

# **Restoration of American Shad to the Brandywine River**

Draft Dec 2015

University of Delaware  
Water Resource Center  
Newark, Del.

## Summary

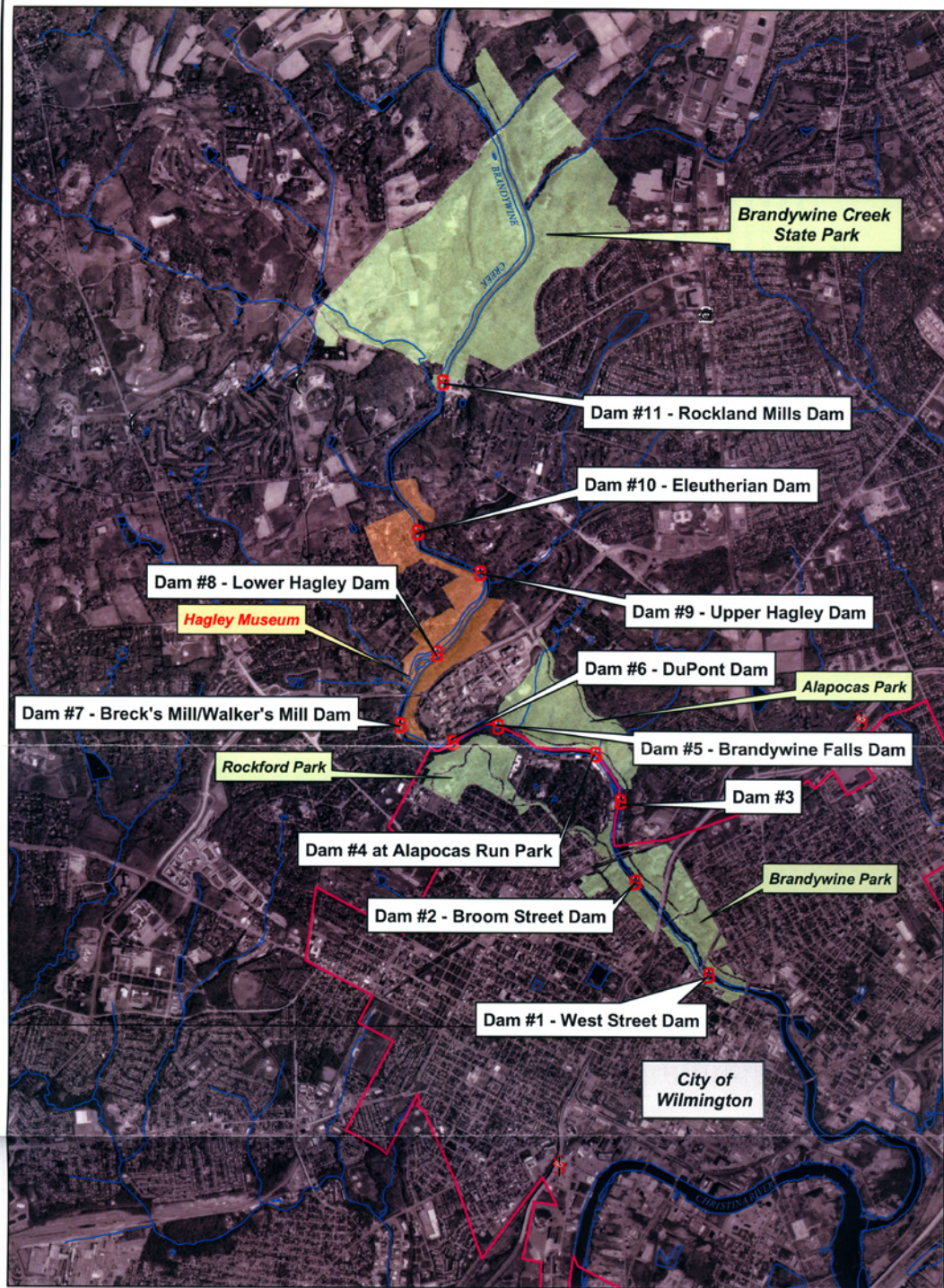
This letter report updates the 2005 American shad restoration along the Brandywine River report prepared by the Brandywine Conservancy.

American shad (*Alosa sapidissima*) were once an abundant migratory fish found throughout East Coast rivers and streams of North America, including the Brandywine River in Delaware and Pennsylvania. Shad were an important part of Native American and early colonial diets, and later, were the basis of an important commercial fishery in larger rivers like the Susquehanna and Delaware. Spring runs of shad comprised a unique and dramatic natural phenomenon, now a lost part of our cultural heritage.

Shad restoration efforts are underway in numerous rivers and streams along the East Coast. A 1985 study titled *A Review and Recommendations Relating to Fishways Within the Delaware Basin* commissioned by the Delaware Basin Fish and Wildlife Management Cooperative identified three tributaries historically used by shad for spawning which had “the greatest potential for restoration of the American shad.” These include the Lehigh, the Schuylkill, and the Brandywine Rivers. The following is a report on the current state of dams along the Brandywine River. Restoring shad to the Brandywine River has important economic, ecological, and cultural benefits for the Brandywine Valley region generally and the Wilmington area specifically.

The following is a summary table on the 11 dams on the Brandywine River, a map highlighting the dams and relevant landmarks, a report detailing each dam, along with photographs of the dams in their current state during the fall of 2015. The description includes the dams location, river mile, owner (if known), parcel number and owners of land on east and west bank, historic and present function, approximate height (based on the 2005 survey by the Brandywine Conservancy), approximate width, if it has a mill race, and the estimated shad potential (cumulatively). The source for shad production estimates is *A Review and Recommendations Relating to Fishways within the Delaware Basin* by the Delaware Basin Fish and Wildlife Management Cooperative (Delaware Division of Fish and Wildlife, et al. 1985). Additionally, the appendix includes flood profiles of the dams.

Dam No.	Dam Name	River Mile	Latitude/ Longitude	Function	Height/ Width (ft.)	East Bank Parcel # Owner	West Bank Parcel # Owner	Mill Race ?	Shad Production Potential	Historic?
1	West Street	2.1	39.75142/-75.54760	Protect water supply from tidal influence. Encloses sewer pipes	3 ft. 176 ft.	2601340075 City of Wilmington	2601340075 City of Wilmington	No	3,300	Wilmington Historic District
2	Brandywine Park/ Broom Street	2.9	39.75868/-75.55502	City water intake; aesthetic (waterfall and mill race supply)	7 ft. 154 ft.	2601410006 City of Wilmington	2601340075 City of Wilmington	Yes	3,600	Wilmington Historic District
3	None	3.35	39.76491/-75.55695	None known; was for industrial water supply	3 ft. 135 ft.	0614300001 Augustine Mill Associates	2600640050 2/3 Mill Road LLC	No	4,600	No
4	Alapocas Run Park and Bancroft Mills	3.6	39.76861/-75.55922	None known; was for water supply	4 ft. 150 ft.	0612700002 State of Delaware	2600620041 Rockford Falls Partners LLC	No	6,700	No
5	Brandywine Falls	4.2	39.77078/-75.56919	Mill race supply; aesthetic; was for industrial water supply	8-10 ft. 200 ft.	0612700002 State of Delaware	2600230001 Brandy. Falls Condo Assoc.	Yes	7,700	No
6	DuPont	4.5	39.76959/-75.57346	None known; possible backup water source	4-6 ft. 182 ft.	0612600002 E I DuPont Nemours & Co.	2600540002 City of Wilmington	No	9,000	No
7	Breck's Mill/Walker's Mill	4.8	39.77086/-75.57903	Aesthetic; once fed two mill races	6 ft. 156 ft.	0612600001 Walkers Mill Associate LLC	703020017 Eleutherian Mills-Hagley	Yes (2)	10,700	Yes
8	Henry Clay Mill/ Lower Hagley	5.2	39.77636/-75.57531	National Historic Landmark, Aesthetic (waterfall), mill race	6-8 ft. 215 ft.	061170001 Eleutherian Mills-Hagley	702700032 Eleutherian Mills-Hagley	Yes	12,100	Yes
9	Upper Hagley/ Birkenhead	5.7	39.78270/-75.57107	National Historic Landmark, Aesthetic (waterfall), mill race	2 ft. 205 ft.	0610800002 Black Gates LLC	0702700032 Eleutherian Mills-Hagley	Yes	13,000	Yes
10	Eleutherian Mills	6.2	39.78556/-75.57740	National Historic Landmark, Aesthetic (waterfall), mill race	3 ft. 126 ft.	0609800002 Black Gates LLC	0702700032 Eleutherian Mills-Hagley	Yes	16,400	Yes
11	Rockland Mills	7.2	39.79757/-75.57497	Part of Historic District. Once fed mill race. Aesthetic	7-8 ft. 135 ft.	0607500002 State of Delaware	0701900007 State of Delaware	Yes	26,600	Yes



#### Legend

- S Dam locations
- Streams
- Parks
- Hagley Museum lands
- City of Wilmington

### Map 3 Delaware Dams of the Brandywine River



0 0.25 0.5 1 Miles

**Environmental Management Center**  
**BRANDYWINE CONSERVANCY**  
P.O. Box 341 Chadds Ford, Pennsylvania 19317 (610) 388-2700

DATE SOURCE: Base data from Chester County GIS data distribution, 2001.  
Aerial photograph from PECCO/ADR aerial photography, flown 2000. Delaware  
Hydrology data from USGS, 2004.

Date: January 19, 2005



# Dam 1

Dam 1 in the Brandywine Creek is located on West Street in Wilmington. At 39.75142 latitude and -75.54760 longitude, the City of Wilmington is the owner. The land on the west bank of the dam is parcel number 2601340075 and the east bank is parcel number 2601340075. The dam is located at 2.1 river miles of the Brandywine and has a height of approximately 3 ft. Dam 1 protects water supply from tidal influencing and encloses two sewer pipes for the City of Wilmington. The estimated shad production potential is 3,300.



**Dam 1 Looking Upstream**





**Dam 1 Looking Upstream East Bank**



## Dam 2

Dam 2 is located at Brandywine Park and Broom Street. At 39.75868 latitude and -75.55502 longitude the City of Wilmington is the owner of the dam. The land on the west bank of the dam is parcel number 2601340075 and the land on the east bank is parcel number 2601410006. The dam is located at river mile 2.9 of the Brandywine and has a height of approximately 7 ft. Dam 2 is used for city water intake. While it is not a historic dam, it is a part of the Wilmington Historic District and does have a mill race. The estimated shad production of dam 2 is 3,600.



**Dam 2 Looking at West Bank and Construction on Mill Race**





**Dam 2 Looking Downstream**



## Dam 3

Dam 3 in the Brandywine Creek is located at latitude 39.76491 and longitude -75.55695. The land on the west bank of the dam is parcel number 2600640050 and the owner is 2/3 Mill Road LLC . The east bank is parcel number 0614300001 and the owner is Augustine Mill Associates. The dam is located at 3.35 river miles of the Brandywine and has a height of approximately 3 ft. Dam 3 was historically used for industrial water supply, however currently has no known use. There is no mill race with the dam and it is not a historical dam. Additionally, dam 3 is currently breached. The estimated shad production potential is 4,600.



**Dam 3 Breached Looking Upstream, Breached**





**Dam 3 Looking Upstream West Bank, Breeched**



## Dam 4

Dam 4 in the Brandywine Creek is located at Alapocas Run Park and Bancroft Mills at latitude 39.76861 and -75.55922 longitude; the Delaware Department of Natural Resources and Environmental Control own the dam. The land of the west bank of the dam is parcel number 2600620041 and the owner is Rockford Falls Partners LLC. The east bank is parcel number 0612700002 and the owner is the State of Delaware. The dam is located at 3.6 river miles of the Brandywine and has a height of approximately 3 to 4 ft. Dam 4 was historically used for water supply, however currently has no know use. There is no mill race with the dam and it is not a historical dam. The estimated shad production potential is 6,700.



**Dam 4 Looking at East Bank**





**Dam 4 Looking Upstream**



## Dam 5

Dam 5 in the Brandywine Creek is located at Brandywine Falls at latitude 39.77078 and -75.56919 longitude. The land of the south bank of the dam is parcel number 2600230001 and the owner is Brandywine Falls Condo Association. The north bank is parcel number 0612700002 and the owner is the State of Delaware. The dam is located at 4.2 river miles of the Brandywine and has a height of approximately 8 to 10 ft. Dam 5 was historically used for water supply, however currently has no know use. There is a mill race but it is not a historical dam. The estimated shad production potential is 7,700.



**Dam 5 Looking at East Bank**





**Dam 5 Looking at East Bank**



## Dam 6

Dam 6 in the Brandywine Creek is located at the DuPont Experimental Station at latitude 39.76959 and -75.57346 longitude; DuPont Company owns the dam. The land of the south bank of the dam is parcel number 2600540002 and the owner is the City of Wilmington. The north bank is parcel number 0612600002 (N. Bank) and the owner is the E I DuPont Denemours & Co. The dam is located at 4.5 river miles of the Brandywine and has a height of approximately 4 to 6 ft. Dam 6 currently has no know use, but is a possible back-up water supply to the DuPont facility. There is no mill race with the dam and it is not a historical dam. The estimated shad production potential is 9,000.



**Dam 6 Looking Downstream, Partially Breeched**





**Dam 6 Looking at East Bank, Partially Breached**



## Dam 7

Dam 7 in the Brandywine Creek is located at Breck's Mill and Walker's Mill at latitude 39.77086 and -75.57903 longitude; Hagley Museum owns the dam. The land of the west bank of the dam is parcel number 703020017 and the owner is Eleutherian Mills-Hagley Foundation. The east bank is parcel number 612600001 and the owner is the Walkers Mill Association LLC. The dam is located at 4.8 river miles of the Brandywine and has a height of approximately 6 ft. Dam 7 historically fed two mill races. There are two mill races with the dam currently and it is a historical dam in the Hagley Museum. The estimated shad production potential is 10,700.



**Dam 7 Looking Upstream**



## Dam 8

Dam 8 in the Brandywine Creek is located at Henry Clay Mill and Lower Hagley at latitude 39.77636 and -75.57531 longitude; Hagley Museum owns the dam. The land of the west bank of the dam is parcel number 702700032; the owner is Eleutherian Mills-Hagley Foundation. The east bank is parcel number 061170001; the owner is the Eleutherian Mills-Hagley Foundation. The dam is located at 5.2 river miles of the Brandywine and has a height of approximately 6 to 8 ft. Dam 8 historically fed a mill race. There is currently a mill race with the dam and it is a historical dam in the Hagley Museum. Additionally, the dam is a National Historic Landmark. The estimated shad production potential is 12,100.



**Dam 8 Looking Upstream**





**Dam 8 Looking Upstream East Bank**



## Dam 9

Dam 9 in the Brandywine Creek is located at Upper Hagley and Birkenhead at latitude 39.78270 and -75.57107 longitude; Hagley Museum owns the dam. The land of the west bank of the dam is parcel number 0702700032 and the owner is Black Gates LLC. The east bank is parcel number 0610800002 and the owner is the Black Gates LLC. The dam is located at 5.7 river miles of the Brandywine and has a height of approximately 2 ft. Dam 9 historically fed a mill race. There is currently a mill race with the dam and it is a historical dam in the Hagley Museum. Additionally, the dam is a National Historic Landmark. The estimated shad production potential is 13,000.



**Dam 9 Looking Upstream East Bank, Partially Breeched**





**Dam 9 Looking Upstream East Bank, Partially Breached**



## Dam 10

Dam 10 in the Brandywine Creek is located at Eleutherian Mills at latitude 39.78556 and -75.57740 longitude; Hagley Museum owns the dam. The land of the west bank of the dam is parcel number 0702700032 and the owner is Black Gates LLC. The east bank is parcel number 0609800002 and the owner is the Black Gates LLC. The dam is located at 6.2 river miles of the Brandywine and has a height of approximately 3 ft. Dam 10 historically fed a mill race. There is currently a mill race with the dam and it is a historical dam in the Hagley Museum. Additionally, the dam is a National Historic Landmark. The estimated shad production potential is 16,400.



**Dam 10 Looking Upstream East Bank**





**Dam 10 Looking Upstream**



## Dam 11

Dam 11 in the Brandywine Creek is located at Rockland Mills at latitude 39.79757 and -75.57497 longitude; the Delaware Division of Natural Resources and Environmental Control own the dam. The land of the west bank of the dam is parcel number 0701900007 and the owner is the State of Delaware. The east bank is parcel number 0607500002 and the owner is the State of Delaware. The dam is located at 7.2 river miles of the Brandywine and has a height of approximately 7 to 8 ft. Dam 11 historically fed a mill race. There is currently a mill race with the dam and it is a historical dam. Additionally, the dam is a part of the Wilmington Historic District. The estimated shad production potential is 26,600.



**Dam 11 Looking Upstream East Bank**

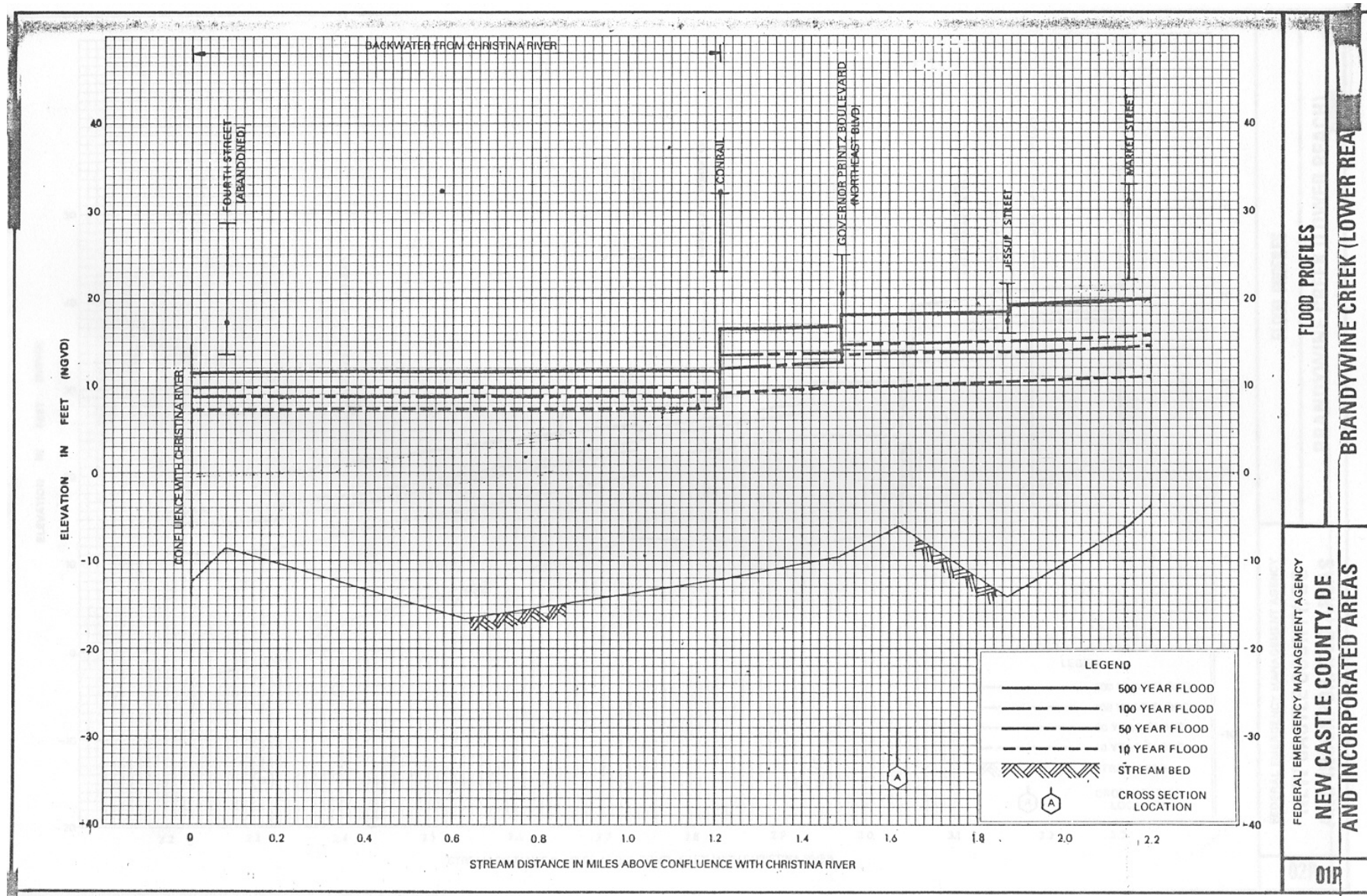




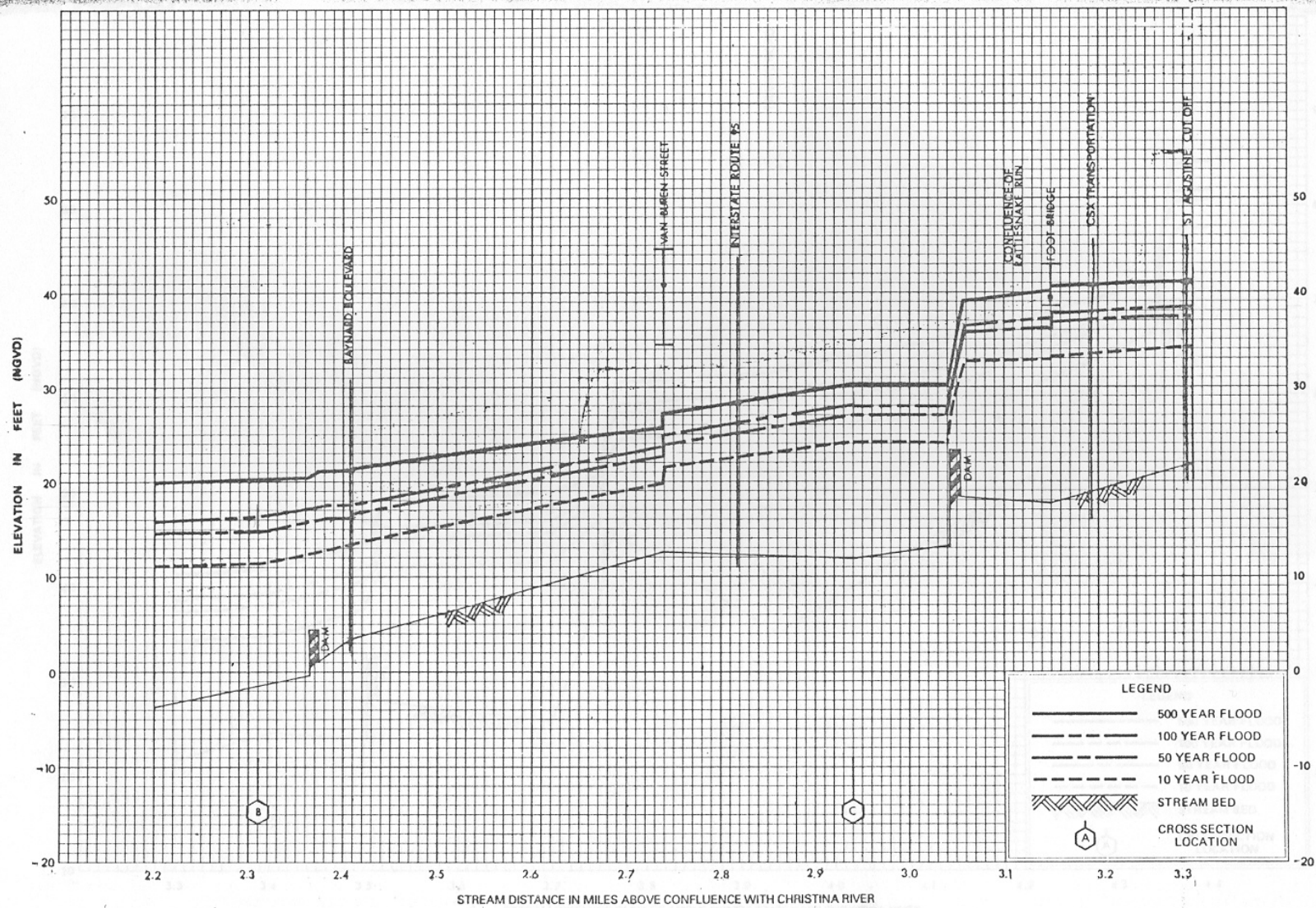
**Dam 11 Looking Upstream West Bank, Partially Breeched**



# Appendix







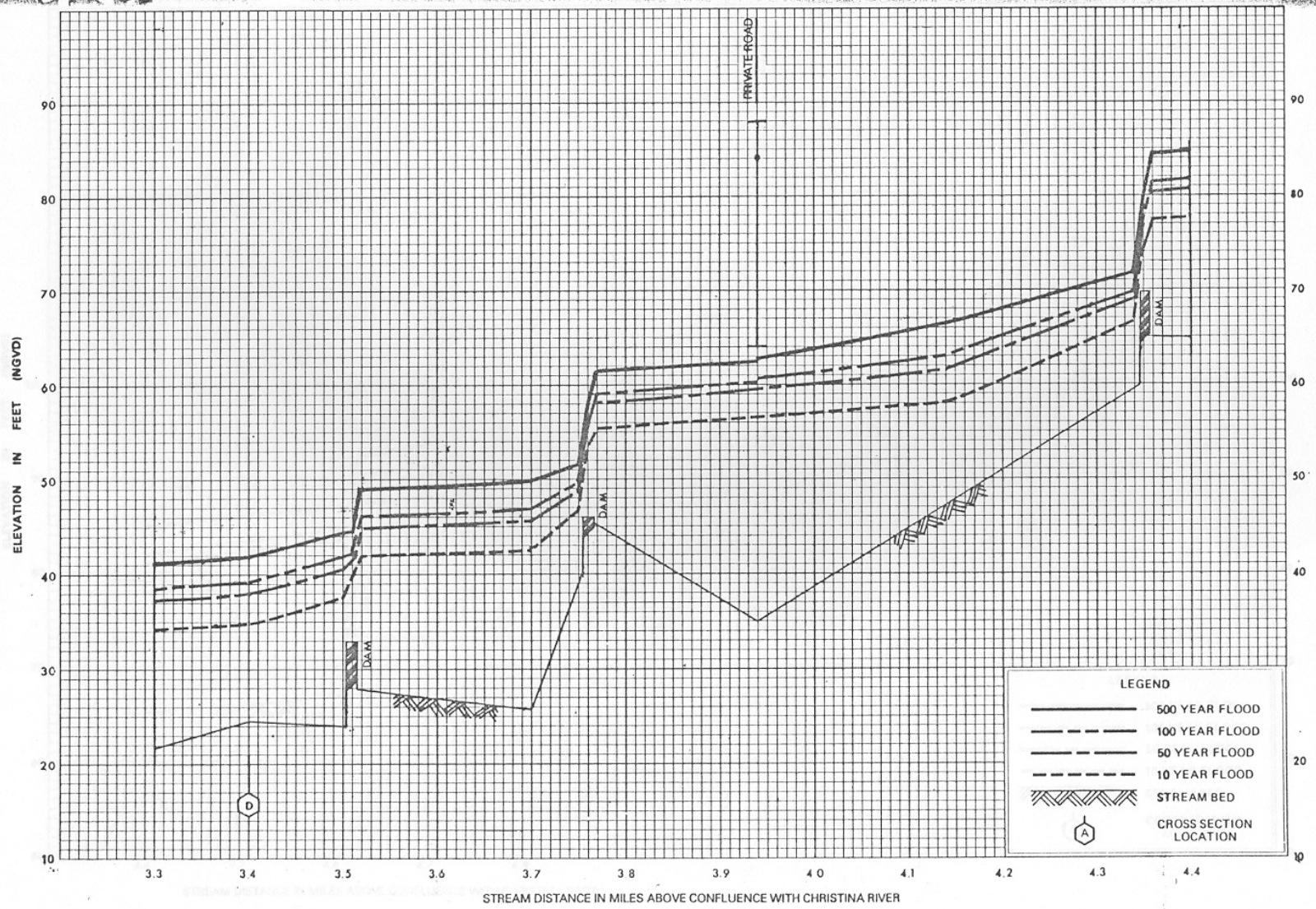
# FLOOD PROFILES

BRANDYWINE CREEK (LOWER REACH)

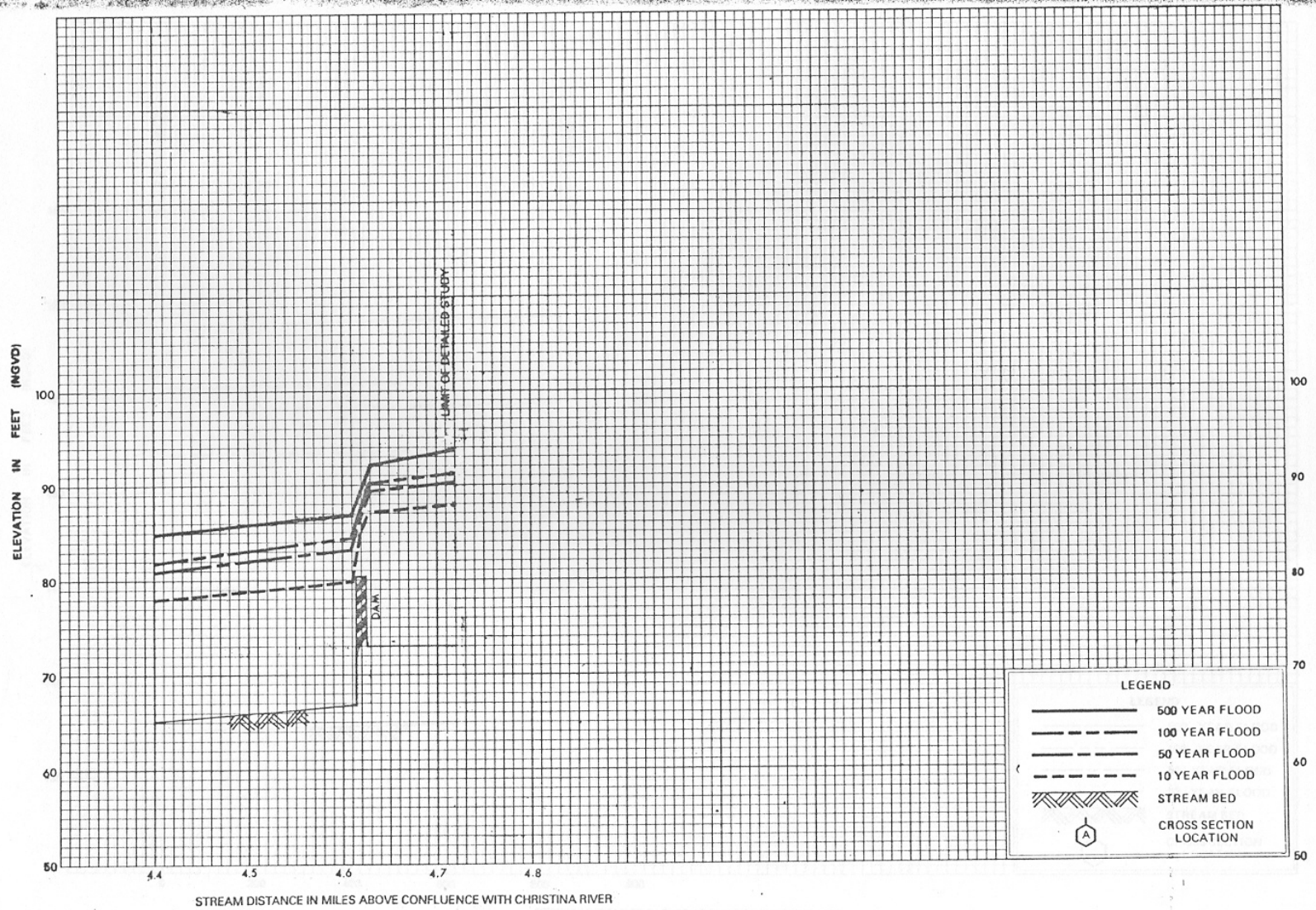
FEDERAL EMERGENCY MANAGEMENT AGENCY  
NEW CASTLE COUNTY, DE  
AND INCORPORATED AREAS

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FLOOD PROFILES  
BRANDYWINE CREEK (LOWER REACH)

FEDERAL EMERGENCY MANAGEMENT AGENCY  
NEW CASTLE COUNTY, DE  
AND INCORPORATED AREAS

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