

Name _____ Date _____

Possible Responses to Action Plan

Annapolis, Anne-Arundel County, Maryland

(10 km radius estimate: Total actual area calculated = 374.56 km²)

- Low-Intensity Urban: 34.7% (64.79 km²)
- Deciduous Forest: 21.4% (39.95 km²)
- Woody Wetlands: 17.6% (32.86 km²)
- High-Intensity Urban: 8.92% (16.64 km²)

Water flow: 8.3 miles

Low-Intensity Urban + High-Intensity Urban: 43.62% (81.43 km²)

Low-Intensity and High-Intensity Urban Areas need to be addressed.

Required Steps to Take	Rationale	Cost
Enhanced nutrient removal	More than 40% of land is low- or high-intensity urban land cover	\$2,000,000
Storm water management control	<ul style="list-style-type: none"> • Rain gardens • Green Roofs • Riparian buffers (for 8.3 miles) 	\$814,300 \$1,628,600 \$207,500
Total:		\$4,650,400
Remaining:		\$10,349,600

Possible Responses to Action Plan, continued

Havre de Grace, Harford County, Maryland

(10 km radius estimate: Total actual area calculated = 391.80 km²)

- Deciduous Forest: 35.5% (72.86 km²)
- Low-Intensity Urban: 23.9% (49.03 km²)
- Pasture/hay: 10.3% (21.11 km²)
- Cropland: 10.1% (20.78 km²)

Water Flow: 2.7 miles

Low-Intensity Urban < 40%

Low-Intensity Urban, Pasture/hay, and Cropland need to be addressed.

Required Steps to Take	Rationale	Cost
Plant cover crops (over 20.78 km² of cropland)	To maintain vegetative cover	\$498,720
Riparian buffers (for 2.7 mi.)	To absorb excess nutrients from runoff and help prevent erosion	\$67,500
Fencing (over 21.11 km²)	To exclude farm animals from accessing waterways	\$5,066,400
Animal manure management (over 21.11 km²)	To improve treatment and/or storage of animal waste	\$6,333
Storm water management control	In low-intensity urban areas (49.03 km²) <ul style="list-style-type: none">• Rain Gardens• Green Roofs	\$490,300
		\$980,600
Total:		\$7,109,853
Remaining:		\$7,890,147

Possible Responses to Action Plan, continued

Scotland, St. Mary's County, Maryland

(10 km radius estimate: Total actual area calculated = 384.37 km²)

- Cropland: 23.3% (18.42 km²)
- Evergreen Forest: 15.7% (12.38 km²)
- Woody Wetlands: 14.2% (11.22 km²)
- Low-Intensity Urban: 12.8% (10.12 km²)

Water Flow: 2 miles

Low-Intensity Urban < 40%

Cropland and Low-Intensity Urban need to be addressed.

Required Steps to Take	Rationale	Cost
Plant cover crops (over 18.42 km ² of cropland)	To maintain vegetative cover	\$442,080
Storm water management control	In low-intensity urban areas (10.12 km ²) <ul style="list-style-type: none"> • Rain Gardens • Green Roofs • Riparian Buffers 	\$101,200 \$202,400 \$50,000
Total:		\$795,680
Remaining:		\$14,204,320

Possible Responses to Action Plan, continued

Alexandria, Virginia

(10 km radius estimate: Total actual area calculated = 384.98 km²)

- Low-Intensity Urban: 53.5% (143.65 km²)
- High-Intensity Urban: 25.4% (68.35 km²)
- Deciduous Forest: 13.5% (36.22 km²)
- Woody Wetlands: 3.89% (10.45 km²)

Water Flow: 133 miles

Low-Intensity Urban + High-Intensity Urban = 78.9% (212 km²)

Low- and High-Intensity Urban need to be addressed.

Required Steps to Take	Rationale	Cost
Enhanced nutrient removal	More than 40% of land is low- or high-intensity urban land cover	\$2,000,000
Remove 4 km ² of impervious cover and plant 2000 trees	More than 50% of land is covered in low- or high- intensity urban land cover. This is needed to redirect runoff away from waterways.	\$5,000,000
Storm water management control	In all urban areas (212 km ²)	
	• Rain Gardens	\$2,120,000
	• Green Roofs	\$4,240,000
	• Riparian Buffers	\$3,325,000
Total:		\$16,685,000
Remaining:		OVER BUDGET*

*Creative options could be used to address this area. Some ideas include: reduce the size of the area to be addressed, remove less impervious cover, add riparian buffers to half of the water flow area, etc.

Possible Responses to Action Plan, continued

Norfolk, Virginia

(10 km radius estimate: Total actual area calculated = 392.76 km²)

- Low-Intensity Urban: 58.6% (161.46 km²)
- High-Intensity Urban: 26.1% (71.82 km²)
- Open Water: 4.85% (13.34 km²)
- Woody Wetlands: 4.12% (11.34 km²)

Water Flow: 15 miles

Low-Intensity Urban + High-Intensity Urban = 84.7% (233.28 km²)

Low- and High-Intensity Urban need to be addressed.

Required Steps to Take	Rationale	Cost
Enhanced nutrient removal	More than 40% of land is covered in low- or high- intensity urban land cover	\$2,000,000
Remove 4 km ² of impervious cover and plant 2000 trees	More than 50% of land is covered in low- or high- intensity urban land cover. This is needed to redirect runoff away from waterways.	\$5,000,000
Storm water management control	In all urban areas (233.28 km ²) <ul style="list-style-type: none"> • Rain Gardens • Green Roofs • Riparian Buffers 	\$2,332,800 \$4,665,600 \$375,000
Total:		\$14,373,400
Remaining:		\$626,600

Possible Responses to Action Plan, continued

Jamestown, Virginia

(10 km radius estimate: Total actual area calculated = 374.06 km²)

- Deciduous Forest: 24.4% (47.76 km²)
- Low-Intensity Urban: 18.2% (35.64 km²)
- Woody Wetlands: 15.4% (30.05 km²)
- Cropland: 8.78% (17.15 km²)

Water Flow: 43 miles

Low-Intensity Urban < 40%

Low-Intensity Urban and Cropland need to be addressed.

Required Steps to Take	Rationale	Cost
Plant cover crops (over 17.15 km ² of cropland)	To maintain vegetative cover	\$411,600
Storm water management control	In low-intensity urban areas (35.64 km ²) <ul style="list-style-type: none"> • Rain Gardens • Green Roofs • Riparian Buffers 	\$356,400 \$712,800 \$1,075,000
Total:		\$2,555,800
Remaining:		\$12,444,200