

# Clean Rivers Project – Potomac Tunnel

MWCOG Water Resources Technical Committee  
January 10, 2025

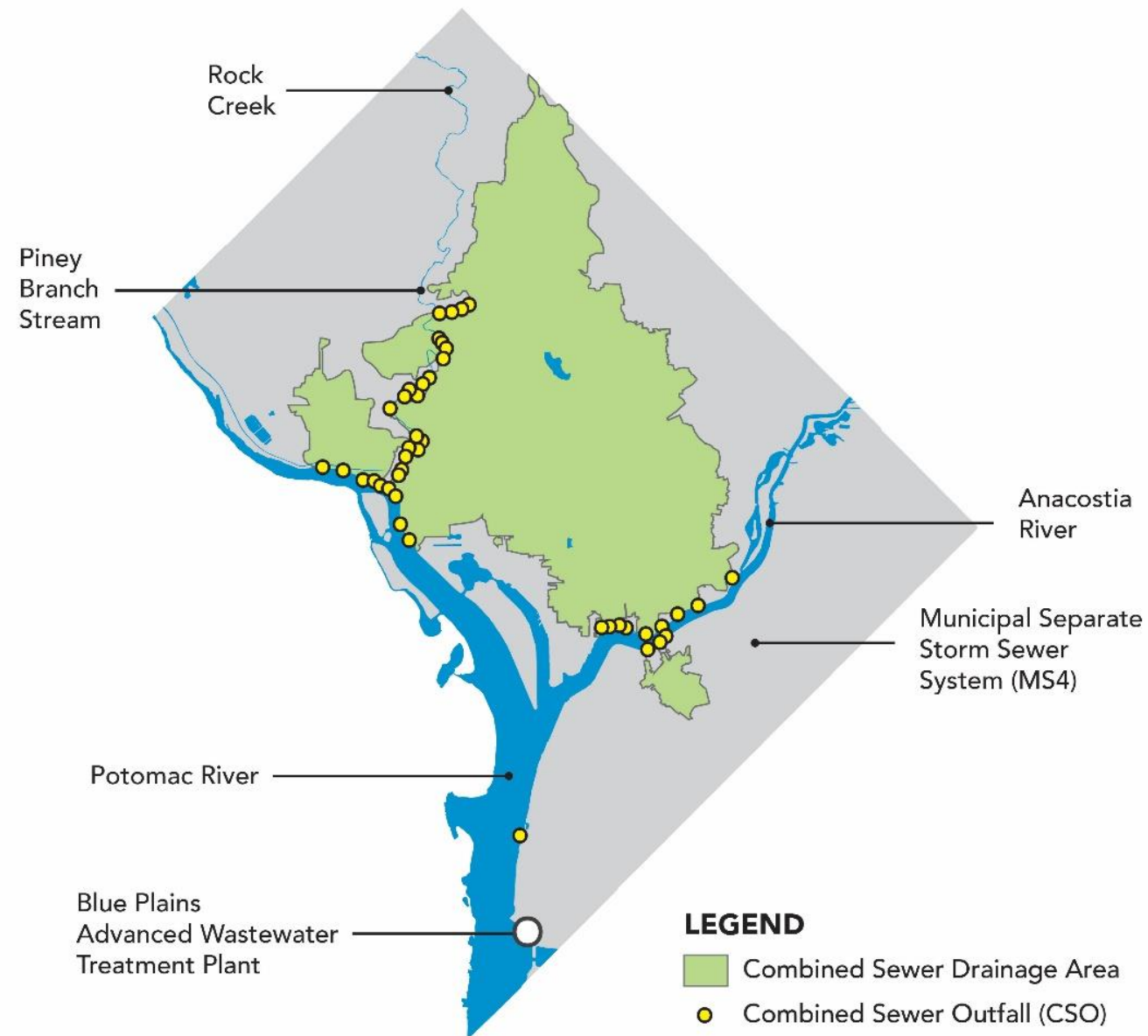


Moussa Wone, Vice President, Clean Rivers Project



- Clean Rivers Project Overview
- Potomac River Tunnel
- Upcoming Projects
- Questions

# dc Combined Sewer System



- 1/3 of area within District is served by combined sewers (12,478 acres)
- Combined Sewer Overflow (CSO) outfalls
  - 15 to Anacostia River
  - 10 to Potomac River
  - 23 to Rock Creek

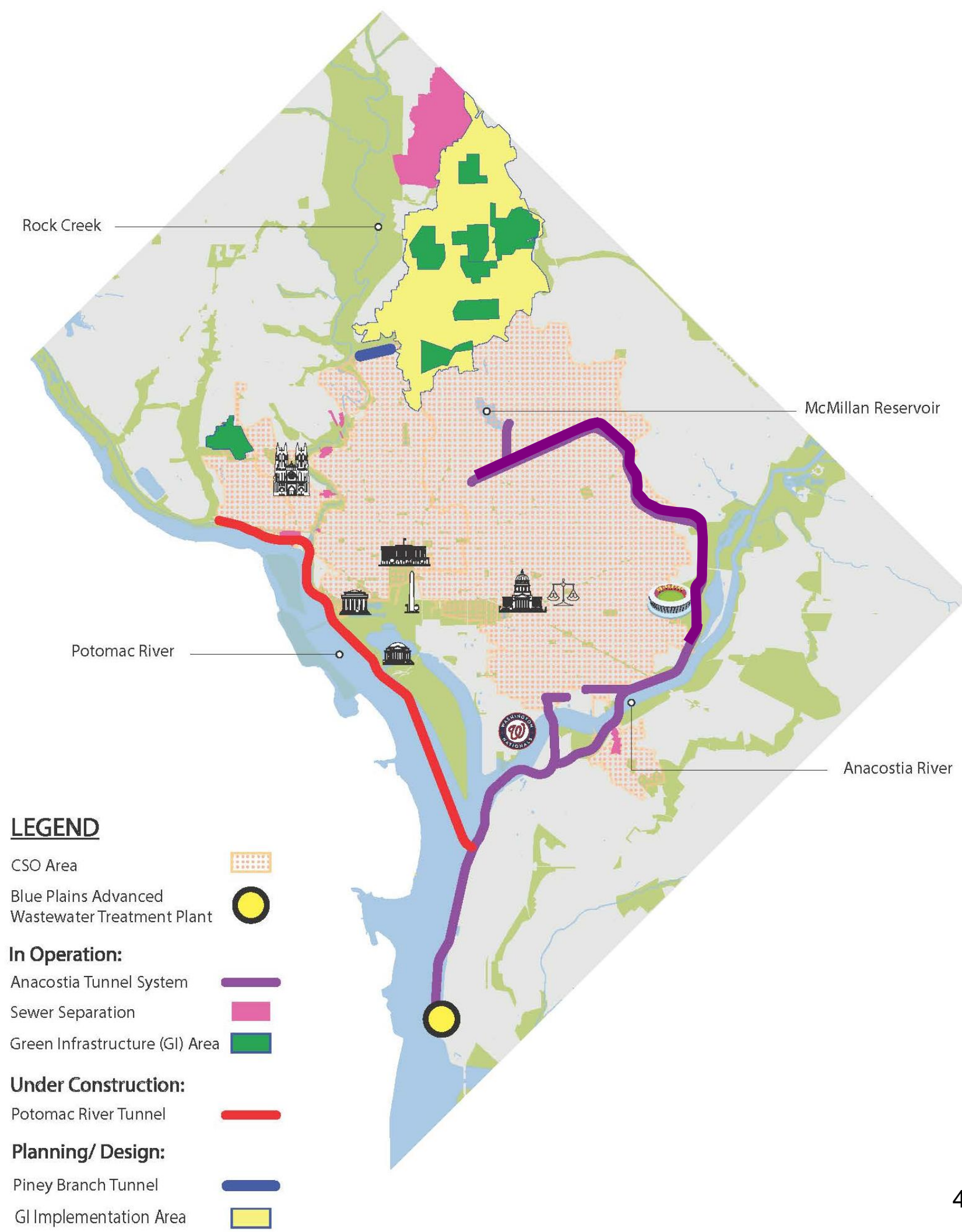


# dc Clean Rivers Project Status

## CLEAN RIVERS PROJECT AND NITROGEN REMOVAL PROGRAMS

- DC Clean Rivers Project: \$3.29 Billion
- Nitrogen Removal: \$950 Million
- Total > \$ 4.2 Billion
- 25 yr implementation (2005 – 2030)
- 96% reduction in CSOs & flood relief in Northeast Boundary
- Approximately 1 million lbs/yr nitrogen reduction predicted

- Project required by Consent Decree signed by EPA, DOJ, District of Columbia and DC Water
- Consent Decree specifies schedule for implementation
- DC Water subject to stipulated penalties and other sanctions if deadlines not met





# dc Clean Rivers Performance

Potomac  
Tunnel in  
construction

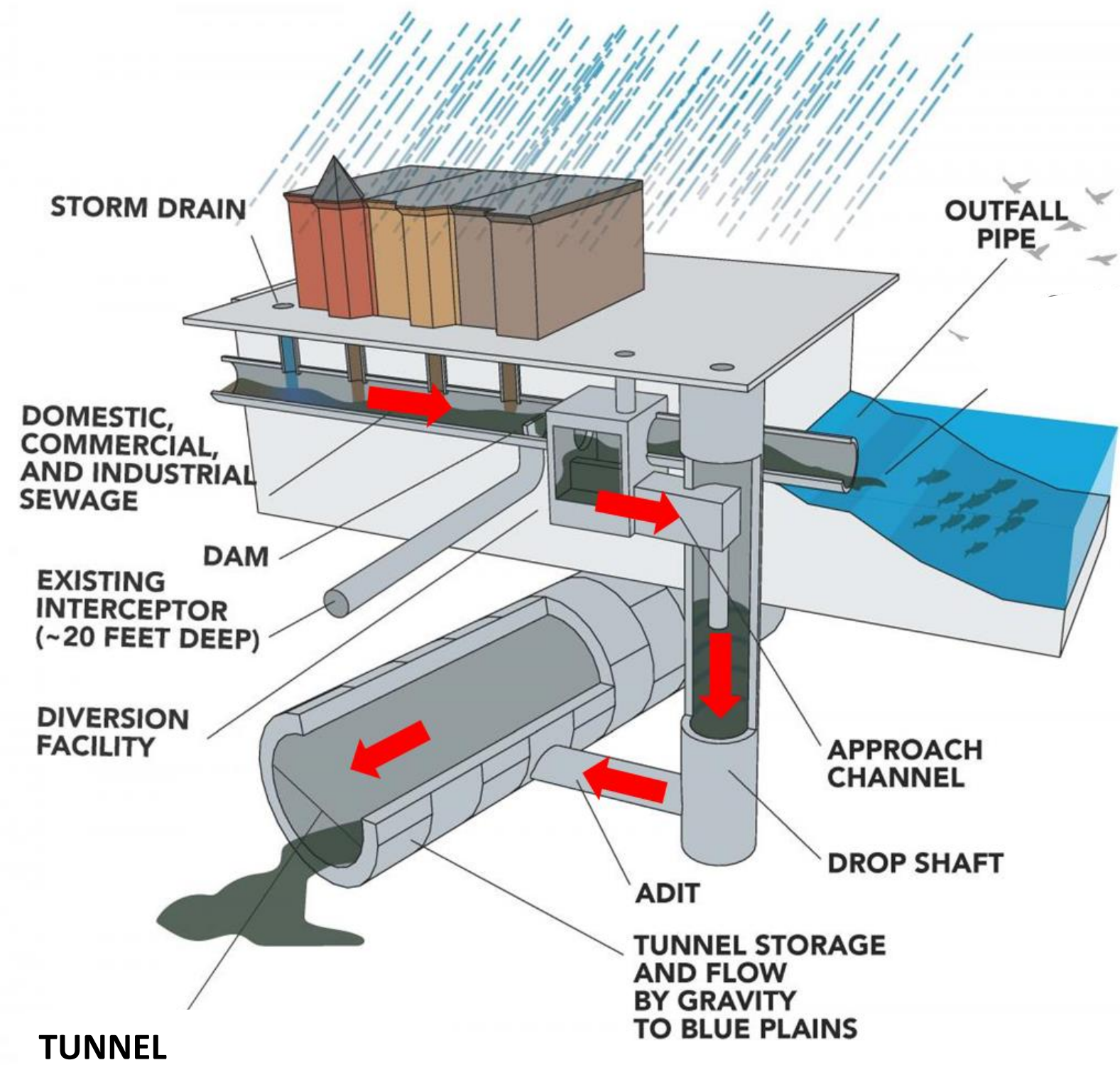
Piney  
Branch  
Tunnel  
upcoming

Controls  
in place

Parameter	Condition	Anacostia River	Potomac River	Rock Creek	Total
CSO Volume (mg/avg year)	1996 – DCW created	2,142	1,063	49	3,254
	LTCP Complete	54	79	5	138
CSO Frequency (#/avg yr)	1996 – DCW created	82	74	30	82
	LTCP Complete	2	4	1 / 4 <sup>1</sup>	4

<sup>1</sup>One at Piney Branch, four at the other Rock Creek CSOs

- 3.2 billion gallons/avg year at start of program
- 98% volume reduction on Anacostia
- 96% volume reduction system-wide

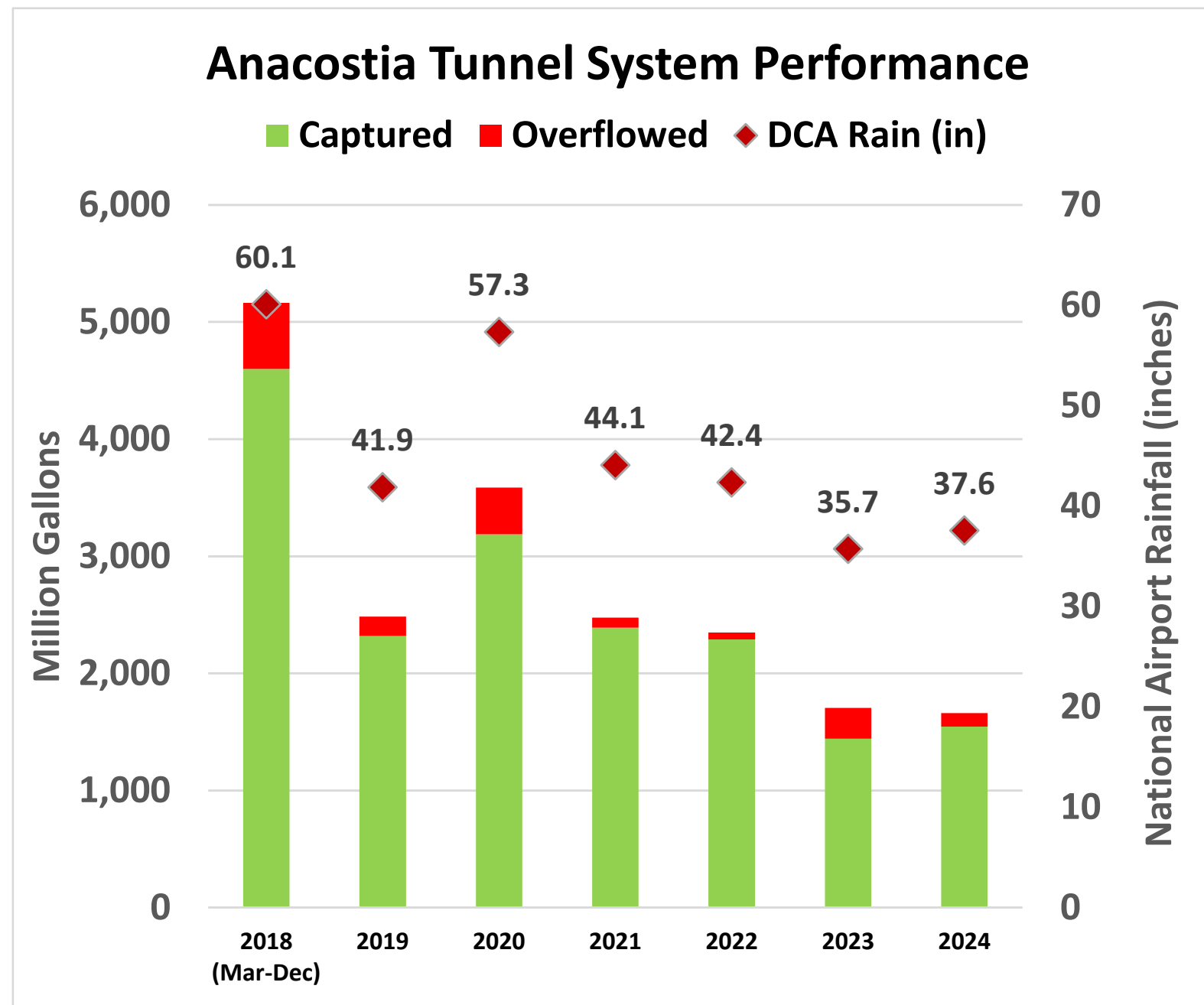






# Anacostia Tunnel System Performance

- Over **17.7 billion gallons of CSOs** captured Mar 2018 – Dec 2024
- Over **11,287 tons of trash**, debris, and other solids captured



Trash, Debris and Solids Removal  
from Screening Shaft at Tunnel  
Dewatering Pumping Station



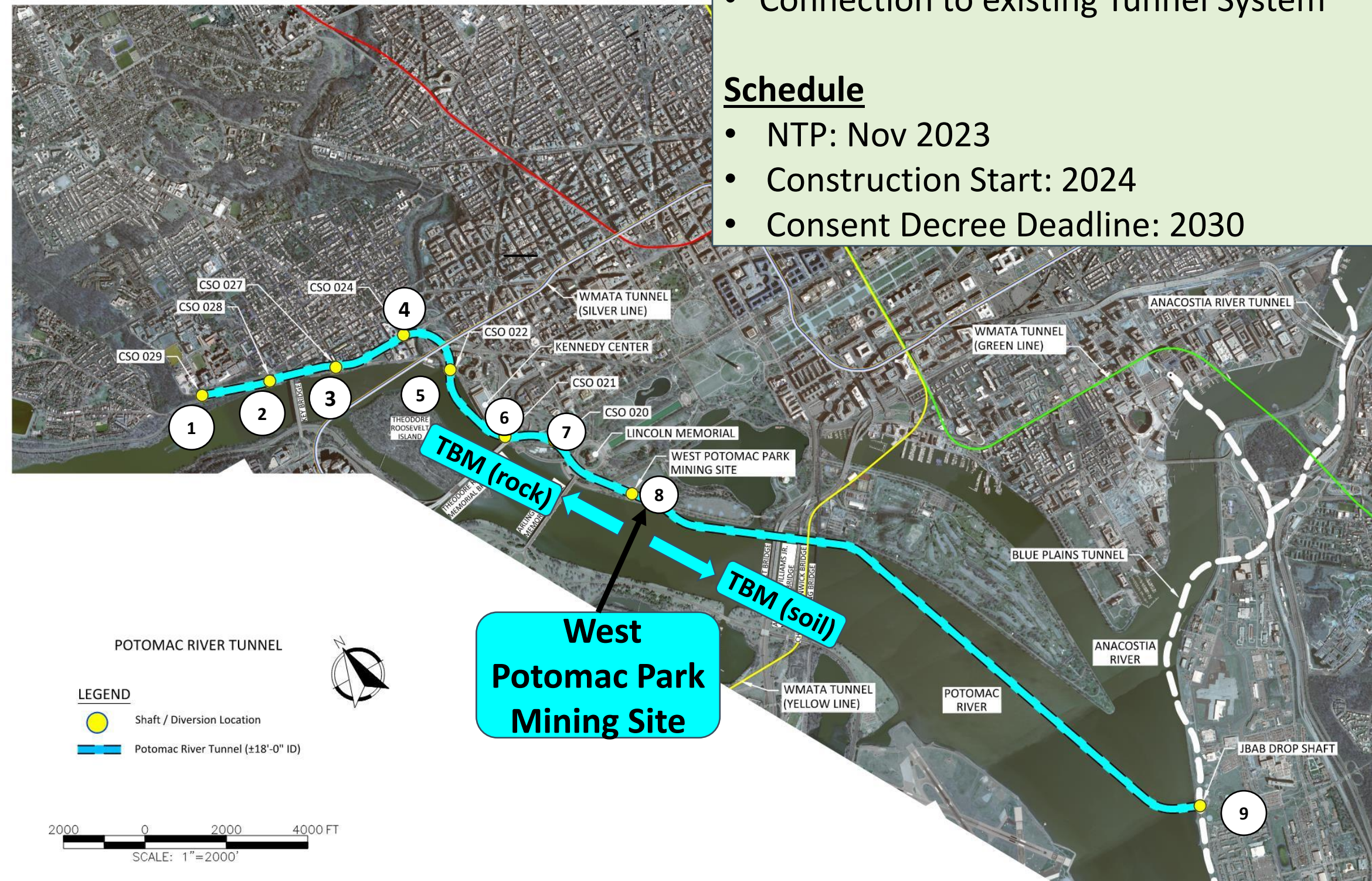




# dc Potomac River Tunnel

## Components

1	CSO 029
2	CSO 028
3	CSO 027
4	CSO 024
5	CSO 022
6	CSO 021
7	CSO 020
8	West Potomac Park
9	Joint Base Anacostia-Bolling



## Project

- Approx 5.5 miles of 18' finished tunnel
  - 2.4 miles in rock (north)
  - 3.1 miles in soil (south)
- 7 shafts
- Connection to existing Tunnel System

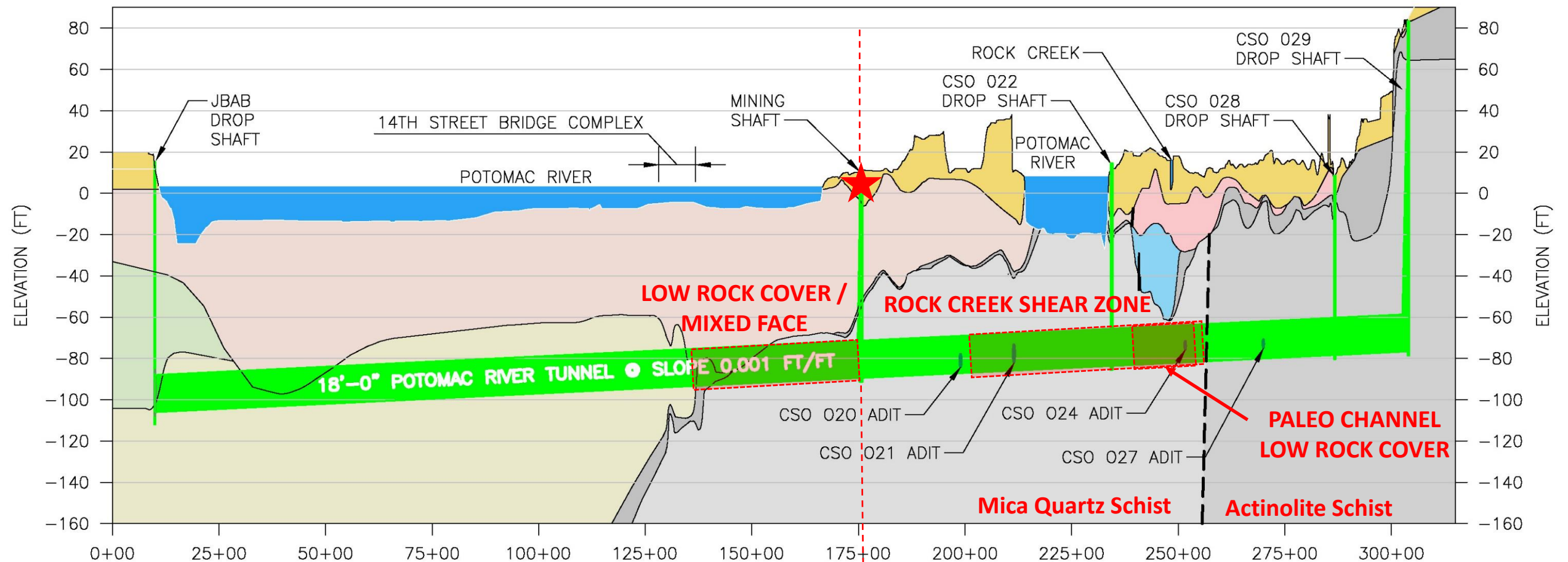
## Schedule

- NTP: Nov 2023
- Construction Start: 2024
- Consent Decree Deadline: 2030





# Tunnel Geologic Profile



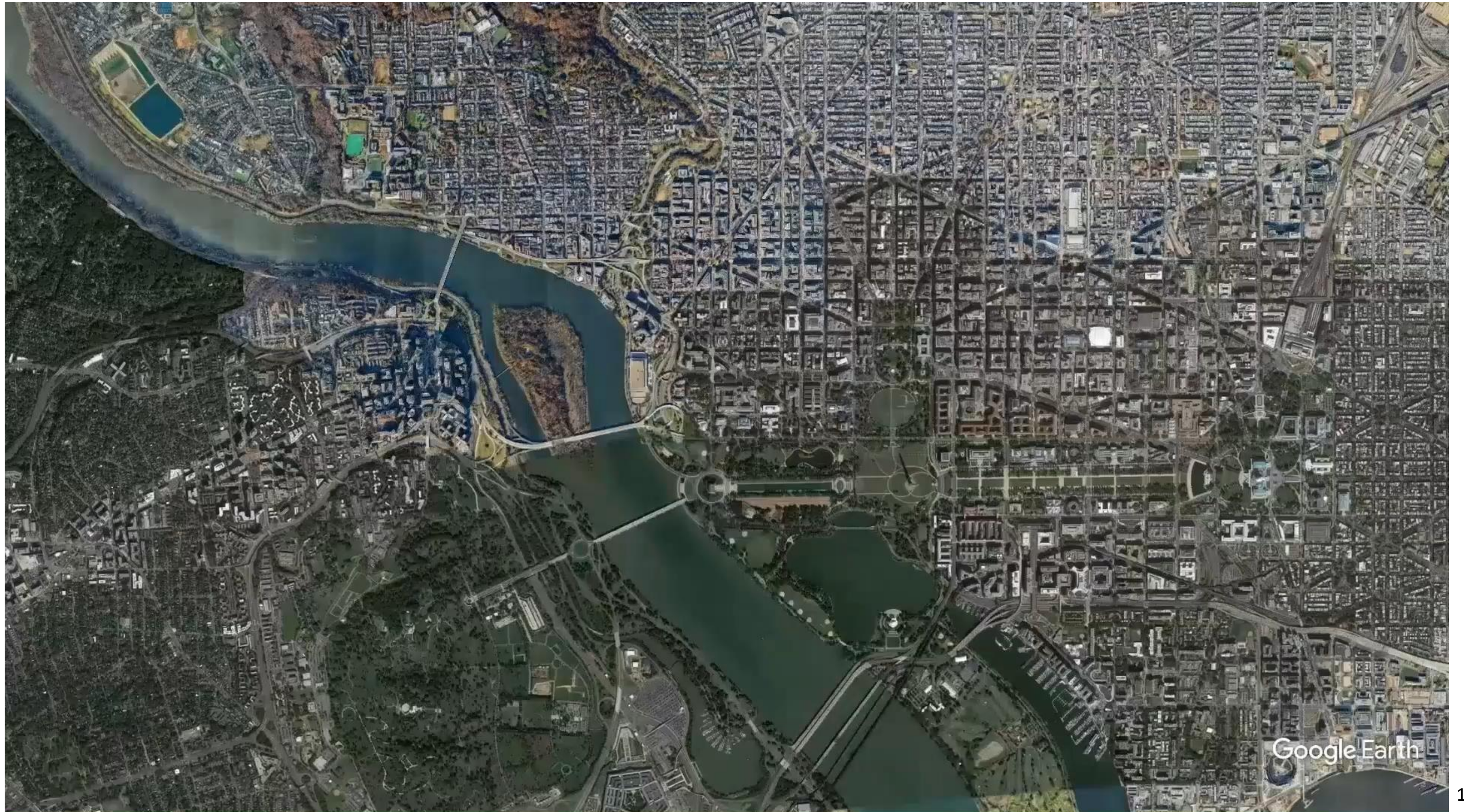
## GEOLOGY:

- |                                  |   |  |
|----------------------------------|---|--|
| Fill                             | Stiff silts/Over-consolidated clays (P/A) | Weathered rock                               |
| Alluvium A1 (fine)               | Dense silty and clay sands (PTX)          | Mica Quartz Schist (UCS Avg 10ksi, Max)      |
| Alluvium A2 (coarse)             |   | Actinolite Schist (UCS Avg 17ksi, Max 28ksi) |
| Alluvium A3 (gravel and cobbles) |   |  |

**SOUTH DRIVE**  
~ 16,600 LF

**NORTH DRIVE**  
~ 12,800 LF

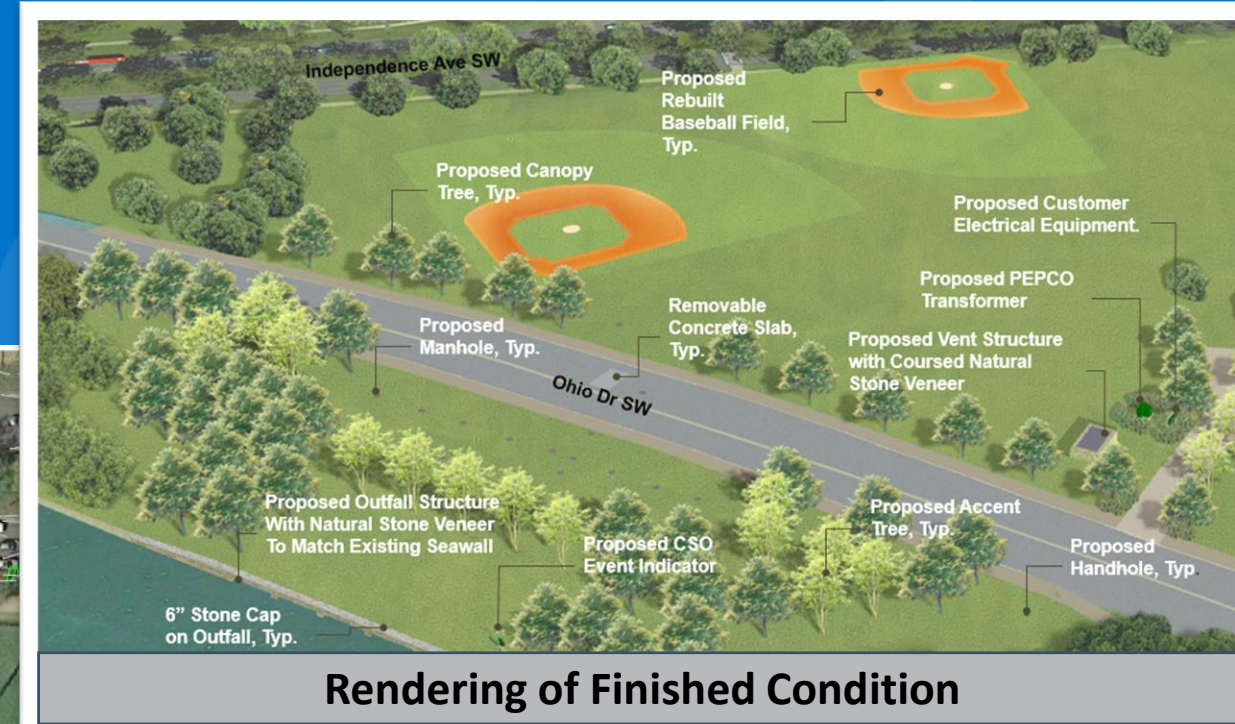
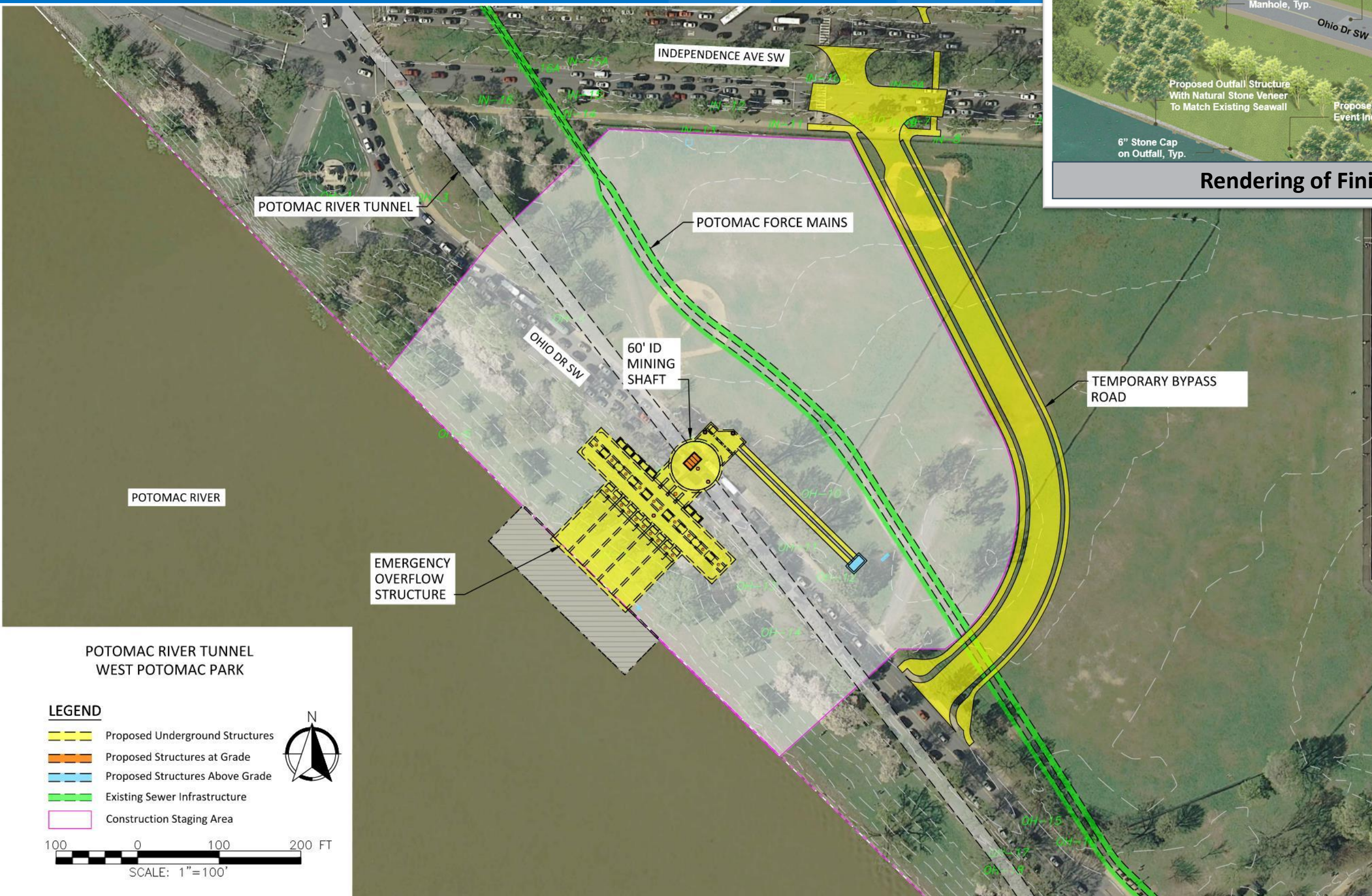




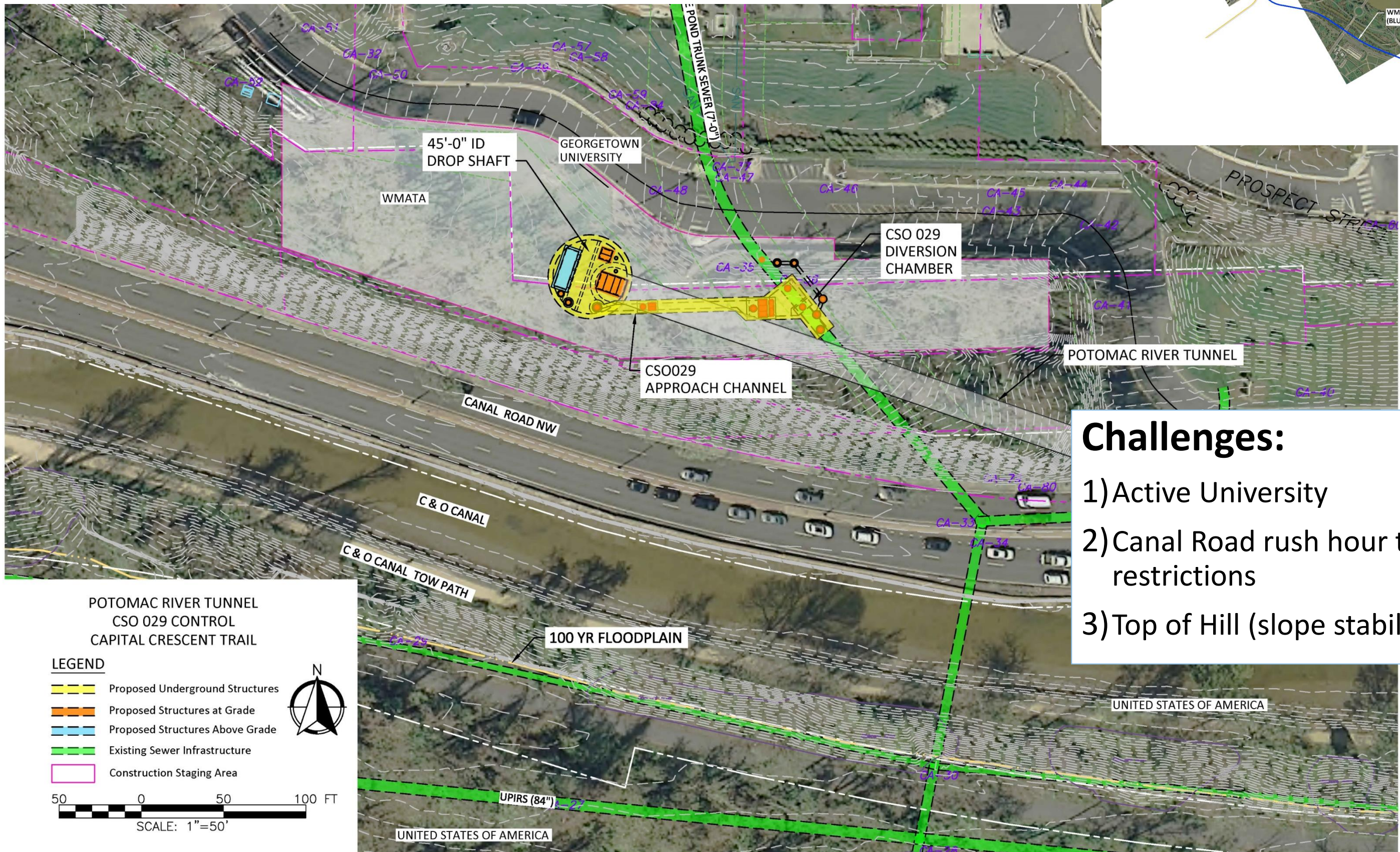
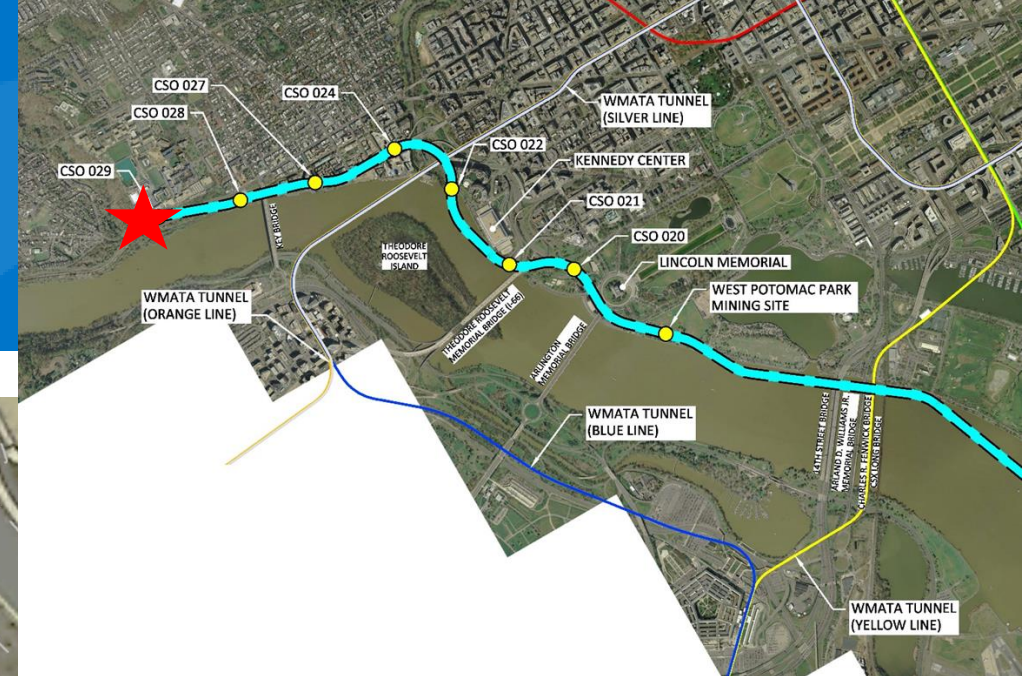




# West Potomac Park Mining Site



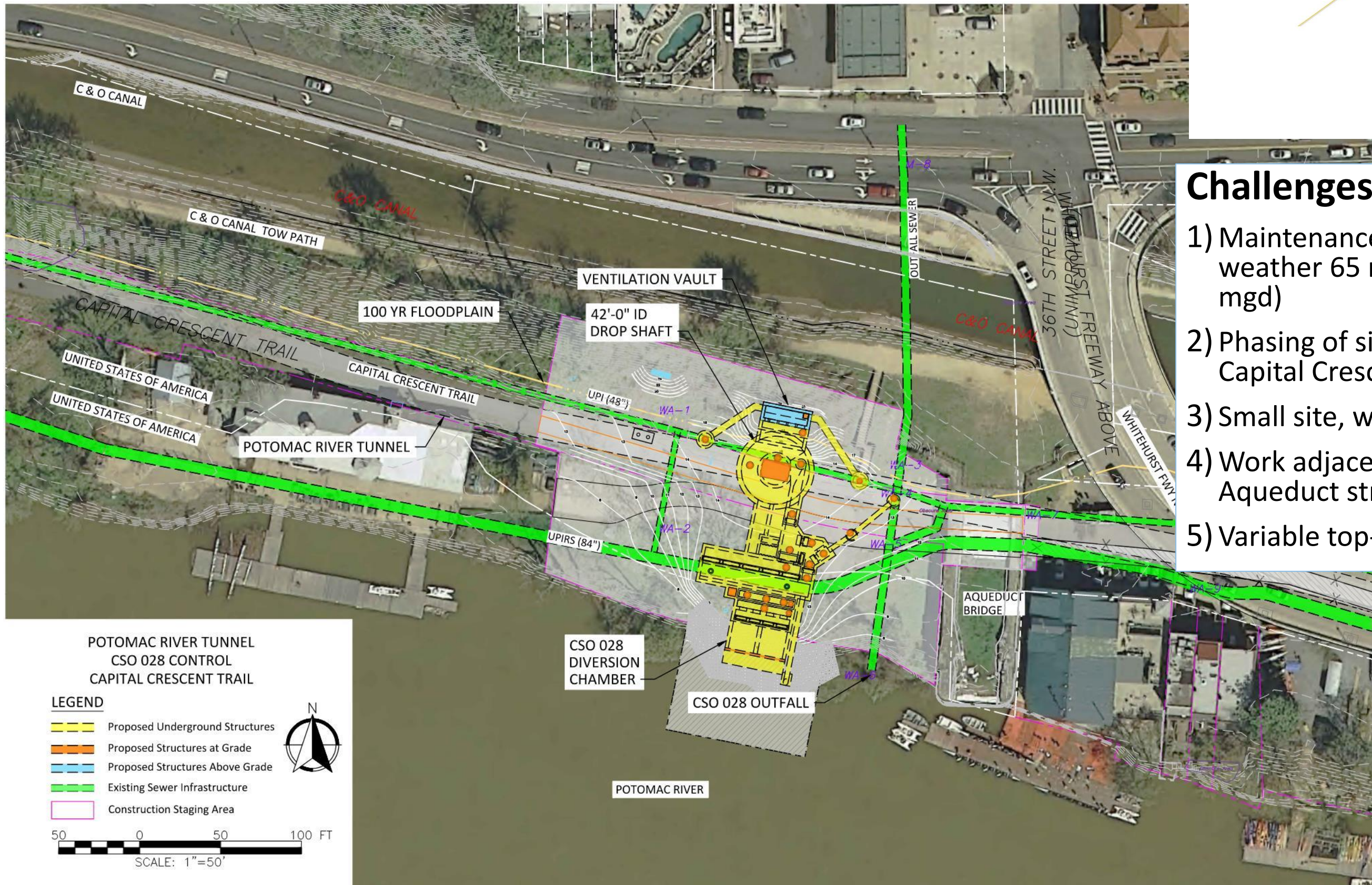
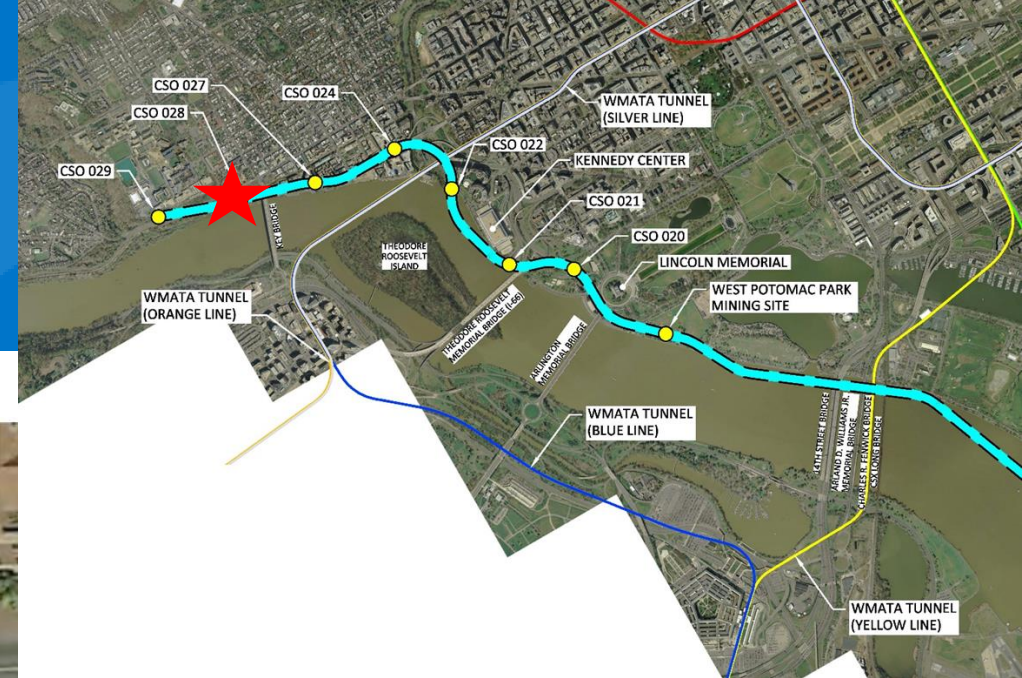




## Challenges:

- 1) Active University
- 2) Canal Road rush hour traffic restrictions
- 3) Top of Hill (slope stability)

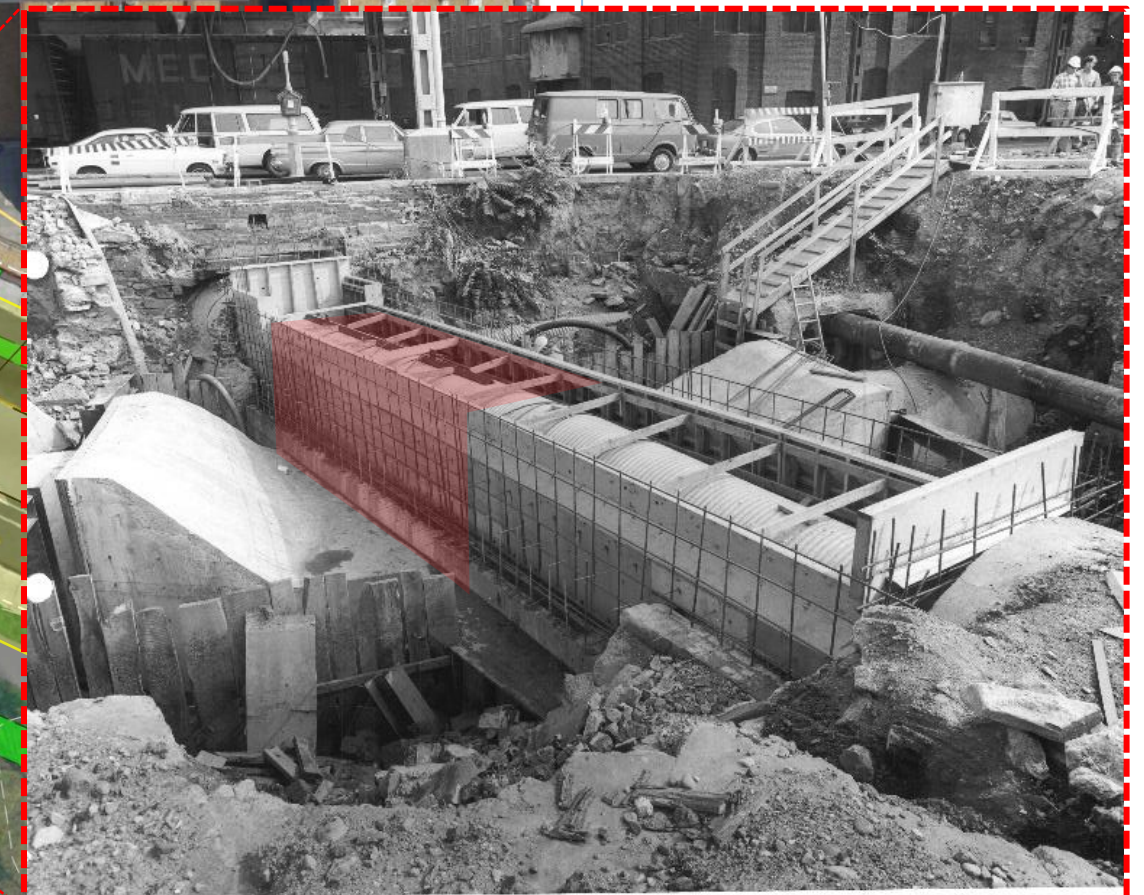
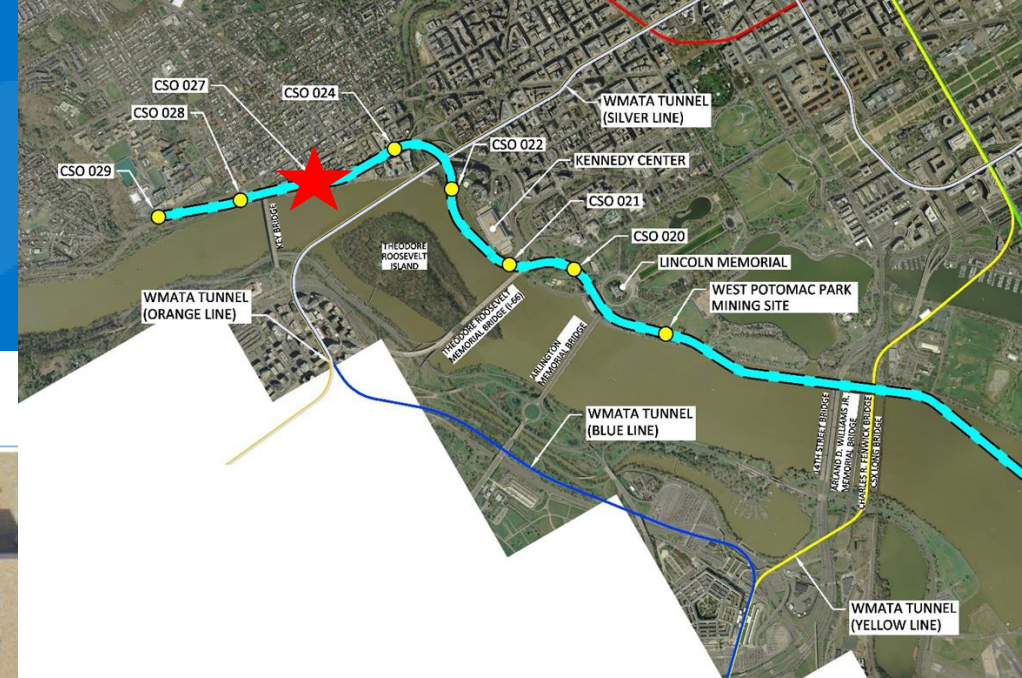




## Challenges:

- 1) Maintenance of flow in UPIRS (dry weather 65 mgd, wet weather 240 mgd)
- 2) Phasing of site required to maintain Capital Crescent Trail accessible
- 3) Small site, with high public use
- 4) Work adjacent to historic Potomac Aqueduct structure
- 5) Variable top-of-rock

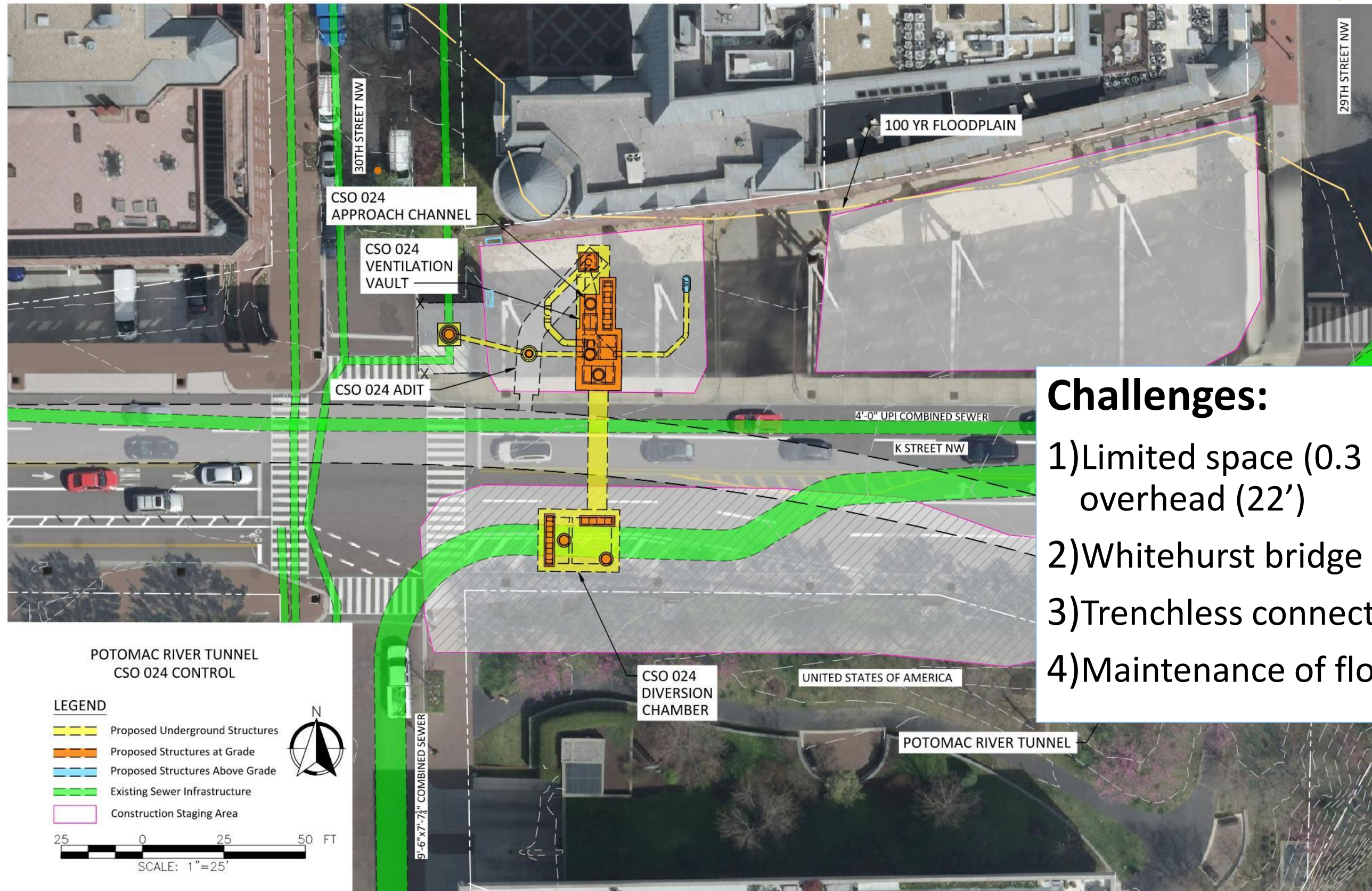




## Challenges:

- 1) Limited space (0.4 acres) and low-overhead (25')
- 2) Whitehurst bridge protection
- 3) UPIRS and abandoned SOE from 1970s
- 4) Boulders in the Fill
- 5) Impact on traffic and community

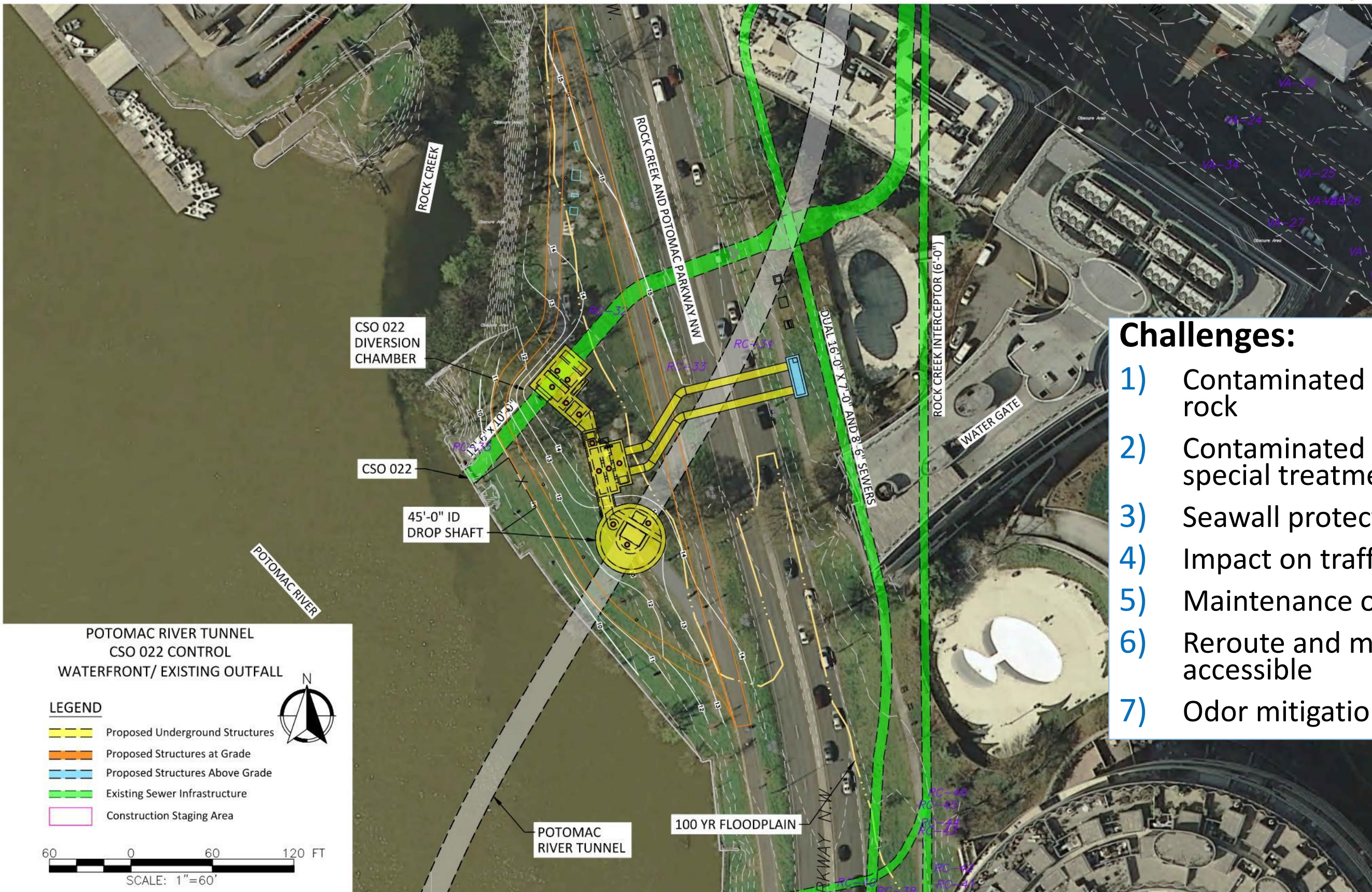
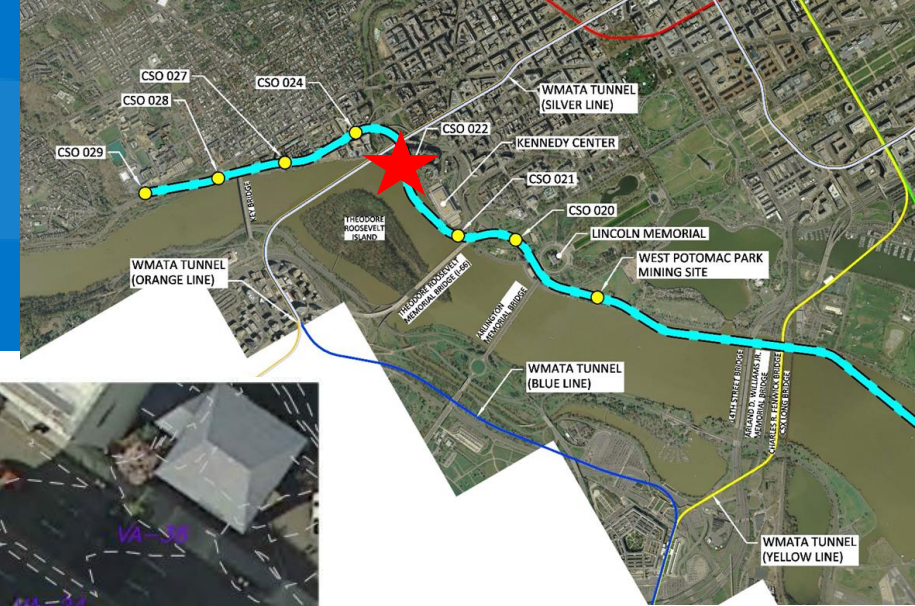




## Challenges:

- 1) Limited space (0.3 acres) and low-overhead (22')
- 2) Whitehurst bridge protection
- 3) Trenchless connection
- 4) Maintenance of flow (10'x7' outfall)

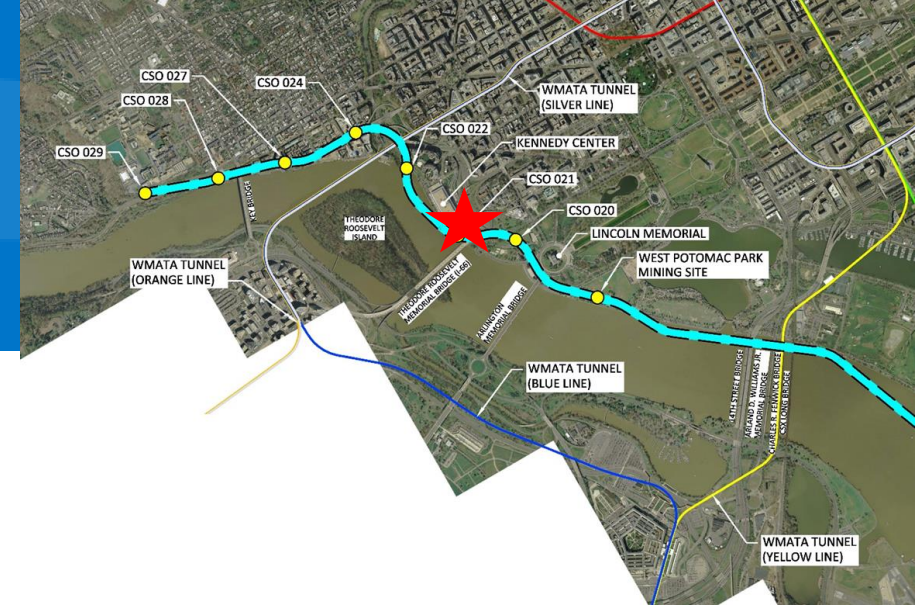




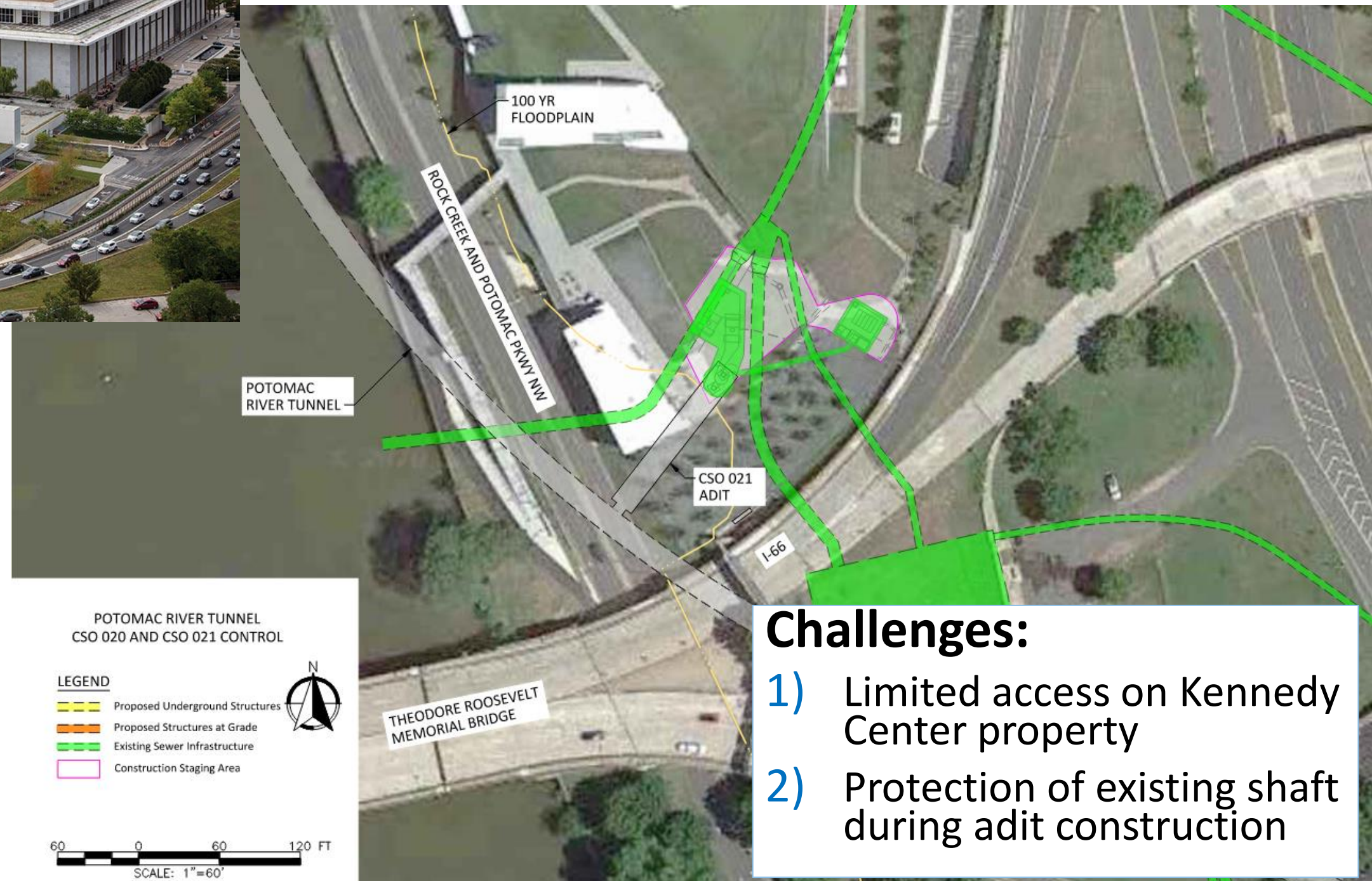
## Challenges:

- 1) Contaminated soil down to top-of-rock
- 2) Contaminated groundwater requiring special treatment
- 3) Seawall protection
- 4) Impact on traffic, Watergate
- 5) Maintenance of flow
- 6) Reroute and maintain trail open and accessible
- 7) Odor mitigation during construction





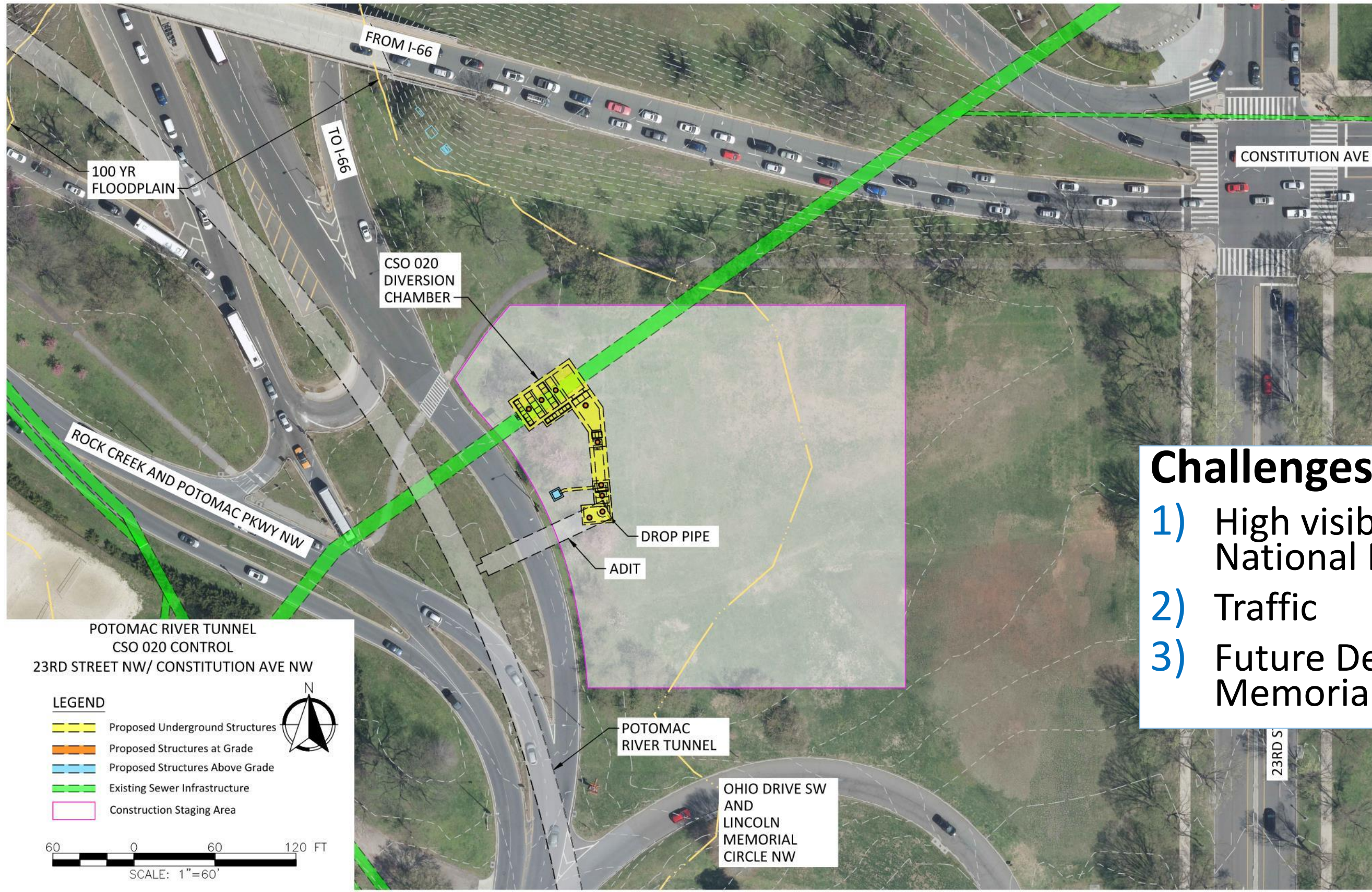
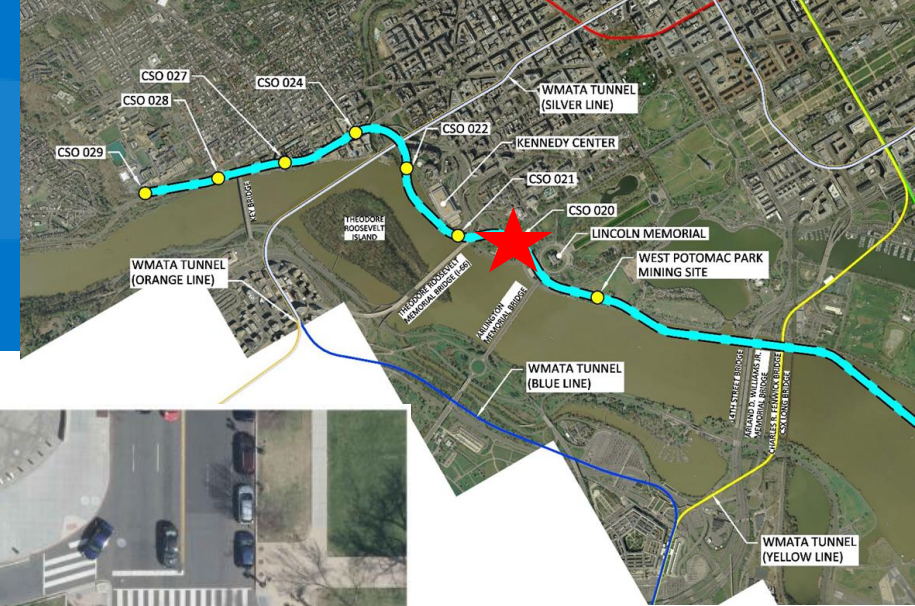
Previously  
constructed CSO  
021 Diversion  
Structure



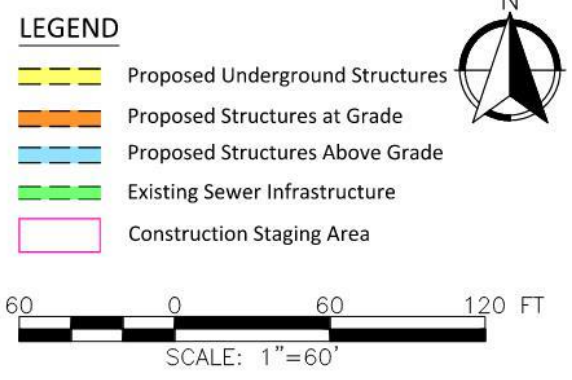
## Challenges:

- 1) Limited access on Kennedy Center property
- 2) Protection of existing shaft during adit construction





POTOMAC RIVER TUNNEL  
CSO 020 CONTROL  
23RD STREET NW/ CONSTITUTION AVE NW

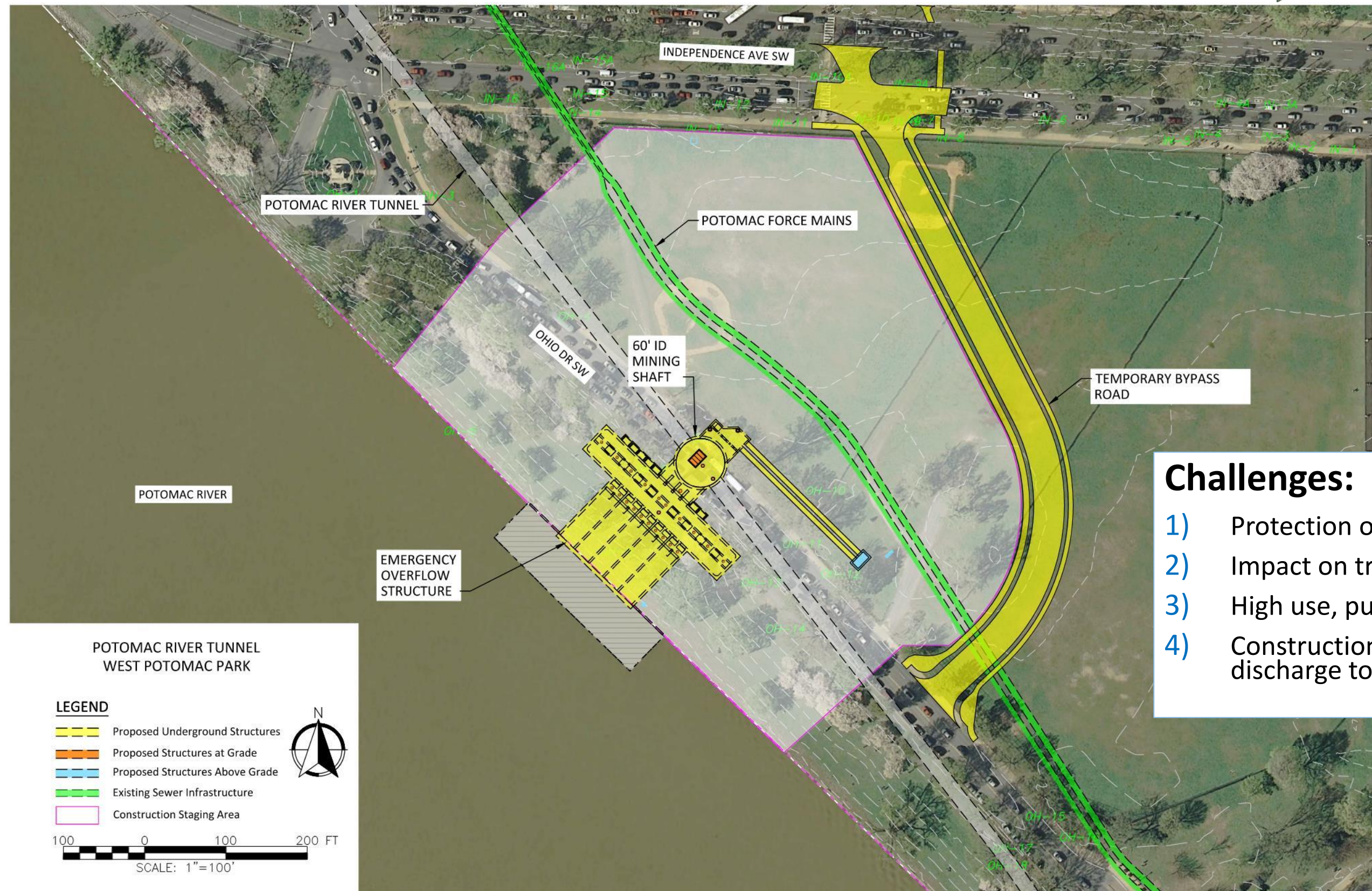
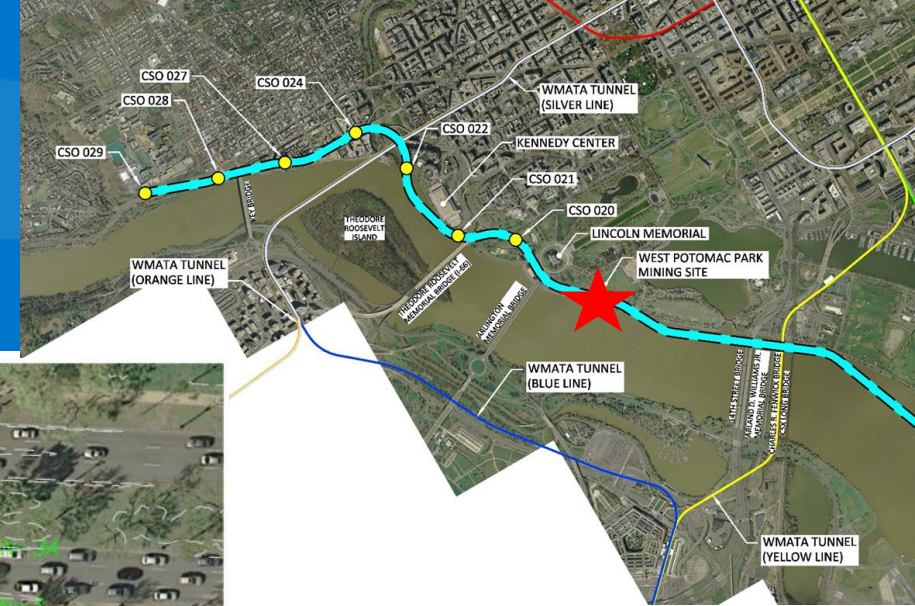


- ### Challenges:
- 1) High visibility area on National Mall
  - 2) Traffic
  - 3) Future Desert Storm Memorial





# West Potomac Park Mining Site



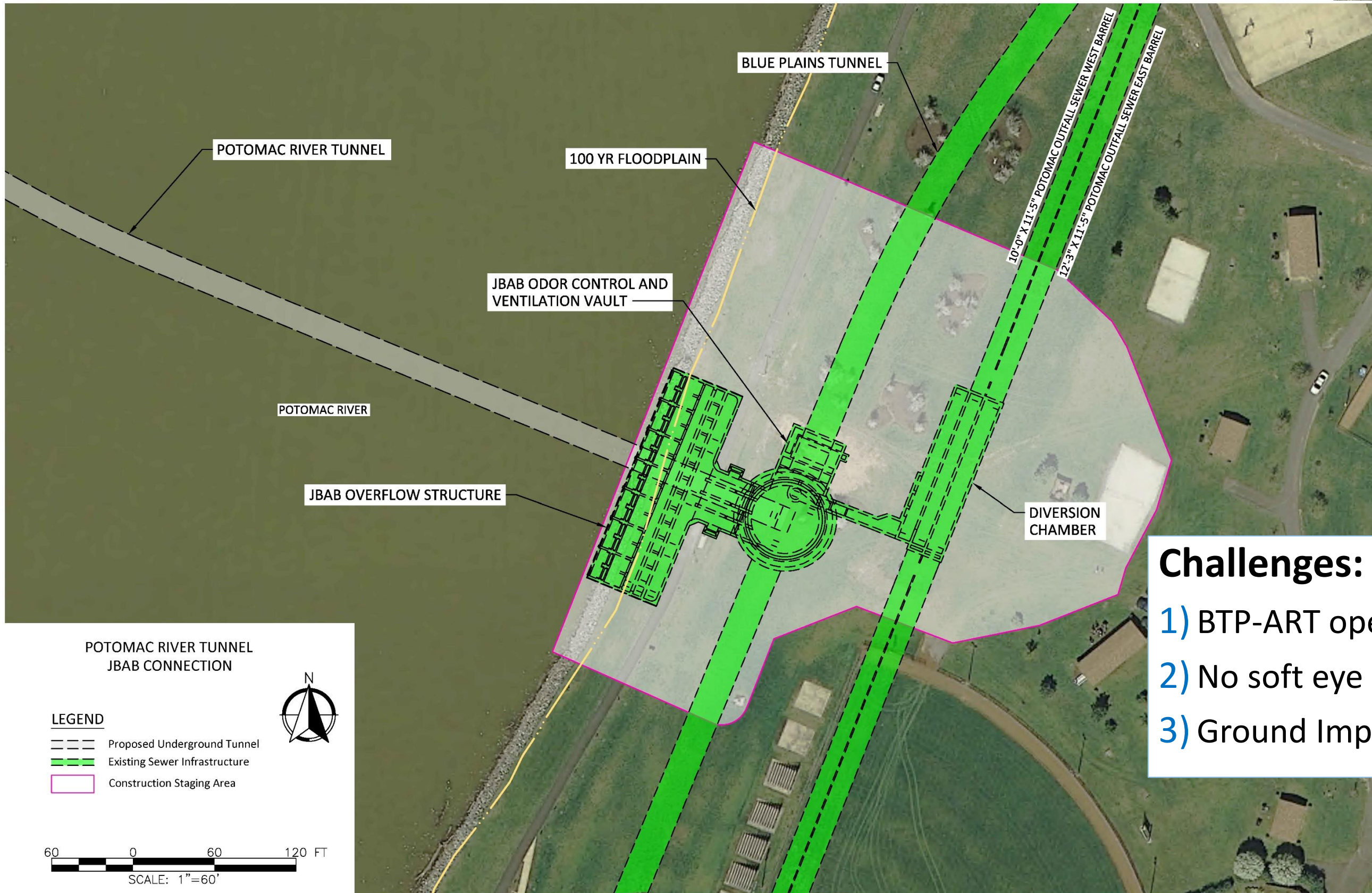
## Challenges:

- 1) Protection of sewer force mains
- 2) Impact on traffic
- 3) High use, public area
- 4) Construction water treatment and discharge to force mains





# Connection to Anacostia Tunnel System at JBAB



## Challenges:

- 1) BTP-ART operational
- 2) No soft eye in shaft wall
- 3) Ground Improvement + SEM





# Potomac Tunnel Progress

- Design underway
- 2 TBMs ordered and being manufactured
- Major equipment to support mining in planning, design and procurement (segment plant, conveyors, gantry, slurry plant)
- West Potomac Park Mining Site set up and Ohio Drive relocated
- Mining shafts support of excavation and excavation underway



WPP- Overflow and Mining Shaft Excavation



Aerial View of West Potomac Park (WPP) Construction Site





# Schedule (simplified)

## Legend

- Planned work
- Work may be performed pending construction progress/schedule adjustments

Activity	2024				2025				2026				2027				2028				2029				2030			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
West Potomac Park																												
CSO 022 (Watergate)																												
CSO 028 (C&O Canal at Key Bridge)																												
CSO 027 (Potomac and K St NW)																												
CSO 020																												
CSO 024 (30 <sup>th</sup> and K St NW)																												
CSO 029 (Georgetown University)																												
CSO 021 (Kennedy Center)																												
JBAB																												

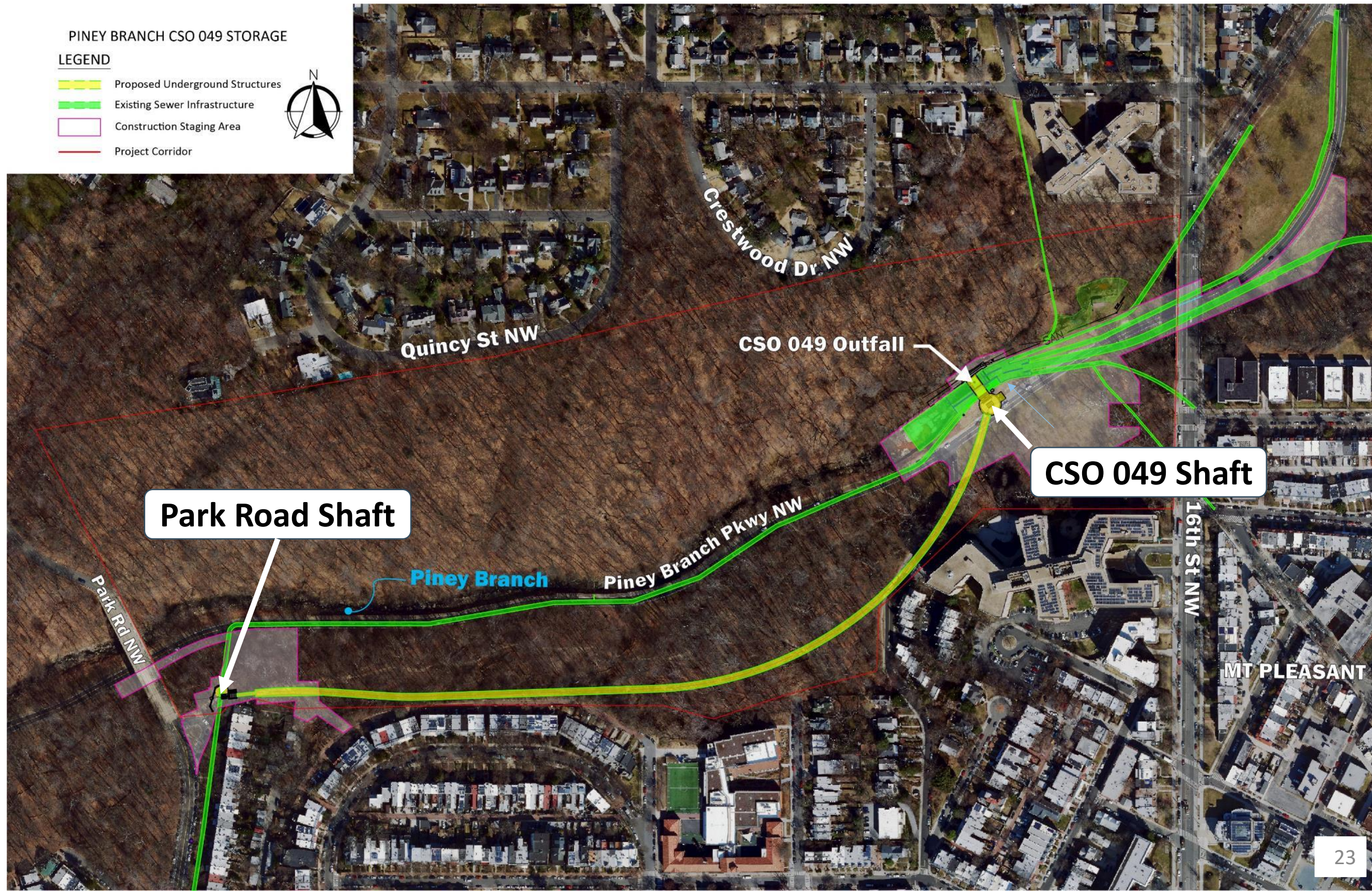




# Upcoming Project: Piney Branch Tunnel



- About 0.5 mile, 18' diameter tunnel
- Controls largest CSO in Rock Creek at Piney Branch
- Construction 2026 – 2029

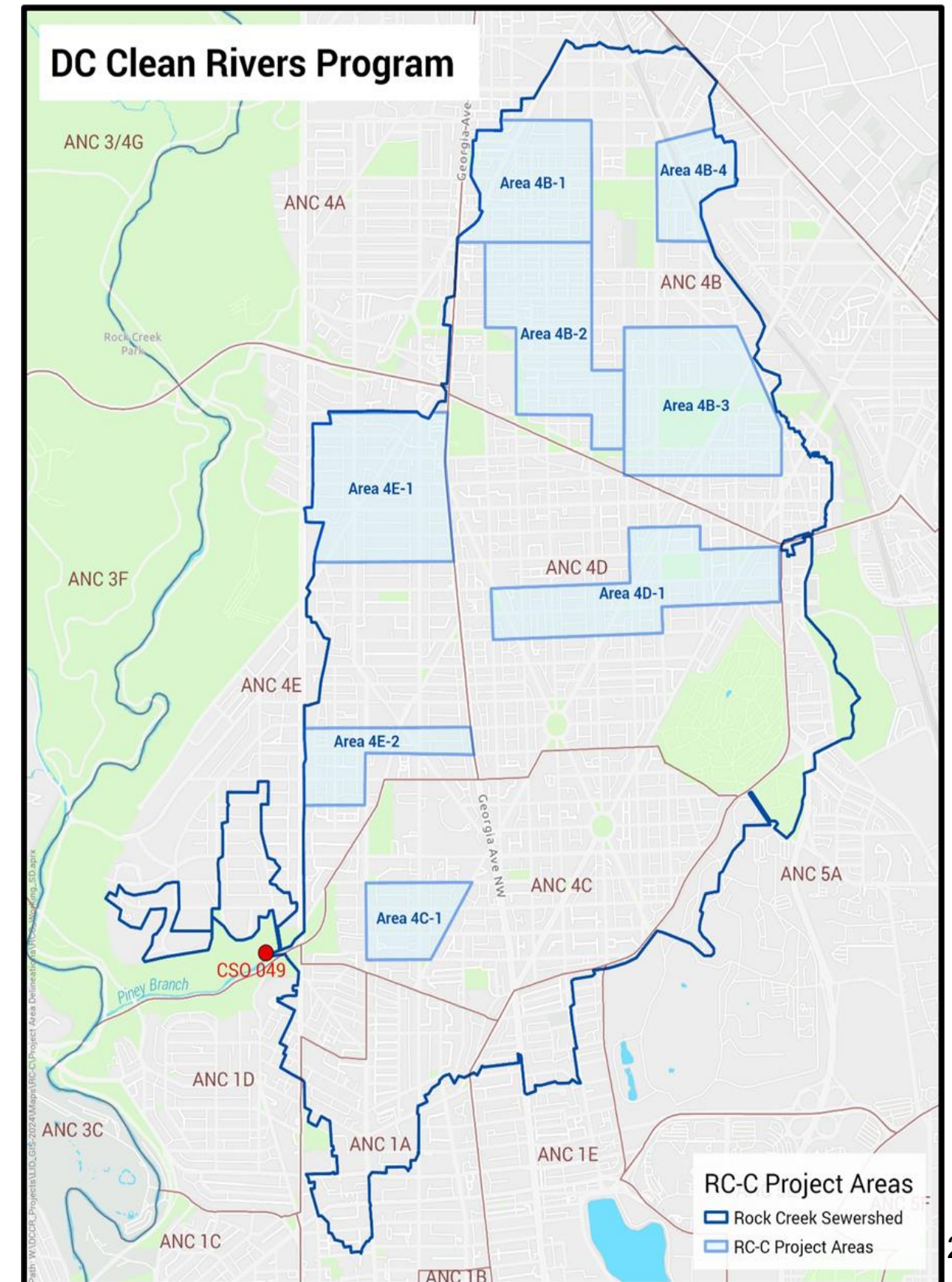
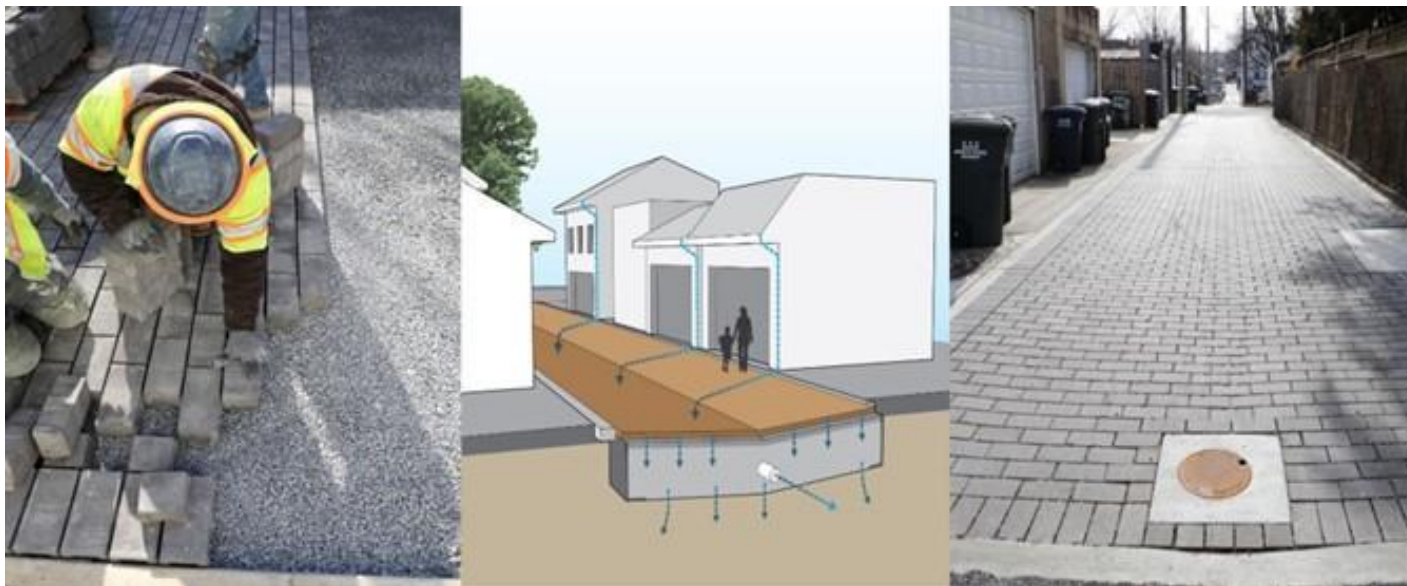






# Upcoming Projects: Green Infrastructure in Rock Creek (Piney Branch)

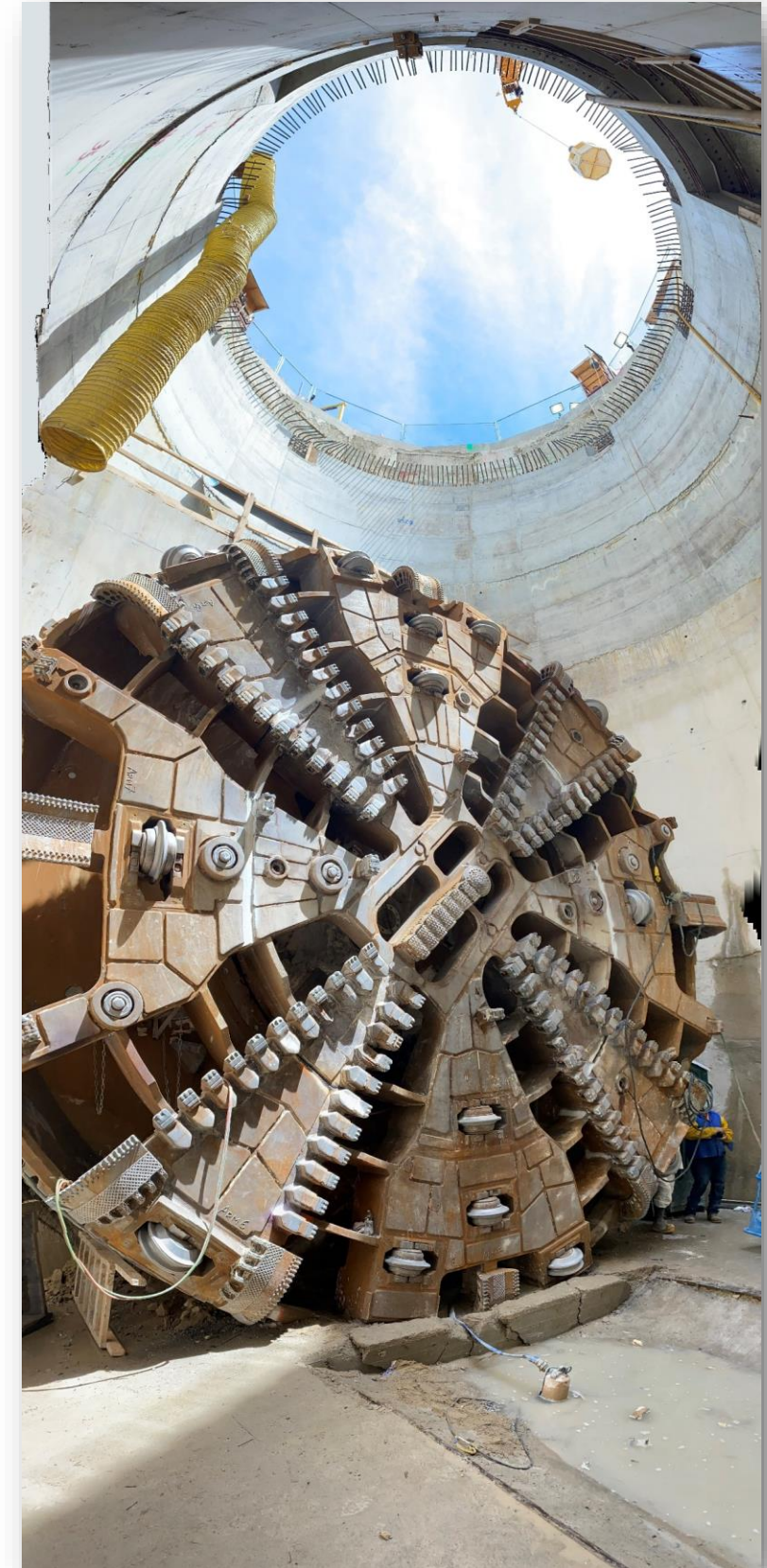
- Two additional projects required by Consent Decree:
  - Rock Creek Project C
    - Place in operation by December 31, 2027
    - Scope: Manage stormwater from 25 impervious acres to the 1.2" Retention Standard
    - Technology: Green alleys (permeable pavers)
  - Rock Creek Project D
    - Place in operation by March 23, 2030
- In total, all projects will manage 92 impervious acres to the 1.2" retention standard





# dc Projects to Complete Consent Decree

Project	Construction Timeframe
Anacostia River	
Northeast Boundary Tunnel	2017 – 2023 (Completed)
Potomac River	
Potomac River Tunnel	2024 – 2030 (In Construction)
Rock Creek	
Green Infrastructure Project C	2025 – 2027
Green Infrastructure Project D	2028 – 2030
Piney Branch Tunnel	2026 – 2029





# dc Questions?

