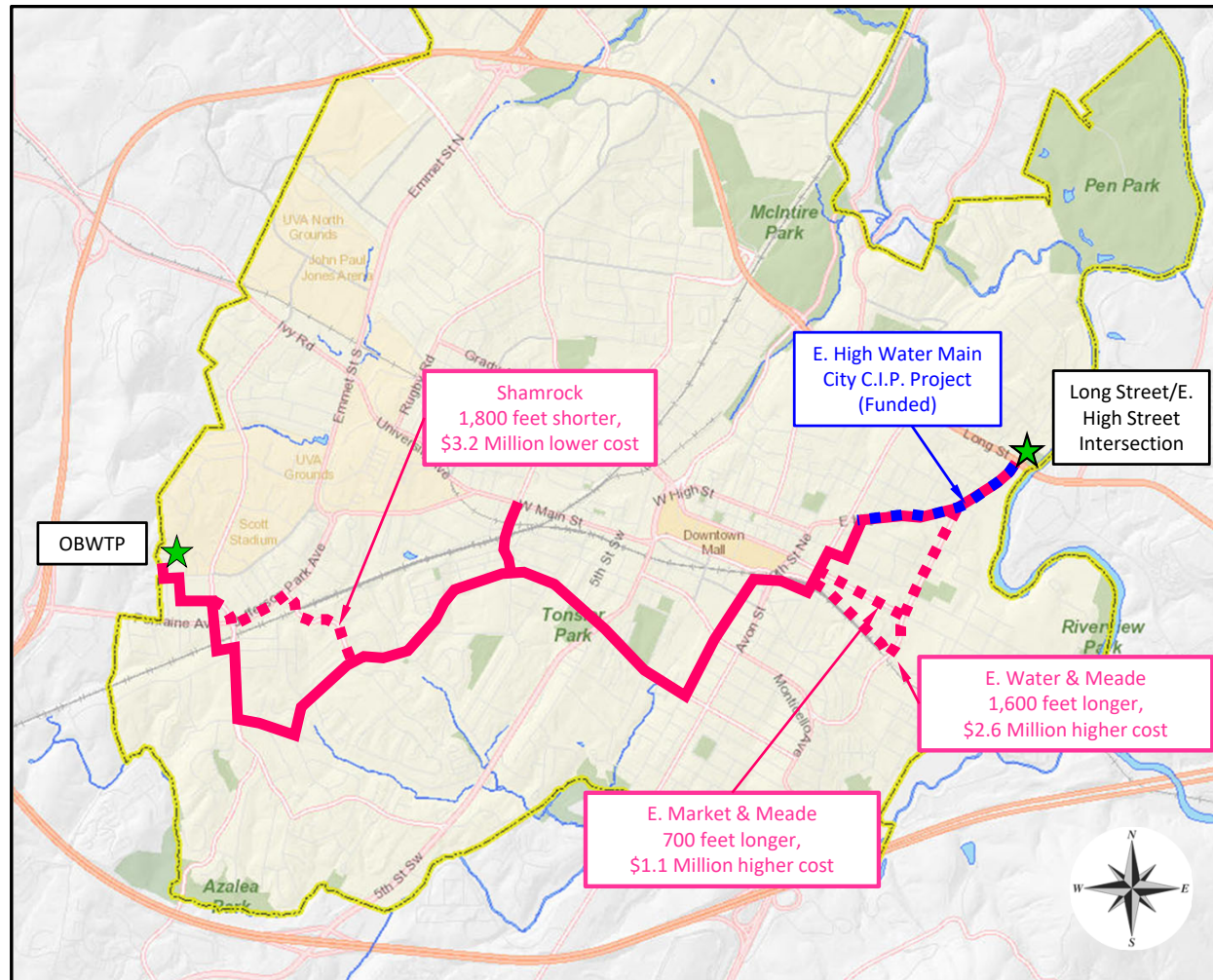
- Stadium, Piedmont, Price, Maury, JPA, Shamrock, Cherry, Elliott, 6th SE, Avon, 10th NE, E. Jefferson, 11th NE, E. High & Roosevelt Brown Connector

- **Southern (E. Market/Meade) Alternate**

- Stadium, Piedmont, Price, Lewis, Cross Railroad, JPA, Cleveland, Cherry, Elliott, 6th SE, Avon, E. Water, Meade, E. High & Roosevelt Brown Connector

- **Southern (E. Water/Meade) Alternate**

- Stadium, Piedmont, Price, Lewis, Cross Railroad, JPA, Cleveland, Cherry, Elliott, 6th SE, Avon, 10th NE, E. Market, Meade, E. High & Roosevelt Brown Connector





## OVERALL RESULTS FOR CORRIDORS EVALUATED THROUGH ADDITIONAL MODELING EFFORTS

ALIGNMENT DESIGNATION	Emmet/Rt. 250 Bypass	Northern (Preston)	Middle (W. Main)	Southern (Cherry)	Southern (Harris/5 <sup>th</sup> )	Remarks
Streets Included in Alignment	Stadium, Piedmont, Price, Maury, JPA, Emmet, Morton, Rivanna Trail (City Garden) & Route 250 Bypass	Stadium, Piedmont, Price, Maury, JPA, Emmet, Lambeth Field, Rugby, Grady, Preston, W. High & E. High	Stadium, Piedmont, Price, Maury, JPA, W. Main, Ridge McIntire, Preston, W. High & E. High	Stadium, Piedmont, Price, Lewis, JPA, Cleveland, Cherry, Elliott, 6th SE, Avon, 10th NE, E. Jefferson, 11th NE, E. High & Roosevelt Brown Connector	Stadium, Piedmont, Price, Lewis, JPA, Harris, 5th SW, Elliott, 6th SE, Avon, 10th NE, E. Jefferson, 11th NE, E. High & Roosevelt Brown Connector	
Overall Length of Pipe (feet)	17,900 CWL 13,000 EWL 30,900 Total <sup>(1)</sup>	17,700 CWL 7,600 EWL 25,300 Total <sup>(1)</sup>	21,400	26,500	30,200	Includes total length of all projects along route
Average Daily Traffic Counts	85% > 10,000 Max. 39,000	86% > 10,000 Max. 29,000	87% > 10,000 Max. 29,000	32% > 10,000 Max. 17,000	45% > 10,000 Max. 18,000	10,000 vehicles per day is minimum threshold for arterial street.
Estimated Overall Construction Duration (Years)	8 <sup>(2)</sup>	4	6 <sup>(2)</sup>	4	4.5	<sup>(2)</sup> Assumes installation with one work crew, otherwise multiple crews will be required to complete the project within 4 years.
Estimated Project Cost for Central Waterline (CWL)	\$ 45 Million	\$ 28 Million	\$ 39 Million	\$ 41 Million	\$ 49 Million	Includes: design, bidding, permitting, easements, construction, upsizing costs, CM, and contingencies
Estimated Project Cost for Advancing Emmet Street Waterline (EWL)	\$ 15 Million	\$ 11 Million	\$ 0 Million	\$ 0 Million	\$ 0 Million	Excludes funded EWL CIP coincident with the CWL (Ivy Road to Arlington Boulevard and Barracks Road)
Estimated Overall Project Cost	\$ 60 Million <sup>(3)</sup>	\$ 39 Million	\$ 39 Million	\$ 41 Million	\$ 49 Million	<sup>(3)</sup> Includes premium for night work
Water System Benefits	Lower	Lower	Higher	Higher	Higher	Adequate tank operability, fire flow, consistent pressures, operational reliability and redundancy
Ease of Future Operations and Maintenance Efforts	Low	Medium	Low	High	Medium	Traffic/neighborhood/business/hospital impacts, operations and maintenance with adjacent utilities



- All alignments have challenges
- Not all alignments equally meet RWSA operational & hydraulic goals
- Southern (Cherry) Alignment #4 provides greatest overall benefits:
  - Higher water system advantages (redundancy, reliability and flexibility)
  - Customer benefits (improved supply and fire fighting, more consistent pressure)
  - Lowest impacts to traffic
  - Lower estimated overall project cost
  - Ease of future operations and maintenance efforts
  - Greatest hydraulic advantage when paired with future Emmet Street Water Line Improvements



- Proceed with Southern (Cherry) Alignment #4

WE **WELCOME** YOUR



AND **THANK YOU** FOR  
YOUR TIME

