



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

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April 23, 2019

Mr. Michael Liberati
Corteva Agriscience
Agriculture Division of DowDuPont
Chestnut Run Plaza 715-236
Wilmington, DE 19805

VIA ELECTRONIC MAIL

**Re: Summer 2018 Constitution Park Bank Management Area Maintenance Inspection
Area of Concern 4, Former DuPont Waynesboro Plant
Waynesboro, Virginia
EPA ID# VAD003114832**

Dear Mr. Liberati:

This letter acknowledges the receipt and review of the Summer 2018 Constitution Park Bank Management Area Maintenance Inspection dated November 30, 2018, submitted to the Virginia Department of Environmental Quality, Office of Remediation Programs (Department) by AECOM on behalf of the E.I du Pont de Nemours and Company (DuPont).

The Department has no comments on the memorandum.

If you have any questions, you may contact me at 703-583-3825 or by email at Kurt.Kochan@deq.virginia.gov.

Sincerely,

A handwritten signature in cursive script, appearing to read "Kurt W. Kochan".

Kurt W. Kochan
Corrective Action Project Manager
Office of Remediation Programs

cc: DuPont Waynesboro Correspondence File
Ceil Mancini, Josh Collins, AECOM

Memorandum

To	Michael Liberati, DuPont CRG Ralph Stahl, DuPont CRG	Page	1 of 2
CC	Nancy Grosso, DuPont CRG Ceil Mancini, AECOM		
Subject	Summer 2018 Constitution Park BMA Maintenance Inspection Former DuPont Waynesboro Site, Area of Concern 4		
From	Andrew Miano, AECOM Joshua Collins, AECOM		
Date	November 30, 2018		

This memorandum summarizes the Summer 2018 Maintenance Inspection (inspection) of the Constitution Park Bank Management Area (BMA) conducted June 21st 2018. It was the third post-construction inspection following completion of construction in February 2017, and followed the scope described in the Maintenance Plan included as Appendix M of the Basis of Design Report, Phase 1A BMAs, South River AOC 4 (Anchor QEA et al., 2016). The purpose of the post-construction inspection is to identify potential BMA maintenance needs, focusing on vegetative development, bank stability, and the integrity of the installed bank remediation features. Additional attachments to this memorandum include:

- Table 1 – Maintenance inspection log
- Appendix A - Photographic log

Findings

The results of the post-construction inspection were generally similar to the Fall 2017 event, with the exception of increased cover of native plants, and a decrease in the invasive Japanese knotweed. A brief summary of findings is provided below; complete details of the maintenance inspection are included in Table 1.

Vegetation

- Most areas along the BMA exhibited healthy growth of planted vegetation. Coverage by native plants is encroaching on areas previously dominated by the invasive Japanese knotweed due to the success of the invasives management effort.
- Planted shrubs and trees that did not survive the summer were removed. Replacement plantings will be installed upon successful control of invasive species. Tree and shrub plantings are currently planned for the Fall of 2019.

Stability

- River bank angles remain unchanged, and generally maintain a consistent bank angle throughout the BMA as designed (Table 1);
- There was no evidence of recent erosion or “at-risk” trees (e.g. trees that may no longer be stable due to erosion).

Installed Features

- Rock toe features were intact, with increased sediment deposition filling in the interstices;
- Large woody debris was stable, and anchor chains were intact;
- Coir logs were intact, but several areas of wear associated with foot traffic were noted along the toe of the slope;
- Geocell and erosion control fabric were intact, but both were exposed in several areas associated with foot traffic;
- The on-going invasive species control has decreased the extent of Japanese knotweed throughout the site, allowing increased coverage of native vegetation and further stabilization in many areas;
- There was no evidence of local scour at the toe of slope.

The Summer 2018 maintenance inspection conducted at the Constitution Park BMA confirmed the integrity of the installed bank stabilization. Native vegetation coverage is increasing along the BMA relative to coverage by Japanese knotweed due to an effective invasives management program that will continue throughout 2019. Vegetative growth will continue to be evaluated during the Fall 2018 post-construction inspection.

PATH FORWARD

The following maintenance activities are planned for the stabilized Constitution Park BMA based on the findings of the Summer 2018 inspection:

- Continue with herbicide treatment of invasive Japanese knotweed during the summer of 2018. Subsequent herbicide treatments will be applied as necessary throughout the year in areas with continued Japanese knotweed growth.
- Invasives species management (e.g. herbicide treatment) will continue for the next year to enable replanting of native vegetation in Fall 2019.
- Continue observation of exposed geocell and erosion control fabric.

REFERENCES

Anchor QEA, AECOM, and E.I. du Pont de Nemours and Company. 2016. Basis of Design Report, Phase 1A Bank Management Areas, South River Area of Concern 4. September 2016.

Table 1
Summer 2018 Constitution Park BMA Maintenance Inspection
Former DuPont Waynesboro Site, Area of Concern 4

Station (ft) ¹	Undercutting				Exposed Roots			At Risk Trees			Installed Stabilization Features/Intact						Local Scour			Overall Change Since Previous Inspection (Y/N)
	Approximate Bank Angle (Degrees)	Consistent Grade (Y/N) ²	Notes	Photo # (Appendix A)	Exposed Roots (L/M/H) ³	Notes	Photo # (Appendix A)	At Risk Trees Present (Y/N + #) ⁴	Notes	Photo # (Appendix A)	Rock Toe/LWD (Y/N) ⁵	Geocell (Y/N) ⁶	Erosion Control Fabric (Y/N) ⁶	Notes	Photo # (Appendix A)	Scour Present (Y/N) ⁷	Notes	Photo # (Appendix A)		
00 - 25	30	N (see notes)	Lower bank: ~30 degrees Upper bank: ~55 degrees	1	L	No woody plants adjacent to edge of water	1	Y	No woody plants adjacent to edge of water	1	NA	NA	NA		1	Y	Low presence of scour 5' upstream of 00 - 25	1	N	
00 + 00	40	N (see notes)	Lower bank: ~30 degrees Upper bank: ~55 degrees	2	N	No woody plants adjacent to edge of water; minimal vegetation present on bank	2	N	No woody plants adjacent to edge of water	2	NA	Y	Y	Cair logs intact, some erosion control fabric is visible	2	N	Potential river access point observed; evidence of foot traffic along the toe of slope, along cair logs	2	Y	
00 + 50	45	Y		3	N	No woody plants adjacent to edge of water; 30-40% invasive species cover	3	N	No woody plants adjacent to edge of water	3	NA	Y (beginning to be exposed at toe of slope)	Y (exposed throughout)	Geocell intact, but beginning to be exposed near the toe of the slope between 00 + 00 and 00 + 50	3	N	Evidence of foot traffic along the toe of slope	3	Y	
00 + 100	40	N (see notes)	Lower bank ~10 degrees (rock toe); Upper bank ~45 degrees	4,5	NA	No woody plants adjacent to edge of water	4,5,6	N	No at-risk trees present; no exposed roots	4,5,6	Y (rock toe)	Y	Y (small exposed section of cair fabric)	Rock toe along bank and constructed river access steps intact	4	N	Sediment deposition adjacent to rock toe boulders	4	Y	
00 + 150	45	N (see notes)	Lower bank ~5 degrees (rock toe); Upper bank ~45 degrees	7	NA	Native vegetation predominantly present; no woody plants adjacent to edge of water	7,8,9	N	No woody plants adjacent to edge of water	7,8,9	Y (LWD and Rock toe)	Y	Y	Installed geocell and erosion control fabric intact	7,9	N	Silt filling in behind LWD and in boulders	7,9	Y	
00 + 200	55	Y		10	NA	Patches of invasive vegetation present; no woody plants adjacent to edge of water	10	N	No woody plants adjacent to edge of water	10	NA	Y	Y (exposed throughout)	installed cair logs, geocell and erosion fabric intact	10	N	Evidence of foot traffic along the toe of slope, along cair logs	10	Y	
00 + 250	55	Y		11,12	NA	Patches of invasive vegetation present; no woody plants adjacent to edge of water	11	N	No woody plants adjacent to edge of water	11,12	NA	Y	Y (exposed throughout)	Geocell intact; edge of erosion control fabric exposed throughout	11,12	N		11	Y	
00 + 300	70	Y		13	NA	Minimal vegetation present; no woody plants adjacent to edge of water	13	N	No exposed roots; no at-risk trees	13	NA	Y	Y (50% exposed)	Erosion control fabric 50% exposed; geocells and installed cair logs intact	13,14,15	N		13	Y	
00 + 350	70	Y		16	NA	Native vegetation present along top of bank with small patches of the invasive knotted plant present	16,18	N	No woody plants adjacent to edge of water	16,17,18	NA	Y (some geocell exposed below observation platform)	Y (exposed throughout)	Cair log 5' downstream slightly loose and appears to have shifted towards the stream;	16,17,18	N	Installed cair logs intact, but showing signs of wear and potential for scour	18	Y	
00 + 400	60	Y		19,20,21	NA	Predominantly native vegetation present; no woody plants adjacent to edge of water	19,20,21	N	No exposed roots; no at-risk trees	19,20,21	NA	Y (small amount exposed upstream around black walnut)	Y (60% exposed)	limited geocell exposed around base of black walnut tree; erosion control fabric exposed throughout, particularly near bottom of bank; cair log looks out of place	19,20,21	N		19	Y	
00 + 450	50	Y		22	NA	Patches of native and invasive vegetation present; no woody plants adjacent to edge of water	22	N	No exposed roots; no at-risk trees	22	NA	Y	Y (exposed throughout)	Erosion control fabric exposed throughout	22	Y	Minimal scour present near cair log	22	Y	
00 + 500	40	Y	Decreased vertical bank height (~6')	23	NA	Native vegetation predominantly present; no woody plants adjacent to edge of water	23	N	No woody plants adjacent to edge of water	23	NA	Y	Y (30% exposed)	Erosion fabric exposed near toe of bank	23	N		23	Y	
00 + 525	15	Y		24,25	NA	Scattered native vegetation; no woody plants adjacent to edge of water	24	N	No woody plants adjacent to edge of water	24	NA	Y (small amount exposed along cair log and edge of remediation)	Y (60% exposed)	Erosion control fabric exposed near toe of bank	24	N		24,25,26	Y	

Notes

- Inspection station is described as the distance (feet) upstream (+) or downstream (-) from the start of the BMA (00); example: Station 00 + 50' is 50 feet downstream from the start of the BMA
- A significant deviation from continuous bank slope or break in grade may be used as an indicator of undercutting; consistent bank grade is evaluated as Y (yes) or N (no)
- The extent to which roots are exposed may provide a relative measure of the magnitude of apparent erosion; extent of exposed roots is evaluated as L (low), M (moderate), H (high), or NA (not applicable- no exposed roots)
- At-risk trees (i.e., trees that lean towards the river) typically have a greater potential to fall into the river. dislodge the bank soil and erosion-control products immediately around and above the tree; presence of at-risk trees is evaluated as Y (yes) or N (no)
- Installed rock toe and large woody debris (LWD) features are monitored to ensure that they are anchored and determine whether material has sloughed, or been eroded, or moved downstream; these installed features are evaluated as Y (yes, intact), N (no, not intact), or NA (not applicable- no installed features to monitor)
- Installed geocell and erosion control fabric are monitored to ensure that they are intact and determine whether material is exposed or visible; these installed features are evaluated as Y (yes, intact), N (no, not intact), or NA (not applicable- no installed features to monitor)
- The presence of local scour is assessed at the toe and center of the bank, per inspection station, as well as approximately 25 feet upstream and downstream of the start and end of the BMA; the presence of scour is evaluated as Y (yes) or N (no)

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 1	Date: 6/21/2018		
Direction Photo Taken: West			
Description: Station 00 – 25' ~30 degree bank angle; no at-risk trees present; both native and invasive vegetation present; limited scour 5' upstream.			

Photo No. 2	Date: 6/21/2018	
Direction Photo Taken: West		
Description: Station 00 + 00' ~40 degree bank angle; patches of invasive and native vegetation present; coir logs intact; no scour observed; heavy foot traffic down the bank and along coir logs.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 3	Date: 6/21/2018		
Direction Photo Taken: West			
Description: Station 00 + 50' ~ 45 degree bank angle present; no at-risk trees or exposed roots present; patches of invasive and native vegetation present; coir logs intact; geocell intact and slightly exposed; no scour observed; evidence of foot traffic along toe of slope, along coir logs.			

Photo No. 4	Date: 6/21/2018	
Direction Photo Taken: West		
Description: Station 00 + 100' ~40 degree bank angle; no at-risk trees or exposed roots present; patches of invasive and native vegetation present; no scour observed; installed rock toe intact, with evidence of sediment deposition; installed river access steps intact.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 5	Date: 6/21/2018		
Direction Photo Taken: Southwest			
Description: Station 00 + 100' No at-risk trees or exposed roots present; no scour observed; installed rock toe intact, with evidence of sediment deposition; evidence of foot traffic along toe of slope, along coir logs.			

Photo No. 6	Date: 6/21/2018	
Direction Photo Taken: Northwest		
Description: Station 00 + 100' Sediment deposition adjacent to rock toe boulders; invasive and native vegetation present.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 7	Date: 6/21/2018		
Direction Photo Taken: West			
Description: Station 00 + 150 ~45 degree bank angle; no at-risk trees or exposed roots present; well established native vegetation; no scour observed; installed rock toe and large woody debris (LWD) intact; installed geocell and erosion control fabric intact; evidence of sediment deposition.			

Photo No. 8	Date: 6/21/2018
Direction Photo Taken: Northwest	
Description: Station 00 + 150' Installed rock toe intact with evidence of sediment deposition: small patches of the invasive knotweed present.	

A photograph showing a riverbank with a rocky toe. The bank is covered in dense green vegetation, including trees and shrubs. The water is dark and rippled. In the background, a bridge is visible across the river. The sky is overcast.

Client Name: DuPont	Site Location: STM-01 (Constitution Park)	Project No. 60532579
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Photo No. 9	Date: 6/21/2018
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Direction Photo Taken:

Southwest

Description:

Station 00 + 150'

Installed rock toe and LWD intact, with evidence of sediment deposition.



Photo No. 10	Date: 6/21/2018
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Direction Photo Taken:

West

Description:

Station 00 + 200'

~55 degree bank angle; patches of invasive vegetation present; no exposed roots; no scour observed; exposed erosion control fabric; foot path present down bank and along coir logs; installed coir logs, geocell and erosion fabric intact.



Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 11	Date: 6/21/2018		
Direction Photo Taken: West			
Description: Station 00 + 250' ~55 degree consistent uniform bank angle; no exposed roots; no scour present; patches of invasive vegetation present; installed coir logs and geocell intact; edge of erosion control fabric exposed near toe of slope.			

Photo No. 12	Date: 6/21/2018	
Direction Photo Taken: Southwest		
Description: Station 00 + 250' Patches of invasive vegetation present; evidence of foot traffic along coir logs; geocell and installed coir logs intact.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 13	Date: 6/21/2018		
Direction Photo Taken: West			
Description: Station 00 + 300' ~70 degree uniform bank angle; no exposed roots or at-risk trees; no scour observed; minimal vegetation present; erosion control fabric exposed near toe of slope; geocell and installed coir logs intact.			

Photo No. 14	Date: 6/21/2018	
Direction Photo Taken: Northwest		
Description: Station 00 + 300' Minimal vegetation present; erosion control fabric exposed near toe of slope; geocell and installed coir logs intact.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 15	Date: 6/21/2018		
Direction Photo Taken: Southwest			
Description: Station 00 + 300' Patches of invasive vegetation present upstream of the inspection point; erosion control fabric exposed near toe of slope; geocell and installed coir logs intact.			

Photo No. 16	Date: 6/21/2018	
Direction Photo Taken: Northwest		
Description: Station 00 + 350' ~70 degree bank angle; no exposed roots or at-risk trees; no scour observed; native vegetation present along top of bank, with small patches of the invasive knotweed present; geocell and installed coir logs intact.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 17	Date: 6/21/2018		
Direction Photo Taken: Southwest			
Description: Station 00 + 350' Limited vegetative cover; edge of installed erosion control fabric exposed; installed coir logs intact.			

Photo No. 18	Date: 6/21/2018	
Direction Photo Taken: Northwest		
Description: Station 00 + 350' Edge of installed erosion control fabric exposed along toe of slope; installed coir logs intact, but showing signs of wear; predominantly native vegetation present covering much of bank.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 19	Date: 6/21/2018		
Direction Photo Taken: West			
Description: Station 00 + 400' ~60 degree bank angle; predominantly native vegetation present with the exception of at toe of slope; no exposed roots; no at-risk trees; no scour present.			

Photo No. 20	Date: 6/21/2018	
Direction Photo Taken: Southwest		
Description: Station 00 + 400' Installed coir logs intact; limited vegetation present at bottom of bank; limited geocell exposed around base of black walnut tree.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 21	Date: 6/21/2018		
Direction Photo Taken: Northwest			
Description: Station 00 + 400' Installed coir logs intact; extensive bare areas present, particularly near toe of the bank.			

Photo No. 22	Date: 6/21/2018	
Direction Photo Taken: West		
Description: Station 00 + 450' ~50 degree bank angle; no exposed roots or at-risk trees; minimal scour observed; patches of native and invasive vegetation present; with areas of bare erosion control fabric visible near toe of bank.		

Client Name: DuPont		Site Location: STM-01 (Constitution Park)	Project No. 60532579
Photo No. 23	Date: 6/21/2018		
Direction Photo Taken: West			
Description: Station 00 + 500' ~40 degree bank angle; no exposed roots or at-risk trees; no scour observed; native approximately 50% vegetative cover , predominantly comprised of native species.			

Photo No. 24	Date: 6/21/2018	
Direction Photo Taken: West		
Description: Station 00 + 525' ~15 degree bank angle; no exposed roots or no at-risk trees; no scour observed; extensive bare erosion control fabric present with limited native vegetation.		