

# STREAM RESTORATION BEST PRACTICES

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**Voluntary guidance for stormwater program managers on best practices for implementing stream restoration projects in the COG region**

Jason Papacosma, Arlington County

WRTC Meeting  
Sept. 10, 2021



Metropolitan Washington  
Council of Governments

# History

- **WRTC set up workgroup to address recent concerns, such as:**
  - Re-consideration of projects in Alexandria
  - Request for moratorium in Montgomery County
  - Divided city council vote in Gaithersburg
- **Emphasis on being proactive rather than reactive**
- **Workgroup began meeting regularly in December 2020**
  - Members include:
    - **Chair, Jason Papcosma, Arlington County (also Christin Jolicoeur and Aileen Winquist)**
    - **Tom Dombrowski, Prince William County**
    - **Charles Smith, Fairfax County**
    - **Jesse Maines, City of Alexandria**
    - **Norm Goulet, Northern Virginia Regional Commission**
    - **Josh Burch, District of Columbia**
    - **Erik Michelson, Anne Arundel County**
    - **Jerry Maldonado, Prince George's County**
    - **Beth Forbes, City of Gaithersburg**
    - **Heather Gewandter, City of Rockville**
    - **Kate Bennett and Ryan Zerbe, Montgomery County**



# Output

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- **Workgroup developed list of 15 best practices**
  - For planning/design, siting/final project selection, public engagement, construction/maintenance/monitoring
  - Set of voluntary guidelines that jurisdictions can adopt in whole or in part
- **Workgroup preparing final report that illustrates best practices with case studies and other local examples**
  - WRTC review in next few weeks
  - Will also create a simplified version for public messaging
  - Present report to Bay Policy Committee in November



# Practice #1: Planning/Design

Provide a clear *road map* for the site selection process that documents how a decision to pursue a stream restoration project will be reached and what its goals are. The road map may include:

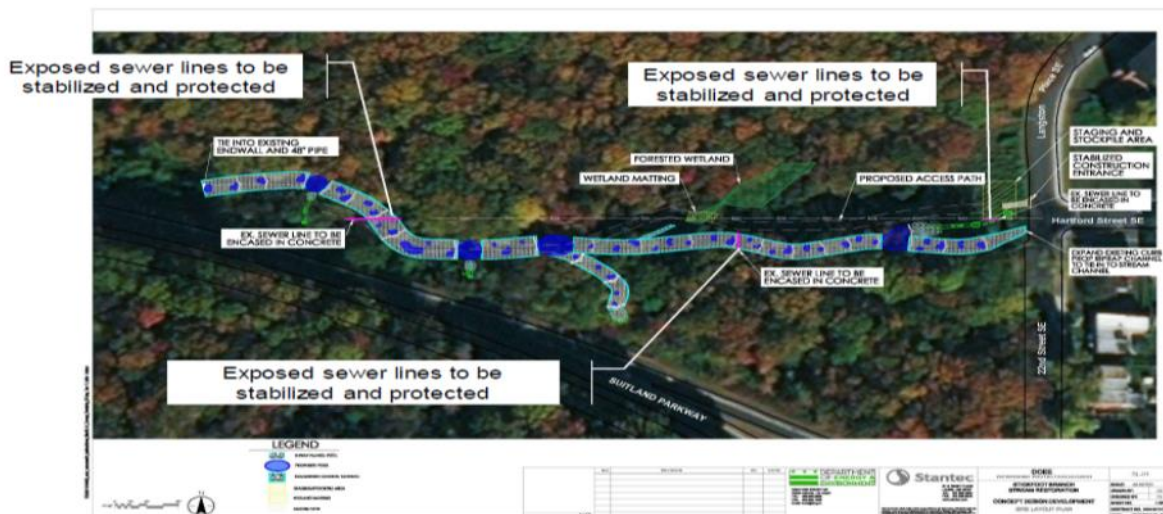


Figure 1: Example of site map for the Stickfoot Branch Stream Restoration Project in the District of Columbia showing site location, access road, and areas to be avoided.

# Practice #2: Planning/Design

For each project, consider different restoration priorities, protocols and channel design approaches that best meet site conditions and restoration goals

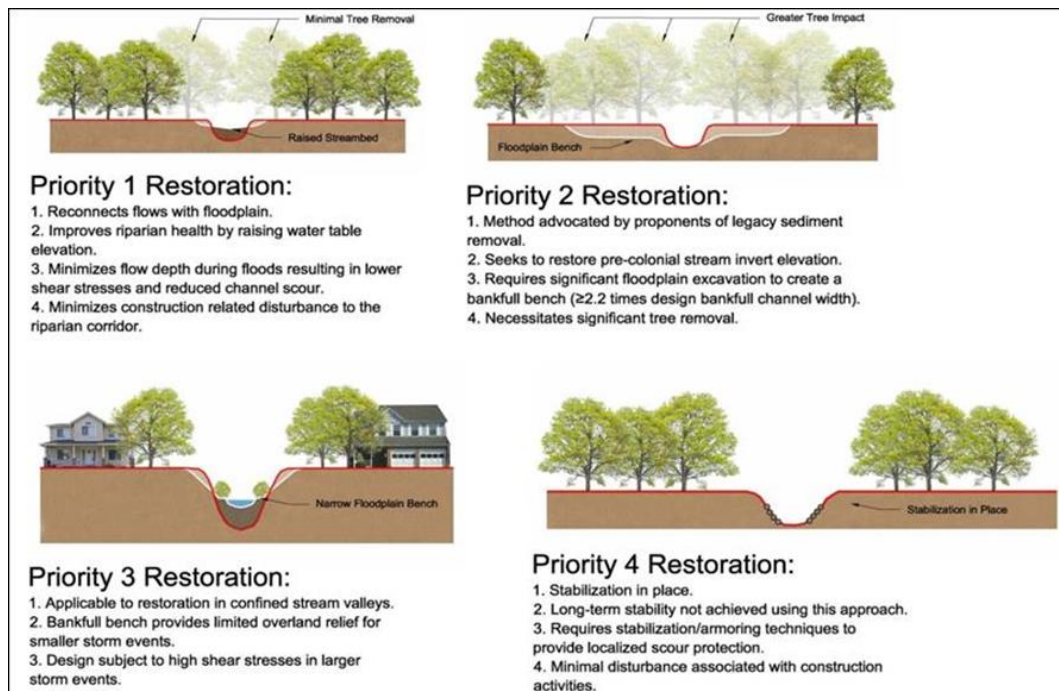


Figure 2: Restoration Priority System (based on Rosgen)

# Practice #3: Planning/Design

Establish metrics for measuring success of projects, based on the primary and secondary goals set for each individual project.

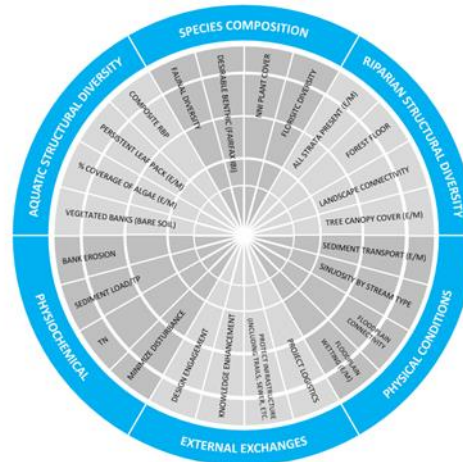


Figure 4. The Fairfax County restoration recovery wheel, based on a recovery wheel created by the Society for Ecological Restoration. The focus is on assessment and monitoring based on 24 metrics of program drivers and ecosystem function.

# Practice #4: Planning/Design

## Create a plan for inspection and maintenance of projects over time as tied to project goals.

### PART 3 – EXECUTION

#### 3.1 Watering

A. In accordance with the approved plans, 20-gallon gator bags or an approved equal shall be installed on all upland and steep slope trees. Trees shall be watered weekly during periods with rainfall of <1 inch from installation to One (1) year following the date of substantial completion.

#### 3.2 Tree Shelter Maintenance

A. Tree shelters shall be inspected bi-monthly during the growing season (April to October) and maintained for five (5) years following the date of substantial completion in accordance with Section 02806 Bio-degradable Tree Shelters

#### 3.3 Plant Maintenance and Replacement

- A. All plantings shall be inspected annually during the growing season (April to October) starting with the first growing season following substantial completion.
- B. Dead, dying and diseased plants shall be replaced. Any plant that is 25% dead or more shall be considered dead and shall be replaced at no charge to the County. A tree shall be considered dead when the main leader has died back, or 25% of the crown is dead.
- C. The Contractor shall submit an inspection report summarizing the inspection findings and proposed replacement species, quantities and schedule to the Project Officer by 10/15 of each year.
- D. Live Stakes: A target survival rate of 80 percent shall apply to live stakes, based on the installed quantity from the approved plan. The Contractor shall replace any dead live stakes with bare root plants to account for lost growth, unless otherwise authorized by the Project Officer.
- E. Herbaceous Plants: Replace dead or dying herbaceous plants between April 1 and May 15 of each year at no additional cost to the County.

Excerpt from an Arlington County contract specifying need for continual inspection and maintenance of plant materials from project.





# Practice #5: Siting/Final Project Selection

**Determine specifications for individual projects based on the set of goals set for each project. In doing so, minimize impacts to high quality aquatic and terrestrial habitat in the stream corridor.**



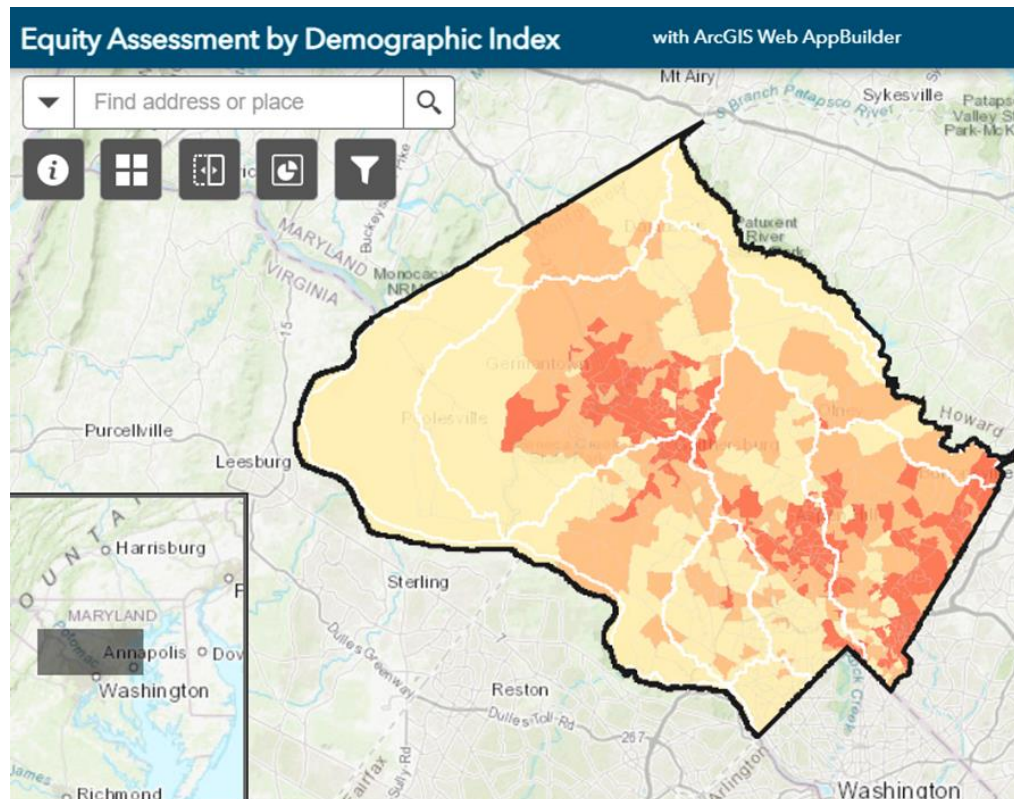
Before restoration, streambank erosion in this section of Powell's Creek in Prince William County led to loss of mature trees





# Practice #6: Siting/Final Project Selection

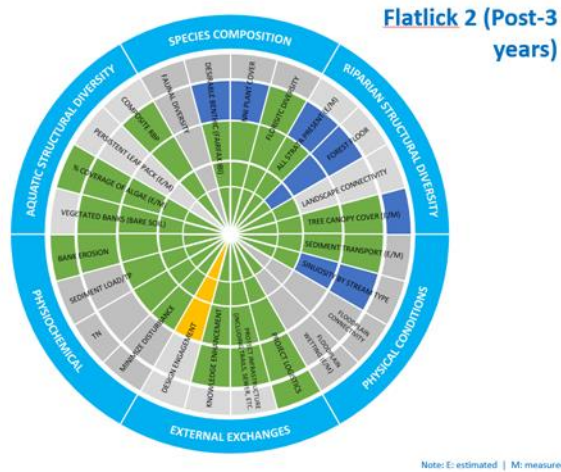
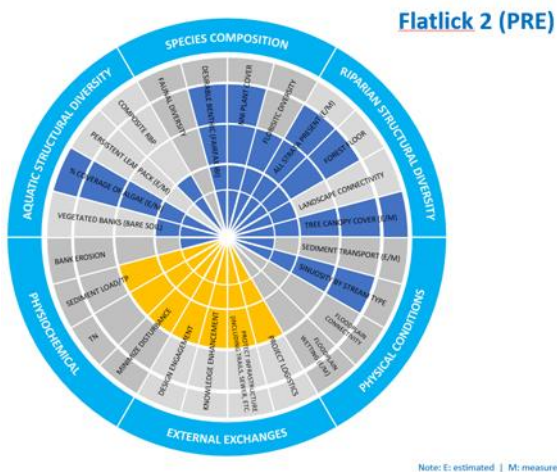
Incorporate DEIJ project siting considerations in overall program management.



Equity Assessment by Demographic Index: Montgomery County DEP Equity Assessment Map showing different tiers of demographic categories of low income and people of color within the county.

# Practice #7: Planning/Design

During the site identification and selection phase, conduct assessments before the project starts to develop a baseline for the metrics used to measure its success as determined in the ‘Planning/design’ step above. Assessments may include but not be limited to:



Use of Fairfax County Restoration Recovery Wheel to measure change in pre-project metrics. .

# Practice #8: Public Engagement

**Define the stakeholders and develop a process for involving them in planning, site selection, and construction**

Case Study: Gulf Branch Stream Project in Arlington County, VA

## Public Process

County staff sponsored several community meetings and open houses about this project over a period of 10 months. The county also established an advisory group with membership; from 5 separate commissions and organizations and four civic associations. During the public meetings...



# Practice #9: Public Engagement

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**Begin public outreach early in the design phase of individual projects to explain project goals and seek input from stakeholders. Involve stakeholders in the site selection and project design process through advisory groups, participation on the design team or other means.**

Case Study: Breewood Tributary Stream Restoration in Montgomery County, MD

Project Website

Breewood Tributary Stream Restoration Project Blog



# Practice #10: Public Engagement

**Demonstrate need for project through visual evidence and site visits whether in person or virtually; explain what will happen if project is not undertaken**

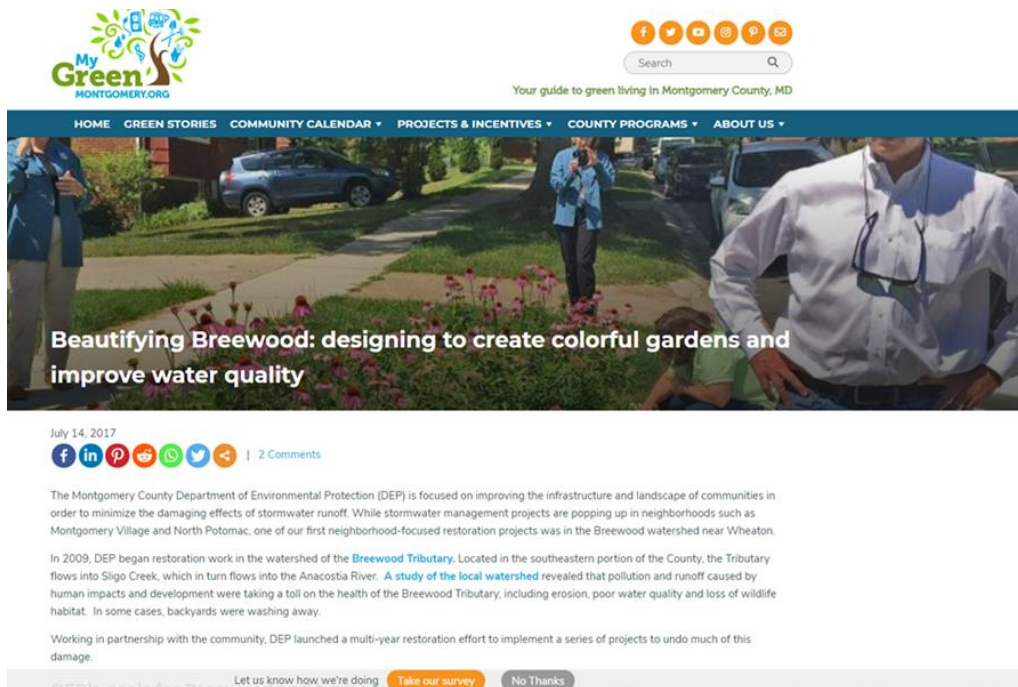


Prince William County DPW staff conducting a site tour of the Dewey's Creek Stream Restoration Project located along the eastern boundary between the Town of Dumfries and Prince William County.



# Practice #11: Public Engagement

Continue to communicate with stakeholders through construction and post-construction periods; highlight where community input was used to make changes or influence the project.



Montgomery County DEP staff established a Project Blog for the Breewood Tributary Restoration

# Practice #12: Construction/Assessment/Maintenance

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**Use construction techniques that minimize impact on high quality aquatic and terrestrial habitat, as identified during the Planning/Design phase.**



Example of the use of felled trees in stream project in Dewey's Creek Stream Restoration Project in Prince William County



# Practice #13: Construction/Assessment/Maintenance

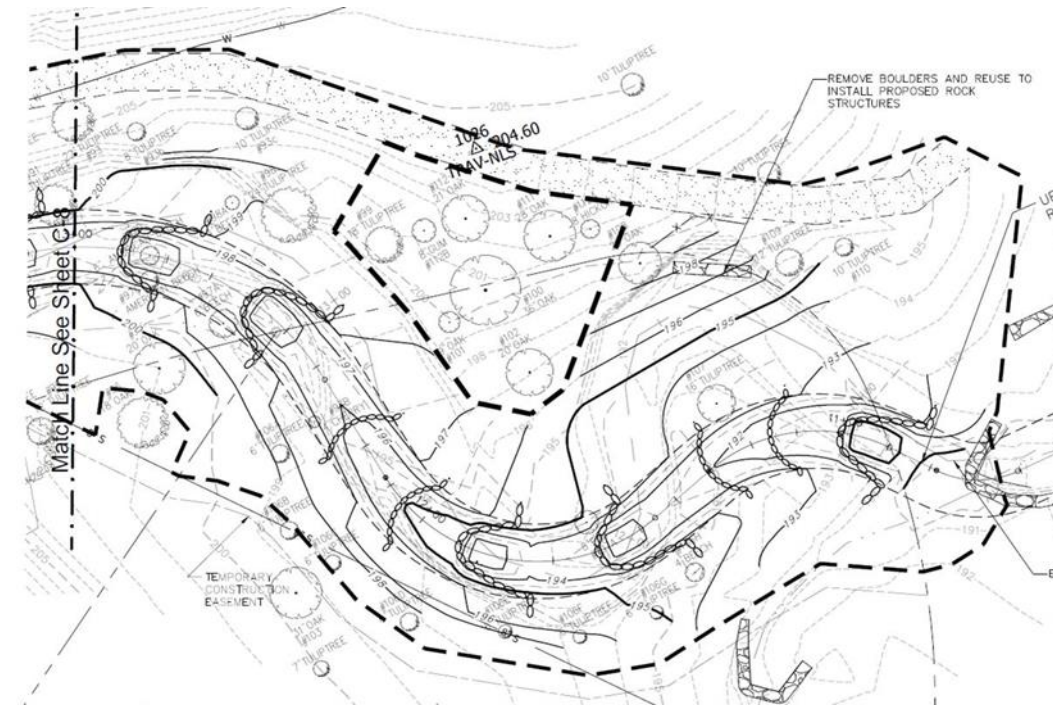
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## Adhere to quality control practices in restoration planting.

- Require plant submittals for source of materials well in advance of planting time
- Require adherence to strict planting windows based on plant material types.
- Conduct rigorous plant materials inspections for correct species, root condition, container size and adherence overall to ANSI Z60 requirements.

# Practice #14: Construction/Assessment/Maintenance

## Make field adjustments at start of construction



Site map for Donaldson Run Tributary B Stream Restoration Project in Arlington County showing efforts to save high quality trees via reduction of the limits of disturbance and establishment of tree save areas (area inside dotted line). The site access shown in the lower left uses an existing trail as the project access for construction

# Practice #15: Construction/Assessment/Maintenance

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**Budget for and pursue follow-up assessment and maintenance activities to maximize the project's long-term benefits.**

**1.3. Plant Warranty and Replacement**

- A. Warranty: Guarantee that plants will be alive and in satisfactory growth for a period of five (5) years, beginning the date of substantial completion as determined by the Project Officer.**

Excerpt from an Arlington County contract specifying need to maintain plantings for at least five years after construction was completed.



# To Comment

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- **COG staff is asking for review and comment over the next few weeks**
- **Comment deadline: Sept. 30**
- **Send comments to Christine Howard, [cdhoward@mwcog.org](mailto:cdhoward@mwcog.org)**
  - **You can find a copy of the report in the 09/08 email with the meeting materials but contact Christine if did not receive it**
  - **The draft version will not be posted online until we receive your comments.**

