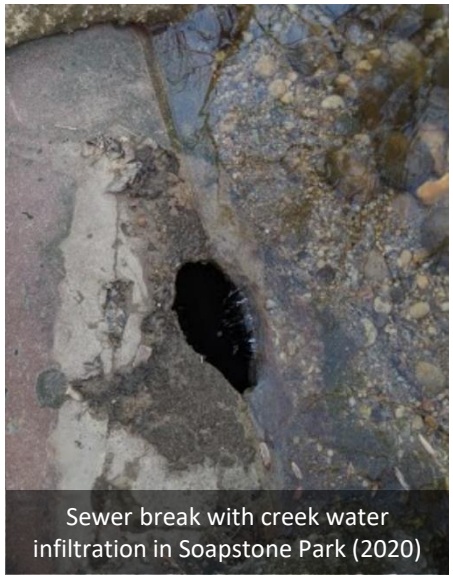
District of Columbia Water and Sewer Authority
David L. Gadis, General Manager


Sewer break with creek water infiltration in Soapstone Park (2020)


Fallen trees and eroding creek bank


Exposed sewer pipe and manholes

Creek Bed Sewer Repair and Rehabilitation Project

Soapstone Valley Park

February 2022

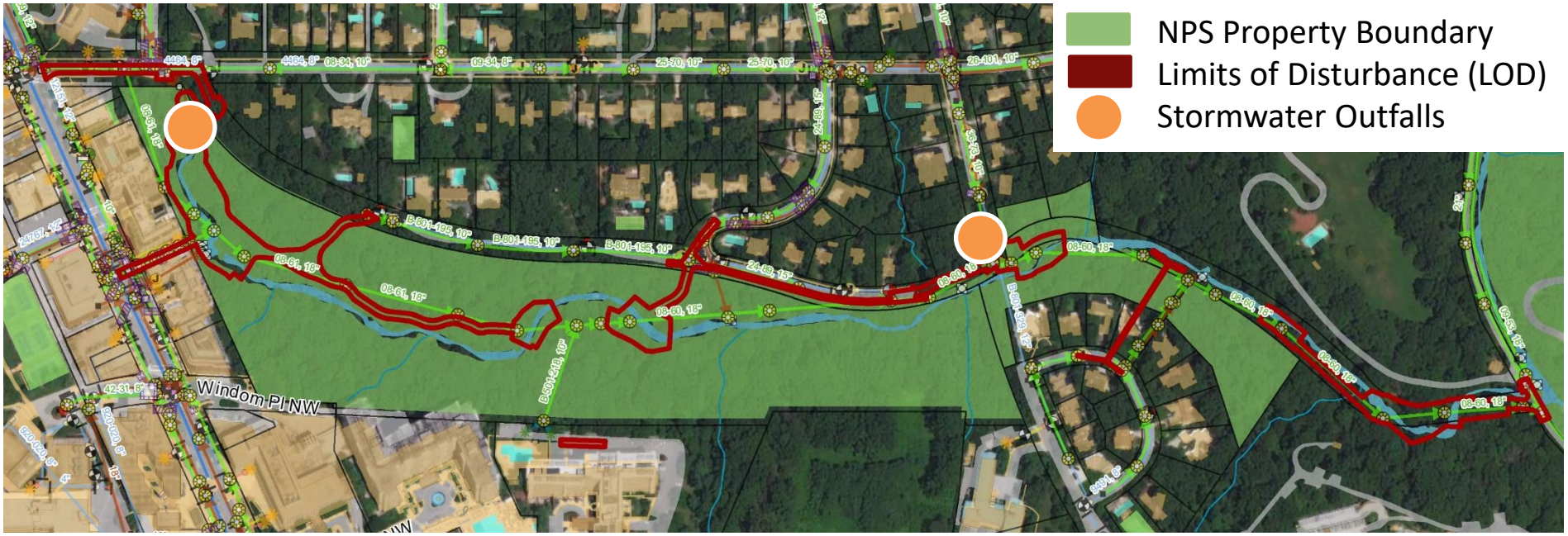
Presentation

Our Discussion

- Project Need and Benefits
- Soapstone Project Planning and Alternatives Analysis
- Environmental Reviews and Permitting
- Procurement
- Where We Are Now

PROJECT NEED AND BENEFITS

Soapstone Valley Park Project

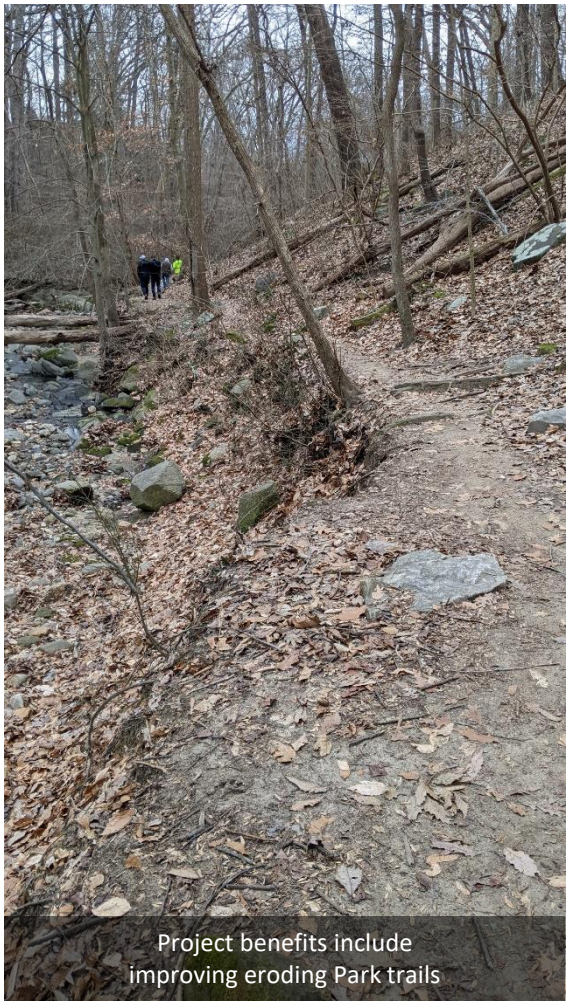


- Soapstone stream restoration and trail rehabilitation
- 6,200 linear feet of sewer pipe rehabilitation
- Repair of two impaired stormwater outfalls

Why Now?

- Protect human health and the environment
  - Deterioration of the sewer pipes causing sewage leaks (seven recorded sewer leaks/ overflows since 2014, on average once/year)
  - Exposed pipes vulnerable to severe damage from falling trees, stones, and ongoing and potentially accelerating erosion
  - **Increasing likelihood of major break that spills sewage into the creek and park**

- Alternative is continued emergency repairs
  - Have a much bigger footprint
  - Less opportunity for a thoughtful approach
  - Will not deliver full community benefits

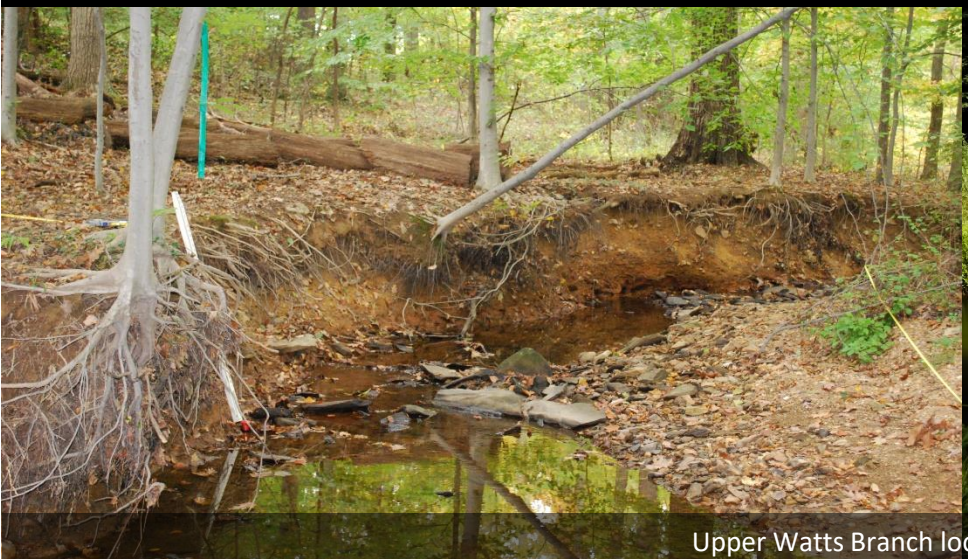


Project benefits include improving eroding Park trails

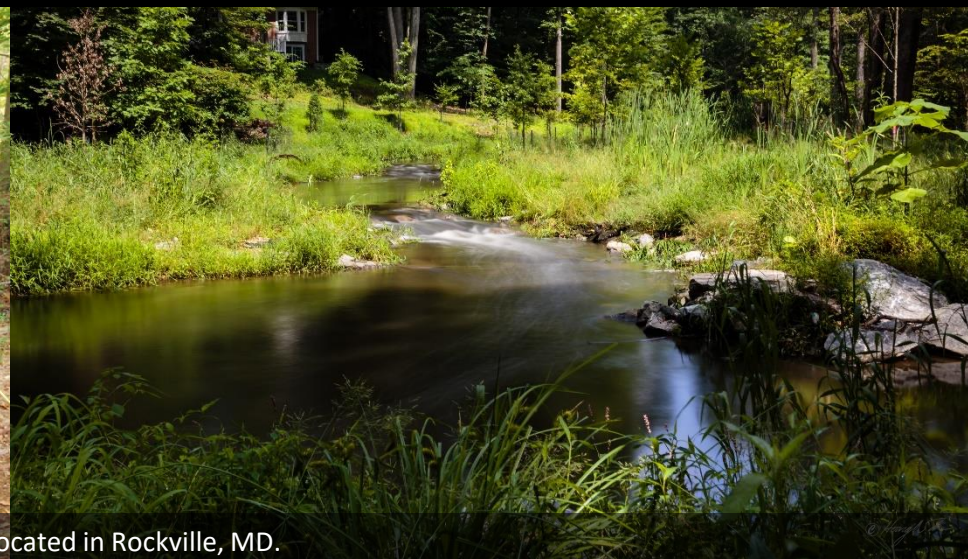
Benefits to the Community

- Eliminates risk of major sewage spills into park
- Ensures long-term, safe recreational use of a valued community asset
- Formalizes Park trail and replaces invasive species with native species
- Stabilizes creek channel to reduce erosion and reconnects to natural floodplain
- Reduces unwanted odors from sewers and manholes

Before



After



Upper Watts Branch located in Rockville, MD.

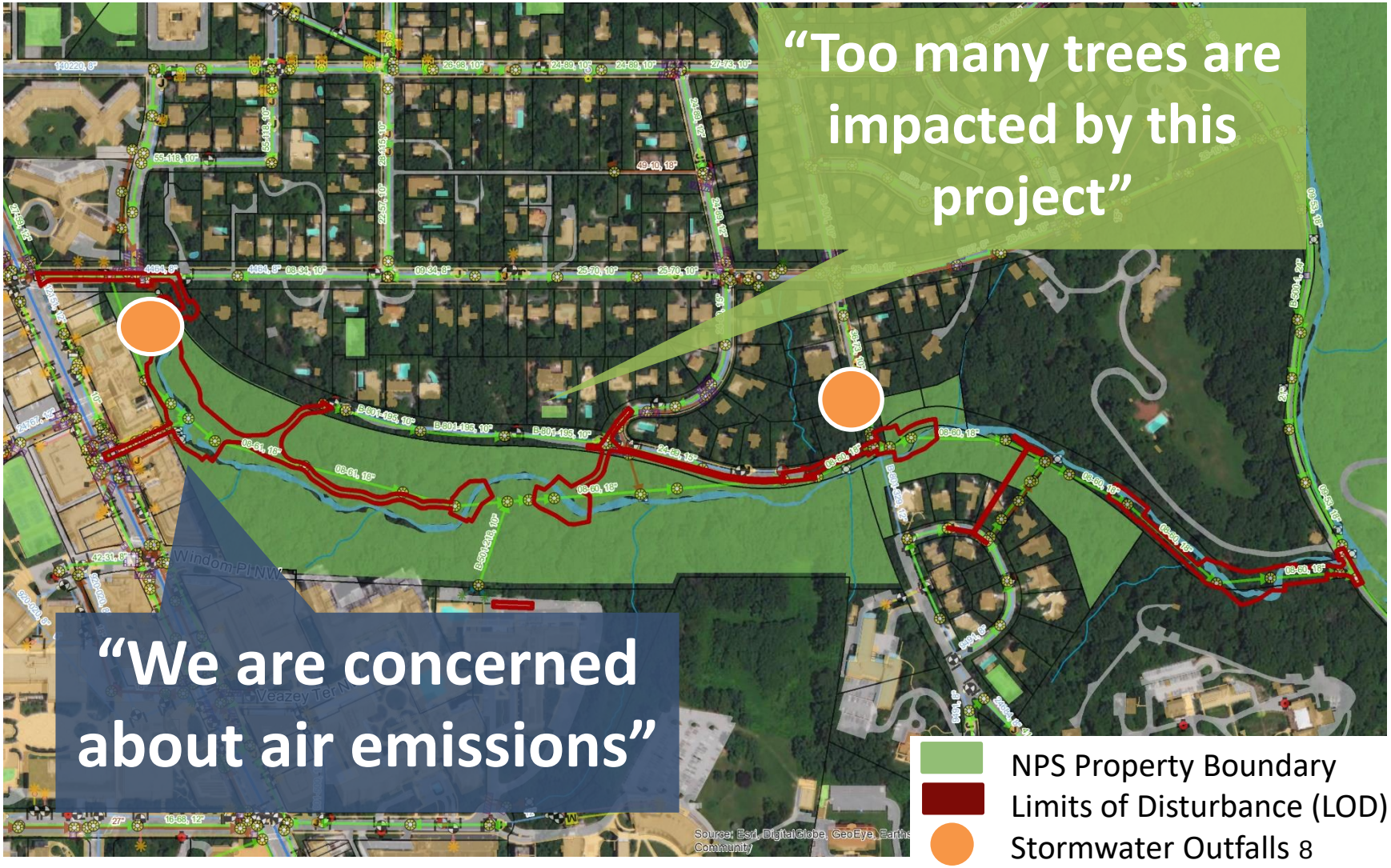
National Park Service

- Floodwaters threaten sewers and Soapstone Valley Park.
- NPS and DC Water have worked for 10 years on planning this project.
- The selected alternative is the least impactful.
- Permits are required for all work.
- All disturbed areas of the park will be restored.


Ongoing Erosion in the Park

For Questions and Concerns About the Park Please Contact:
Nick Bartolomeo
Resources, Lands and Planning Manager
202-579-8494 | nick_bartolomeo@nps.gov

We Hear You


"Too many trees are impacted by this project"
"We are concerned about air emissions"
NPS Property Boundary
Limits of Disturbance (LOD)
Stormwater Outfalls

No-VOC*, Styrene-Free Resin

- For this project, DC Water will use a resin that contains no volatile organic compounds (VOCs)* and no styrene.
- This will increase the cost of the project but minimize the risk of emissions.
- DOEE is currently assessing the need for additional measures for use of no-VOC, styrene free resin and hot water cure.
- DC Water will continue to work with DOEE to verify any additional mitigation measures to use standard resin (with steam curing) in DC.

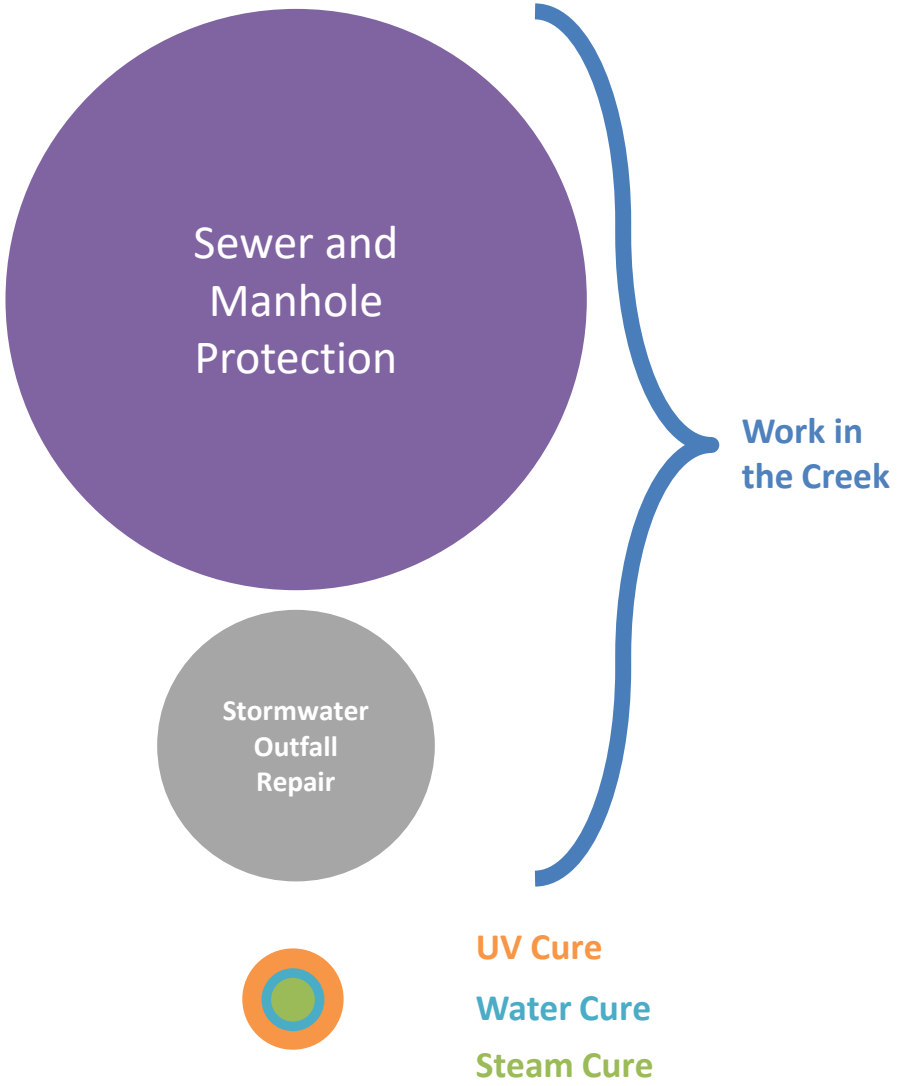
** No ozone damaging compounds*

Hot Water Curing Method

Pro	Con
• There are no intentional emissions with hot water curing • Can be completed within approved Limits of Disturbance (LOD)	• Longer construction duration • Additional equipment required

Minimizing Tree Impacts

- Number of trees affected has always been – and continues to be a driving factor in the design of this project.
- Authorized to cut no more than 371 trees.
- Most of the tree impact is to protect exposed manholes and sewers and stream restoration.
- Second most is for work to repair the two stormwater outfalls.
- Tree-cutting **must be complete by March 31** to avoid impacts to federally protected bats.
- Native trees and vegetation will be replanted as part of mitigation



Construction Approach
Addresses Community Concerns

- Third-party air quality monitoring during CIPP work with data made available to the public
  - Air quality monitoring during the CIPP portion of construction will be conducted by an independent third party.
  - Details of air quality monitoring plan are under development and will include consultation with DOEE.
- Protection of Blue Plains Advanced WWTP confirmed
- Lining work will be completed beginning from the downstream end (near Broad Branch Road) and moving upstream

Near-Term Construction Schedule Update

- September 2021:
  - DC Water Issued Notice to Proceed to contractor for Soapstone project
- February 2022:
  - Site visits to stake out LOD and tag trees for removal, trimming, or protection
  - Signage installed, park is closed to visitors
  - Tree removals begin
- March 2022:
  - Tree removals continue
  - Initial detailed construction schedule complete*
- Spring 2022:
  - Access path construction
  - Stormwater outfall construction begins
- Summer 2022:
  - Sewer lining work begins in the Park

Schedule driver: Need to complete tree cutting by March 31

** Tentative timeline, dependent on contractor*

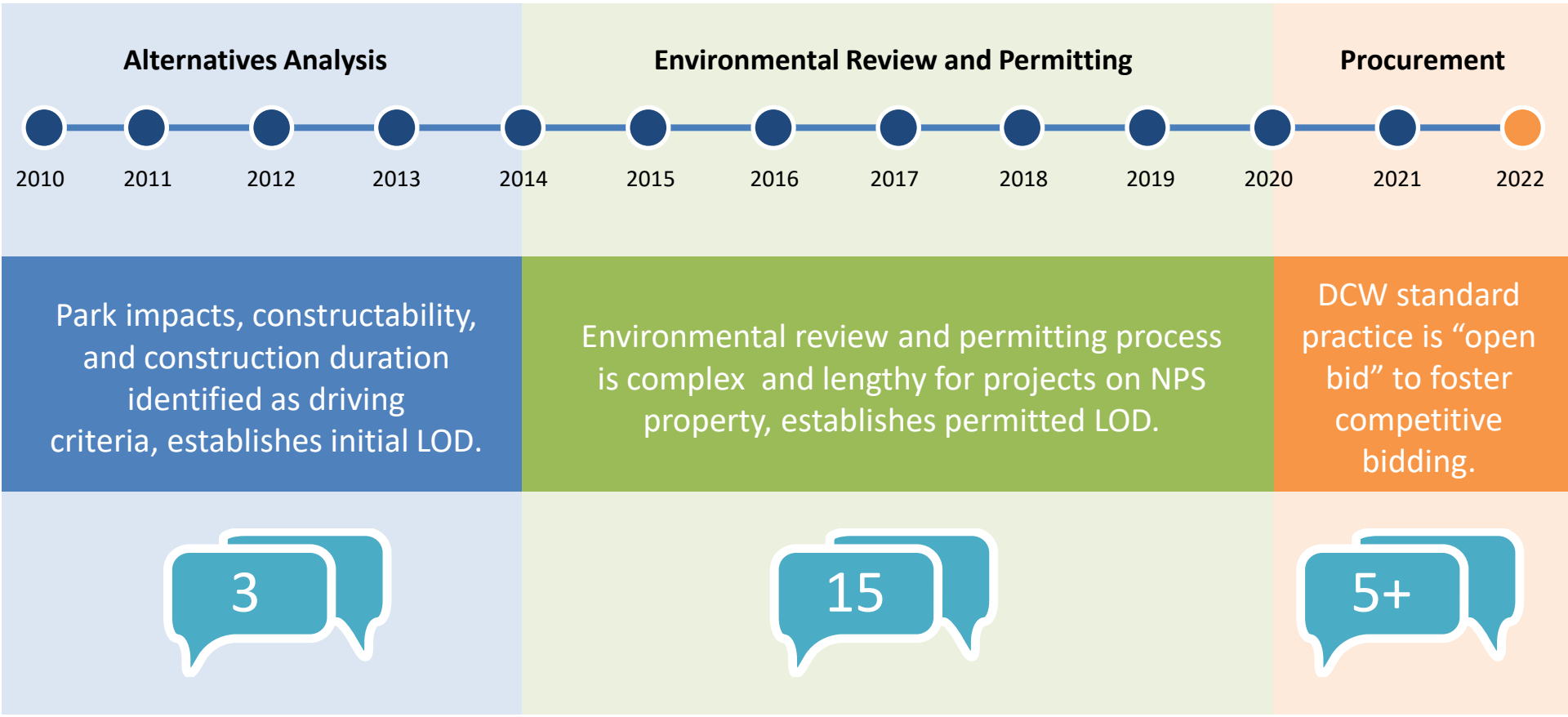
DC Water's Role During Construction

- DC Water retains inspection responsibility for construction from start through site restoration and clean up including adherence to work plan and specifications as well as quality control

- Contractor's safety plan is reviewed by DC Water's Safety Department who also oversee implementation

SOAPSTONE PROJECT PLANNING AND ALTERNATIVES ANALYSIS

Decision Making Process



23 Public Engagement Activities Since 2013

2010 Sewer System Condition Assessment

Alternatives Analysis 2011-2013 | Environmental Review and Permitting | Procurement

- Full evaluation of sewers and manholes within the Park
- CCTV inspection reveals sewer pipe deficiencies and leaks
- Exposed sewer pipes and manholes at risk of damage and failure
- Sanitary manhole inspects show deterioration and water infiltration
- Stormwater outfalls need repair to comply with District municipal separate storm sewer system (MS4) Permit
- Progression of deterioration since 2010 assessment

Extensive Water Infiltration

At-risk Sewer Pipe Crossing Stream

Manhole Exposed by Erosive Stream Channel

2010 Sewer System and Stormwater Outfall Condition Assessment Recommendations

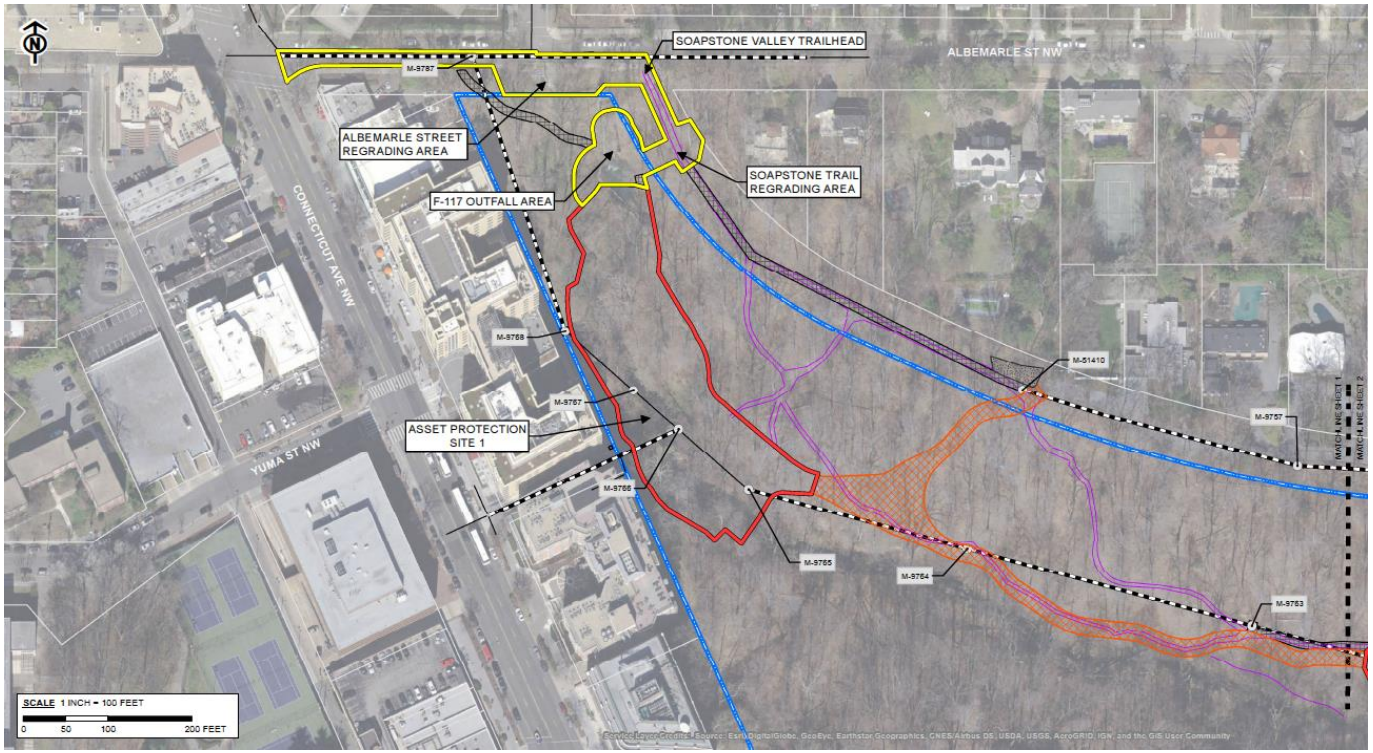
Alternatives Analysis 2011-2013 | Environmental Review and Permitting | Procurement

- Protect exposed sewers and manholes within and adjacent to the creek to the extent practicable
- Repair 2 stormwater outfalls per MS4 permit
- Repair, Replace or Rehabilitate
  - ~6,200 feet of sanitary pipe
  - ~22 Sanitary manholes

Stormwater Outfall Repair

Alternatives Analysis 2011-2013 | Environmental Review and Permitting | Procurement

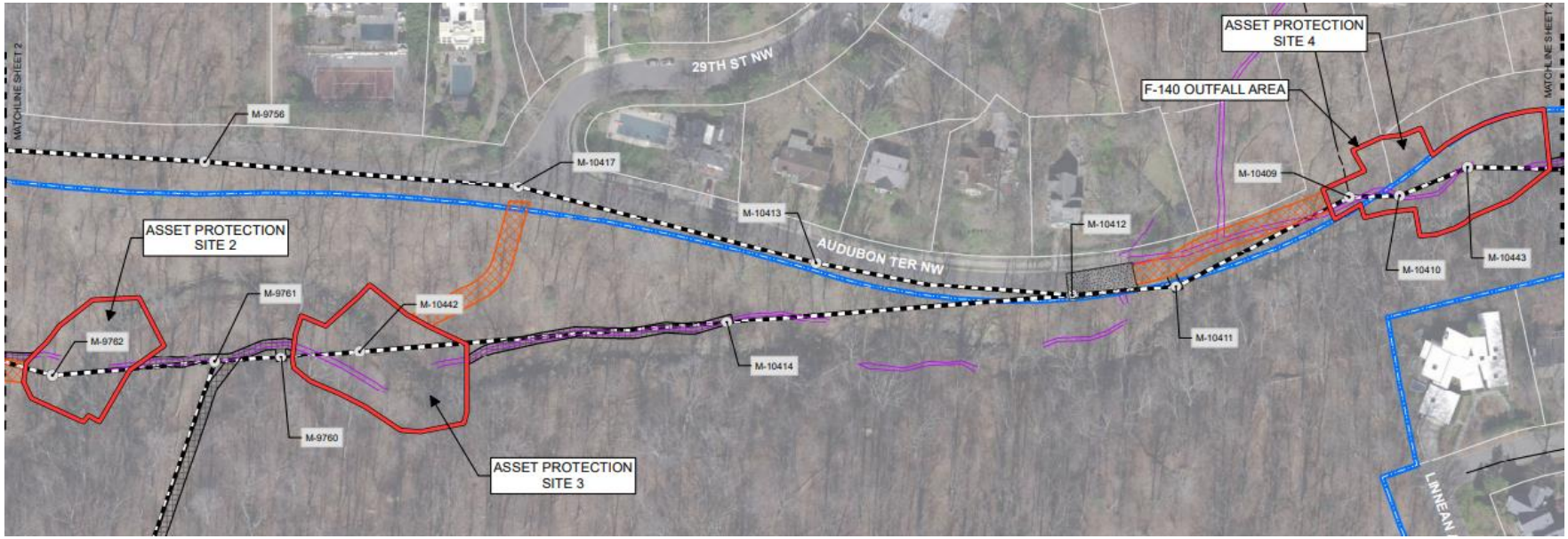
- Repair stormwater outfall to comply with MS4 Permit
- Second largest driver of LOD to access outfall



Protecting Exposed Manholes and Sewers and Restore the Creek

Alternatives Analysis 2011-2013 | Environmental Review and Permitting | Procurement

- Protect exposed sewers and manholes within and adjacent to the creek to the extent practicable
- Largest driver for LOD for access



Sewer Repair Alternatives Analysis

Alternatives Analysis 2011-2013 | Environmental Review and Permitting | Procurement

	Alternative	Reason For Elimination or Advancement
✓	CIPP Trenchless	- Compatible with existing site conditions - Repairs the sewers - Little additional impact to the park beyond stormwater and sewer and manhole protection work
X	Trenchless Pipe Relocation along Audubon Terrace NW or Albemarle St NW	- Requires pump stations (Albemarle St) - Requires extensive geotechnical borings (Audubon Terrance) - Requires aerial sewer pipe crossing, sewer remains at risk
X	Open Cut Pipe Replacement (Same Location and New Location in Park)	- Large footprint (including open cut within the creek) - Significant ground disturbance - Construction infeasible in certain locations
X	Trenchless Construction in Same Alignment	- Infeasible from engineering standpoint (shallow depth of sewer, pipe crossings would require excavation)

Sewer Repair Alternatives Analysis (continued)

Alternatives Analysis 2011-2013 | Environmental Review and Permitting | Procurement

	Alternative	Reason For Elimination or Advancement
X	Trenchless Construction in New Alignment	- Requires aerial sewer pipe crossing, sewer remains at risk - Dependent on extensive soil investigations - Incompatible with varying soil profiles anticipated to be in the park
X	Installation of a Siphon	- Difficult to maintain, subject to frequent blockages - Design criteria for sewer flow rates and velocities incompatible with Soapstone sewers
X	Other Trenchless Rehabilitation Methods (i.e., Spiral Wound Pipe, Fold-and-form, Horizontal Directional Drilling (HDD), Pipe Bursting, Pipe Ramming)	- Does not provide structural rehabilitation (Spiral Wound Pipe) - Incompatible with sewer pipe size in Soapstone (Fold-and-Form) - Not appropriate for gravity-fed sewers (HDD) - Incompatible with exposed sewers (Pipe Bursting) - Difficult to maneuver in varying soil conditions (Pipe Ramming)
X	Reroute Alternative	- Open cut installation of new sewer pipes - Large footprint and ground disturbance - Requires pump stations and permanent vehicular access - Only removes partial flow; remaining sewers would require rehabilitation

Overview of Cured-in-Place Pipe (CIPP)

- CIPP is a type of trenchless technology that involves insertion of a **tube liner** containing resin inside the existing pipe.
- Following insertion, the **tube liner is cured** in place becoming a structural entity.
- Three curing installation methods: water cure, steam cure, Ultraviolet (UV) cure
- CIPP Factors:
  - **Liner Material**
    - Determines shape and thickness of resin
    - Can vary according to curing method
  - **Liner Resin**
    - VOCs are function of the resin
  - **Curing**
    - Emissions are function of curing method and resin
    - Different equipment and access requirements

Animation Courtesy of IPR Solutions

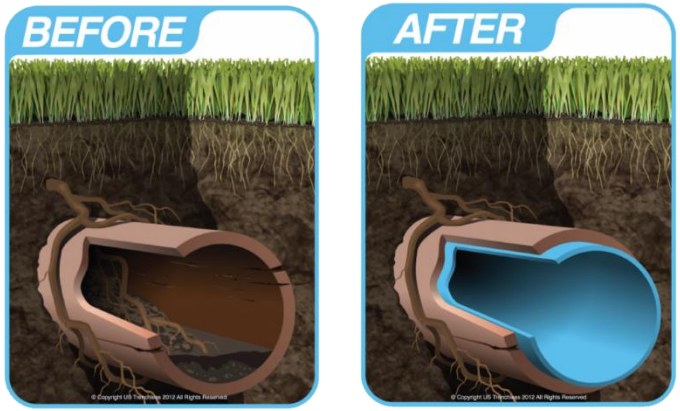
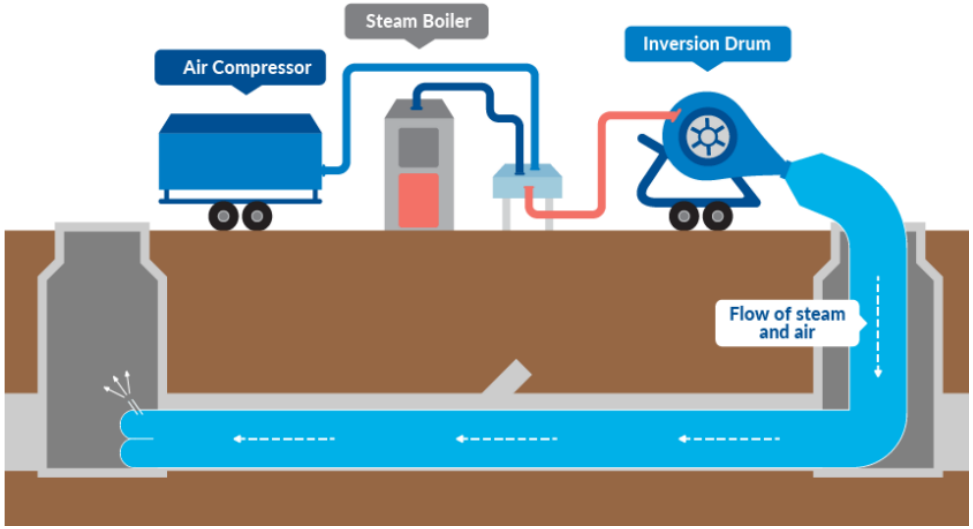


Figure Courtesy of US Trenchless

Steam Cure Installation Method

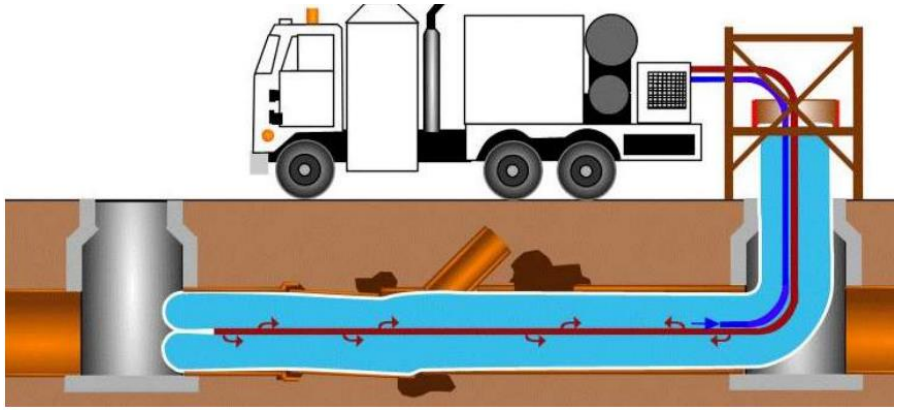
Alternatives Analysis 2011-2013 | Environmental Review and Permitting | Procurement

- Liner pulled or inverted using pressurized air
- Cured with steam under pressure
- Temporary release of steam only during curing
- Cure time 1-2 hours
- Can line 800 feet – 1000 feet at one time, can line up to 45-degree bend
- DC Water requires 15-foot barrier around manholes and 8-foot stack for vented steam to minimize worker exposure



Water Cure Installation Method

- Liner inverted using water
- Cured with hot water
- Cure time 4-8 hours depending on temperature and other conditions
- Controlled release of water to sanitary sewer and onto WWTP
- Can line 1,000 feet – 2,000 feet at one time, can line up to 45-degree bend
- Requires temporary structures to create water column for liner installation

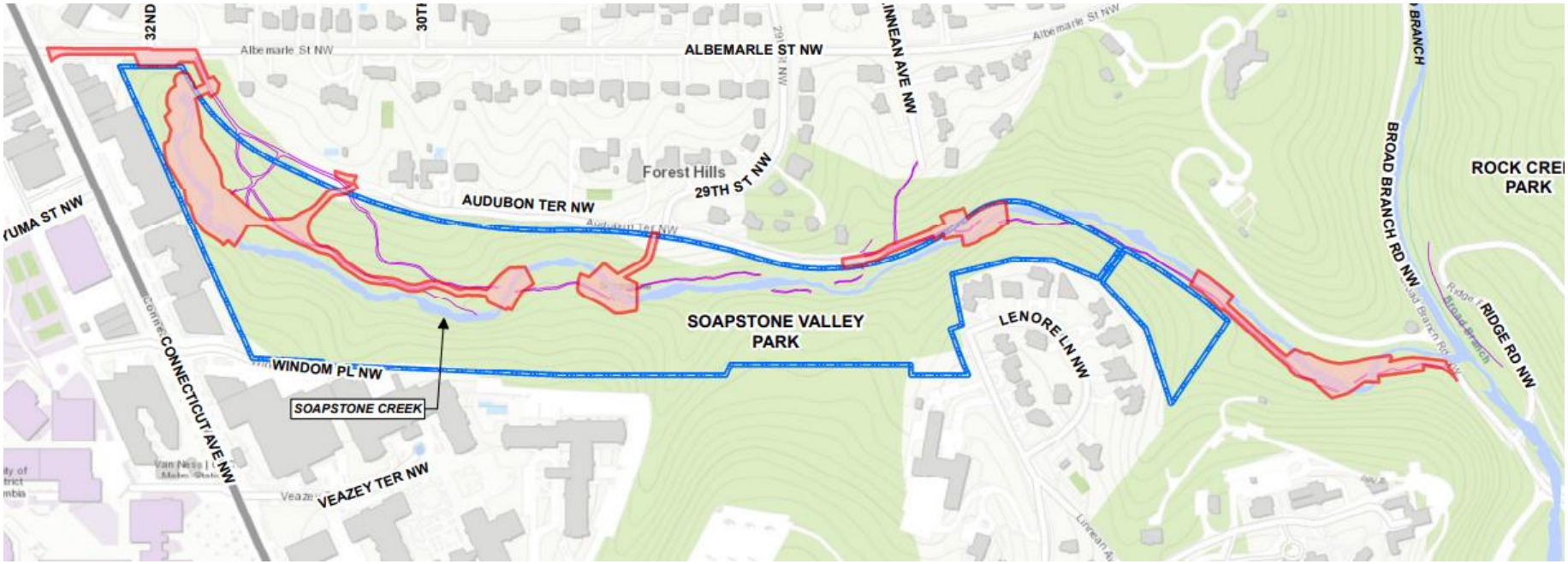


Ultraviolet (UV) Installation Method

Alternatives Analysis 2011-2013 | Environmental Review and Permitting | Procurement

- First US install in 2007; more frequent use in last 4-5 years
- Fiberglass liner that is pulled via a winch from downstream manhole
- Air is used to invert the liner, CCTV to inspect the liner, UV light to cure the liner
- Process requires no water for curing, but still needed for cleaning
- Limited on installation lengths and bends in pipes
- No steam plume, but odor could still be detected

Overview: Final Approved LOD



- Protection of exposed sewers/manholes and stream restoration is the largest factor for LOD and number of impacted trees
- Stormwater outfall repair is the second largest driver for LOD extents and number of impacted trees
- CIPP work can be done within the established LOD
- LOD does not include access to all manholes

Why Hot Water Curing Method for Soapstone?

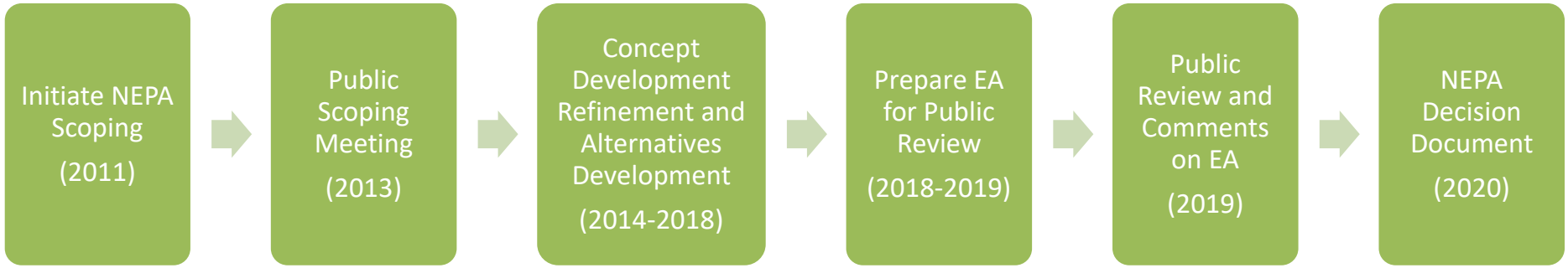
Pro	Con
• There are no intentional emissions with hot water curing • Can be completed within approved Limits of Disturbance (LOD)	• Longer construction duration • Additional equipment required

ENVIRONMENTAL REVIEW AND PERMITTING

NEPA Overview

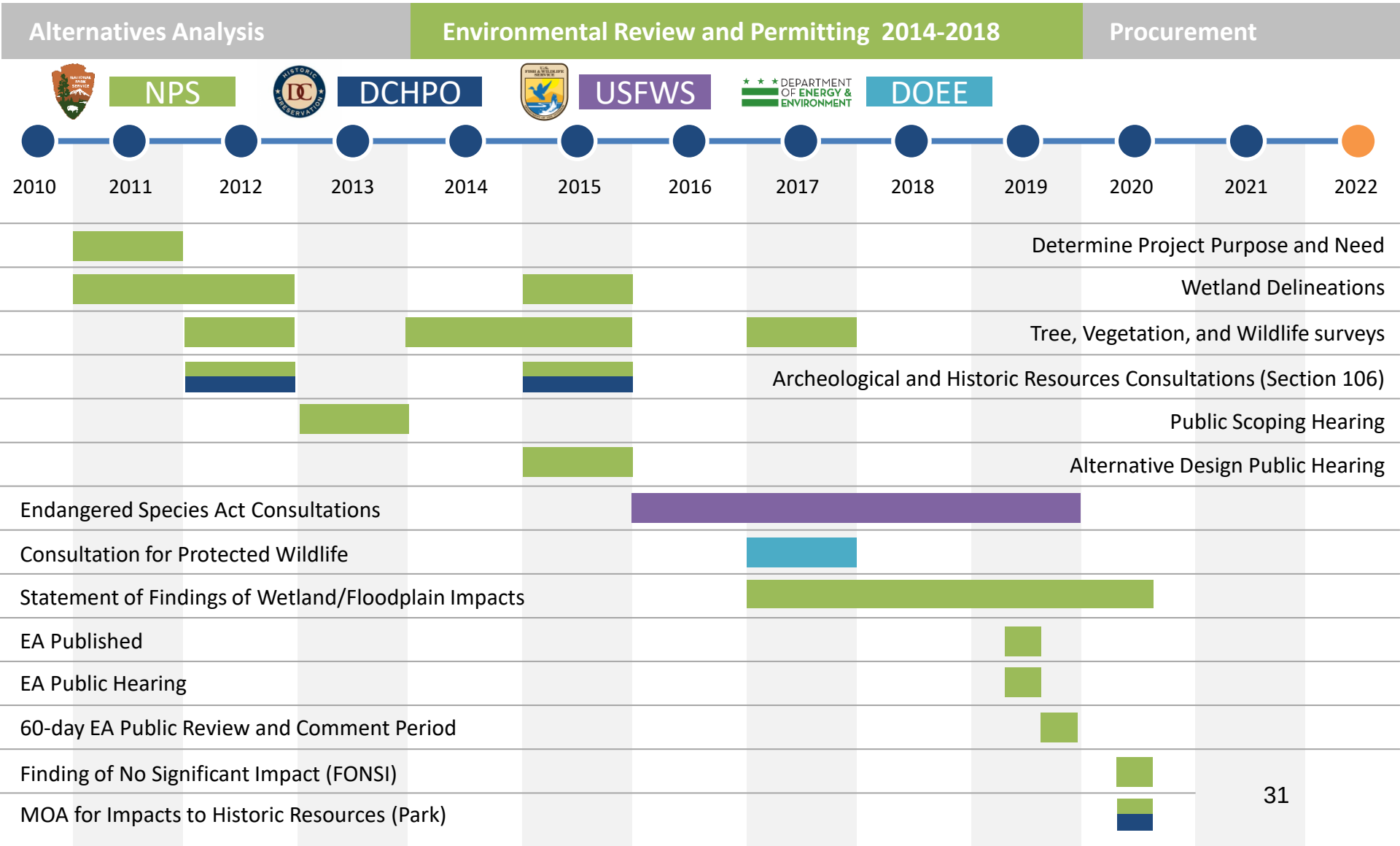
Alternatives Analysis | **Environmental Review and Permitting 2014-2018** | Procurement

- National Environmental Policy Act (NEPA) requires federal agencies to assess environmental effects of major federal actions (funding, federal property, others)
- Each federal agency establishes guidelines for NEPA implementation
- National Parks Service (NPS) was Lead Agency for preparation of the Soapstone Environmental Assessment (EA)
- The purpose of an EA is to provide a concise public document to help officials make informed decisions accounting for the environmental consequences



Overview of NEPA Process

Soapstone Environmental Review Timeline



Soapstone Environmental Assessment

Alternatives Analysis | **Environmental Review and Permitting 2014-2018** | Procurement

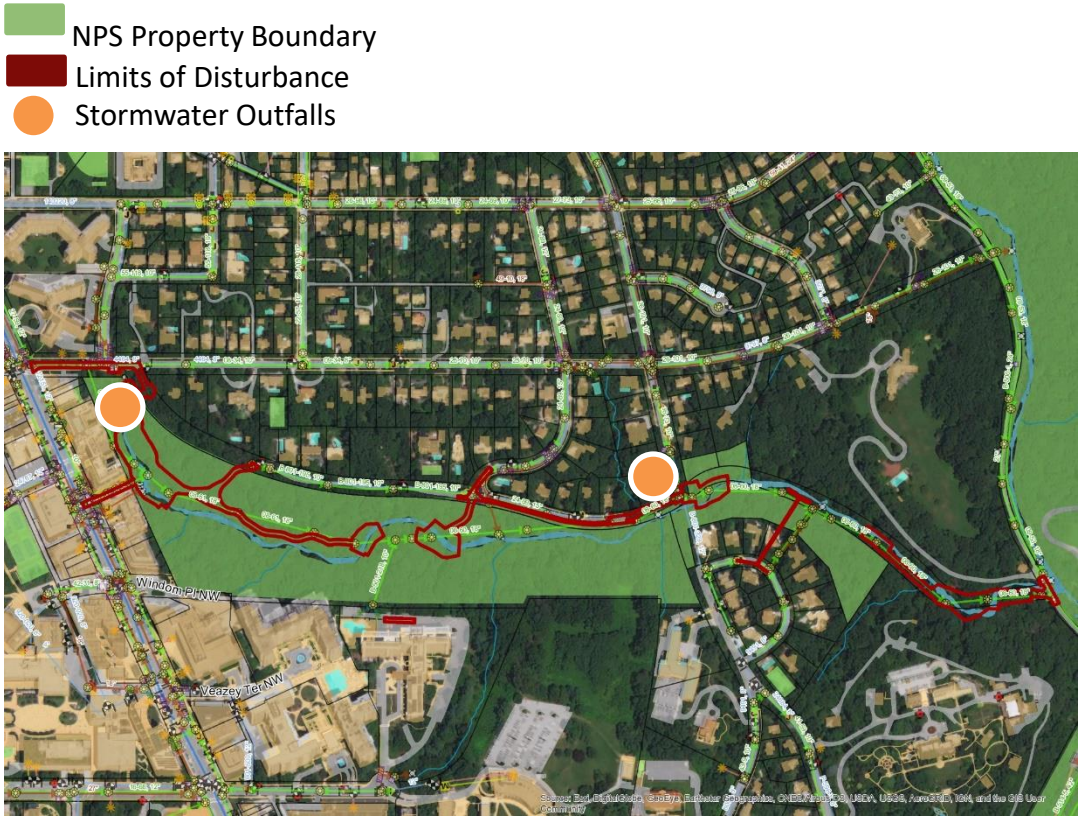
- EA prepared in accordance with:
  - 40 CFR 1500-1508 - federal regulations governing NEPA compliance
  - NPS Director's Order 12 (Conservation Planning, Environmental Impact Analysis, and Decision-Making)
  - NPS NEPA Handbook
- The EA evaluated two alternatives:
  - No Action Alternative
  - CIPP Trenchless Alternative
    - Did not specify the CIPP cure method
    - No CIPP technology was excluded
    - Questions received on technology during public review confirmed all technologies would be allowed during bid phase
  - Other alternatives evaluated and dismissed (EA Appendix D)

- EA evaluated proposed project compliance with applicable local and federal regulations and per NPS direction
  - NPS Management Policies 2006
  - NPS Director's Order 12 *Conservation Planning, Environmental Impact Analysis, and Decision-Making*
  - NPS Director's Order 14 *Resource Damage Assessment and Restoration*
  - NPS Director's Order 77-1 *Wetland Protection (Statement of Findings)*
  - NPS Director's Order 77-2 *Floodplain Management (Statement of Findings)*
  - Executive Order 11990 *Protection of Wetlands*
  - Section 106 of the National Historic Preservation Act
  - Section 7 of the Endangered Species Act
  - Clean Water Act (Section 303(d)
  - 401, 404, 501)
  - DC Regulations

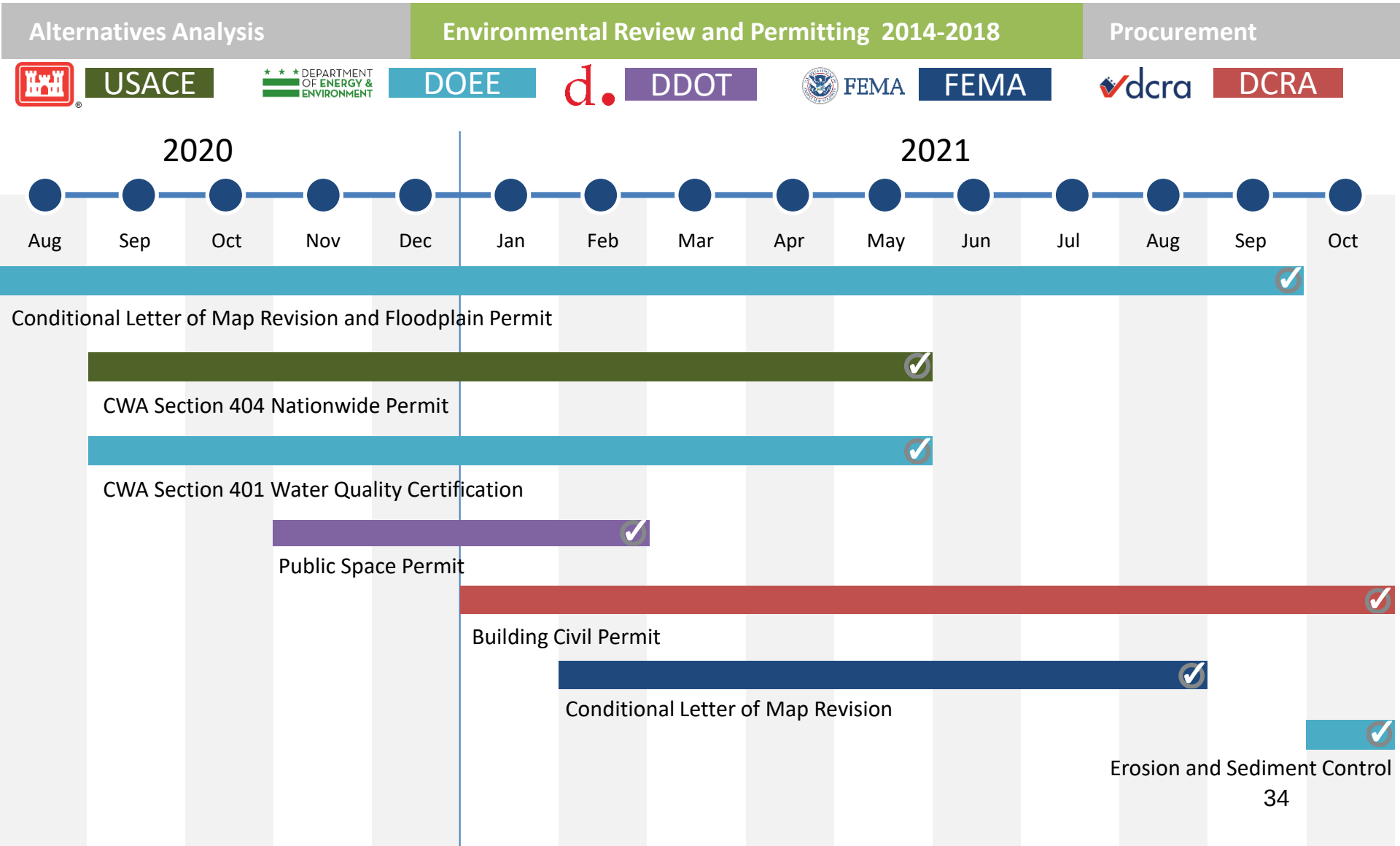
Environmental Assessment Establishes Limits of Disturbance

Alternatives Analysis 2011-2013 | Environmental Review and Permitting | Procurement

- Iterative design process with NPS sets approved LOD
- Smallest LOD within which project can be feasibly constructed
- Any variation to LOD risks reopening NEPA process



Soapstone Permitting Review and Approval Timeline



Soapstone Construction Phase Permits

Agency	Department	Permit / Approval
National Park Service (NPS)	Rock Creek Park Division	• Special Use Permits (SUP) • Right of Way Permit
Federal Emergency Management Agency (FEMA)	National Flood Insurance Program	• Letter of Map Revision
District Department of Energy & Environment (DOEE)	Watershed Protection Division	• Letter of Map Revision
	Fisheries and Wildlife Division	• Time of Year Restriction Waiver for In-Water Work (as needed)
District Department of Transportation (DDOT)	Public Space Regulation Division (PSRD)	• Occupancy Permit • Public Inconvenience Permit • Construction and Excavation Permit Steel Plate Permit (TBD) • Oversize / Commercial Vehicle Permit • Loading Permit (TBD) • Manhole Access Permit (TBD)
	Urban Forestry Administration	• Public Space Tree Permit • Special Tree Removal (TBD)
District Department of Consumer and Regulatory Affairs (DCRA)	Permit Center	• After Hours Permit (TBD) • Excavation Permit
DC Water	Compliance Program	• Fire Hydrant Use Permit

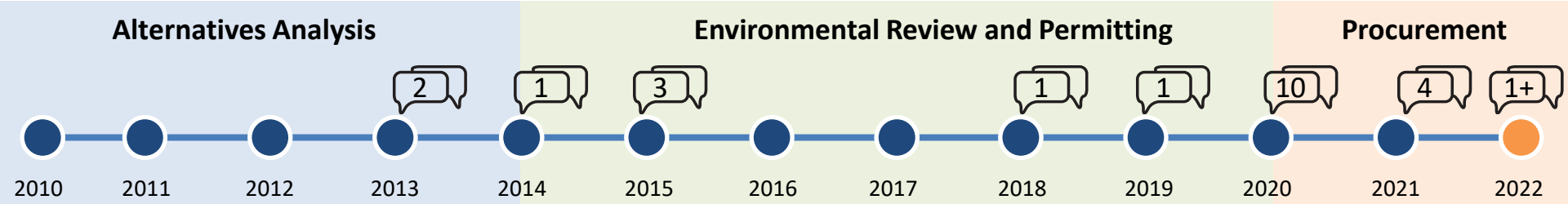
PROCUREMENT

Procurement

- DC Water specification for CIPP work is nationally recognized among utility peers for being comprehensive and innovative.
- In addition to technology, the specification covers experience with similar work, and the proposal has to include the safety record of the bidders as part of the evaluation.
- Bid documents structured to incentivize contractor to minimize tree removal
- DC Water lays out constraints and allows the contractor to select a suitable technology within the contractual constraints
- Prior to start of CIPP work, contractor is required to develop and have a site safety plan approved by DC Water.
- In addition, DC Water will have an independent contractor conduct air quality monitoring.
- Air quality monitoring data obtained during Soapstone project will inform future CIPP work specifications.

Decision Making Process

23 Public Engagement Activities Since 2013



Repair Options:

- Open Cut
- Trenchless Construction
- Re-route
- Siphon
- Other Trenchless Rehab
- Cured-in-place (CIPP Trenchless

CIPP Trenchless

Park impacts, constructability, and construction duration identified as driving criteria, establishes initial LOD.

Iterative Design Process with NPS

EA Publication, Public Review, NEPA completion

Environmental review and permitting process is complex and lengthy for projects on NPS property, establishes permitted LOD.

Open Request for Qualifications on CIPP Trenchless Method

RFP to Qualified Firms

DCW standard practice is “open bid” to foster competitive bidding.

SOAPSTONE PROJECT
WHERE ARE WE NOW

Where We Are

- No-VOC, styrene-free resin
- Water curing process
- Third party air quality monitoring
- No additional trees
- Fits within approved Limits of Disturbance in the EA
- The need to complete this project is urgent
- Tree removal must be complete before March 31 due to federally protected bats

Thank you

- This has been a lengthy, complex process
- Community participation and patience are vital contributions to protecting public health and the environment

Upper Watts Branch located in Rockville, MD.

Q&A