



Remedial Design and Stakeholder Engagement, South River Remedy

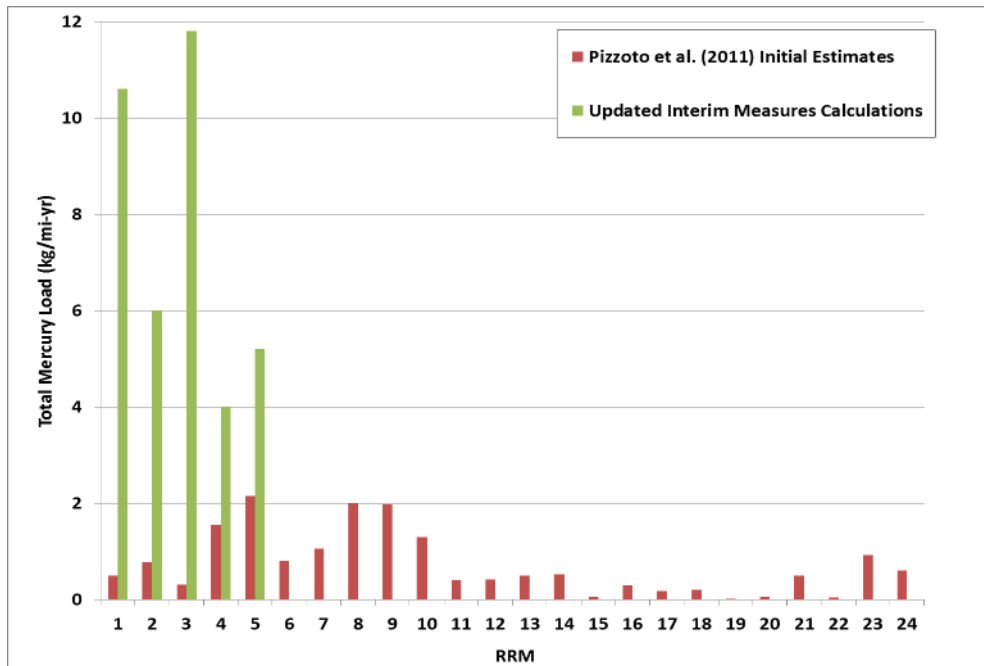
Clay Patmont

October 2015



Three Overarching South River Remedy Objectives

1. Reduce mercury loading
2. Improve habitat
3. Minimize disruption

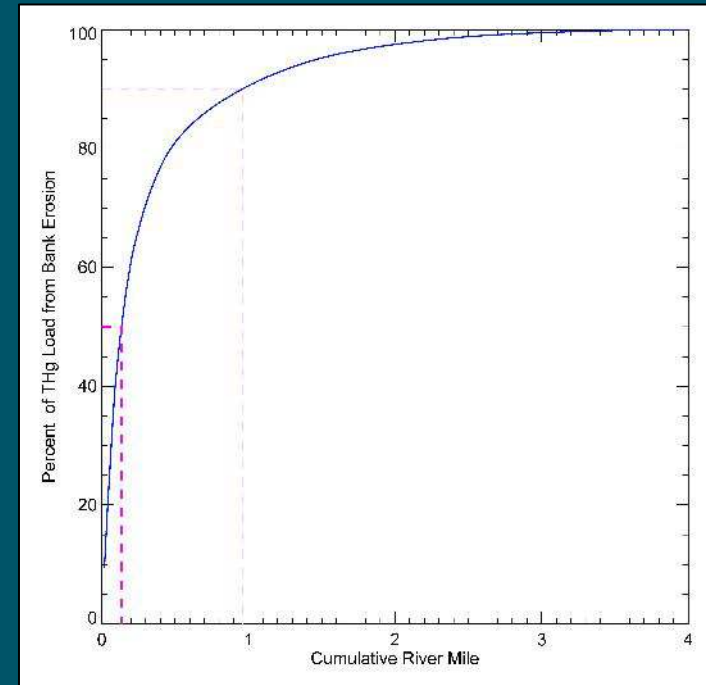


Initial Bank Management Areas (BMAs) - 2014



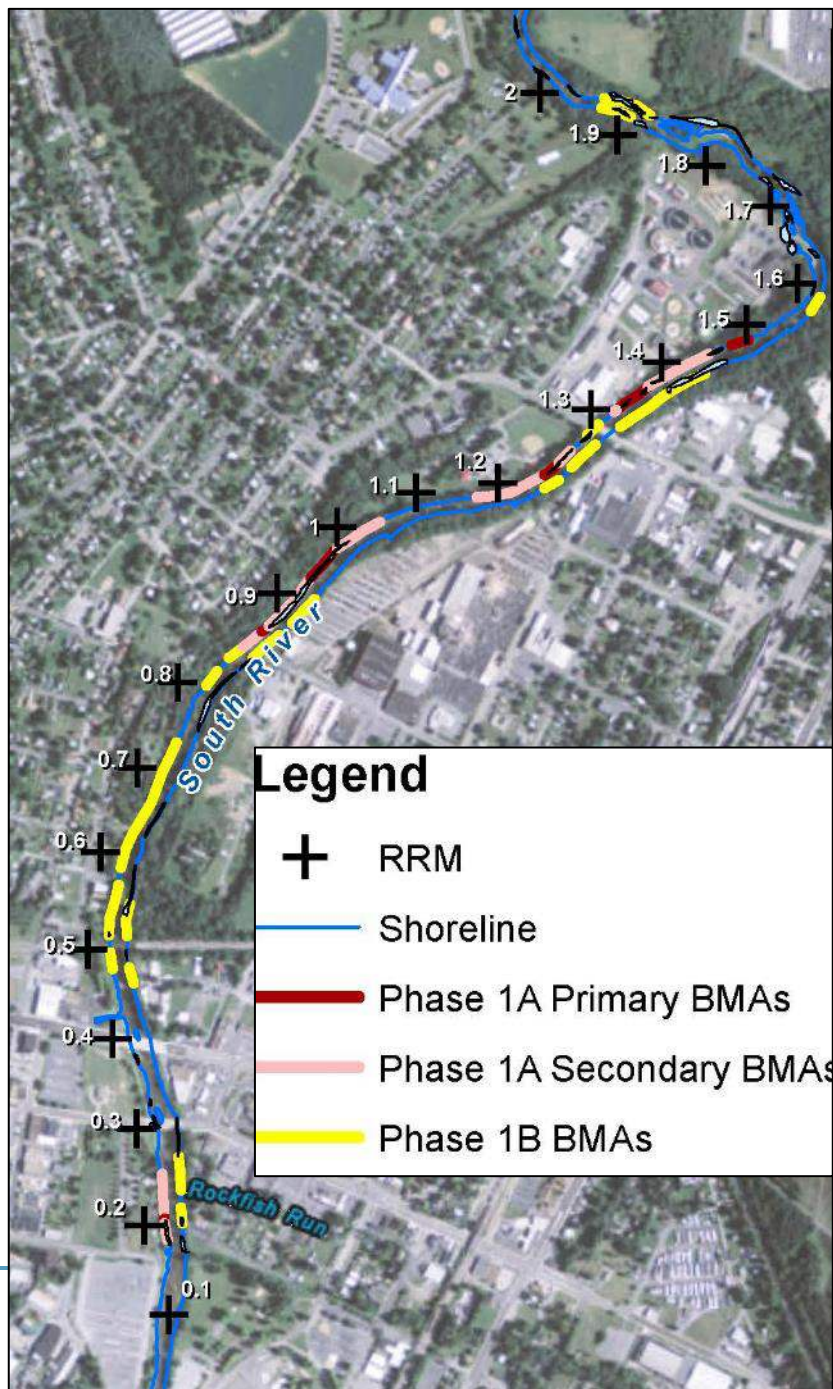
Updated Mercury Loading from BMAs – 2015

- More detailed loading analyses
- BMA definitions:
 - **Primary** BMAs (contribute 50% of cumulative T-Hg bank load)
 - Approximately 5% of bank length
 - **Secondary** BMAs (contribute an additional 40% of T-Hg bank load)
 - An additional 20% of bank length
- Phase 1: RRM 0 to 2
 - Phase 1A: most City-owned BMAs
 - Facilitates stakeholder input



Phase 1A Bank Management Areas (RRM 0 to 2)

- Localized Primary BMAs
 - Constitution Park (1 area)
 - North Park (3 areas)
 - Wastewater Plant (2 areas)
- Broader Secondary BMAs
- Different habitat conditions in BMAs
 - Assessed with stakeholders using detailed surveys

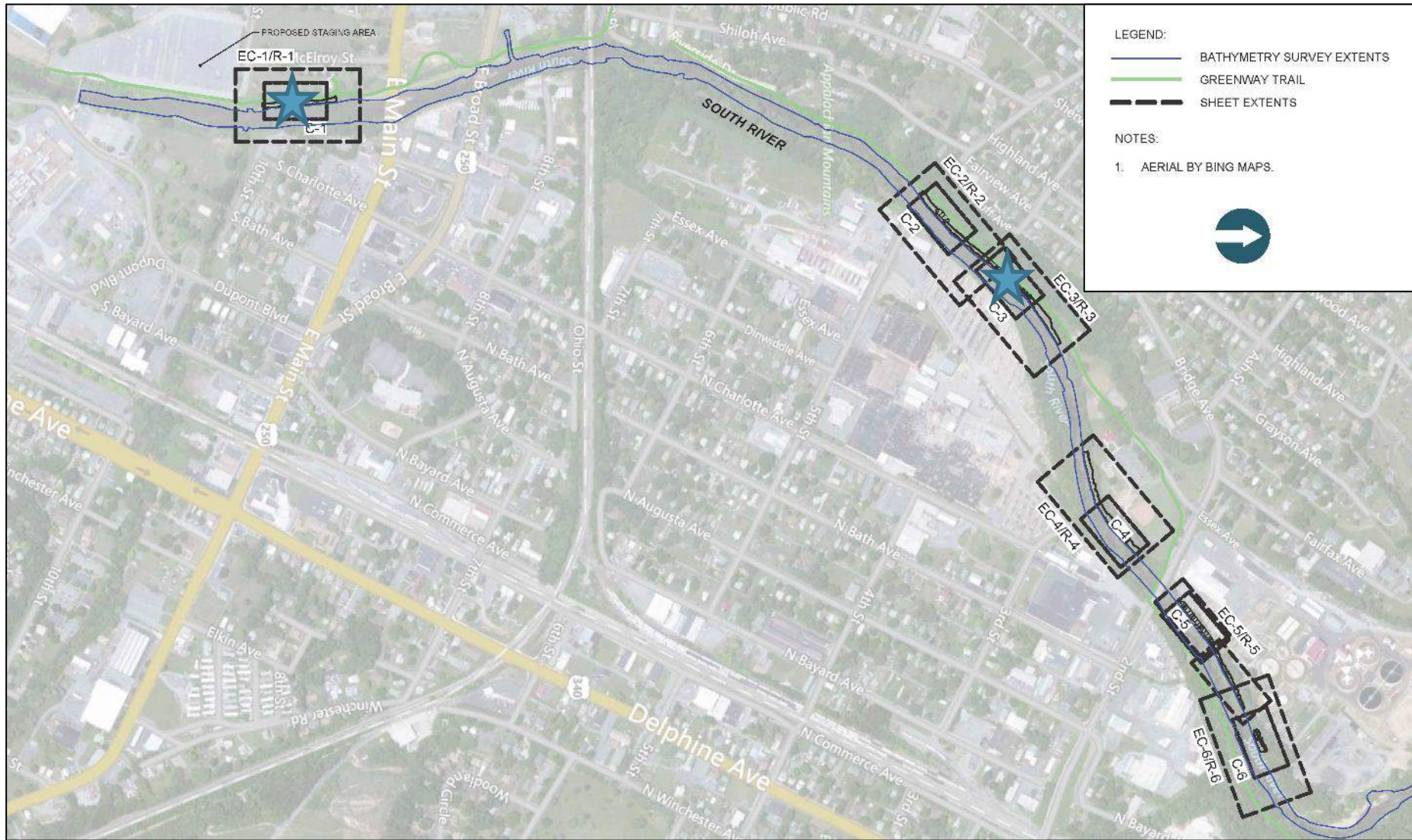


Bank Remedy Concepts

- Mercury remediation remedies
 - Removal and disposal
 - Structural stabilization
 - Enhanced vegetative stabilization
- Habitat remedies
 - Enhancement
 - Avoidance
 - Replacement
- Location-specific preliminary designs developed with stakeholder engagement



Phase 1A BMA Preliminary Design Areas

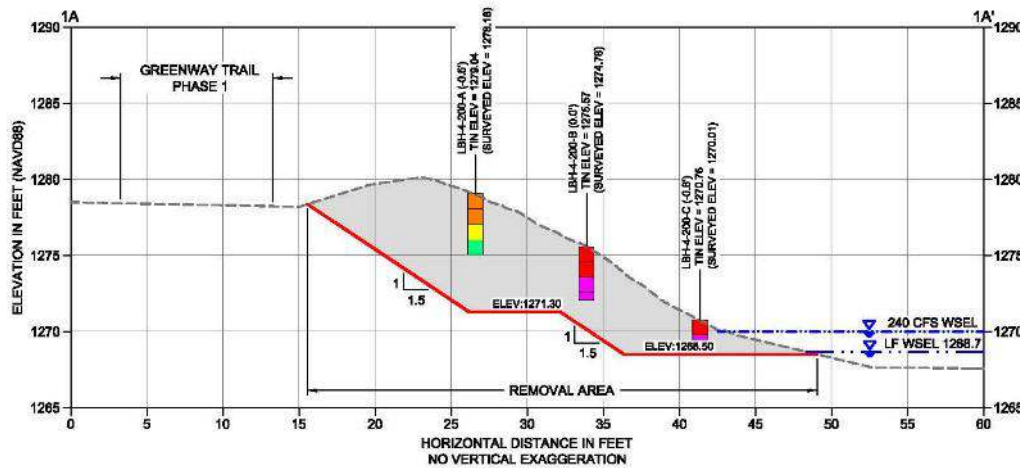


Constitution Park

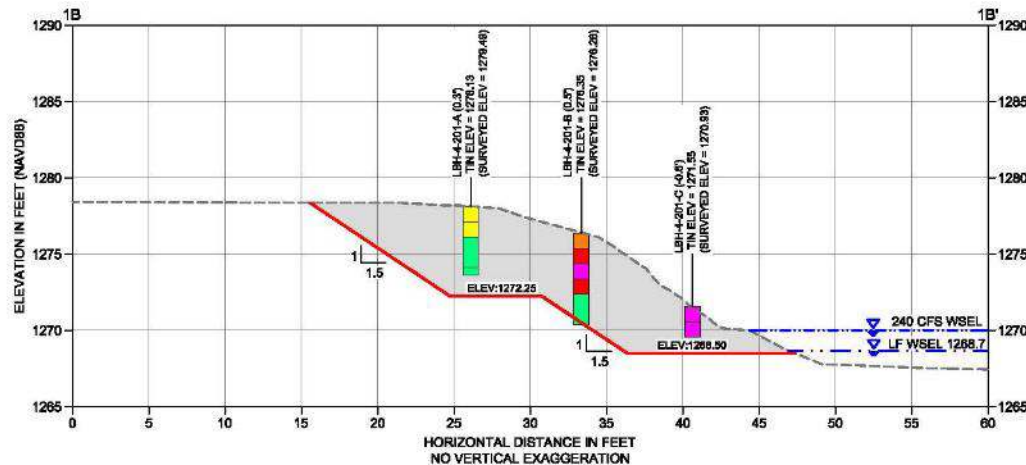
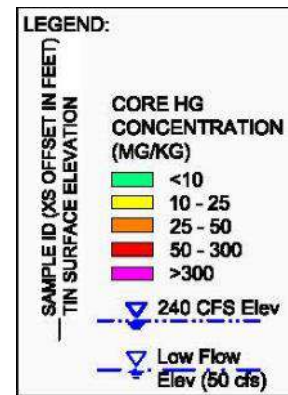


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Constitution Park Primary BMA Removal Prism

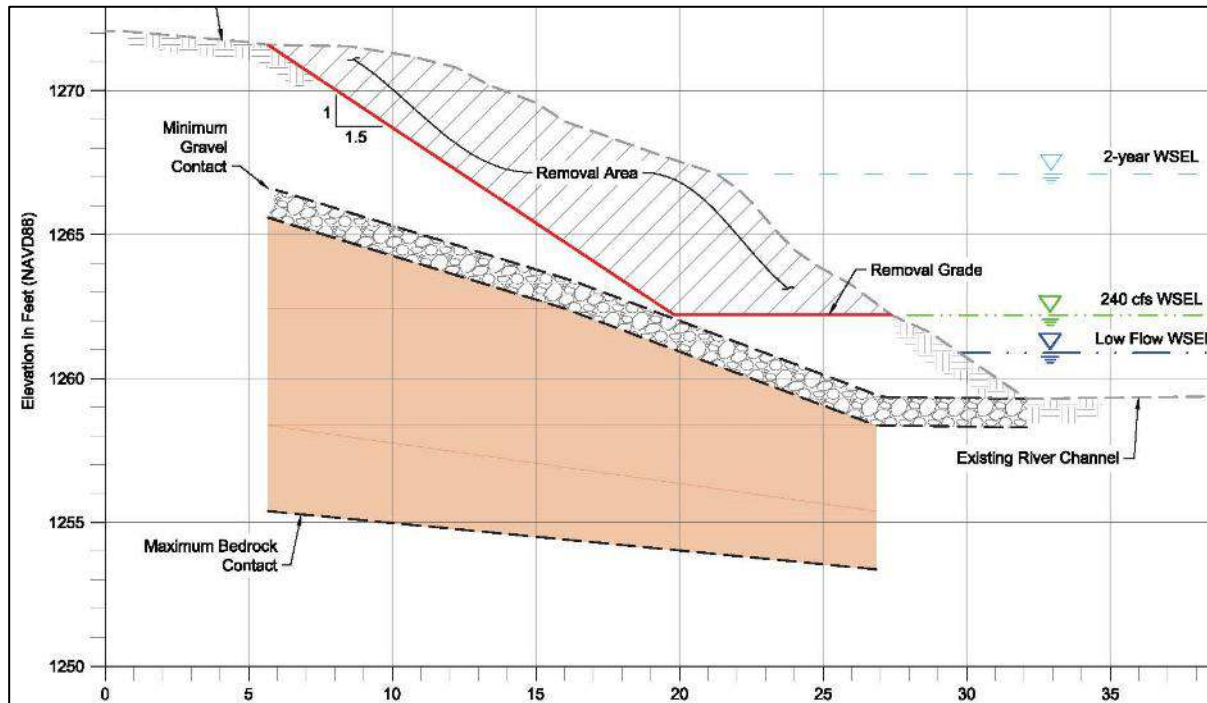


1A SECTION - CONSTITUTION PARK
C-1 SCALE: 1" = 5'



1B SECTION - CONSTITUTION PARK
C-1 SCALE: 1" = 5'

Typical Primary BMA Removal Section

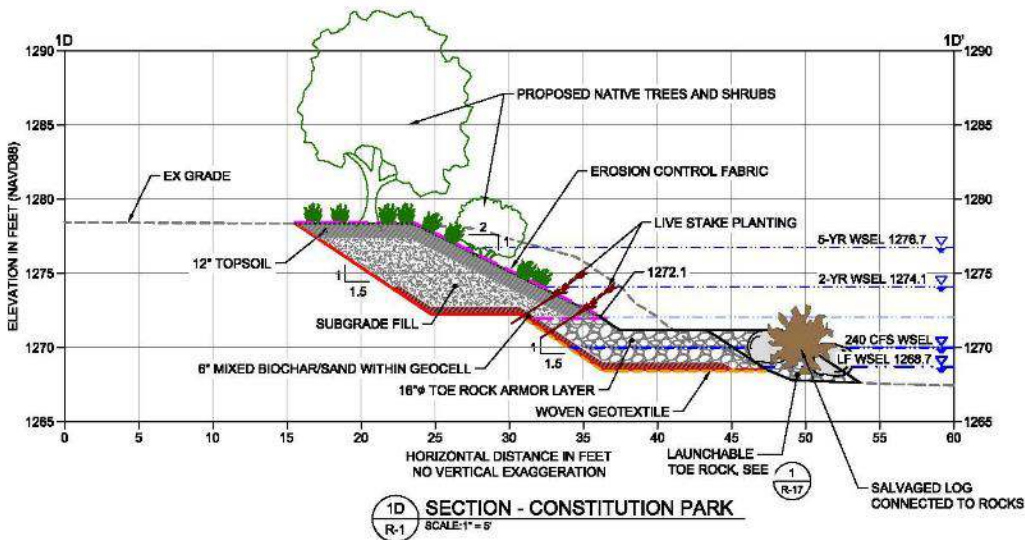
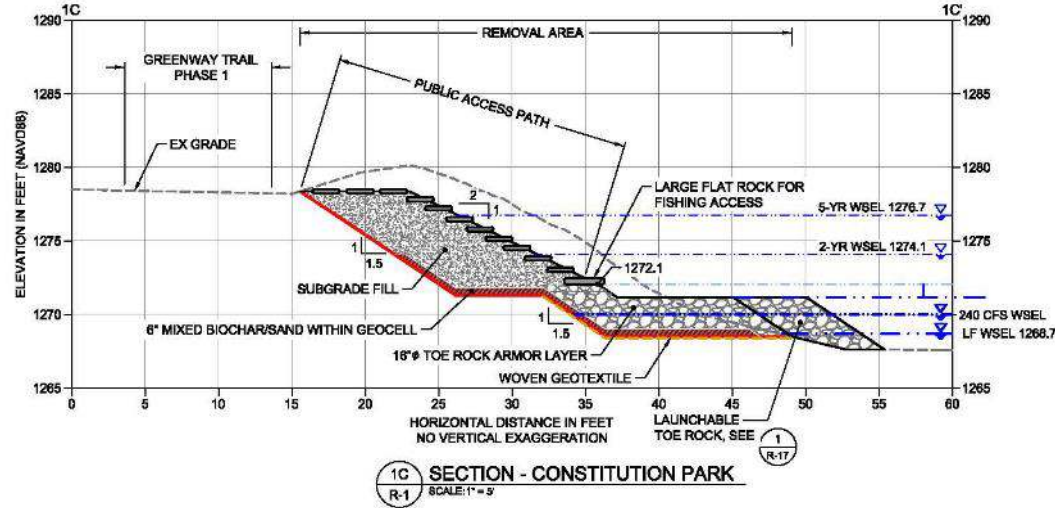


LEGEND:

---	Existing Grade	---	Low Flow Water Surface Elevation
---	Removal Grade	---	Removal Area
---	2-year Water Surface Elevation	---	Typical Depth of Bedrock
---	240 cfs Water Surface Elevation	---	Typical Depth of Basal Gravel/Sand

- Excavations unlikely to extend to bedrock in most Primary BMAs
- Opportunistic placement of biochar in lower bank, but above basal gravel

Constitution Park Primary BMA Restoration



- Integrate public access path
- Enhance existing low ecological value riparian and bank habitat

LEGEND:

- EXISTING GRADE
- POST REMOVAL SURFACE
- - - - - ROCK TOE UPPER LIMIT

SHORT ST

EX WATER LINE

EX WATER LINE (TO BE VERIFIED)

PROPERTY BOUNDARY APPROXIMATED FROM 1986 SURVEY AND WILL BE RESURVEYED BY A LICENSED SURVEYOR

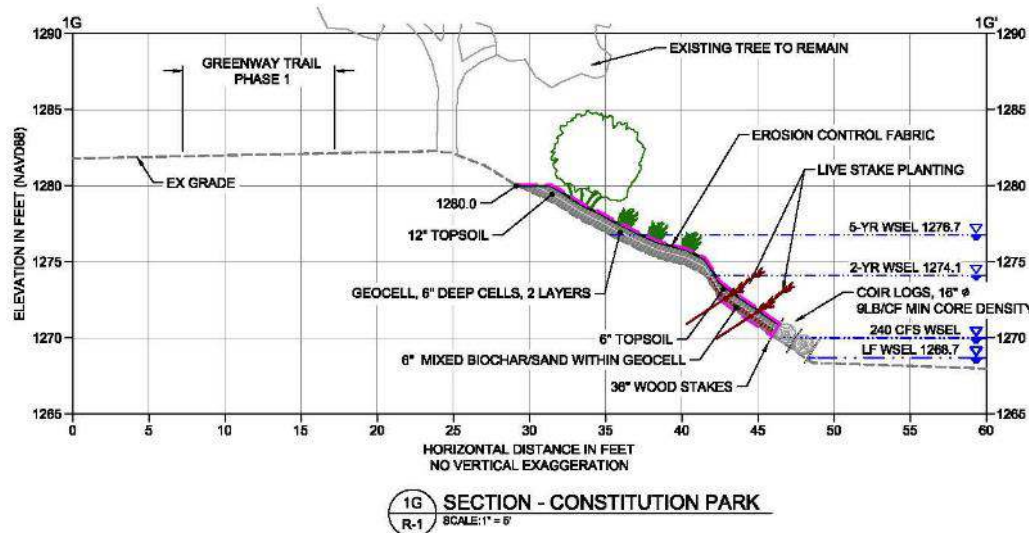
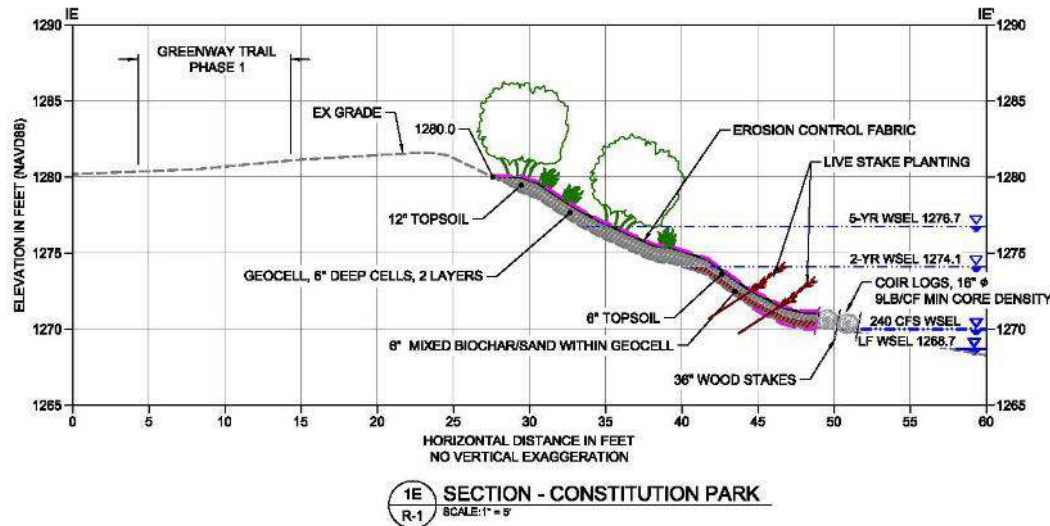
S. RIVER GREENWAY TRAIL, PHASE 1

EX GAS LINE

LEGEND

- 1250— EXISTING CONTOURS (1 FT INTERVAL)
- BATHYMETRY SURVEY EXTENTS
- PARCEL LINE
- BL12.0 EXISTING TREE TO REMAIN (SPECIES, DBH)
- +0.20 RELATIVE RIVER MILE
- GREENWAY TRAIL
- PROPOSED ACCESS ROAD
- TOE ROCK PLACEMENT
- RIPARIAN LIVE STAKING
- NATIVE UPLAND PLANTING
- PUBLIC ACCESS

Constitution Park Secondary BMA Restoration



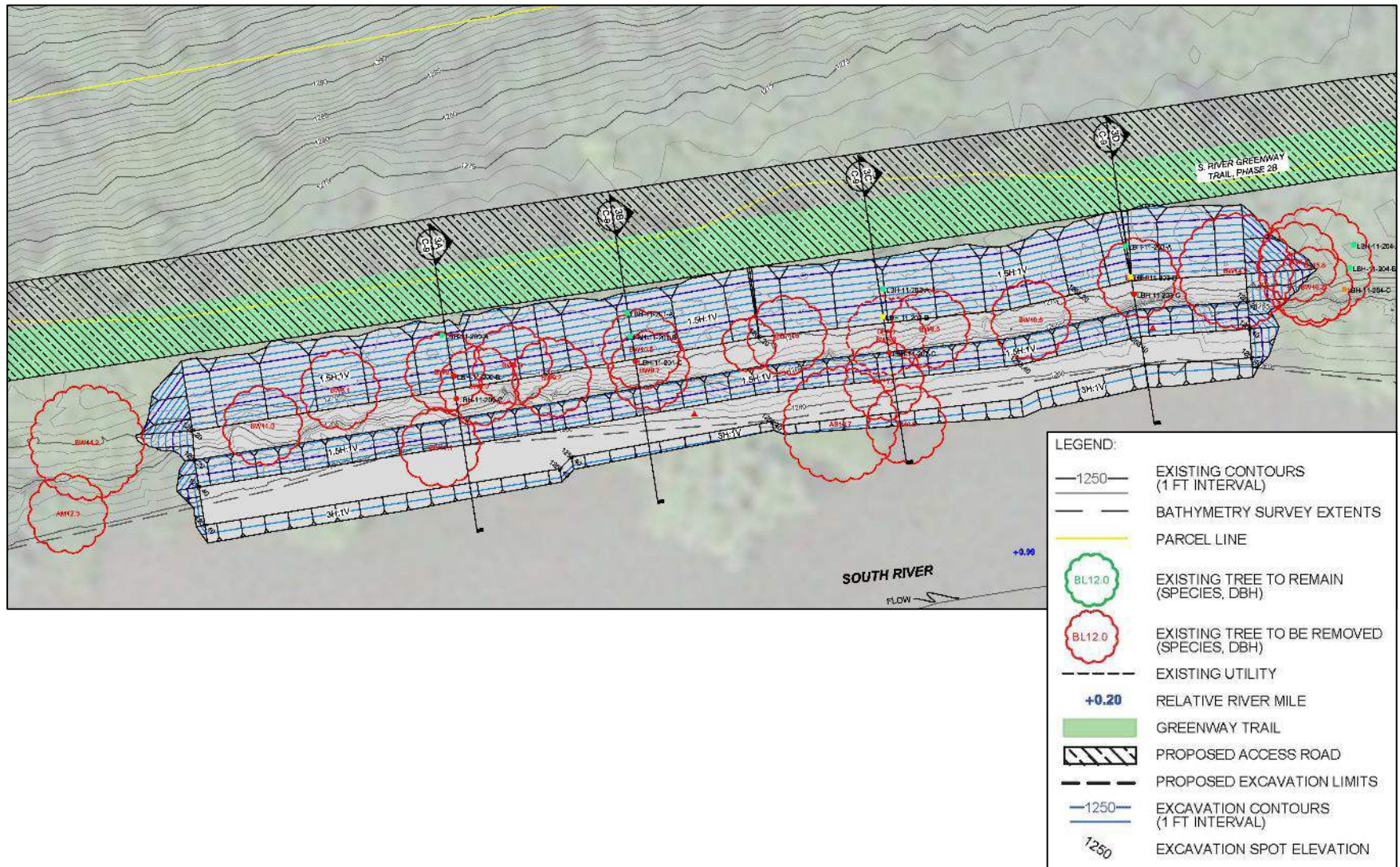
- Protect existing large trees
- Enhance existing low ecological value riparian and bank habitat



North Park B

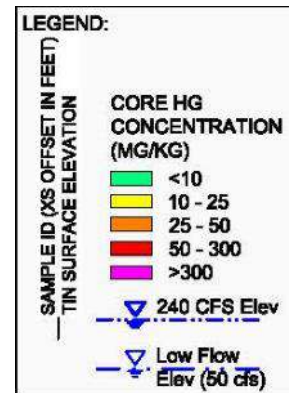
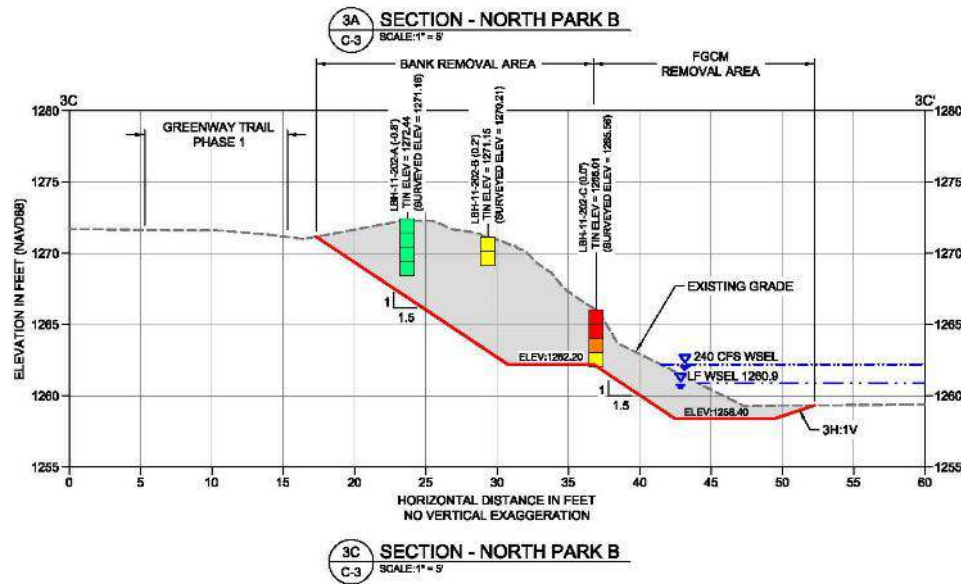
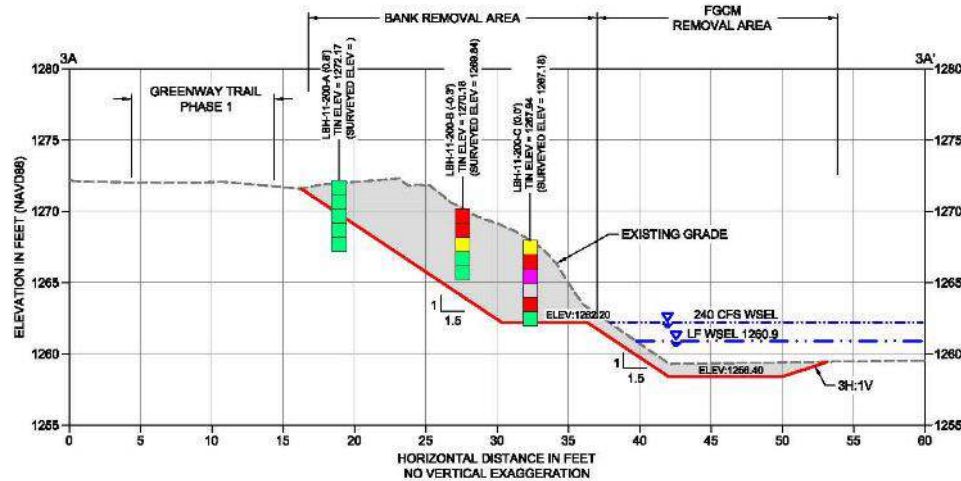


North Park B Primary BMA Preliminary Design



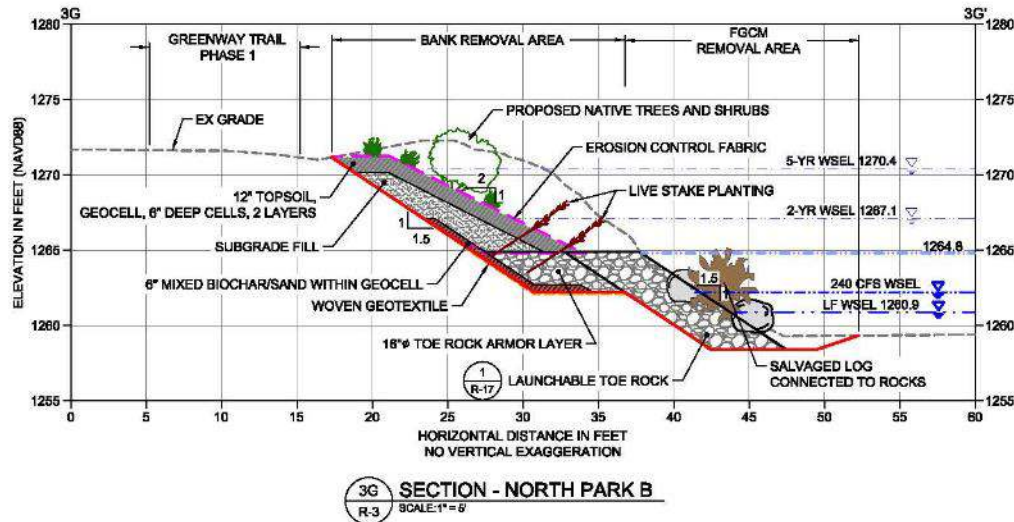
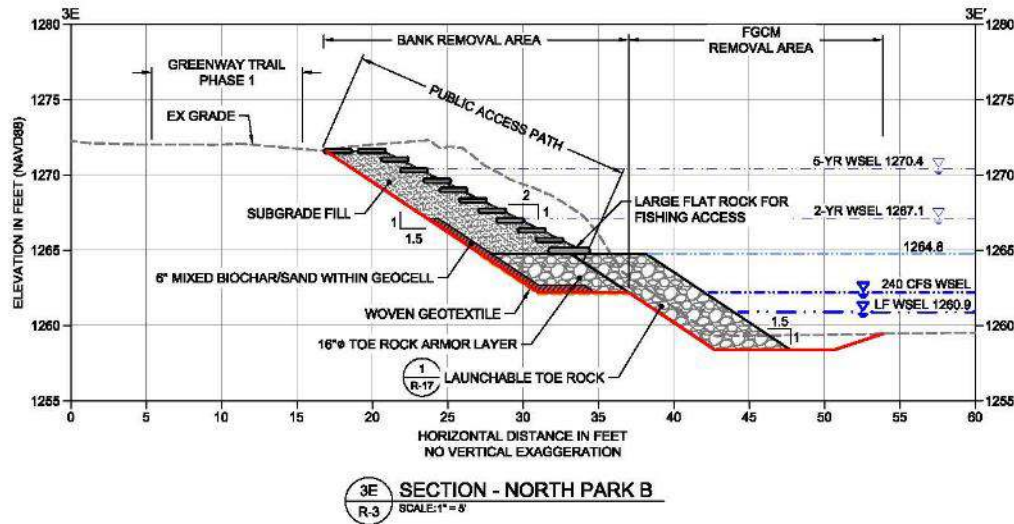
North Park B Primary BMA Removal Prism

- Includes removal of adjacent fine-grained channel margin deposit



North Park B Primary BMA Restoration

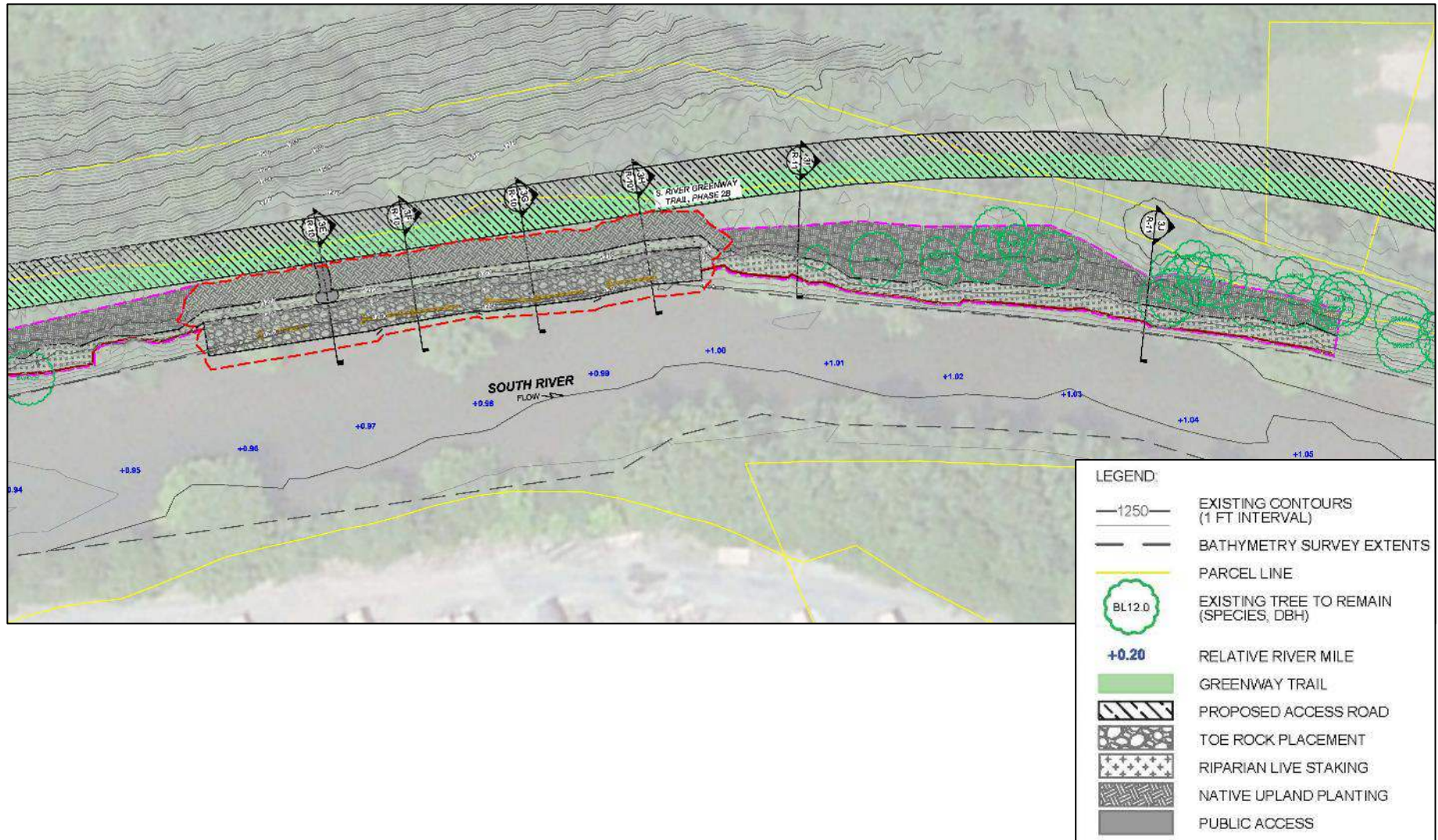
- Integrate public access path
- Enhance existing low ecological value riparian and bank habitat



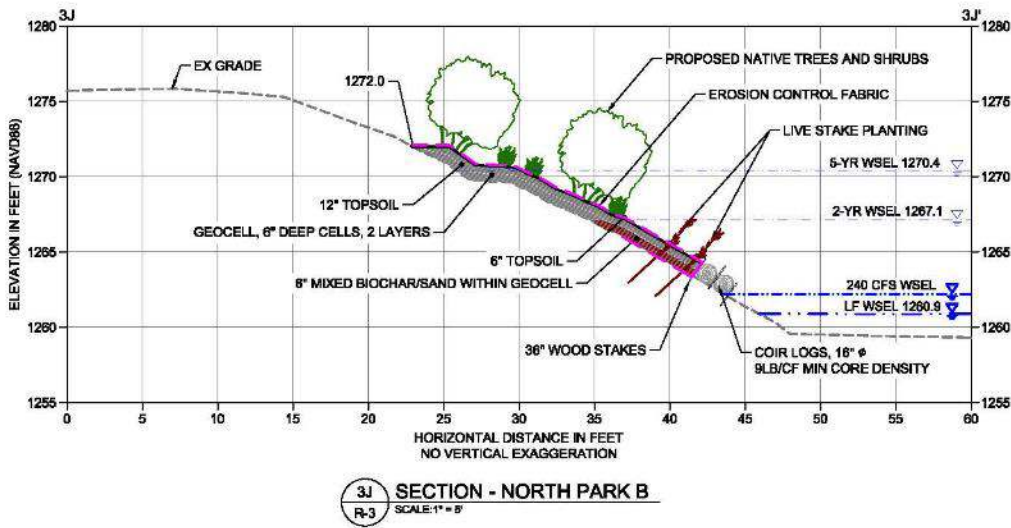
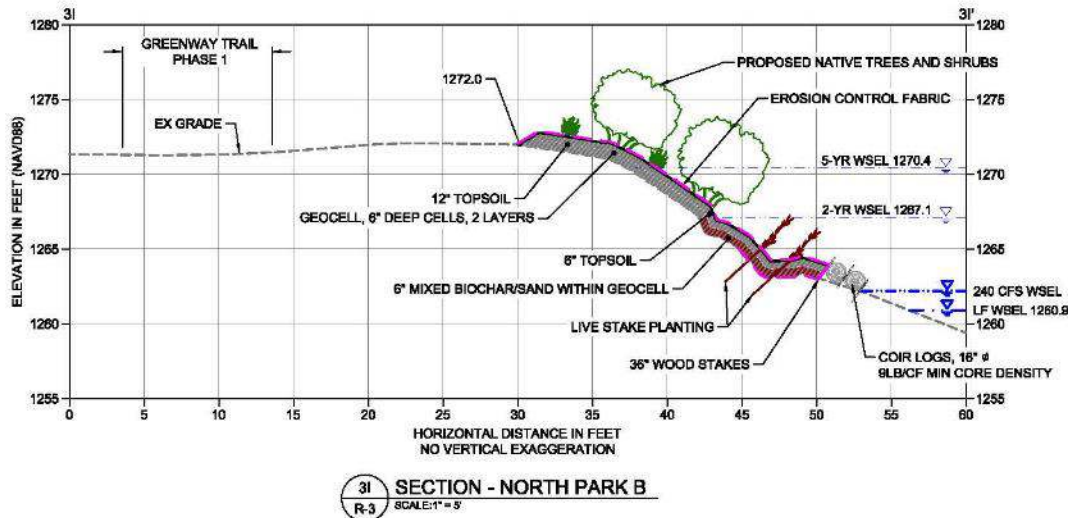
LEGEND:

- EXISTING GRADE
- POST REMOVAL SURFACE
- - - - - ROCK TOE UPPER LIMIT

North Park B Secondary BMA Prelim. Design



North Park B Secondary BMA Restoration



- Protect existing large trees
- Enhance existing low ecological value riparian and bank habitat



Schedule and Next Steps

- November – City and VADEQ review of draft Phase 1A preliminary design report
- December – Phase 1A permit applications
- Early 2016 – Phase 1A final design, access agreements, and permits
- Spring 2016 – begin Phase 1A construction

