

Contributing to the Collective: The Role of Montgomery Parks in the Monitoring & Protection of the Northwest Branch



Rachel Gauza | Biological Monitoring Program Coordinator

Erin McArdle, P.E. | Environmental Engineer

Doug Stephens | Principal Natural Resources Specialist

Jackie Hoban | Senior Natural Resources Specialist

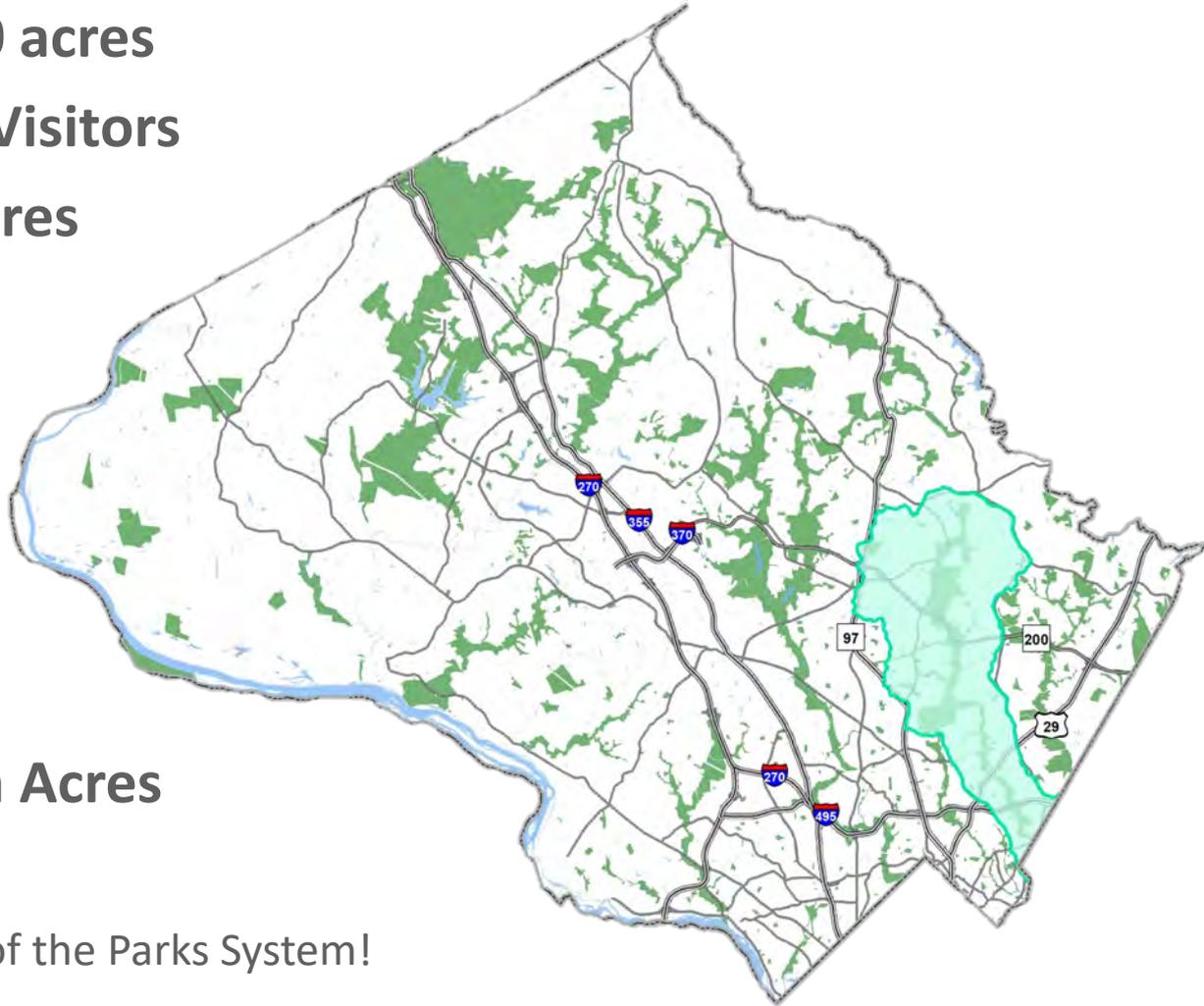
Valeria Espinoza | Stream & Parks Cleanup Coordinator

Neighbors of the Northwest Branch Meeting
February 2, 2021



Montgomery Parks Snapshot

- **424 Parks on >37,000 acres**
- **14,000,000+ Annual Visitors**
- **~7,285 Developed Acres**
 - 363 Athletic Fields
 - 229 Basketball Courts
 - 276 Playgrounds
 - 111 Historical Structures
 - 134 Picnic Area
 - >260 mi. Trails
- **~29,706 Natural Area Acres**
 - 490 stream miles
 - Comprises **more than** $\frac{3}{4}$ of the Parks System!



Learn more: <https://www.montgomeryparks.org/about/parks/>



Stormwater Shapes (and Scars) Streams



**National
Pollutant
Discharge
Elimination
System**

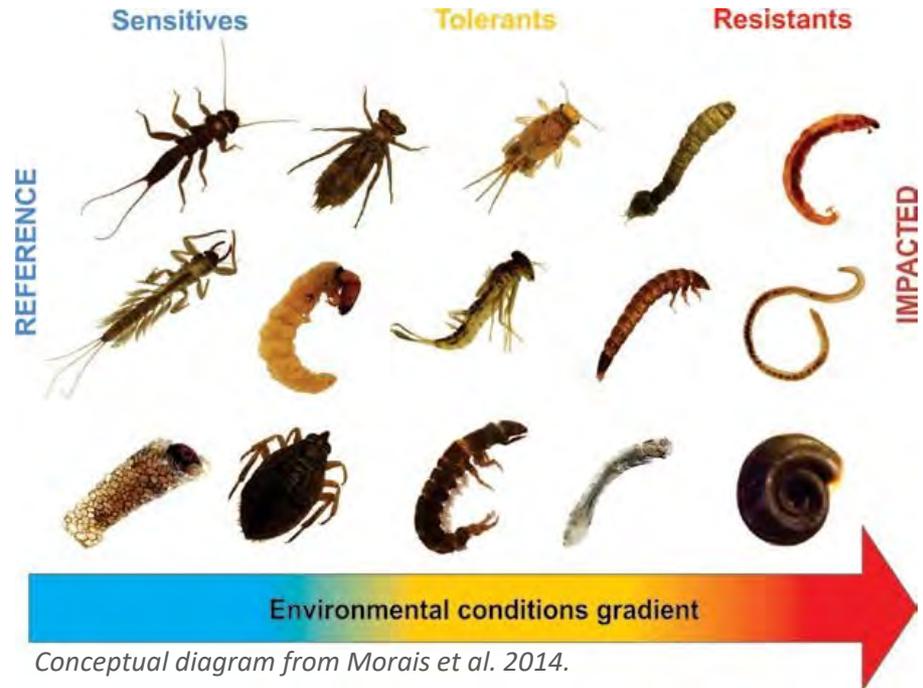
**Municipal
Separate
Storm
Sewer
System**

Permit for pollution prevention



Biological Community Monitoring to Assess Streams

- **Aquatic organisms are sensitive to change and pollution**
 - Benthic macroinvertebrates → →
 - Fishes
 - Amphibians & reptiles
- **Biological communities reflect cumulative effects**
- **Good Water Quality / Good Stream Health = Diversity & abundance of aquatic fauna**
- **Poor Water Quality / Impaired Stream Health = Taxa loss, lower counts**



Northern Hogsucker



Northern Red Salamander

Biological Monitoring Program Data Collection

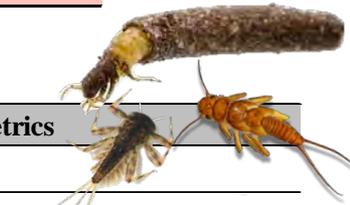
- **Benthic macroinvertebrate** sampling in Spring (March thru April).
- **Electrofishing** at same sites in Summer (June thru September).
- **Supplemental data collection** during both index periods
 - **Habitat** assessments (in-stream, riparian)
 - **Physical Chemistry** measurements
 - **Herpetofauna** searches



About the Data: From Counts to IBIs

- Organism counts & identifications → Metrics → Index of Biotic Integrity (IBI) Score → Narrative
- Geolocated, 75 m sampling stations with catchment areas delineated

Average Stream Conditions	
Narrative	Combined IBI (%)
Excellent	88 - 100
Good	64 - 87
Fair	42 - 63
Poor	0 - 41



Fish IBI Metrics	Benthic Macroinvertebrate IBI Metrics
Total number of species (species richness)	Taxa richness (total number of taxa)
Total number of riffle benthic insectivore individuals	Biotic Index (*)
Total number of minnow species (Cyprinidae)	Ratio of scrapers (Scrapers / (scrapers + filter feeding collectors))
Total number of intolerant species	Proportion of <i>Hydropsyche</i> sp. & <i>Cheumatopsyche</i> sp. (net-spinning caddisflies)
Proportion of tolerant individuals to total individuals	Proportion of dominant taxa
Proportion of individuals as omnivores/generalists	Total number of EPT taxa [†]
Proportion of individuals as pioneering species [°]	Proportion of EPT individuals [†]
Total number of individuals (excl. tolerant spp.)	Proportion of shredders to total individuals
Proportion of individuals w/ disease/anomalies	

(*) **Biotic Index** = [(number of individuals per taxa * Tolerance Values for all taxa and total) / total # of organisms]

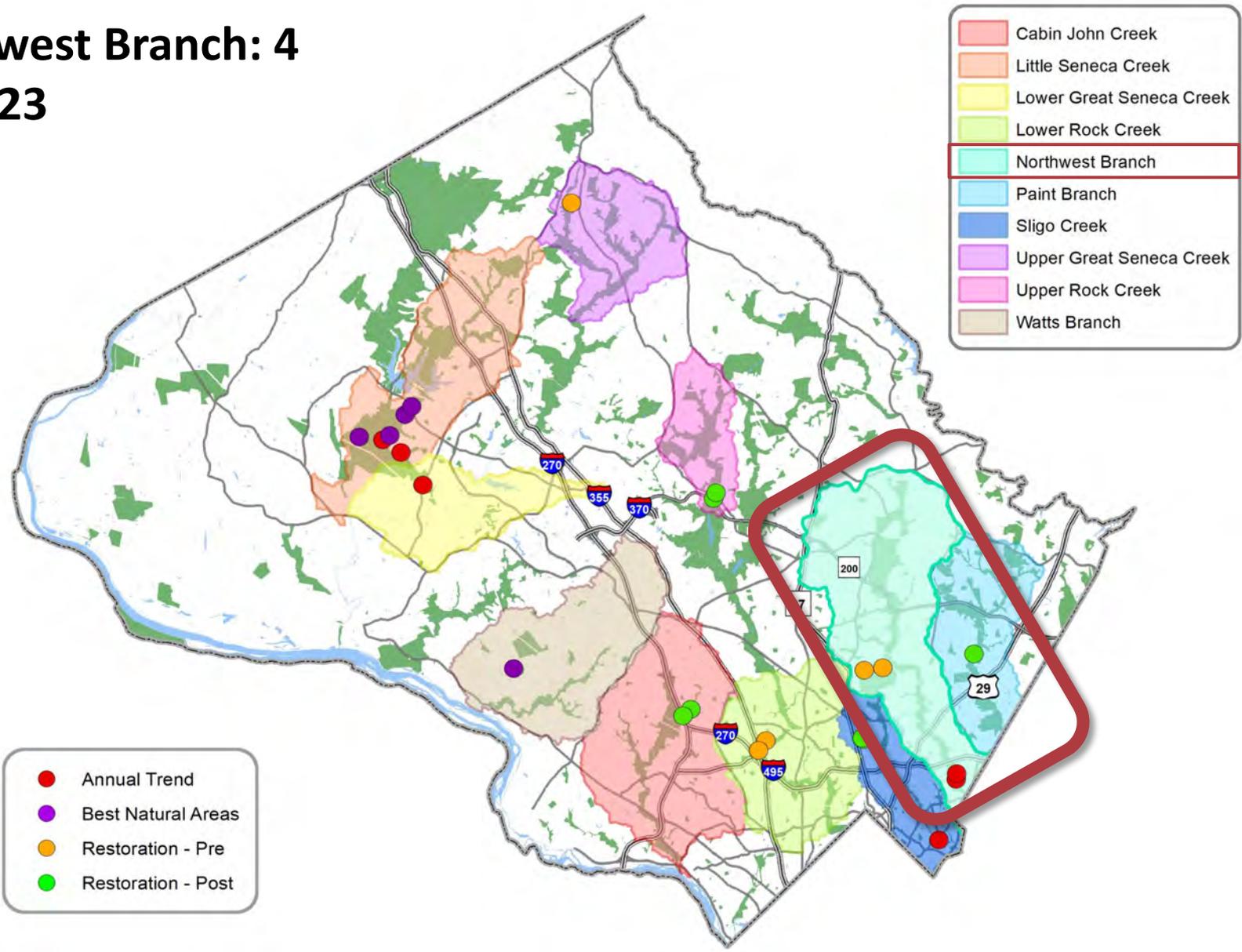
[°] **Pioneering fish** species include Blacknose Dace, Bluntnose Minnow, Creek Chub, Green Sunfish, and Tesselated Darter which are dominant in fluctuating environments such as streams affected by temporal dessication and/or anthropogenic stressors.

[†] EPT are taxa that are either mayflies (Ephemeroptera), stoneflies (Plecoptera), or caddisflies (Trichoptera), aquatic insects that spend all of their juvenile or larval stages instream and represent some of the most sensitive taxa to pollution.

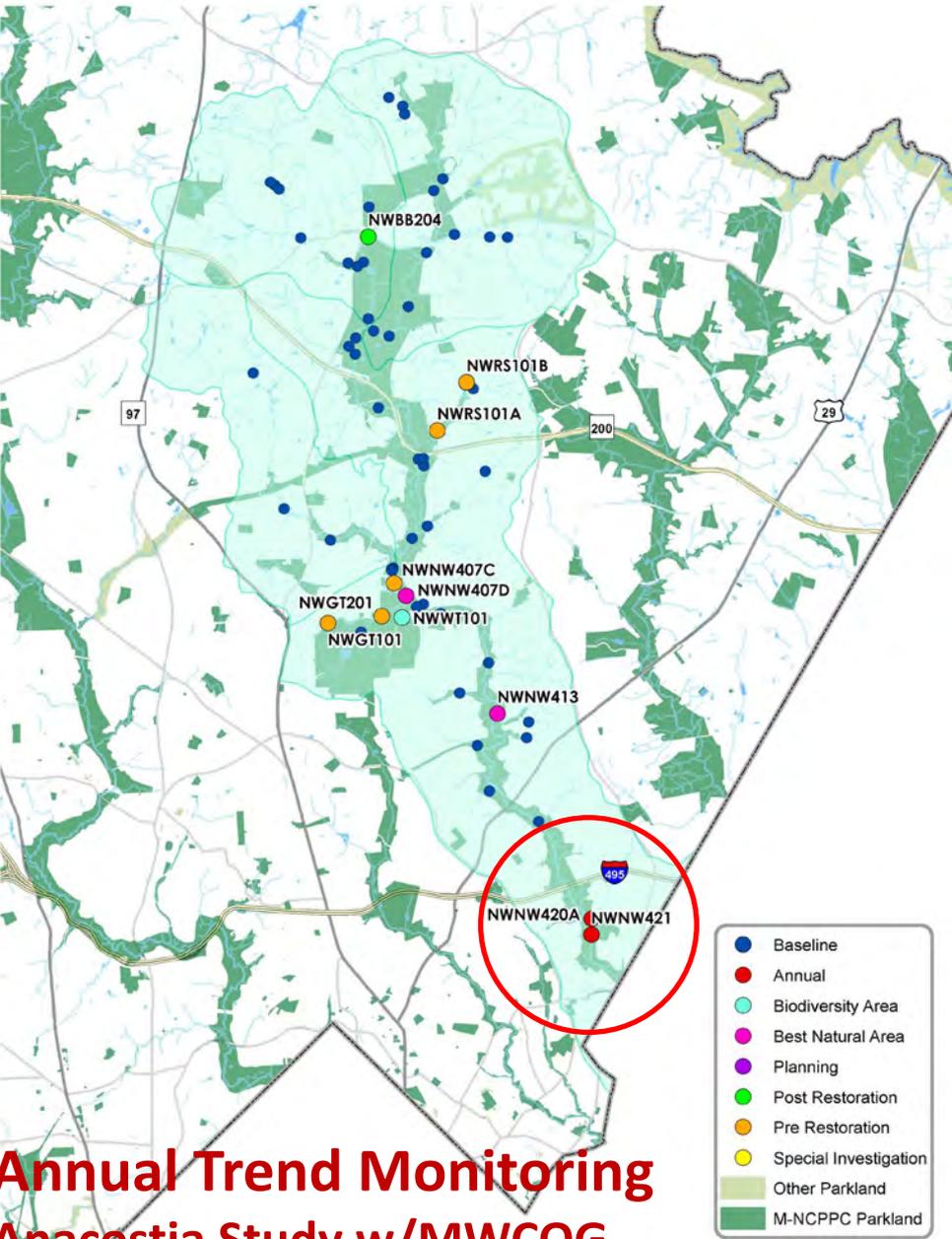
2020 Parks Monitoring Sites

Northwest Branch: 4

Total: 23



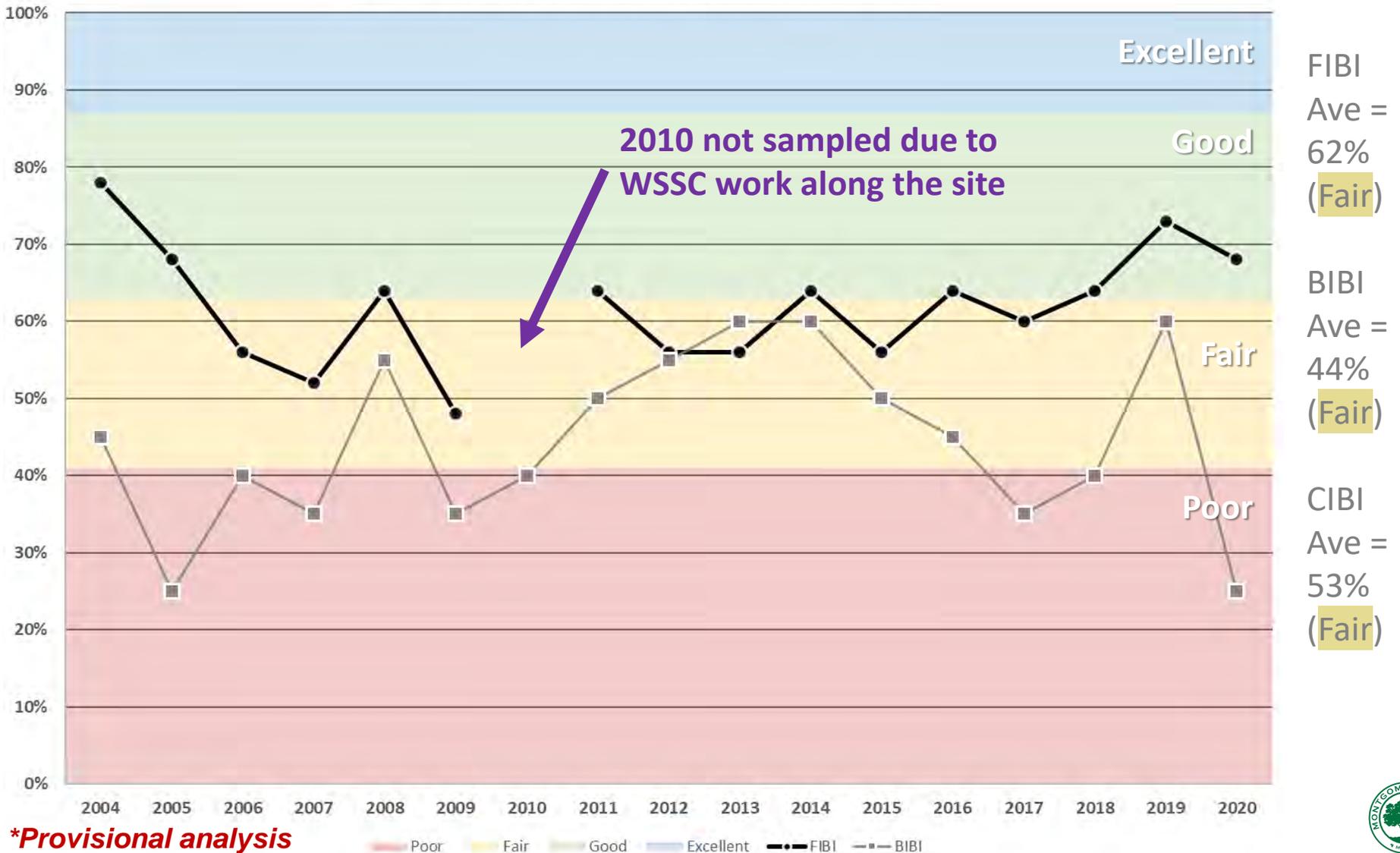
Northwest Branch Mainstem



Annual Trend Monitoring
Anacostia Study w/MWCOG
 Catchment Area: ~18,560 ac. (~29 sq. mi.)

Biological Communities Over Time in NW Branch Mainstem

Northwest Branch Mainstem (NWNW421) Conditions

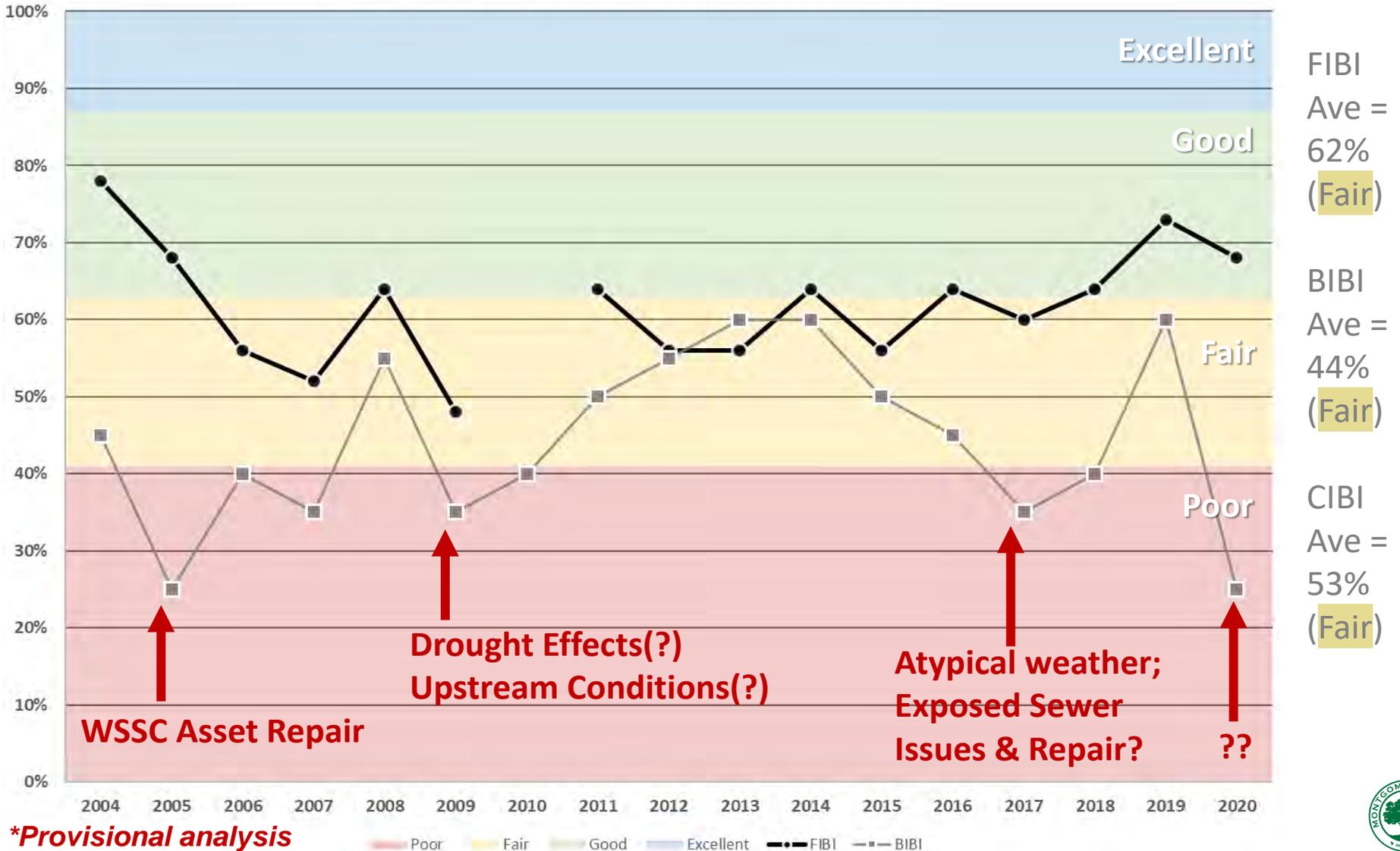


**Provisional analysis*



Biological Communities Over Time in NW Branch Mainstem

Northwest Branch Mainstem (NWNW421) Conditions



**Provisional analysis*



Initial Impressions for Northwest Branch lower mainstem

- **Northwest Branch shows some level of resiliency...**
 - Community scores increase following drops
 - Overall upward trend
 - Pollution intolerant fish species present every year
- **...but there are some limitations**
 - Stressed environment
 - Habitat availability & water quality
 - Large catchment area w/extensive influences
- **Examine elsewhere in the watershed for sources & solutions**



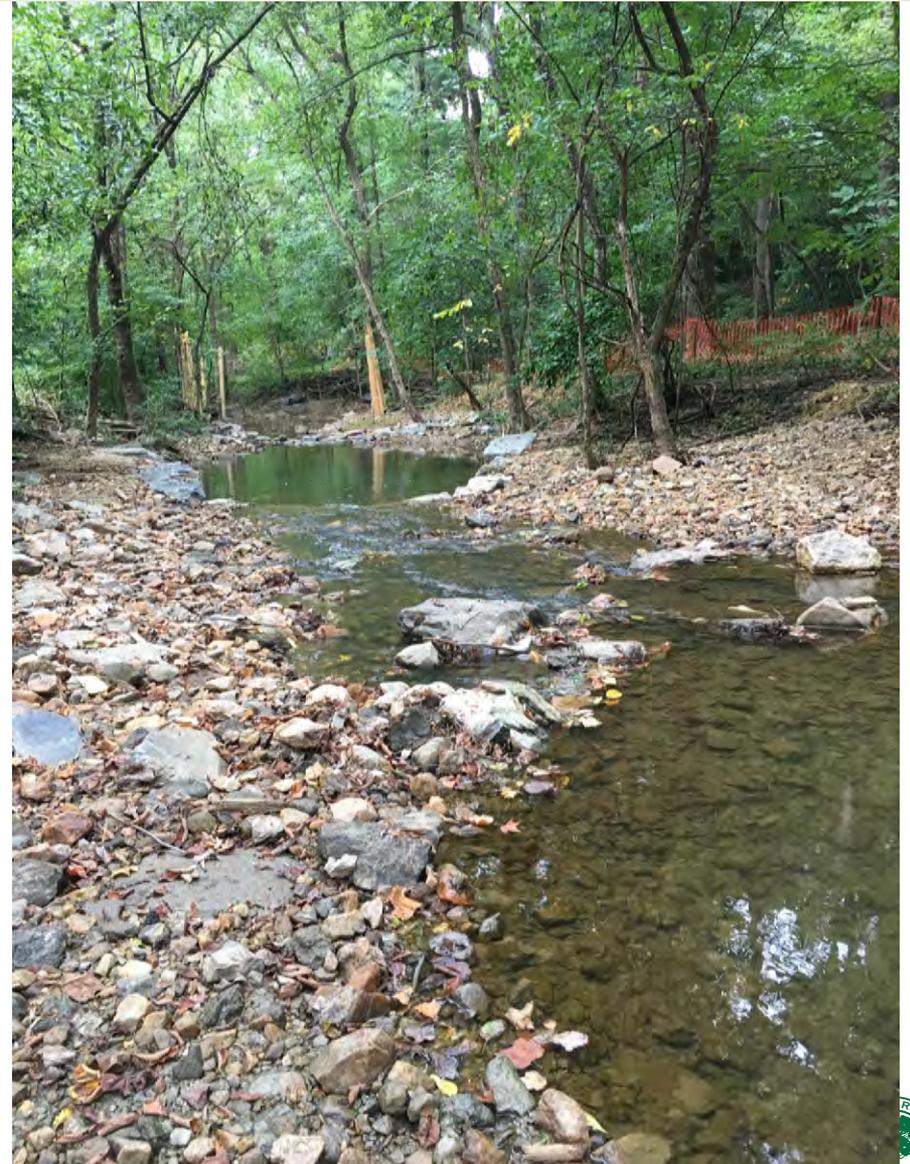
Glenallan Tributary Stream Restoration Project Location



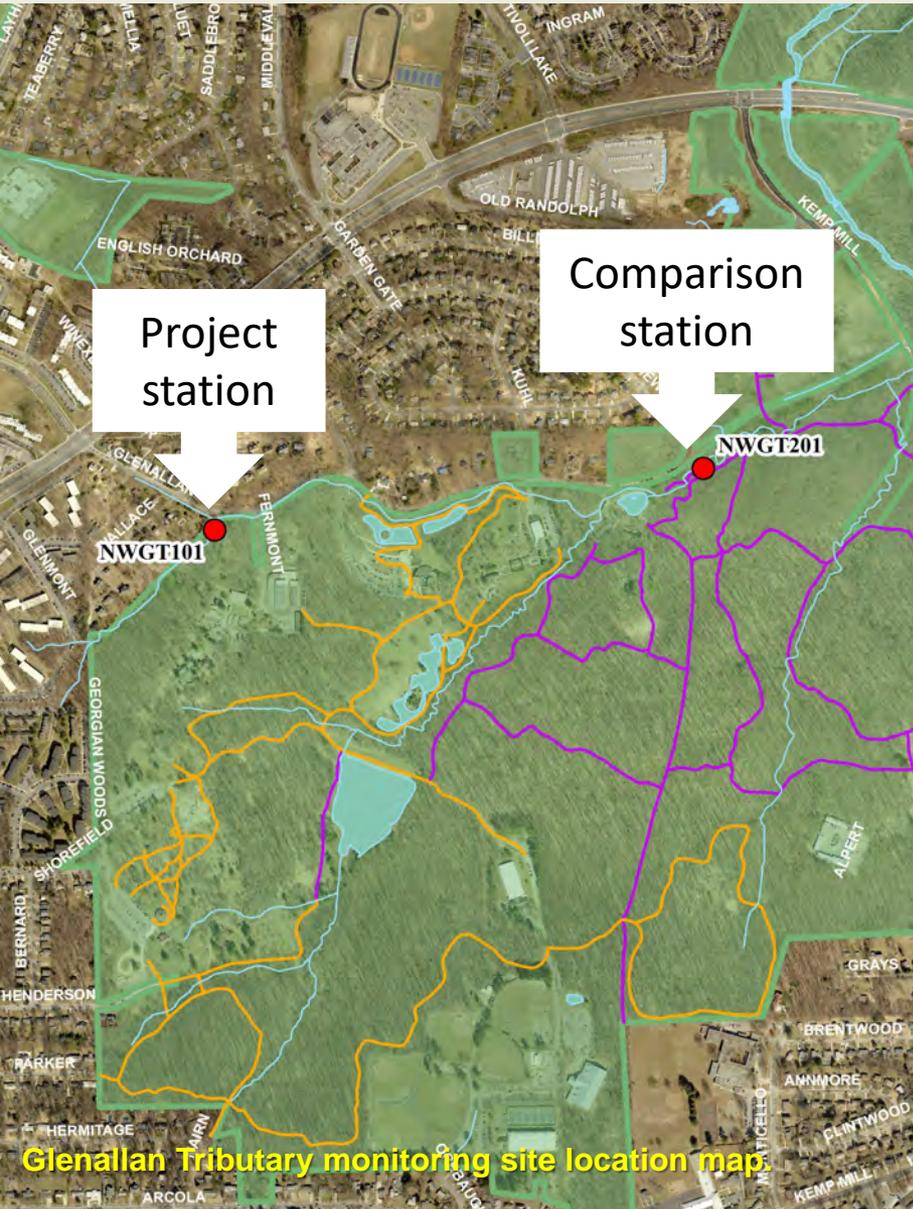
Glenallan Tributary Stream Restoration Existing Conditions



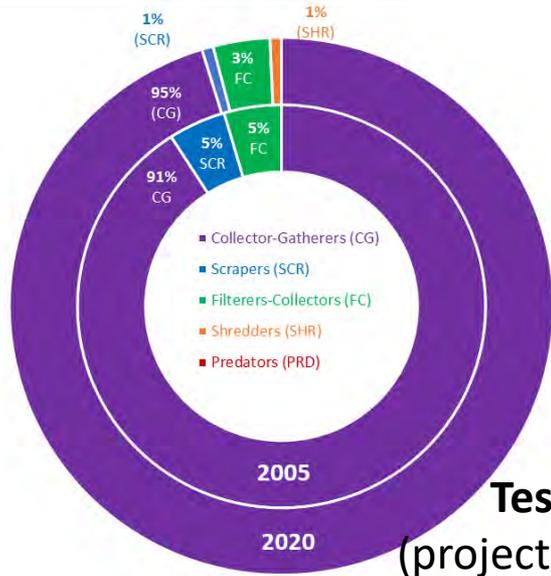
Glenallan Tributary Stream Restoration Proposed Conditions



Glenallan Trib. Pre-restoration Biological Assessment



Glenallan Trib. Invertebrate Community



NWGT101 Benthics

2005 (Inner Ring)
2020 (Outer Ring)

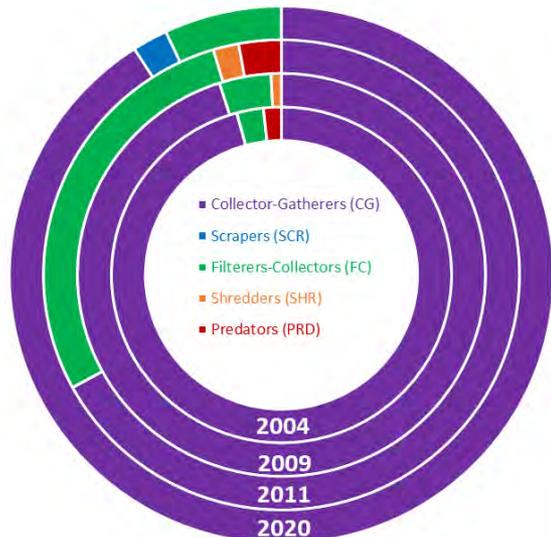
Total Taxa

2005 = 4
2020 = 6

IBI Scores

2005 = 20% (**POOR**)
2020 = 35% (**POOR**)

Test
(project area)



NWGT201 Benthics

2004 (Innermost Ring)
2020 (Outermost Ring)

Total Taxa

2004 = 5
2009 = 6
2011 = 11
2020 = 9

IBI Scores

2004 = 25% (**POOR**)
2009 = 30% (**POOR**)
2011 = 40% (**FAIR**)
2020 = 45% (**FAIR**)

Control (downstream)

- **What is there (NWGT101)**
 - Taxa counts – Lower than desired
 - Tolerant organisms are dominant
 - Unbalanced tax community
- **What is missing (NWGT201 comparison)**
 - Higher diversity of taxa
 - Increased community function
 - Improved habitat & water quality = potentially slightly less tolerant organisms?



Cambarus acuminatus, a crayfish identified as a State Species of Greatest Conservation Need (SGCN), present at NWGT201.

Glenallan Trib. (NWGT101): Vertebrate Community

What is There (2020)



Blacknose Dace at NWGT101, pre-restoration (2020).

- **Tolerant, “pioneer” fish species**
 - Blacknose Dace, Creek Chub, Green Sunfish
- **Generalist amphibians**
 - American Bullfrog, Green Frog



Young Green Frog at NWGT101, pre-restoration (2020).

What Could Come (Future)



Fantail Darter at NWGT201 downstream.

- **Increased habitat connectivity**
- **Increased habitat availability**
- **Future downstream benefits**



Resident Eastern Box Turtle in proximity of stream site.



Northern two-lined Salamander common to Montgomery County streams (but not detected at NWGT101... yet?)

Glenallan Tributary Headwaters (NGWT101)

At the surface:

- **Obvious habitat impairments**
 - Very shallow, low base flow
 - Unstable banks
 - Stream bottom with transient sediment and moderate deposition of fine particles
 - Lack of riffle habitat
 - Lacking fish cover & other prime invertebrate habitat
 - Extensive non-native and invasive riparian plants
- **Physical chemistry concerns**
 - Lower than desirable dissolved oxygen concentrations & saturation in summer
 - 48% in summer | >100% in spring!
 - 97% in summer at downstream control (NWGT201)
 - Higher than desirable conductivity values in spring
 - 700+ umhos in spring | 295 umhos in summer!
 - 275 umhos in spring at downstream control (NWGT201)

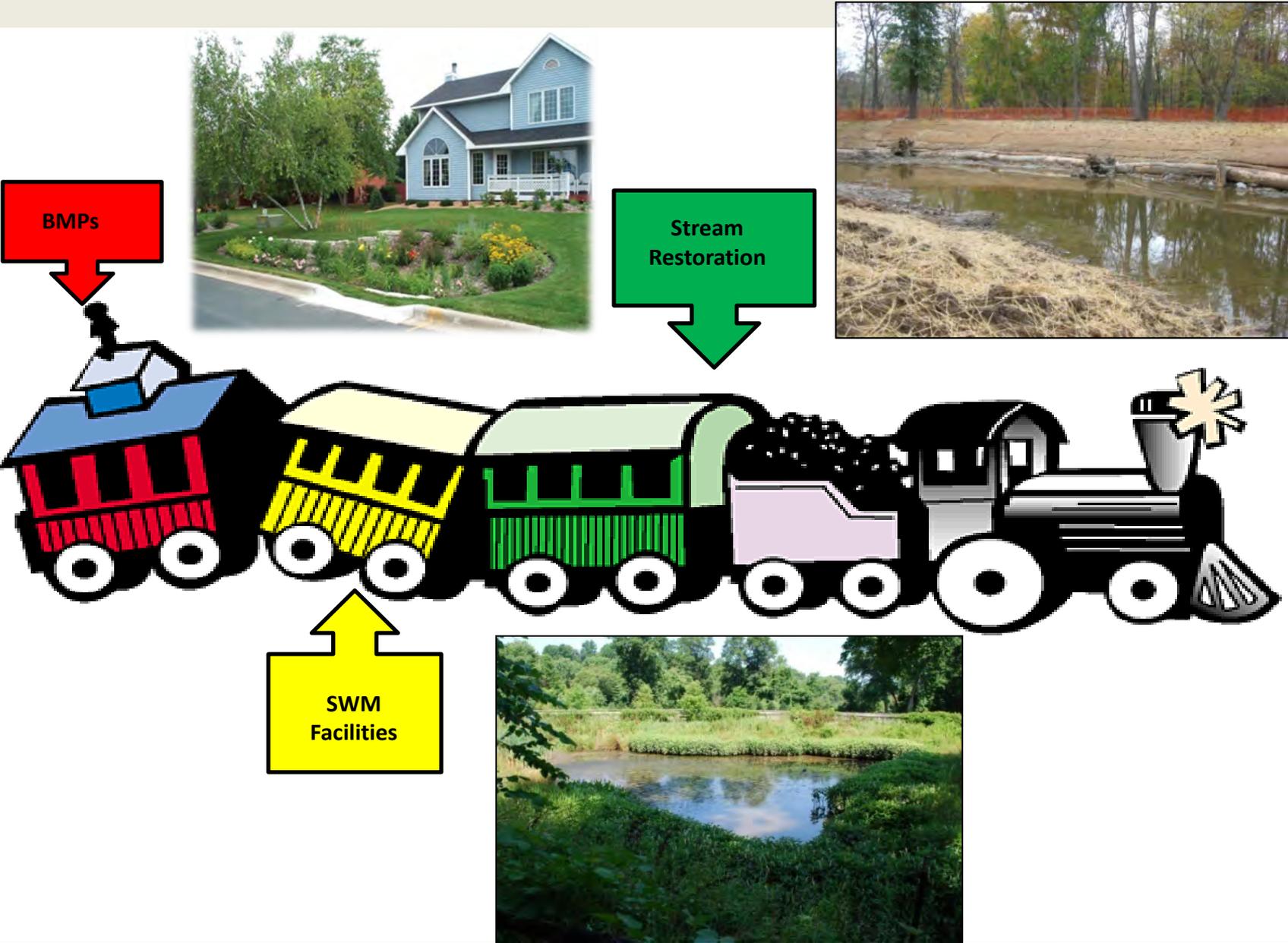


Japanese bamboo stand on right bank (facing downstream) (2020).



Japanese Pachysandra and Lesser Celendine, non-native ground cover (2020).

The Stormwater "Treatment Train"



Riparian Enhancements with Wood Matrices



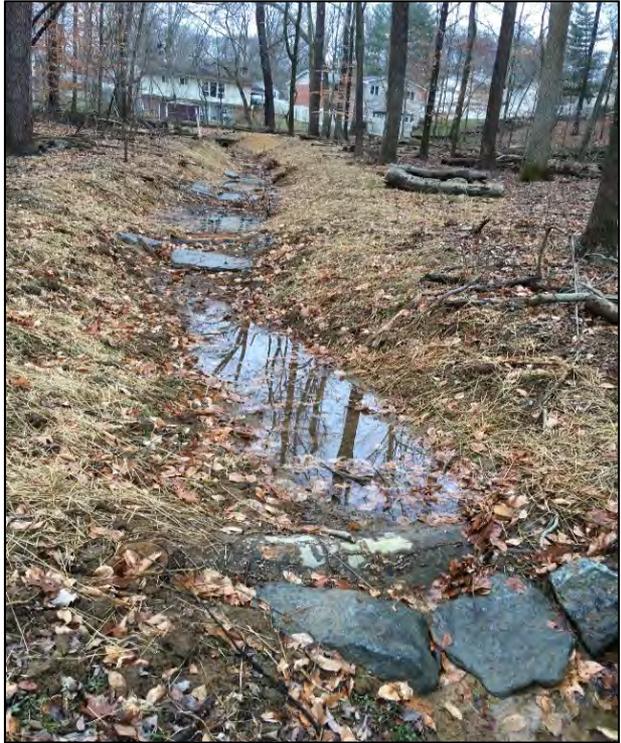
Sustainable Outfall Stabilization



Before:
Looking Upstream



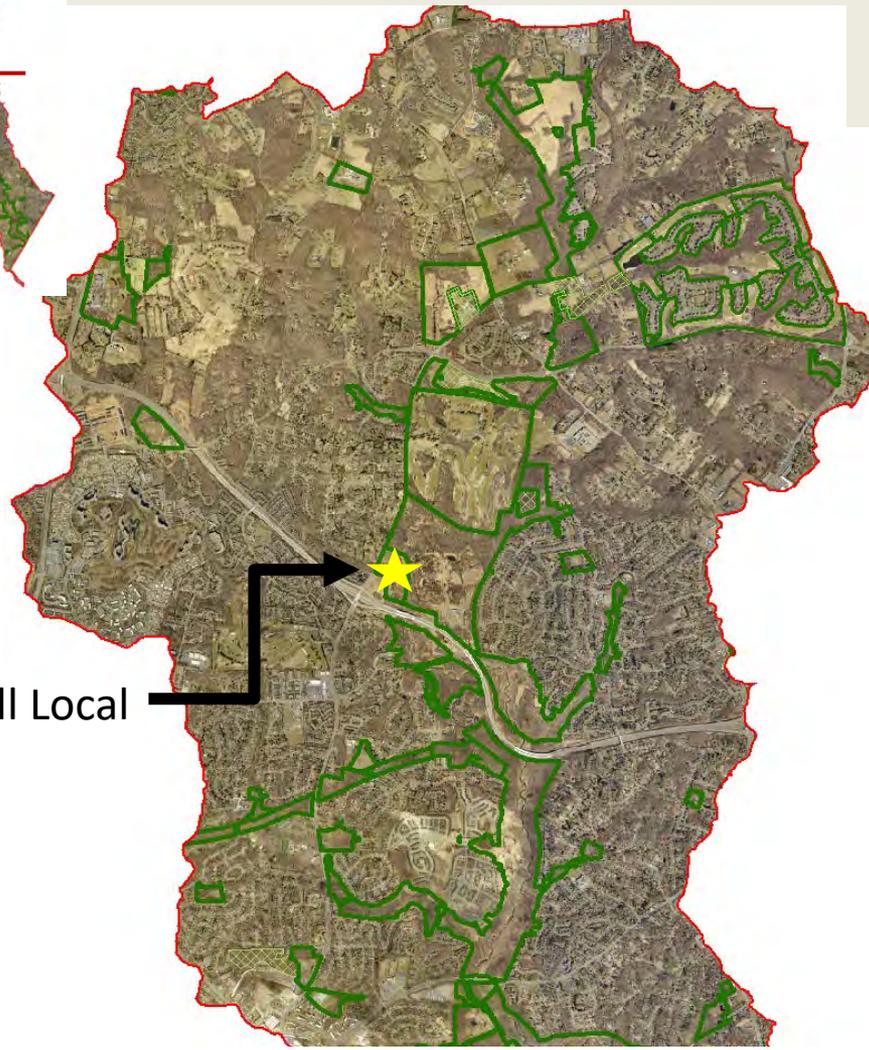
After:
Looking Upstream



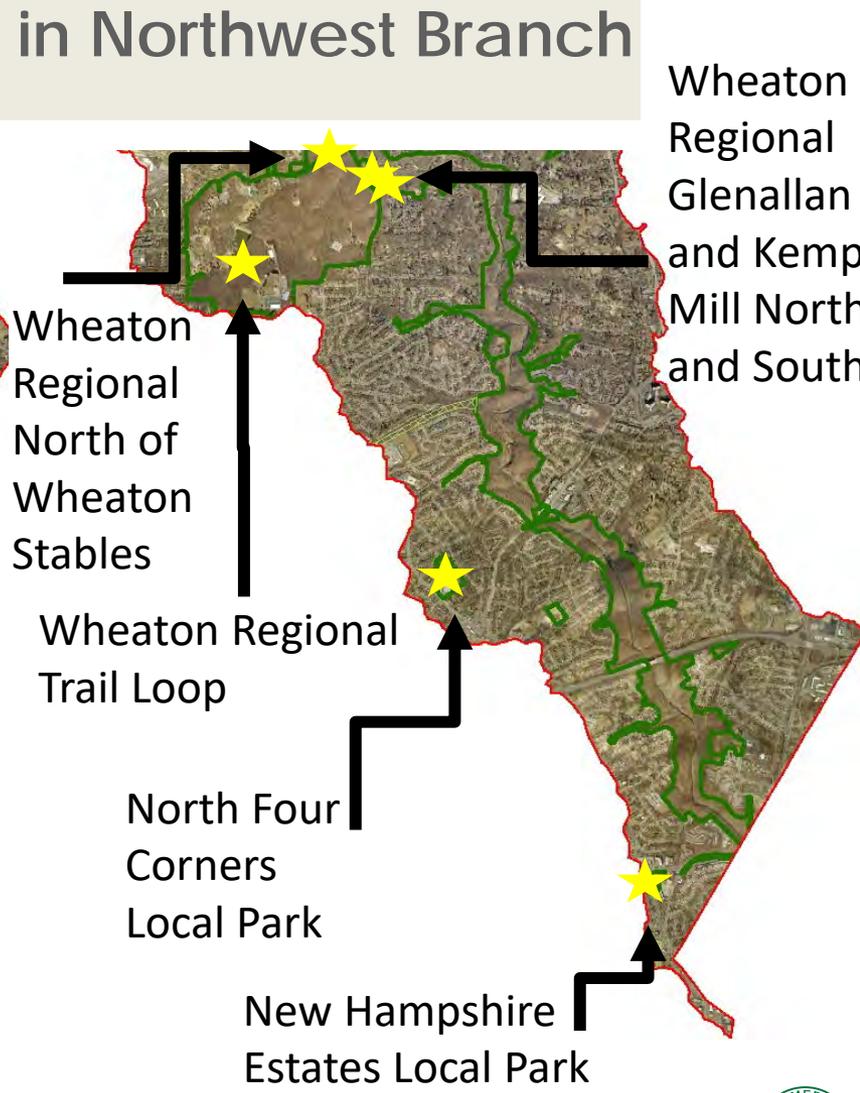
After:
Looking
Downstream



Parks Water Quality CIP Program Winter 2021 Projects in Northwest Branch



Layhill Local
Park



Wheaton
Regional
North of
Wheaton
Stables

Wheaton Regional
Trail Loop

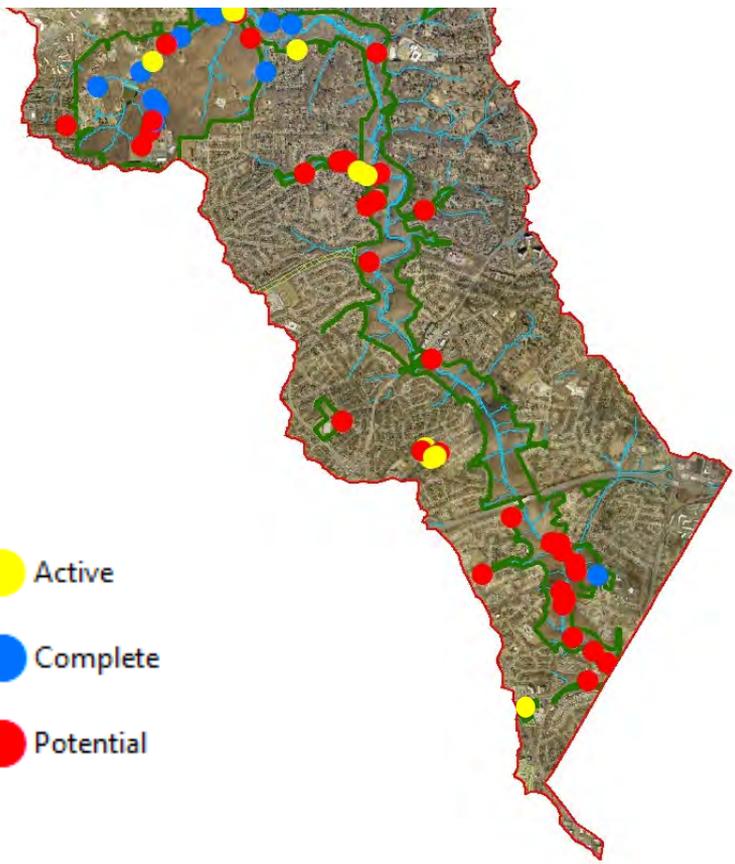
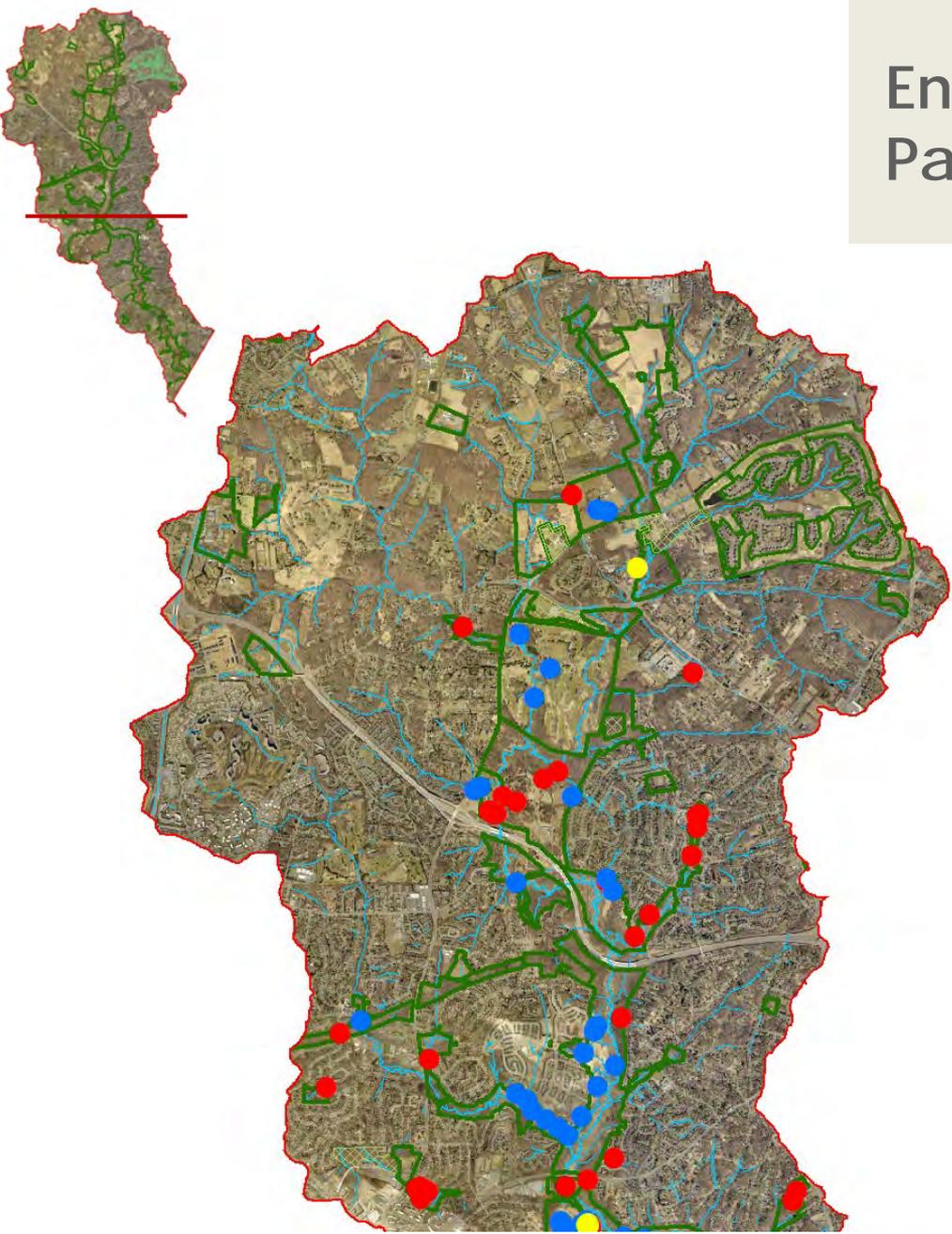
North Four
Corners
Local Park

New Hampshire
Estates Local Park

Wheaton
Regional
Glenallan
and Kemp
Mill North
and South



Environmental Projects on Parkland in Northwest Branch



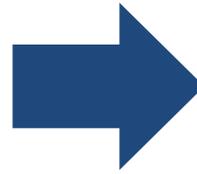
- Active
- Complete
- Potential



Environmental Review

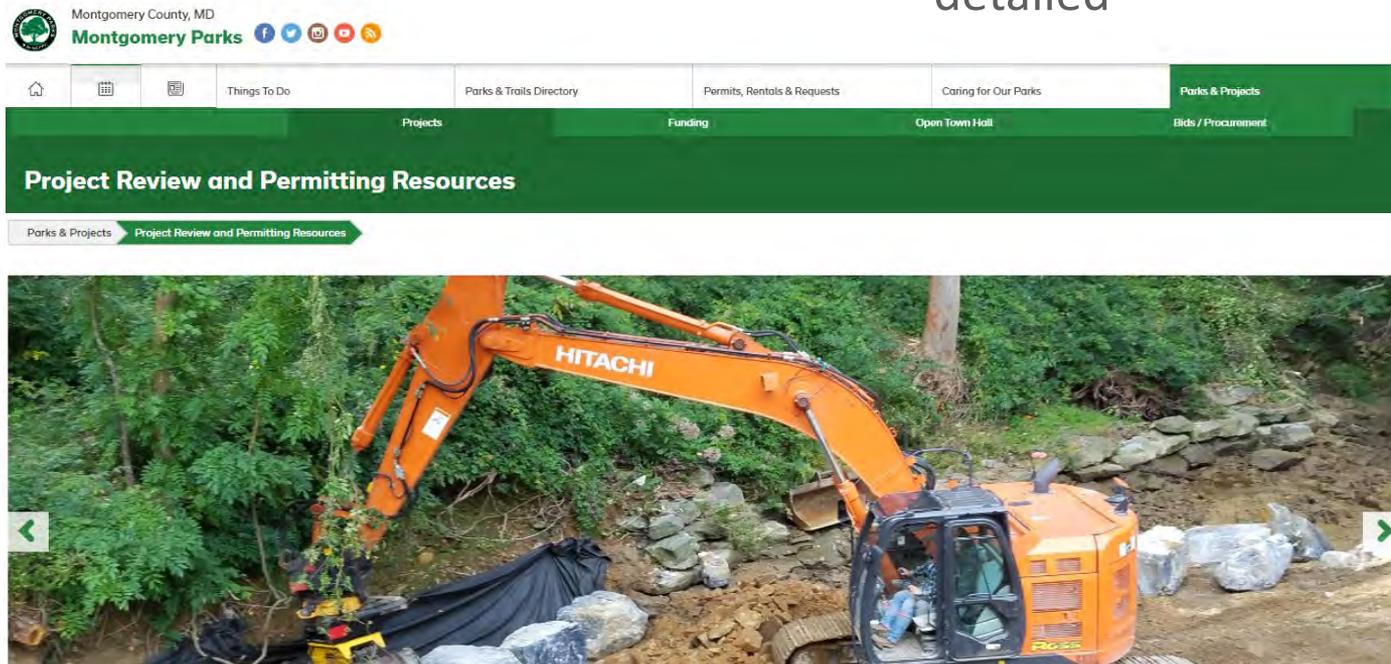
Concept Review

- Early coordination with public and private organizations planning construction with impacts to parkland



Park Construction Permit

- Technical review provides ongoing review and coordination as project designs advance and become more detailed

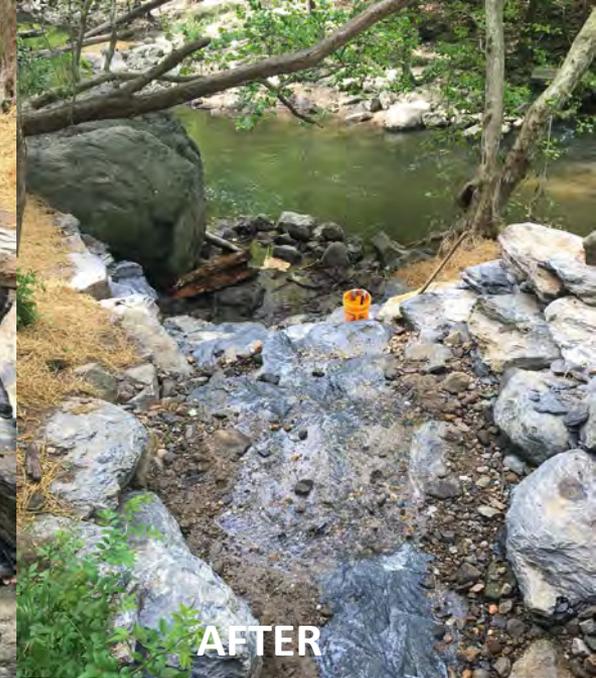


For more information: <https://www.montgomeryparks.org/projects/resources/>

Partner Projects: WSSC

WSSC

- Water main breaks
- Sewer line failures
- Routine maintenance
- Pipe lining
- Exposed asset protection
- Asset removal



Partner Projects: WSSC



Rolling Stone Tributary

Partner Projects: WSSC

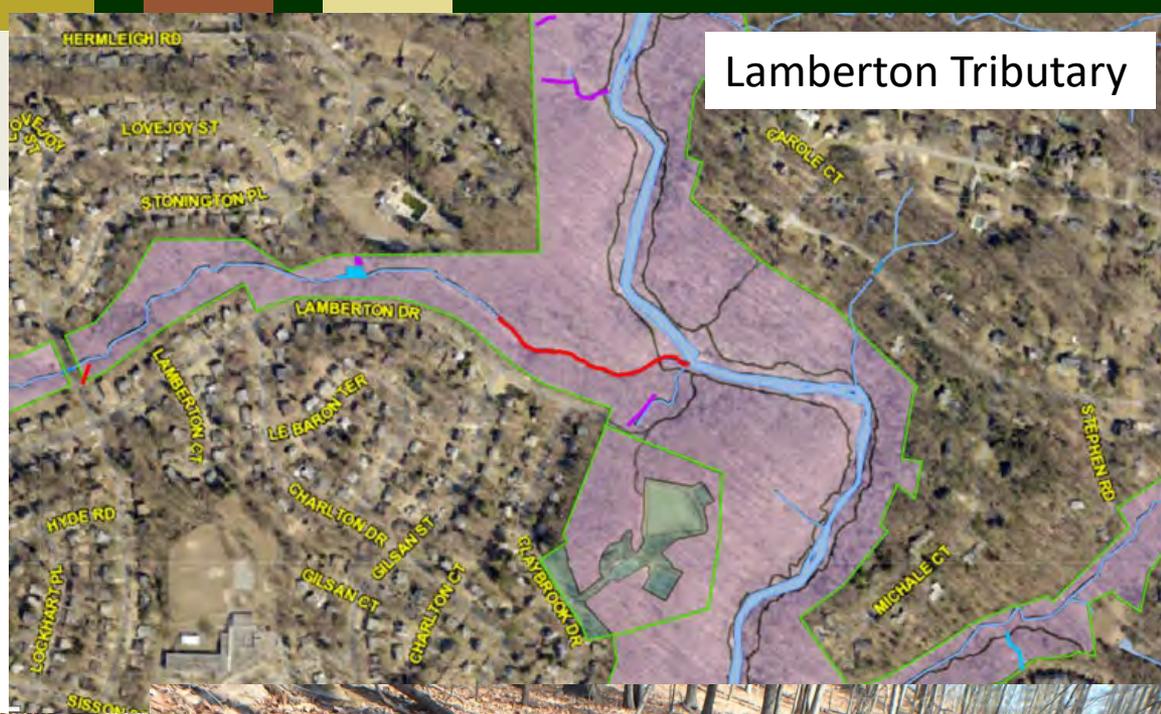
Main Stem Restoration





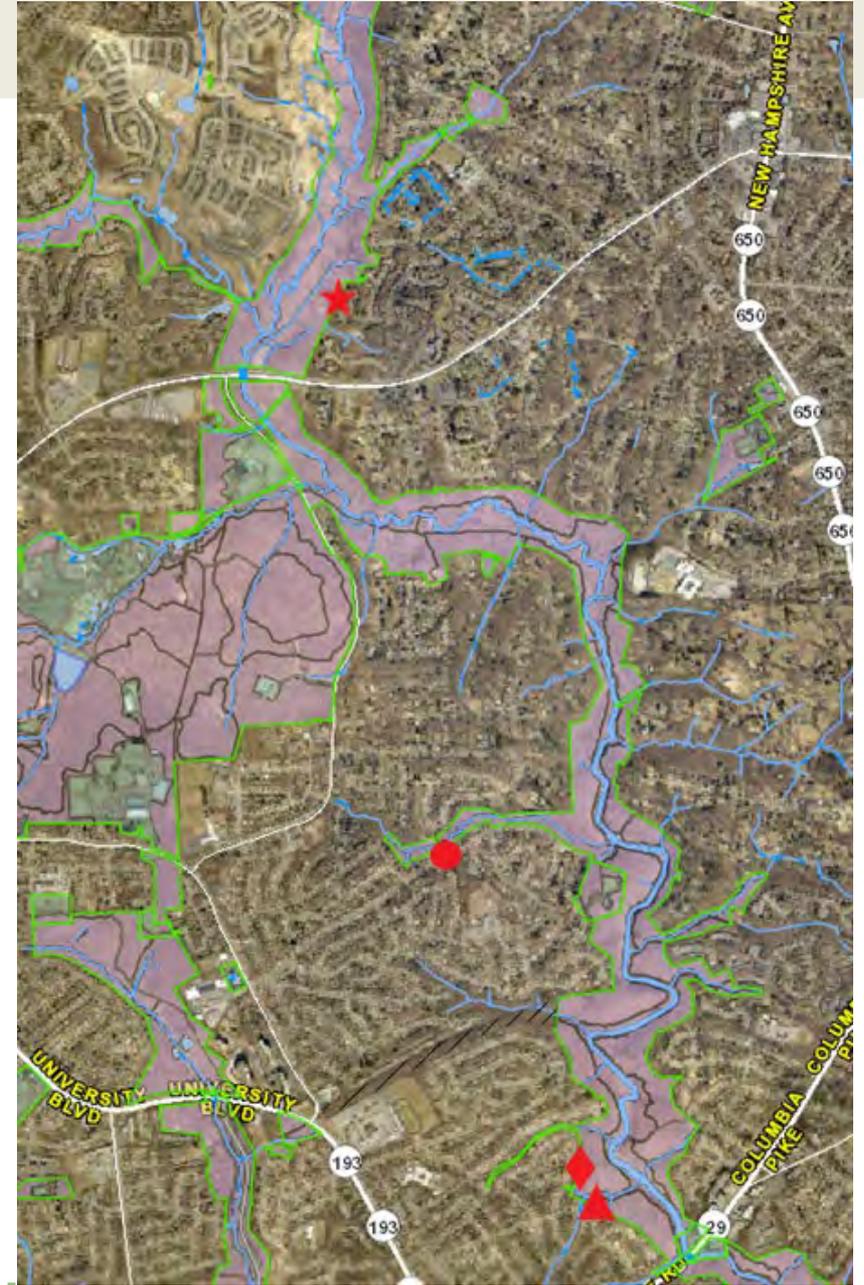
Partner Projects: WSSC

Asset protection
(exposed pipes) and
stream stabilization



MCDOT Outfall Program

- ★ **Pebble Beach Ct Outfall**
(completed 2020)
- **Lamberton Dr & Lovejoy St**
(completed Winter 2020,
Plantings Spring 2021)
- ◆ **Loxford Terrace Outfall**
(completed Fall 2020)
- ▲ **Margate Rd Outfall**
(completed Fall 2020)



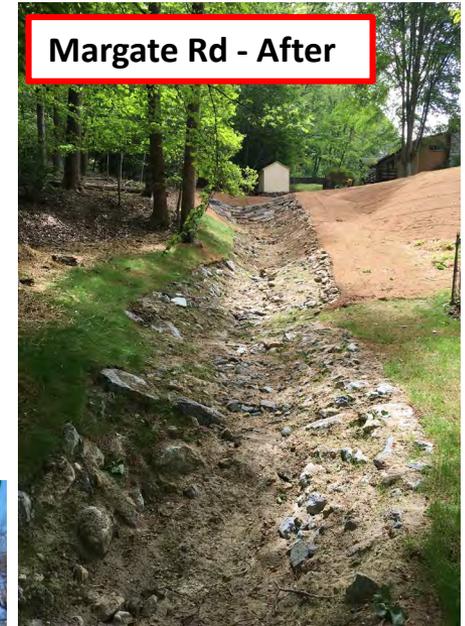
MCDOT Outfall Program



Loxford Ter - After



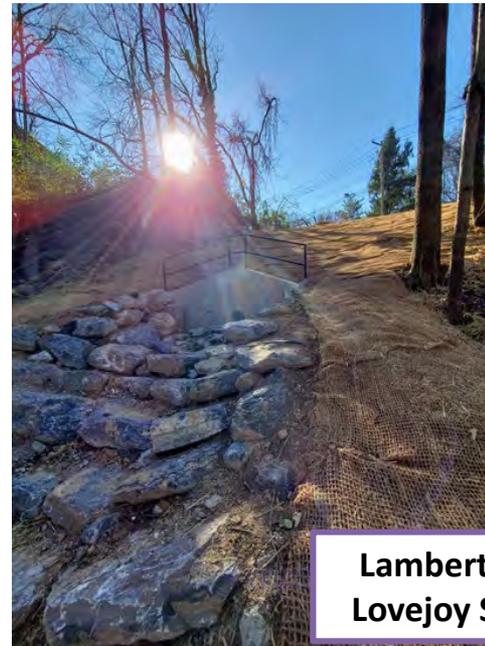
Margate Rd - During



Margate Rd - After



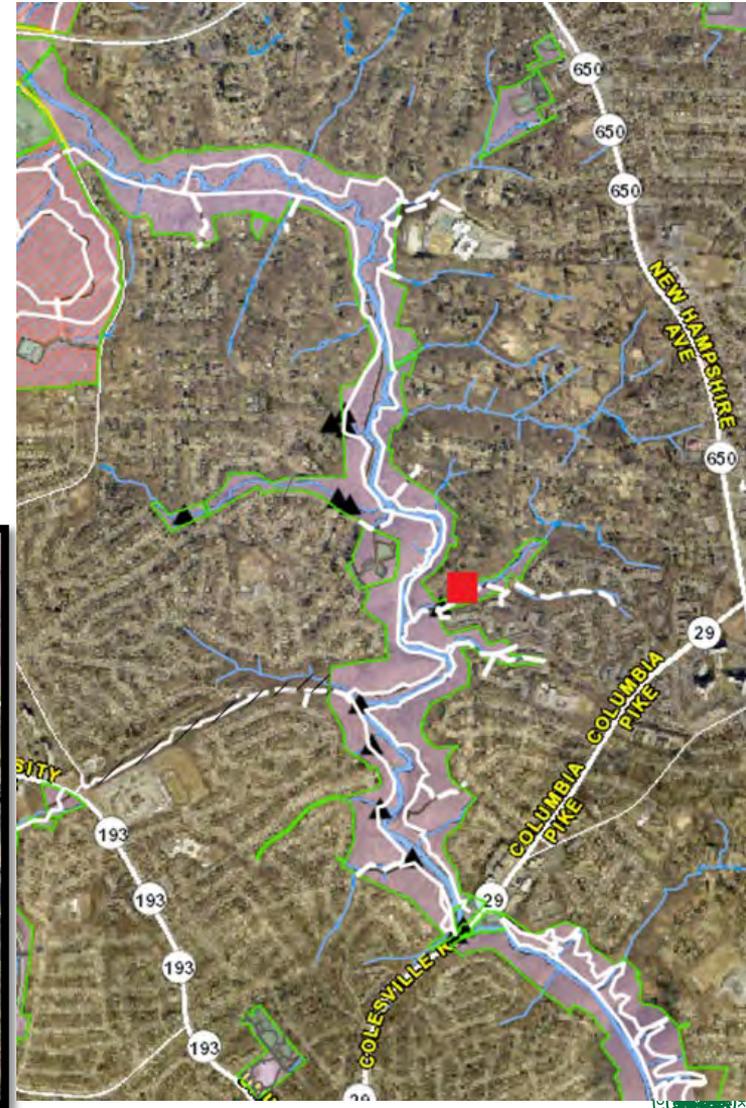
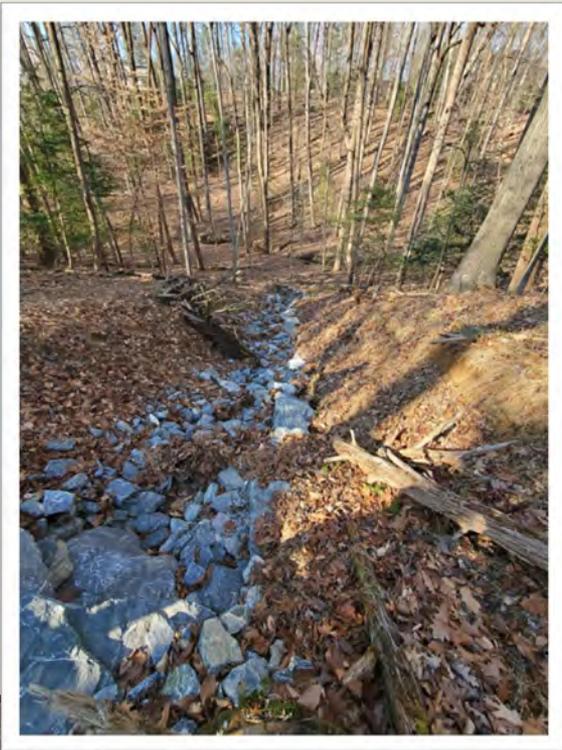
Lambertson Dr & Lovejoy St - Before



Lambertson Dr & Lovejoy St - After



Other BMPs



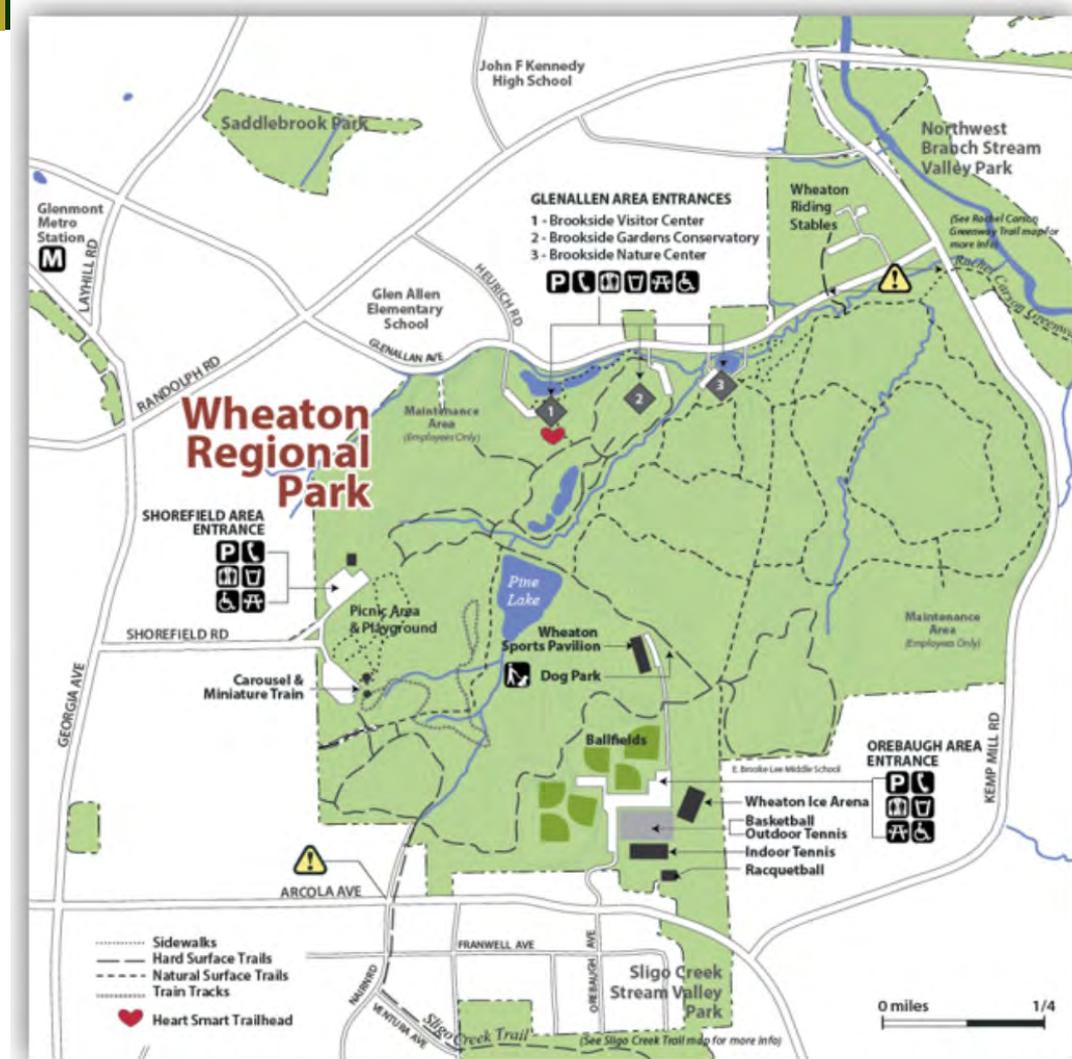
Other BMPs

- MCDOT proposal to construct side path along Norwood Rd at Woodlawn as part of Heritage Triangle Trail connection
- Parks coordinating the MCDOT on improved SWM



Wheaton Regional Park Master Plan Update

- <https://www.montgomeryparks.org/projects/directory/wheaton-regional-park-master-plan-update/>
- The current [Master Plan for Wheaton Regional Park](#) was created in 1987. A park master plan guides the development of the park, including new facilities and renovated facilities, as well as broad operation, management, and maintenance issues.



- Comment on our [Open Town Hall forum](#) and [interactive map](#)
- Email the project manager: Chuck Kines – Charles.Kines@montgomeryparks.org
- Invite us to your club, group, civic, or homeowner association meeting to share information.

Volunteer Services Office

1

Trail Volunteers

- ⑩ Public Trail Workdays (currently on hold)
- ⑩ Organized groups
- ⑩ Jim.Corcoran@montgomeryparks.org

2

Weed Warriors

- ⑩ Public Weed Warrior Workdays (currently on hold)
- ⑩ Weed Warrior Supervisors (currently on hold)
- ⑩ Certified Weed Warriors --> [Contact us!](#)
- ⑩ Corinne.Stephens@montgomeryparks.org

3

Park Cleanups

- ⑩ Public Park Cleanups (coming soon)
- ⑩ Become a Park Cleanup Leader! --> [Apply here](#)
- ⑩ Organized groups
- ⑩ Valeria.Espinoza@montgomeryparks.org

Volunteer Services Office



Trail Volunteer Highlights

1,135 volunteers and 8,572 hours of trail work in NW Branch since 2011



Weed Warrior Highlights

- In 2020, WWs logged over 269 hours in NW Branch parks
- 2,229 hours in the Sligo and Long Branch watersheds!
- WeedWarrior.org



Volunteer Services Office

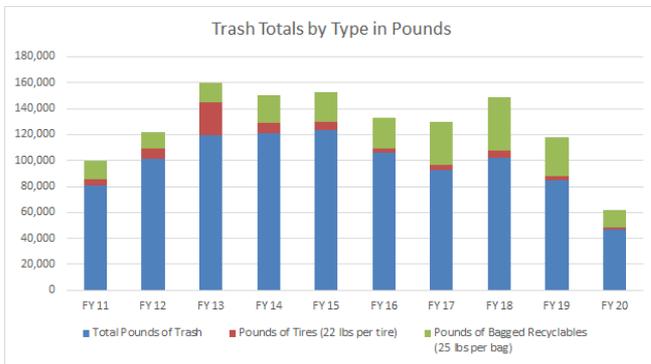


NW Branch Cleanup Highlights

Over 200 cleanups and 3,939.5 service hours (since 2011)

Litter Totals

- 1,704.5 trash bags
- 667.5 recycle bags
- 13,063 lbs loose trash (approx)



All cleanup & volunteer service data gets totaled annually to continue funding programs and projects



Cleanup Volunteer Leader – NW Branch

Orientation Tuesday 2/16 @ 7pm

Interested in leading community cleanup events along the Northwest Branch watershed?

Program Overview:

- Seasonal opportunity (3-6 months)
- Scout for areas that need cleanups
- Schedule cleanups that work with your schedule (2-3 per season)
- VSO will handle recruitment and coordination
- VSO provides all cleanup supplies
- Leaders submit cleanup results

Onboarding Steps:

1. [Apply here](#)
2. Attend Virtual Orientation
3. Complete online background check
4. Shadow (new leaders)



THANK YOU!

Rachel Gauza

Doug Stephens

Jackie Hoban

Resource Analysis Section

Park Planning & Stewardship

Erin McArdle, P.E.

Park Development Division

Valeria Espinoza

Volunteer Services Office

Public Affairs & Community Partnerships

Questions? Contact rachel.gauza@montgomeryparks.org | valeria.espinoza@montgomeryparks.org