

**INCORPORATING STORMWATER
GREEN INFRASTRUCTURE INTO
EXISTING LANDSCAPES AT ELK NECK
STATE PARK TO PROVIDE CHESAPEAKE
BAY TMDL RESTORATION CREDIT**

4.25.2025



BRITTANY AYERS MOYER, PE

Project Manager



8 years
experience in MS4
compliance, BMP
design, and
Chesapeake Bay TMDL
project planning



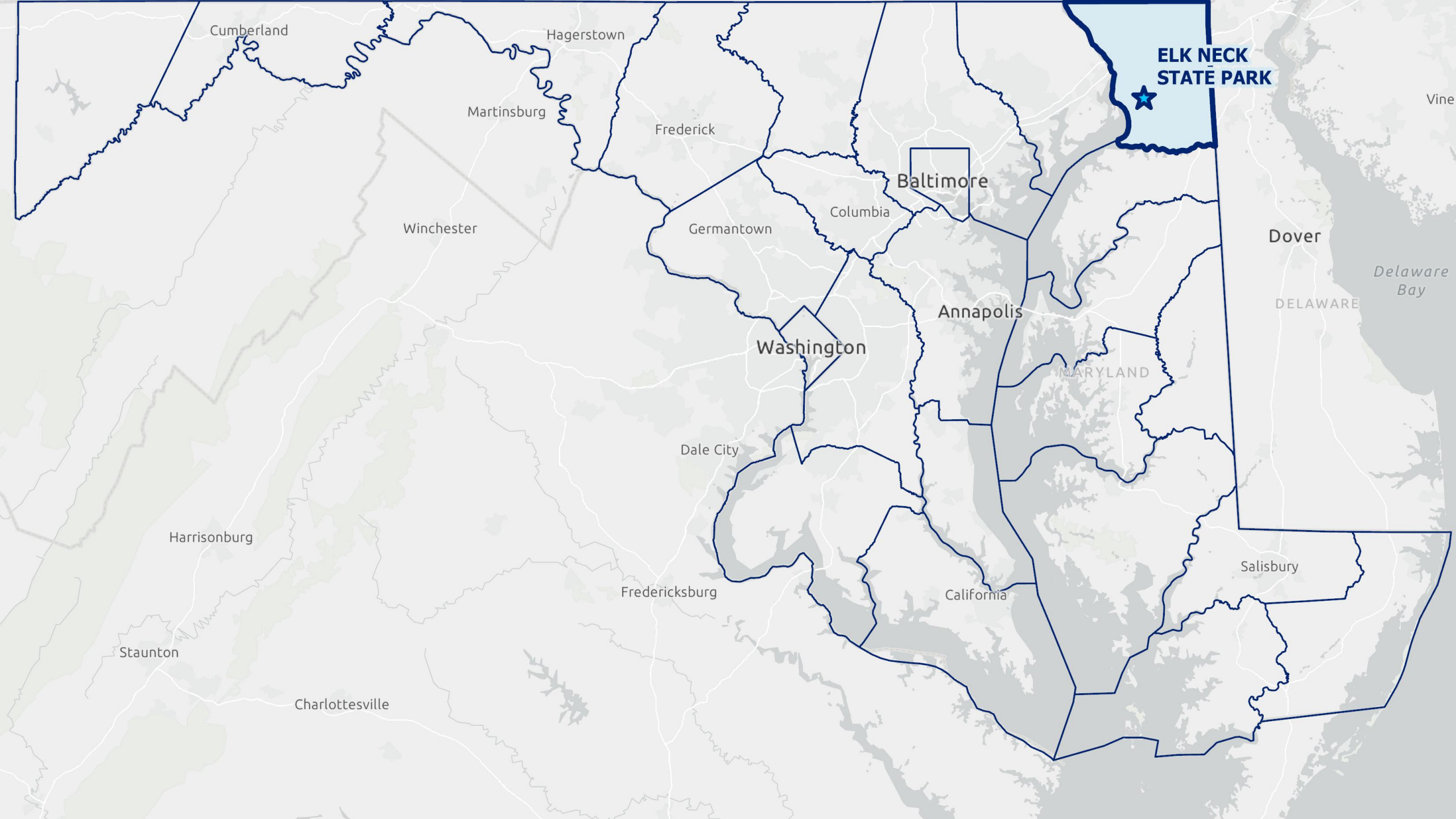
STEPHANIE GORDON-BAZAN, PE

Project Engineer

5 years
experience in MS4
compliance, BMP
design, and
Chesapeake Bay TMDL
project planning

A group of people is gathered in a field of yellow flowers, possibly participating in a community activity or a planting project. The people are blurred in the background, and the foreground is dominated by a single, sharp yellow flower with a dark brown center. The sky is bright blue with scattered white clouds. A blue rectangular box with white text is overlaid on the right side of the image.

PROJECT BACKGROUND



Cumberland

Hagerstown

Martinsburg

Frederick

Baltimore

Columbia

Germantown

Winchester

Washington

Annapolis

MARYLAND

Dale City

Dover

DELAWARE

Delaware Bay

Salisbury

California

Fredericksburg

Staunton

Harrisonburg

Charlottesville

**ELK NECK
STATE PARK**

CECIL COUNTY: ELK NECK STATE PARK ESD

WHY THIS LOCATION?

- » Treat previously untreated stormwater from large existing parking areas
- » Public outreach
- » Community partnerships



CECIL COUNTY: ELK NECK STATE PARK ESD

KEY DESIGN FEATURES

- » 8 BMPs
 - > 4 Micro-Bioretentions
 - > 4 Bioretentions
- » Landscaping
 - > Street Trees
 - > Conservation Landscaping
 - > Urban Tree Canopy
- » Impervious Surface Reduction





DESIGN CHALLENGES AND INNOVATIVE SOLUTIONS

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Design Challenges | Developed Public Space

**Integrate BMPs within
existing parking lot**

**Minimize disruption to
infrastructure**

Maximize MS4 Credit

Minimize Cost

Permitting

**Balance Needs of
multiple stakeholders**

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Design Challenges | Innovative Solutions

- » Leverage existing stormdrain systems
- » Add curbs to direct runoff
- » Maximize treatment with limited space
- » Emphasize landscaping with native plants



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Innovative Solutions | Leverage existing stormdrain systems



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Innovative Solutions | Add curbs to direct runoff



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Innovative Solutions | Maximize treatment with limited space



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Design Challenges | Emphasize landscaping with native plants



LESSONS LEARNED



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Lessons Learned | Respond and Adapt

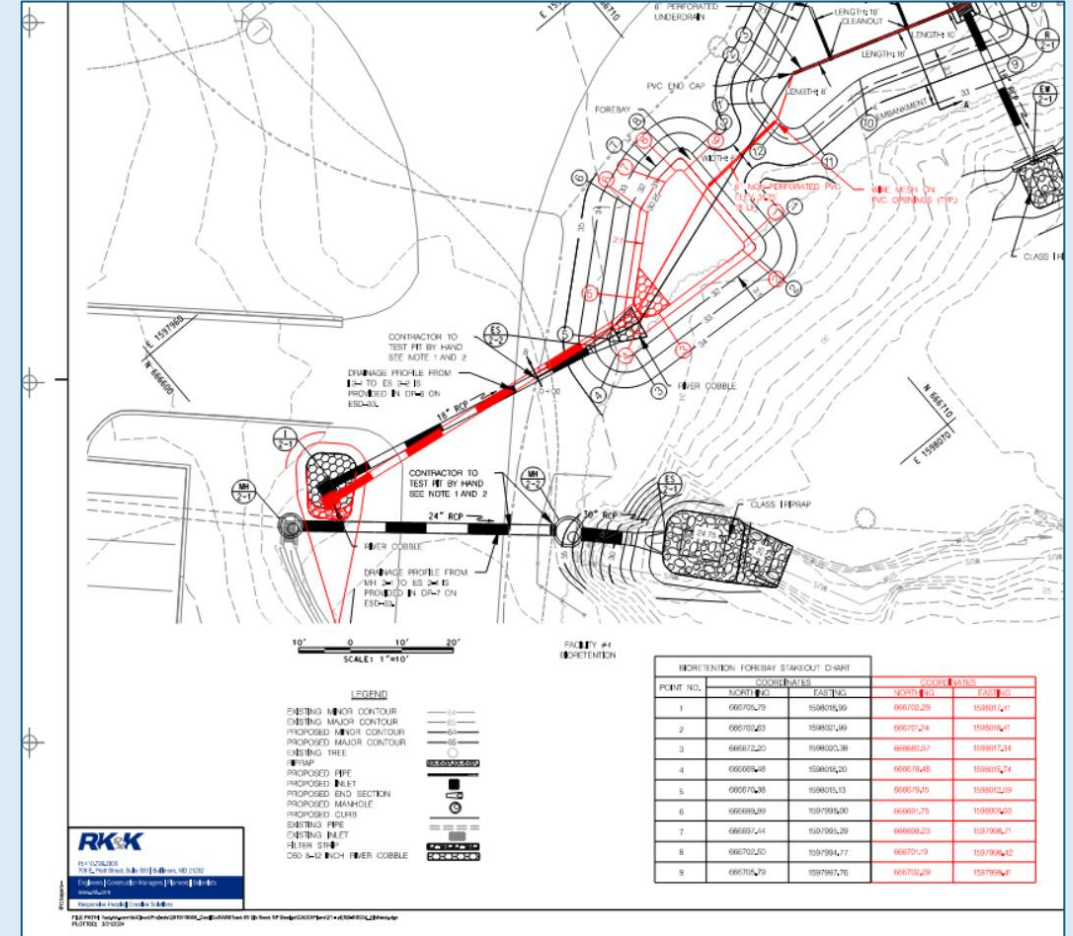


VERSUS



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Lessons Learned | Respond and Adapt



A photograph of a field of yellow flowers, likely Black-eyed Susans, growing in dark soil. In the background, a group of people is gathered, some holding blue ribbons, suggesting a community event or project. The sky is bright blue with scattered white clouds. A semi-transparent blue rectangular box is overlaid on the right side of the image, containing the text 'PROJECT BENEFITS AND OPPORTUNITIES' in white, bold, uppercase letters.

PROJECT BENEFITS AND OPPORTUNITIES

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Stakeholder Collaboration



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Public Education



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Water Quality Improvement and MS4 Restoration Credits

Facility	Impervious Acres Treated
Micro-Bioretention #1	0.36
Micro-Bioretention #2	0.27
Micro-Bioretention #3	0.64
Bioretention #4	0.60
Micro-Bioretention #5	0.17
Bioretention #6	0.72
Bioretention #7	0.57
Bioretention #8	0.28
Conservation Landscaping	0.04
Street Trees #1-#4	0.16
Urban Tree Canopy Planting	0.06
Impervious Surface Reduction	0.25
Total	4.12

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Sustainable Green Infrastructure



QUESTIONS & ANSWERS