February 23, 2009

Mrs. Laura Herr  
State of Delaware  
Department of Natural Resources and Environmental Control  
Wetlands and Subaqueous Lands Section  
89 Kings Highway  
Dover, DE 19901

RE: Project No. 5980.PD  
Hagley Eleutherian Dam  
Restoration and Millrace Maintenance  
New Castle County, Delaware

Dear Mrs. Herr:

On behalf of Hagley Museum and Library (Hagley), Duffield Associates, Inc. (Duffield Associates) is submitting this Subaqueous Lands Permit application for the restoration of the existing Hagley Eleutherian Dam and maintenance of the associated millrace on the Brandywine River located in Wilmington, Delaware (Attachment 1). Hagley is the site of the gunpowder works founded by E.I. du Pont in 1802. This example of early American industry includes restored mills, a workers’ community, and the ancestral home and gardens of the Du Pont family. From 1802 to 1921, Eleutherian Mills was a gunpowder mill site used for the manufacture of explosives by the Du Pont family business. The name also refers to the house on the hill above the mills, which was the first Du Pont family home in America. The business was founded by Eleuthère Irénée du Pont. In 1952, the site became an outdoor museum and the Hagley Museum and Library was founded. This project will help preserve and maintain the historic structures that are part of early American industry.

The Eleutherian Dam is currently operational; however, some of the originally constructed timber members have been stripped from the dam. Hagley desires to restore the existing dam to its historical (1969) condition by replacing the timber members, which make up the front portion of the dam (see Attachment 2). In addition, scour holes are present at the base of the dam and may eventually undermine the dam. It is proposed that the scour holes be filled with grouted concrete (geotubes) for structure stabilization.

A rock vane deflector (deflector) is proposed for the upstream entrance of the millrace. The purpose of the deflector is to reduce scour on the western upstream face of the dam. This deflector is not for bank stabilization and, as such, is not proposed to be constructed at the same angles defined in the Maryland Waterway’s Construction manual.
The millrace portion of the proposed project includes maintenance repairs to the stone walls, removal of existing turbine and millrace dam, sediment/debris removal, constructing a flow control structure at the upstream entrance of the millrace, and constructing two (2) walls to maintain flow within the millrace. The millrace has silted in over time; sediment was last removed in the 1970s. Hagley would like to restore flow to the millrace by removing the sediment. The millrace maintenance portion of the project has been designed to provide possible future fish passage around the dam. A secondary benefit of the flow control structure is to manage flows in the millrace, especially if the millrace is used for future fish passage.

Wetlands are not present within the project area limits and an Ordinary High Water determination was conducted by Duffield Associates on February 9, 2009.

Concurrently, Duffield Associates is preparing an Individual Permit application to the U.S. Army Corps of Engineers. In addition, Erosion and Sediment Control Plans have been submitted to New Castle County for approval of the disposal area. The eastern adjacent landowner on which a portion of the dam work will be completed is aware of the project and has been contacted for an access agreement.

Because Hagley Museum and Library is a non-profit organization, we request that the Subaqueous Lands permit fee be waived.

Very truly yours,

DUFFIELD ASSOCIATES, INC.

Jennifer M. Egan
Project Geologist

Theodore A. Thomson, Jr., Ph.D., P.E.
Project Manager

JETAT:bac
WORD/5980PD.0209-DNREC-COVER.COR
CERTIFIED MAIL NO. 70051820000059743511

Attachment 1 U.S.G.S. Site Location Map
Attachment 2 Hagley Museum and Library Eleutherian Dam Historic Photographs from 1969 (2)
Attachment 3 Subaqueous Lands Permit Application including Letter from Adjacent Property Owner and Project Area Deed
Attachment 4 Project Narrative
Attachment 5 Subaqueous Lands Permit Appendices H and R
Attachment 6 Project Plans (9 sheets)
Attachment 7 Table - Environmental Sediment Sampling Analysis
Attachment 8 Disposal Site Location and Photographs

cc: Mr. Geoff Halfpenny – Hagley Museum and Library
ATTACHMENT 1

U.S.G.S. SITE LOCATION MAP
NOTE: THIS SKETCH IS ADAPTED FROM USGS QUADRANGLE FOR WILMINGTON NORTH, 1993
ATTACHMENT 2

HAGLEY MUSEUM AND LIBRARY
ELEUTHERIAN DAM HISTORIC PHOTOGRAPHS FROM 1969 (2)
1969 DAM CONSTRUCTION

HAGLEY MUSEUM AND LIBRARY ELEUTHERIAN DAM

WILMINGTON, DELAWARE

DUFFIELD ASSOCIATES
Consultants in the Geosciences
5400 Limestone Road
Wilmington, Delaware 19808-1232
Tel. (302) 239-6654 Fax (302) 239-8485
E-MAIL: duffield@duffnet.com

Photographed By: Date: 1969
Scale: NO SCALE Project No.: 5980.PD
Drawing No. N/A PHOTOGRAPH 1
ATTACHMENT 3

SUBAQUEOUS LANDS PERMIT APPLICATION
INCLUDING LETTER FROM ADJACENT PROPERTY OWNER AND PROJECT AREA DEED
Wetlands and Subaqueous Lands Section

PERMIT APPLICATION FORM

For Subaqueous Lands, Wetlands, Marina and 401 Water Quality Certification Projects

State of Delaware
Department of Natural Resources and Environmental Control
Division of Water Resources
Wetlands and Subaqueous Lands Section
APPLICATION FOR APPROVAL OF
SUBAQUEOUS LANDS, WETLANDS, MARINA
AND WATER QUALITY CERTIFICATION PROJECTS

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

Application Instructions:

1. Complete each section of this basic application and appropriate appendix as thoroughly and accurately as possible. Incomplete or inaccurate applications will be returned. For projects involving docks, piers or wetland walkways, please refer to the Guidance Document for Boat Docking Facilities and Wetland Walkways.

2. All applications must be accompanied by scaled site plans and cross-section plans that show the location and design details of the proposed project. Full construction plans should be submitted for major projects.

3. All applications must have an original signature page and proof of ownership or permitted land use agreement.

4. Submit an original and two (2) additional completed copies of the application (total of 3) with the appropriate application fee* to: Wetlands and Subaqueous Lands Section
DNREC
89 Kings Highway
Dover, Delaware 19901

*Application fees are non-refundable regardless of the permit decision or application status.

5. No construction may begin at the project site before written approval has been received from this office.

Additional Information:

1. For Tax Parcel Information: New Castle County 395-5400
   Kent County 736-2010
   Sussex County 855-7878

2. Recorder of Deeds: New Castle County 571-7550
   Kent County 744-2314
   Sussex County 855-7785

3. Approval may also be required from the Corps of Engineers for projects contained in a completed state application form. Applicants are strongly urged to contact the Corps for a determination of their permitting requirements. The contact number for the Regulator of the Day is (215) 656-6728.

4. For additional permit information, contact the Wetlands and Subaqueous Lands Section at (302)739-9943.
APPLICANT'S REVIEW BEFORE MAILING

DID YOU COMPLETE THE FOLLOWING?

_____ x _____ Yes  BASIC APPLICATION

_____ x _____ Yes  APPENDICES

_____ x _____ Yes  VICINITY MAP

_____ x _____ Yes  PLAN VIEW

_____ x _____ Yes  ELEVATION OR SECTION VIEW

_____ x _____ Yes  SIGNATURE PAGE (Page 3) with Agent Authorization if appropriate

_____ x _____ Yes  COPY OF PROPERTY DEED & SURVEY

_____ x _____ Yes  THREE (3) COMPLETE COPIES

_____ x _____ Yes  LIST OF ADJACENT PROPERTY OWNERS (as per item #14A & B of this basic application form)

N/A?
Hagley is a non-Profit organization

APPROPRIATE APPLICATION FEE
(Checks should be made payable to the State of Delaware)

Mail 3 complete copies of the application, with drawings to:

Department of Natural Resources and Environmental Control
Division of Water Resources
Wetlands and Subaqueous Lands Section
89 Kings Highway, Dover, DE 19901
(302) 739-9943
Wetlands and Subaqueous Lands Section Basic Application Form

Section 1: Applicant Identification

1. Applicant's Name: Geoff Halpenny
   Mailing Address: Hagley Museum and Library
   298 Buck Road East
   Wilmington, DE 19807
   Telephone #: 302-658-2400
   Fax #: 302-658-0568
   E-mail: 

2. Consultant's Name: Duffield Associates, Inc.
   Mailing Address: 5400 Limestone Road
   Wilmington, DE 19808
   Telephone#: 302-239-6634
   Fax #: 302-239-8485
   E-mail: jegan@duffnet.com

3. Contractor's Name: TBD
   Mailing Address: 
   Telephone #: 
   Fax #: 
   E-mail: 

Section 2: Project Description

4. Check those that apply: New Project/addition to existing project? □
   Repair/Replace of existing structure? X (if checked must answer #19)

5. Project Purpose (Attach additional sheets as necessary): SEE ATTACHMENT 4

6. Check each Appendix that is enclosed with this application: SEE ATTACHMENTS 5 AND 6
   □ A. Boat Docking Facilities □ G. Bulkheads □ N. Preliminary Marina Checklist
   □ B. Boat Ramps □ H. Fill □ O. Marinas
   □ C. Road Crossings □ I. Rip-Rap □ P. Stormwater Management
   □ D. Channel Modifications/Dams □ J. Vegetative Stabilization □ Q. Ponds and Impoundments
   □ E. Utility Crossings □ K. Jetties, Groins, Breakwaters □ R. Maintenance Dredging
   □ F. Intake or Outfall Structures □ M. Projects in Wetlands □ S. New Dredging

Section 3: Project Location

7. Project Site Address: 298 Buck Road East
   Wilmington, DE 19807
   Name of site owner: 
   (if other than applicant)
   County: N.C. X Kent □ Sussex □

8. Driving directions: From the south: Take I-95 north to exit 5B (Newport exit) in Delaware. Follow Route
   141 north for 7 miles. After crossing Route 100, watch for Hagley's main entrance on the right. See
   Attachment 1 for road map.
   (Attach a location road map with the site indicated on the map).

9. Tax Parcel Number: 0702700032 /060980002 Subdivision Name: Eleutherian Mills Hagley Foundation

WSLS Use Only:
Type of Auth: SP □ SL □ WE □ WQ □ SA □ SU □ LA □ MP □ WA □ EX □
Permit #: 
SPGP: 18 □ 20 □ Individual Permit: □ Nationwide Permit #: 
Received Date: Project Scientist: 
Fee Received? Yes □ No □ Amt: $$ Receipt #: 
Public Notice #: Public Notice Dates: ON □ OFF □
Section 3: Project Location (Continued)

10. Name of Waterbody at Project Location: **Brandywine Creek** Waterbody is a Tributary to: **Christina River**

11. Is the waterbody: Tidal □ Non-tidal X

12. Is the project:
On public subaqueous lands? □ On private subaqueous lands? X In wetlands? □

If the project is on private subaqueous lands, indicate the name of the subaqueous lands owner:
*A the eastern portion of the dam is on private property of Louviers Land LLC/William Laird.*
(Written permission of the private subaqueous lands owner must be included with this application).

13. Present Zoning: Agricultural □ Residential X Commercial □ Industrial □ Other □

Section 4: Miscellaneous

14. A. List the name and complete mailing address of the immediately adjoining property owners on all sides of the project. (Attach additional sheets as necessary):

*No additional sheets necessary.*

**Owner**
Tax Parcel - 0609800002
EI-DuPont Nemours, Louviers Land LLC
300 Bellevue Parkway, Suite 200
Wilmington, DE 19809

**Property address of above**
Irene Jennings
1 Black Gates Road
Wilmington, DE 19803

B. For wetlands and marina projects, list the name and complete mailing address of each property owner within a 1000 foot radius of the project. (Attach additional sheets as necessary)

Not applicable.

15. Indicate the names of all representatives from DNREC and the Army Corps of Engineers who you have discussed the project with:

**Bill Moyer and Laura Herr met to discuss millrace maintenance and jurisdiction approximately two years ago.**

A. Have you had a State Jurisdictional Determination performed on the property? Yes □ No X
B. Has the project been reviewed in a monthly Joint Permit Processing Meeting? Yes □ No X

If yes, what was the date of the meeting? __________________________

16. If there is any existing fill or structures in subaqueous lands at the project site, were the structures constructed or fill placed prior to 1969? X Yes □ No - If no, provide a copy of any prior and/or current authorization(s) for projects at this site. If a copy is not available, provide the permit or lease number(s) if known.

________________________________________

17. Have you applied for or obtained a federal permit for the project from the Army Corps of Engineers?
□ None X Pending □ Issued □ Denied Date: __________

Type of permit: **Submitted concurrently USACE 404 Individual Permit** Federal Permit or ID #: 

18. Have you applied for permits from other Sections within DNREC?

None X Pending □ Issued □ Denied Date: Concurrent Permit or ID #: 

Type of permit (circle all that apply): Septic Well NPDES X Storm Water NOI for disposal area
Section 5: Signature Page

19. Agent Authorization:

If you elect to complete this agent authorization section, all future correspondence to the Department may be signed by the duly authorized agent. In addition, the agent will become the primary point of contact for all correspondence from the Department.

I do not wish to authorize an agent to act on my behalf. ☐

I wish to authorize an agent as indicated below. ☑

I, ____________________________, hereby designate and authorize

Name of Applicant
Duffield Associates, Inc.

Name of Agent
Duffield Associates, Inc.

Authorized Agent’s Name: Duffield Associates, Inc.
Mailing Address: Duffield Associates, Inc.
5400 Limestone Road
Wilmington, DE 19808
P.O.C Jennifer Egan

Telephone#: 302-239-6634
Fax #: 302-239-8485
E-mail: jegan@duffnet.com

20. Agent Signature

I hereby certify that the information on this form and on the attached plans is true and accurate to the best of my knowledge, I further understand that the Department may request information in addition to that set forth herein if deemed necessary to appropriately consider this application.

______________________________  ________________________
Agent’s Signature          Date: 2/24/09

21. Applicant’s Signature:

I hereby certify that the information on this form and on the attached plans is true and accurate to the best of my knowledge and that I am required to inform the Department of any changes or updates to the information provided in this application. I further understand that the Department may request information in addition to that set forth herein if deemed necessary to appropriately consider this application. I grant permission to authorized Department representatives to enter upon the premises for inspection purposes during working hours.

______________________________  ________________________
Applicant’s Signature          Date: 2/24/09

Print Name

______________________________  ________________________
Applicant’s Signature          Date: 2/24/09
22. Contractor’s Signature:

I hereby certify that the information on this form and on the attached plans is true and accurate to the best of my knowledge, and that I am required to inform the Department of any changes or updates to the information provided in this application. I further understand that the Department may request information in addition to that set forth herein if deemed necessary to appropriately consider this application.

TBD ____________________________  ____________________________
Contractor Name  Date

IMPORTANT NOTE TO APPLICANTS

BEFORE SIGNING AND MAILING YOUR SUBAQUEOUS LANDS, WETLANDS OR MARINA PERMIT APPLICATION, PLEASE READ THE FOLLOWING:

THE DEPARTMENT REQUESTS THAT THE CONTRACTOR OR PARTY WHO WILL PERFORM THE CONSTRUCTION OF YOUR PROPOSED PROJECT, IF OTHER THAN THE APPLICANT, SIGN THE APPLICATION SIGNATURE PAGE ALONG WITH THE APPLICANT, IN THE SPACES PROVIDED.


IF YOU HAVE NOT YET CHOSEN A CONTRACTOR BY THE TIME OF APPLICATION, YOU MAY WISH TO DO SO PRIOR TO SUBMITTING APPLICATION FOR PROCESSING.

IF YOU CHOOSE TO SUBMIT YOUR APPLICATION WITHOUT THE SIGNATURE OF YOUR CONTRACTOR, YOU WILL BE HELD SOLEY RESPONSIBLE FOR ALL OF THE TERMS AND CONDITIONS OF THE PERMIT OR LEASE, INCLUDING THOSE TERMS AND CONDITIONS RELATING TO CONSTRUCTION AND WHICH REQUIRE THAT THE PERMITTED STRUCTURE OR ACTIVITY BE INSTALLED OR CONDUCTED IN ACCORDANCE WITH THE APPROVED PLANS AND PERMIT CONDITIONS.

Please contact the Wetlands and Subaqueous Lands Section at (302) 739-9943 if you should have any questions.
DELAWARE DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL ("DNREC")

ENVIRONMENTAL PERMIT APPLICATION
BACKGROUND STATEMENT
Pursuant to 7 Del. C. Chapter 79

FILING STATUS:

This Background Statement is being filed with DNREC because:

☒ 1. It is an initial application for a new permit (or permits) and the applicant company has not been issued any permits by DNREC in the previous five (5) years [See 7 Del. C. § 7902(a) and (b)];

☐ 2. It is required on an annual basis because the company has been designated a chronic violator pursuant to 7 Del. C. § 7904 [See 7 Del. C. § 7902(a)(7) and (b)(2)]; or

☐ 3. It is required on an annual basis as the applicant company has been found guilty, pled guilty or no contest to any crime involving violation of environmental standards which resulted in serious physical injury or serious harm to the environment as defined in 7 Del. C. § 7902(c) [See 7 Del. C. § 7902(a)(7) and (b)(2)].

<table>
<thead>
<tr>
<th>Applicant Company's Name or Company's Name Filing Statement</th>
<th>Hagley Museum and Library</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Application or Date of Statement</td>
<td>2-24-09</td>
</tr>
<tr>
<td>Permit(s) Being Applied for or Statement for Filing Statuses 2 or 3</td>
<td>☐ Permit Subaqueous Lands □ Statement for filing Statuses 2 or 3—If filing under these statuses, attach a statement of the date of designation as Chronic Violator or the date of Conviction/Plea.</td>
</tr>
<tr>
<td>Other DNREC Permits Held</td>
<td>☐ N/A – No other permits held with DNREC □ List of all DNREC permits currently held with dates of issuance and expiration attached.</td>
</tr>
</tbody>
</table>
ENVIRONMENTAL PERMIT APPLICATION BACKGROUND STATEMENT

Please note: Companies filing statements pursuant to Chapter 79 have the right to identify information to be afforded confidential status pursuant to 7 Del. C. § 7903(b) and the requirements set forth in Section 6, “Requests for Confidentiality” of the DNREC Freedom of Information Act Regulation.

PROVIDING ALL OF THE INFORMATION REQUESTED IN THIS FORM SATISFIES THE REQUIREMENTS OF 7 Del. C. Chapter 79 ("ENVIRONMENTAL PERMIT APPLICATION BACKGROUND STATEMENT") UNLESS THE DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL ("DNREC") OR THE DELAWARE DEPARTMENT OF JUSTICE DETERMINES THAT ADDITIONAL SUBMISSIONS ARE NECESSARY. FAILURE TO PROVIDE THE INFORMATION REQUESTED OR PROVIDING ERRONEOUS INFORMATION IS GROUNDS FOR DENYING OR REVOKE AN ENVIRONMENTAL PERMIT/APPROVAL/LICENSE, AND FOR CIVIL AND/OR CRIMINAL PENALTIES.

A.  (Authority – 7 Del. C. § 7902(a)(1&2) & § 7905) Attach a complete list (full names) of all current members of the applicant company’s board of directors, all current corporate officers, all persons owning more than 20% of the applicant’s stock or other resources, all subsidiary/affiliated companies with type of business performed, street addresses, all parent companies with addresses, all companies with which the applicant’s company shares two or more members of the board of directors, and the name(s) of the person(s) serving as the applicant’s local chief operating officer(s) with respect to each facility covered by the permit in question or for the statement required for filing Statutes 2 or 3. [Note: For companies that do not have a facility located in Delaware, no listing for the local chief operating officer(s) is required].

☐ Information attached
☐ Information attached, except for local chief operating officer as there is no facility located in the State of Delaware.

B.  (Authority - 7 Del. C. § 7905) Please check one of the following selections below, showing type of ownership for the applicant/statement company:

☐ Proprietorship List the state, county, book record and page number where the certificate is found (Attach hereto).
☐ Partnership List the state, county, book record and page number where the certificate is found (Attach hereto).
☒ Corporation (LLCs included) List the city, state, date of incorporation, corporation file number, current corporate standing, registered agent, and address of the registered agent (Attach hereto).
☐ Municipality
☐ Public Institution/ Government Agency
☐ Other
CERTIFICATE OF INCORPORATION
OF
ELEUTHERIAN MILLS-HAGLEY FOUNDATION, INC.

WE, the undersigned, in order to form a Corporation for the purposes hereinafter stated, under and pursuant to the provisions of the General Corporation Law of the State of Delaware, being Chapter 55 of the Revised Code of 1935 and the acts amendatory thereof and supplementary thereto, DO HEREBY CERTIFY as follows:

FIRST: The name of the Corporation is:
ELEUTHERIAN MILLS-HAGLEY FOUNDATION, INC.

SECOND: Its principal office in the State of Delaware is to be located at Greenville, Wilmington, County of New Castle, and the name and address of its resident agent is ELEUTHERIAN MILLS-HAGLEY FOUNDATION, INC., P.O. Box 3630, Greenville, Wilmington, New Castle County, Delaware 19807.

THIRD: The objects and purposes to be transacted, promoted and carried on are:
(a) To operate exclusively for charitable, scientific and educational purposes in any part or parts of the United States of America but not elsewhere;
(b) To receive donations for charitable, scientific and educational purposes to be used in the United States of America exclusively for such purposes;
(c) To establish and maintain charitable, scientific and educational activities and institutions;
(d) To grant scholarships and fellowships in any art or science;
(e) To grant aid to schools, colleges and universities anywhere in the United States of America;
(f) To use all its income exclusively for charitable, scientific and educational purposes;
(g) To acquire, receive, purchase, lease, hold, use and enjoy and to take by gift, grant, devise or bequest property real,
personal or mixed and any interest therein, located anywhere in the
United States of America, and to grant, bargain, sell, give,
exchange, demise, hold, assign, mortgage, pledge, transfer and set
over the same at pleasure and generally to deal therewith without
restriction but only for the uses, objects and purposes herein
provided;

(h) In execution of the purposes aforesaid, to purchase, lease
or otherwise acquire lands with any and all improvements thereon
along the banks and in the vicinity of the Brandywine Creek within
the State of Delaware, and to create, develop, maintain and conduct
upon said property a museum for the preservation and public display
of historical records, books, manuscripts, charts, maps and other
material and objects of an educational value; to develop, beautify,
improve and maintain said property, and to conduct thereon
horticultural and floricultural displays and to provide proper
facilities thereon for the use of the public. No condition is to
be permitted to exist with respect thereto save in conformity with
the objects and purposes of this Corporation;

(i) To carry on, upon property owned or leased by this
Corporation, classes, open to the public, in any educational of
scientific field and to provide for the delivery and holding of
lectures, exhibits, meetings and classes, all open to the public,
for scientific and educational purposes with respect to any
legitimate subject including any locality or localities within the
United States of America and particularly that part of the country
along the banks of the Brandywine Creek in the State of Delaware;

(j) To publish and circulate reports, pamphlets, or other
matter of material dealing with charitable, scientific or
educational subjects;

(k) To act as Trustee in any instance or instances where any
property, real, personal or mixed, is received by gift, grant,
device or bequest in trust for the uses, objects and purposes
hereinbefore set forth, in accordance with the terms and conditions
of such trust or trusts;
(l) To engage in any other exclusively charitable, scientific or educational activity or activities in the United States of America but not elsewhere;

(m) To possess and exercise all the powers and privileges necessary or convenient to the attainment of the objects and purposes set forth in this Certificate of Incorporation and such incidental powers as shall be necessary to the exercise of the powers expressly conferred;

FOURTH: This Corporation shall not have authority to issue capital stock and is not organized for profit. No part of its net earnings shall inure to the benefit of any private member or individual. No substantial part of the activities of this Corporation shall be carrying on propaganda or otherwise attempting to influence legislation, and it shall make no donation to any institution or institutions if any substantial part of the activities of such institution or institutions is carrying on propaganda or otherwise attempting to influence legislation.

The members of this Corporation shall consist of those individuals and only those individuals who shall be the Trustees of the Corporation as provided in Article EIGHTH hereof. The election of a person as Trustee shall be an admission of that person to membership in the Corporation. Such membership shall continue so long as and only so long as he remains a Trustee.

FIFTH: The name and place of residence of each of the incorporators are as follows:

<table>
<thead>
<tr>
<th>NAME</th>
<th>RESIDENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Henry W. Bryan</td>
<td>Wilmington, Delaware</td>
</tr>
<tr>
<td>Thomas E. Clough</td>
<td>Wilmington, Delaware</td>
</tr>
<tr>
<td>R. Russell Pippin</td>
<td>West Chester, Pennsylvania</td>
</tr>
</tbody>
</table>

SIXTH: The existence of this Corporation is to be perpetual.
SEVENTH: The private property of the members shall not be subject to the payment of corporate debts.

EIGHTH: The direction and management of the affairs of the Corporation and the control of its property shall be vested in a Board of Trustees the number of whom shall be as fixed from time to time by the By-Laws.

Trustees shall be elected at annual meeting of the members of this Corporation and shall hold office until their successors are elected. The first Trustees shall be those individuals so qualified as shall be elected by the incorporators at the annual meeting of this Corporation.

Vacancies caused by death, resignation, removal or otherwise in the Board of Trustees shall be filled by the remaining Trustee or Trustees in such manner as the By-Laws shall prescribe.

Any Trustee may at any time resign by written resignation filed with the Secretary of the Corporation and may be removed for cause by the vote of a majority of the Trustees then in office.

NINTH: The Board of Trustees shall have power:

(a) To make, alter, or repeal any By-Law or By-Laws by the affirmative vote of a majority of all the Trustees of the Corporation.

(b) If the By-Laws so provide, to hold their meetings and to have one or more offices within or without the State of Delaware, and to keep the books of this Corporation, subject to the provisions of the statutes, outside the State of Delaware at such place or places as may from time to time be designated by the Board of Trustees.

This Corporation may, in its By-Laws, confer powers upon its Trustees in addition to the foregoing, and in addition to the powers and authority expressly conferred upon them by law.

TENTH: The said Trustees shall be entitled to receive, hold, and administer any funds or property which may be transferred to or
received by the Corporation and the income therefrom for the purposes and objects hereinbefore enumerated; with full power to adopt a common seal, to appoint officers, agents and employees, and to allow them suitable salaries or compensation, with full power to adopt such rules and regulations as may be necessary to secure the safe and convenient transaction of the business of the Corporation; with full power and discretion to deal with and expend, subject to the provisions of this Charter any and all funds and other property of the Corporation in such a manner as will, in their judgment, best promote the objects hereinbefore set forth; and to have and use all the powers and authority necessary to promote said objects and carry out said purposes.

ELEVENTH: When authorized by the written consent or pursuant to the affirmative vote of all of the members of the Corporation, the Trustees may, in connection with any liquidation of dissolution or winding up of the Corporation, donate, transfer, and convey all or any part of the assets and property of the Corporation to the United States of America or the State of Delaware or any political subdivision thereof or to such Corporation or institution organized and operated exclusively for charitable, educational or scientific purposes as such Trustees shall deem proper; or with the written consent or pursuant to the affirmative vote of all of the members of the Corporation, the Corporation may consolidate or merge into or with any other Corporation or institution which is organized and operated exclusively for charitable, educational or scientific purposes, as herein proved.

TWELFTH: A trustee of this corporation shall not be personally liable to the corporation or its members for monetary damages for breach of fiduciary duty as a trustee, except for liability (i) for any breach of the trustee's duty of loyalty to the corporation or its members, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing
transaction from which the trustee derived an improper personal benefit.

THIRTEENTH: The Certificate of Incorporation of the corporation may be amended from time to time as provided by the law, provided, however, that no amendments to Article THIRD or Article FOURTH hereof shall be made without the unanimous consent of the Trustees of the Corporation.

IN WITNESS WHEREOF, we have hereunto set our respective hands and seals this 30th day of October, A.D. 1952.

Henry W. Bryan  
(SEAL)

Thomas E. Clough  
(SEAL)

R. Russell Pippin  
(SEAL)

Revised with amendments:
8/23/72
10/14/74
12/1/86
C. **(Authority - 7 Del. C. § 7902(a)(3) & § 7905)** Have any of the following been issued to or agreed to by the applicant/statement company, any employee, person, entity, or subsidiary/affiliated company, specified in response to Item A, for violation of any environmental statute, regulation, permit, license, approval, or order, regardless of the state in which it occurred, during the five years prior to the date of this application/statement:

<table>
<thead>
<tr>
<th>OFFENSE</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notice of Violation(s)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Administrative Order(s)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Administrative Penalty(ies)</td>
<td>✓</td>
<td></td>
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D. **(Authority - 7 Del. C. § 7902(a)(3), (a)(4) & § 7905)** If you answered “yes” to any of the actions listed in Item C above for the applicant company or any other person identified in Item A, attach a description of the incidents or events leading to the issuance of each action, regardless of the state in which it occurred, for the 5 years prior to the date of the statement, and the disposition of each action, what state the action/offense occurred in, and any actions that have been taken to correct the violations that led to such enforcement action.

☐ N/A
☐ Information attached

E. **(Authority - 7 Del. C. § 7902(a)(5) & § 7905)** Attach a description of any felony or other criminal conviction for a crime involving harm to the environment or violation of environmental standards of any person or entity identified in Item A above that resulted in a fine greater than $1,000 or a sentence longer than 7 days, regardless of whether such fine or sentence was suspended.

☐ N/A
☐ Description attached

F. **(Authority - 7 Del. C. § 7902(a)(6) & § 7905)** Attach copies of any and all settlements of environmental claims involving the applicant, associated with actions identified in response to Item D above, whether or not such settlements were based on agreements where the applicant did not admit liability for the action.

☐ N/A
☐ Information attached
Items for Filing Statuses 2 or 3 Only

G. (Authority - 7 Del. C. § 7902(a)(7) and § 7905) If the applicant/statement company has been found guilty, pled guilty or no contest, to any crime involving violation of environmental standards which resulted in serious physical injury or serious harm to the environment attach a summary of the events involved and a copy of the disposition of the action. (See 7 Del. C. § 7902(c) for definitions of “serious physical injury” or “serious harm to the environment” before answering this question.)

☐ N/A
☐ Yes – Information Attached.

H. (Authority - 7 Del. C. § 7902(a)(8)) – If the applicant/statement company has been designated a chronic violator under 7 Del. C. § 7904, a detailed written report from an independent inspector who has inspected the applicant’s premises for the purpose of detecting potential safety and environmental hazards to employees and the surrounding community. The Secretary may waive the duty to submit a detailed written report upon a showing of good cause by the applicant. A showing by the applicant that the acts which caused it to be designated as a chronic violator did not jeopardize public health shall constitute “good cause” under this paragraph.

I. (Authority - 7 Del. C. § 7902(a)(7)) – If the applicant has been designated a chronic violation under § 7904 of this Title, OR has been found guilty or pled no contest to any crime involving violation of environmental standards which resulted in serious physical injury or serious harm to the environment, a statement made under oath by the applicant’s local chief operating officer with respect to the facilities covered by the permit, stating that: (a) disclosures made by the applicant/reporting company under federal and state environmental statutes and regulations during the preceding calendar year have been, to the chief operating officer’s knowledge, complete and accurate, and (b) that the facility has implemented policies, programs, procedures, standards or systems reasonably designated, in light of the size, scope, and nature of facility operations to detect deter and promptly correct any noncompliance with state environmental statutes and regulations. The statement filed pursuant to this paragraph shall include an acknowledgement by the affiant that intentionally false statements submitted in compliance with this paragraph constitute criminal perjury as defined at 11 Del. C. §§1221-1222.
STATE OF DELAWARE – DEPT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
ENVIRONMENTAL PERMIT BACKGROUND STATEMENT CERTIFICATION

I HEREBY CERTIFY THAT I HAVE READ THE PRECEEDING SUBMISSION, HAVE PROVIDED ALL OF THE INFORMATION REQUESTED, AND THAT ALL OF THE INFORMATION PROVIDED IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

[Signature]

DATE: 2/24/09

NAME: GEOFF HALFPENNY

TITLE: EXECUTIVE DIRECTOR

COMPANY NAME: HASLEY MUSEUM AND LIBRARY

ADDRESS: 298 BUCK RD

WILMINGTON, DE 19807

TELEPHONE: 302 658 2400

FAX NUMBER: 302 658 0568

REGISTERED AGENT NAME: Duffield Associates, Inc.

ADDRESS: 5400 Limestone Road, Wilmington, DE 19808

TELEPHONE: 302-239-6634

FAX NUMBER: 302-239-8485

SWORN TO AND SUBSCRIBED BEFORE ME THIS 3rd DAY OF

February, 2009

James McNinch
NOTARY PUBLIC SIGNATURE (SEAL)

PRINTED NAME OF NOTARY PUBLIC

New Castle County, Delaware

STATE/COUNTY

MY COMMISSION EXPIRES ON: April 9, 2010
Hagley Museum and Library
IN WITNESS WHEREOF, the said parties of the first part have hereunto set their hands and seals the day and year aforesaid.

Sealed and Delivered in the Presence of:

John S. Walker

Robert E. Fox (SEAL)

Helen W. Fox (SEAL)

Ronald S. Baker (SEAL)

Helen R. Baker (SEAL)

Irving L. Yalisove (SEAL)

Anna M. Yalisove (SEAL)

STATE OF DELAWARE )

NEW CASTLE COUNTY ) SS.

BE IT REMEMBERED, That on this 15th day of December in the year of our Lord one thousand nine hundred and fifty-two personally came before me, the undersigned, a Notary Public for the County and State, aforesaid, Ronald S. Baker and Helen R. Baker, his wife, Robert E. Fox and Helen W. Fox, his wife, and Irving L. Yalisove and Anna M. Yalisove, his wife, parties to this Indenture, known to me personally to be such, and severally acknowledged this Indenture to be their Deed.

GIVEN under my Hand and Seal of office, the day and year aforesaid.

John S. Walker, Notary Public.

Appointed June 10, 1952

Town Two Years

Delaware

Received for record December 19, 1952

Burton H. Neil, Recorder.

THIS DEED, made the 17th day of December, in the year of our Lord one thousand nine hundred and fifty-two (1952), between LOUISE EVELINA du PONT GODWIN, HENRY F. du PONT, and SAMUEL HALLMARK du PONT and VIRGINIA SIMMONS du PONT, his wife, all of Christians Hundred, New Castle County and State of Delaware, parties of the first part, and ELEUTHERIAN MILLER-HAGLEY FOUNDATION, INC., a corporation of the State of Delaware, of the City of Wilmington, County of New Castle and State of Delaware, party of the second part,

WITNESSETH:

THAT the parties of the first part for the consideration hereinafter set forth hereby give, grant and convey unto the said party of the second part, its successors and assigns, forever,

ALL that certain lot, piece or parcel of land situate in Christians Hundred, New Castle County and State of Delaware, bounded and described as follows, to-wit:

BEGINNING at a point on the center of a private road (erroneously called "Brock Road" in the deed from Notoby Realty Company to Henry A. duPont dated the 15th day of March, A.D. 1922, but really the private road laid out by Eleuthera du Pont de Nemours in 1862 to give access from the "Old Forge Road" to his private residence) on the prolongation of the westerly side of the road leading from the cemetery of the du Pont de Nemours Cemetery Company to Christ Church whence North 68 degrees 28 minutes East 36.5 feet on the center line of the aforesaid.
private road; thence along the land of the du Pont de Nemours Cemetery Company the following courses: North 12 degrees 56 minutes West 152.0 feet; North 76 degrees 30 minutes East 225.0 feet; North 13 degrees 30 minutes West 345.0 feet; South 76 degrees 30 minutes West 111.9 feet; thence along the land now or formerly of Margaretta du Pont Carpenter the following courses: North 13 degrees 30 minutes West 711.6 feet; North 74 degrees 58 minutes East 1613.91 feet to the center line of Brandywine Creek; thence on the center line of Brandywine Creek along the land now or formerly of Lemont du Pont the following courses: South 39 degrees 41 minutes East 43.07 feet, South 16 degrees 34 minutes East 162.9 feet, South 24 degrees 25 minutes East 215.18 feet; thence continuing on the center line of Brandywine Creek along the land now or formerly of Mary A. B. du Pont Laird the following courses: South 2 degrees 35 minutes East 390.48 feet, South 17 degrees 48 minutes West 110.38 feet, South 13 degrees 9 minutes West 379.86 feet, South 66 degrees 51 minutes East 171.59 feet; thence leaving Brandywine Creek along the land now or formerly of Paulina du Pont Dean the following courses: South 49 degrees 12 minutes West 329.2 feet, South 68 degrees 34 minutes West 106.1 feet, South 65 degrees 30 minutes West 226.7 feet to a stone monument on the easterly line of a lane leading to the residence now or formerly of Paulina du Pont Dean; thence South 65 degrees 1 minute West 69.25 feet to a point on the easterly line of road leading in a northeasterly direction to the location of the former Eleutherian Mills; thence along southeasterly line of said road along land now or formerly of Paulina du Pont Dean the following courses: A curve to the right, the radius of which is 587.86 feet, to a point which is by a chord South 44 degrees 10 minutes West 86.66 feet; a curve to the right, the radius of which is 190.19 feet, to a point which is by a chord South 56 degrees 15-1/2 minutes West 51.35 feet; thence South 81 degrees 41 minutes West 79.28 feet to a point, said point being on the center line of the joint road running to the said former Eleutherian Mills and to Nemours, the residence now or formerly of Paulina du Pont Dean, and also being the intersection of the center line of the road leading northeasterly to the former Eleutherian Mills with the center line of the road leading southeasterly to the residence now or formerly of Paulina du Pont Dean; thence along the center line of the said joint road the following courses: A curve to the left, the radius of which is 443.94 feet, to a point which is by a chord South 70 degrees 4-1/2 minutes West 84.2 feet; South 65 degrees 17 minutes West 87.59 feet; a curve to the right, the radius of which is 391.68 feet, to a point which is by a chord South 71 degrees 44 minutes West 88.0 feet; thence leaving the center line of said road along the land now or formerly of Paulina du Pont Dean. South 65 degrees 1 minute West 273.49 feet to a stone monument on the westerly line of the road leading from the cemetery of the du Pont de Nemours Cemetery Company to Christ Church; thence along the westerly line of said road along the land now or formerly of A. du Pont, North 48 degrees 41 minutes West 536.7 feet to the point or place of beginning and containing 57.011 acres, more or less.

BEING the same land and premises which were conveyed to the said Henry A. du Pont by two separate indentures: One from Remisby Realty Company bearing...
date the 15th day of March, A. D. 1922, and recorded in the Office for the Recording of Deeds, etc., in and for New Castle County and State of Delaware, in Deed Record Y, Volume 30, page 362; and another from Paulina du Pont Dean and J. Simpson Dean, her husband, bearing date the 13th day of August, A. D. 1926, and recorded in the Office for the Recording of Deeds, etc., in and for New Castle County, in Deed Record Q, Volume 32, page 387; and

BEING the same land which by deed dated the 5th day of January A. D. 1926, of record in the Office for the Recording of Deeds, etc., in and for New Castle County and State of Delaware, in Deed Record X, Volume 33, page 235, Henry A. du Pont conveyed to Louise Evelina du Pont Crowninshield, one of the parties of the first part herein, upon the terms and subject to the conditions expressed in said deed in language as follows (within quotation marks), to wit:

"To the use of the said Louise Evelina du Pont Crowninshield for and during the term of her natural life and to such person or persons, lineal descendants of Eleuthere Irene du Pont de Nemours living at the time of the death of the said Louise Evelina du Pont Crowninshield, upon such lawful estate or estates as in such shares or proportions as the said Louise Evelina du Pont Crowninshield shall, in and by her last Will and Testament designated and appoint in default of appointment by the said Louise Evelina du Pont Crowninshield, at and upon her death, then to Henry F. du Pont for and during the term of his natural life and to such person or persons, being lineal descendants of Eleuthere Irene du Pont de Nemours living at the time of the death of the said Henry F. du Pont, upon such lawful estate or estates and in such shares or proportions as the said Henry F. du Pont shall in and by his last Will and Testament designate and appoint; and in the event that the said Louise Evelina du Pont Crowninshield shall fail to exercise the power of appointment herein conferred and the said Henry F. du Pont shall predecease the said Louise Evelina du Pont Crowninshield, or if both the said Louise Evelina du Pont Crowninshield and the said Henry F. du Pont shall fail to exercise the powers of appointment conferred upon them herein, then unto Samuel Hallowe du Pont, his heirs and assigns, forever."

"TO HAVE AND TO HOLD said premises with all the rights, easements and appurtenances thereunto belonging, unto the said party of the second part, its successors and assigns, forever."

AND the said Louise Evelina du Pont Crowninshield does hereby covenant that by a separate instrument of release dated the 17th day of December, A. D. 1952, not yet recorded but intended so to be; she has irrevocably released, relinquished, renounced, abandoned and extinguished the aforesaid power of appointment conferred upon her in said deed dated the 5th day of January, A. D. 1926; and that now there does not exist, and that hereafter she will not execute, and instrument purporting to contain the exercise of, or any designation or appointment under, said power of appointment; and Henry F. du Pont does hereby covenant that by a separate instrument of release dated the 17th day of December, A. D. 1952, not yet recorded but intended so to be, he has irrevocably released, relinquished, renounced, abandoned and extinguished the aforesaid power of appointment conferred upon him in said deed dated the 5th day of January, A. D.
1926; and that now there does not exist, and that hereafter he will not execute, any instrument purporting to contain the exercise of, or any designation or appointment under, said power of appointment.

The consideration for the gift, grant and conveyance herein made by each of said parties of the first part, is the gift, grant and conveyance herein made by each of the other parties of the first part; saving that the consideration for the gift, grant and conveyance herein made by Louise Evelina du Pont Crowinshield, in addition to the aforesaid consideration, is that certain lease hereinafore agreed upon, from the part of the second part, to her for and during her natural life of the land and premises hereinafore described and conveyed.

PROVIDED, and it is agreed, that if, within one year from the date hereof, said party of the second part should cause a survey of said premises to be made, and should within one year and one month from the date hereof request the parties of the first part so to do, the parties of the first part will reform this deed by executing a new deed similar to this deed but containing the description of said premises as disclosed by said survey, provided it is recited in said reformed deed that the premises as so described are the same premises which were conveyed by said deed of the 5th day of January, A. D. 1926.

IN WITNESS WHEREOF, the said parties of the first part have hereunto set their hands and seals, the day and year aforesaid.

Sealed and Delivered
in the Presence of

Louise Evelina du Pont Crowinshield

Henry F. du Pont (L.S.)

Natalie B. Sylvanis

Samuel Hallock du Pont (L.S.)

Natalie B. Sylvanis

Virginia Simmons du Pont (L.S.)

COMMONWEALTH OF MASSACHUSETTS
COUNTY OF SUFFOLK

BE IT REPEATED, That on this 17th day of December, A. D. 1952, personally came before me, the subscriber, a Notary Public for the Commonwealth aforesaid LOUISE EVELINA du PONT CROWINSHIELD, party to the foregoing indenture, known to me personally to be such, and individually acknowledged this Indenture to be her Deed.

GIVEN under my hand and seal of office, the day and year aforesaid.

John M. Harrington, Jr.
Notary Public
Commonwealth of Massachusetts
U. S. A.
Commission expires Feb. 6, 1959.

THE COMMONWEALTH OF MASSACHUSETTS
EDWARD J. COTTON
SECRETARY OF THE COMMONWEALTH

I HEREBY CERTIFY, That at the date of the attestation hereon annexed, John M. Harrington, Jr., whose name is signed to the attached certificate of acknowledgment, proof or affidavit, was at the time of taking such acknowledgment, proof or affidavit, a NOTARY PUBLIC for the said Commonwealth duly commissioned
ATTACHMENT 4

PROJECT NARRATIVE
PROJECT NARRATIVE

Hagley Museum and Library (Hagley) would like to restore the Eleutherian Dam that exists on their property. Hagley has indicated that the dam had last been repaired circa 1969 (see attached photographs). These previous repairs reportedly included constructing a sloped spillway surface on the downstream face of the dam. The sloped spillway was constructed of timber framework (approximately 1-foot-square timber beams) filled with stone. Cast in place concrete was apparently placed over the stone level with the timber framing to create a flat, sloped spillway surface. The concrete spillway surface was covered with timber planking (decking) as an aesthetic covering.

Since the 1969 repairs, the sloped portion of the spillway has sustained significant damage, apparently from high flow conditions and debris across the spillway face. This has resulted in all of the timber planking being removed and a significant portion of the concrete spillway being damaged. To repair this area, new reinforced concrete grade beams, stone fill between the grade beams, and a new concrete spillway face are proposed. Stone fill will be required to re-level this area with the remaining portions of the spillway. It is anticipated that on-site material (e.g., stone currently present below the dam) would be utilized as fill material. The purpose of the grade beams is to provide anchorage for the new planking. Due to the significant forces acting on the planking (e.g., debris hitting the planking, uplift forces from water running over the spillway, etc.), it is proposed to construct rock anchors to securely anchor the reinforced concrete grade beams to the underlying bedrock.

Based on the results from the several site visits performed by Duffield Associates, scour is occurring at the downstream toe of the dam spillway. In the areas where the depth to river bottom was determined, measurements were obtained at 5 foot intervals starting from the western toe of the dam and moving eastward. This data indicates that the scour depth ranged from minimal (0 to ½ feet) to significant (3 to 4 feet) at the middle of the dam. Due to safety concerns, the river bottom elevation in the western portion of the spillway toe (from the eastern edge of the dam approximately 30 feet west) was not determined during Duffield Associates’ site reconnaissance. This area is assumed to have the most significant scour as this portion of the dam has the most significant flow.

To reduce the potential for further scour and to fill in the areas previously scoured, Duffield Associates is proposing the installation of grout filled geotextile bags (geotubes) in these locations along the downstream toe. These geotubes would be placed to have reduced visibility from the ground surface.

The stone-walled millrace was historically utilized to divert water from the Brandywine River to feed powder mills, located between the millrace and the river. The water was reportedly diverted through approximately 3-foot diameter metal supply pipes, which exit the millrace in a perpendicular direction towards the powder mills. Significant amounts of sediment have accumulated throughout the millrace, obscuring its base along the majority of the millrace bottom. The sediment in the millrace was reportedly last removed in the 1970s. Restoration of flow, to the existing millrace, involves creating additional water depth through the length of the
millrace by removing accumulated sediment at the entrance, as well as throughout the millrace. The existing millrace walls are in deteriorated condition and require maintenance improvements. Anticipated improvements include replacement of missing stone sections of the wall, as well as re-pointing areas where the stone has loosened. In addition, several structures at the downstream outlet of the millrace are proposed for removal including a turbine and associated structures and small dam. Two (2) new walls are proposed for construction to keep the outlet flow at the millrace exit, as shown. One (1) wall will block flow to a former turbine area that is currently obstructed with sediment, and the second wall will block a second former outflow (millrace exit) area, which is also currently blocked with sediment.

A rock vane deflector and flow control structure are proposed at the upstream entrance to the millrace. The rock vane deflector is proposed to reduce scour that currently occurs along the western upstream portion of the dam. The flow control structure will block (or reduce) flow through the millrace during certain flow periods in order to reduce the potential for damage during high flow to the millrace.

In addition to the dam restoration, the Brandywine Conservancy has approached Hagley regarding incorporating a fish passage into the dam restoration project, as part of a master plan to restore shad to the Brandywine River. To address this concern, an assessment of alternatives for a fish passage was explored during the design phase of the dam restoration project. The current design of the millrace maintenance allows for possible fish passage with increased flows and obstruction (turbine and dam) removal at the exit of the millrace if or when downstream dams are removed.
ATTACHMENT 5

SUBAQUEOUS LANDS PERMIT
APPENDICES H AND R
APPENDIX H
FILL

* Please make sure answers to all of the questions in this appendix correspond to information on the application drawings.

* See Joint Application Form Reference Guide - How to Calculate Square Feet, Cubic Feet, and Cubic Yards.

1. How many feet will the fill be placed channelward of the:
   
   A. Tidal waters: NA
   
   B. Non-tidal waters: ordinary high water line?
      Permanent Fill – geotube to
      fill voids at the toe of the dam and
      rock vane deflector at the entrance of the millrace
      Temporary Fill – rocks and matting to access and dewater work areas

2. How much fill will be located:
   
   A. on subaqueous land (channelward of mean high water) fill will be placed
      channelward of ordinary high water, see below.
   
   B. on vegetated wetlands? NONE

Type of Fill below Ordinary High Water:
Grouted concrete (for geotubes to fill voids at the toe of dam).
Rocks for rock vane deflector – 2 foot minimum diameter stone.
Rock and concrete for walls and weir.

Amount of fill:
Geotube – 30 C.Y. (round geotube (62.5 ft. (l) x 12.56 ft.²)/27 all under OHW)
Rock vane deflector – 8.9 C.Y. +/- (all under OHW – approximately 40 ft. (l) x 3 ft. (w) x
2 ft. (h))/27
Millrace Walls – approximately 19.3 C.Y.
   Wall 1 – (15 ft. (l) x 3 ft. (w) x 5ft. (h))/27 = 8.3 C.Y. (approximate)
   Wall 2 - (20 ft. (l) x 3ft. (w) x 5ft. (h))/27 = 11 C.Y. (approximate)
Millrace flow control structure – 12.2 C.Y. ((22 ft. (l) x 3 ft. (w) x 5 ft. (h))/27

3. The fill will be (check one)
A. _____X Hauled in from upland sources (rock will be used from onsite as appropriate)
B. _____ Obtained from dredged material

H-1
4. What is the total volume of fill? 70.4 cubic yards
What is the total fill per running foot of shoreline? N/A
5. What method will be used to place the fill? Bucket excavator, concrete pump truck with steel tubing to fill geotubes, and pour flow control structure and walls.
6. How will the fill be retained? Not applicable.
7. State the type and composition percentage of the fill material (e.g. sand 80%, silt 5%, clay 15%, etc.) Rock vane will be constructed with onsite rocks and boulders from the surrounding area. Geotubes will be filled with grouted concrete.
8. Describe the type(s) of structure(s) to be erected on the filled area (if any).
NONE.
9. What type of ground cover will be provided for the filled area(s) to prevent soil erosion and help keep sediment from reaching State waters?
Not applicable.

H-2
APPENDIX R

MAINTENANCE DREDGING OR EXCAVATING

* If dredged material is to be placed in a disposal site, a separate map showing the location of the disposal site should be attached. This drawing must indicate the proposed retention levees, weirs, spillways, and/or devices for retaining the materials.

* Bottom samples to determine heavy metals or other toxic materials must be taken and analyzed if deemed necessary be the DNREC staff. The responsibility, as well as the expense incurred for obtaining and analyzing these samples, must be borne by the applicant.

* See Joint Application Form Reference Guide - How to Calculate Square Feet, Cubic Feet and Cubic Yards.

* If maintenance dredging is to be done, evidence of previous dredging must be provided. Any previously issued permit with drawings which indicates the date the dredging occurred, the area involved and dredging depth constitutes acceptable proof.

* Please make sure answers to all of the questions in this appendix correspond to information on the application drawings.

1. How many cubic yards of material will be MAINTENANCE DREDGED or excavated channelward of the:

   A. Tidal waters: NA.
   B. Non-tidal waters: ordinary high water line? 1,300 cu. yds.

2. What is proximity of the dredging project to the nearest creek bank or banks? What are existing land uses along this bank(s)?
   The millrace is adjacent to the Brandywine Creek. The existing land use is landscaped grass, small trees and shrubs.
   What is the primary vegetation?
   Trees and grass.

3. By what method (hydraulic, clamshell or other) will the dredging be done? If other, explain:
   Bucket excavator. The millrace and upstream entrance to the millrace will be dewatered prior to sediment removal. A small excavator will remove the sediment from the areas and load the sediment onto a lined truck for disposal at the Hagley Museum landscape storage area.

4. How many cubic yards of total material will be dredged or excavated?
   1,300 cu. yds. of maintenance sediment removal.
By what method? (hydraulic, clamshell, other, if other explain)
Bucket excavator.

5. What will be the dimensions of the dredged or excavated area relative to mean low water (for tidal areas only) or ordinary water level (for non-tidal areas only)?
570 ft. length 2-4 ft. depth 17.5 ft. base width 17.5 ft. top width (millrace)
Enterance to millrace approximately 50 ft. (l) x 50 ft. (w) x 2 ft. (d) (approximate)

6. How will the dredged or excavated material be transported to its disposal area?
The sediment from the millrace and upstream of the millrace entrance will be loaded onto a lined truck.

7. What are average depths in area of proposed dredging:
existing ft. (mlw) proposed ft. (mlw) 2-4 feet at ordinary high water.
Include a survey of proposed and existing depths on application drawings.
Relative to OHW - 2-4 ft.

8. What is the proposed dredging depth in relation to surrounding bathymetry?
(Indicate both proposed depths and surrounding depths on attached drawings)
Relative to OHW 2-4 ft.

9. Describe characteristics of the material to be disposed including:
   A. Physical nature of material (i.e. sand, silt, clay, etc.). Give percentages of various fractions if available.
The sediment in the millrace and upstream of the millrace entrance is predominantly sand and gravel with some cobbles and some silt.
   
   B. Chemical composition of material - Many areas have sediments with high concentration of pollutants (chemicals, organics etc.) which may be resuspended or reintroduced into the water. For heavily industrialized sites, a chemical analysis of this material should be provided (if applicable).
See Attachment 7. Millrace will be dewatered prior to sediment removal; therefore re-suspension will be negligible. Based on sediment samples taken on July 17, 2008 from the millrace, it appears the millrace sediment is applicable for reuse as soil on the Hagley property.

   C. What are the dewatering properties of material to be disposal of?
Sand and gravel are easily dewatered.

10. Land Disposal Areas.
   A. Describe dimensions, characteristics and exact locations of the proposed dredged material disposal site (provide photographs, directions to, and complete plans of disposal site).

See attached photographs (Attachment 8). Disposal area is in an area on Hagley property utilized for landscape/soil storage.
(APPENDIX R, CONTINUED)

B. Describe method of dredged material containment (embarkment, behind bulkhead, etc.)
The sediment from the millrace and upstream of the millrace entrance will be disposed in a pit within the landscape storage area on Hagley Museum grounds.

C. What type of leachates will be produced by the spoil material and what is planned for the protection of groundwater?
No leachates will be produced from the millrace sediment.

D. Disposal site coordinates
39-47.31 latitude
75-35.022 longitude

E. What methods will be used to ensure that spoil water does not adversely affect water quality both during construction and after completion of the project?
The construction areas of the millrace and upstream of the millrace entrance will be dewatered prior to sediment removal and the sediment will be loaded to lined trucks for transport to the storage area.

F. Describe present land use of the disposal site.
The present land use of the disposal site is the landscape and vegetation storage area for the Hagley Museum grounds.

11. Water Disposal Areas

A. Describe methods to be used for water disposal including volumes and site selection, and containment (if applicable).
NOT APPLICABLE.

B. Describe the existing water characteristics at the site, including chemical analysis for water quality.
NOT APPLICABLE.

12. Identify the dredging and disposal schedule to insure that operations do not degrade water quality during times of anadromous fish migration.
Construction activities will not take place during fish migration of species documented to migrate through the project area.

13. Has an Erosion and Sediment Control Plan been approved by the county conservation district for the project? _____ Yes No
Plans have been prepared as part of the permit application plans and are being submitted concurrently to New Castle County Land Use department which issues E&S permits.

* Approved plans must be received by this office prior to approval being issued.
ATTACHMENT 6

PROJECT PLANS
(9 SHEETS)
ATTACHMENT 7

TABLE – ENVIRONMENTAL SEDIMENT SAMPLING ANALYSIS
### Environmental Sediment Sampling and Analysis

**Summary**

Hagley Eleutherian Millrace

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<tr>
<td>Sampling Date (month/day/year)</td>
<td>7/17/08</td>
<td>7/17/08</td>
</tr>
</tbody>
</table>

| Matrix | Soil | Soil |

#### GUIDANCE VALUES

<table>
<thead>
<tr>
<th>PPL Pesticides/PCBs (mg/kg) by EPA Method 8081A/8082</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pesticides</td>
<td>N.D.</td>
</tr>
<tr>
<td>PCBs</td>
<td>N.D.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PPL Semivolatile Organic Compounds (mg/kg) by EPA Method SW-846 8270C</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pyrene</td>
<td>N.D.</td>
</tr>
<tr>
<td>Fluoranthene</td>
<td>N.D.</td>
</tr>
</tbody>
</table>

No other TCL semivolatile organic compounds were detected

<table>
<thead>
<tr>
<th>PPL Metals (mg/kg) by EPA 8000/7000 Series Methods</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium</td>
<td>11</td>
</tr>
<tr>
<td>Copper</td>
<td>5.1</td>
</tr>
<tr>
<td>Lead</td>
<td>9</td>
</tr>
<tr>
<td>Nickel</td>
<td>12</td>
</tr>
<tr>
<td>Zinc</td>
<td>65</td>
</tr>
</tbody>
</table>

No other PPL metals were detected

**NOTES:**
1. Units are in milligram per kilogram (mg/kg) unless noted otherwise.
2. N.D. = Substance was not detected
3. n/a = not applicable

**Guidance Values**

1. Reference is the Uniform Risk-based Standard (URS) for Unrestricted Use in a Critical Water Resource Area for Surface Soils as published by the State of Delaware, Department of Natural Resources and Environmental Control, Site Investigation and Restoration Branch in the December 1999 document titled, "Remediation Standards Guidance Under the Hazardous Substance Cleanup Act."

ATTACHMENT 8

DISPOSAL SITE LOCATION
AND PHOTOGRAPHS
NOTE:
THIS LOCATION SKETCH IS ADAPTED FROM A 2002 NEW CASTLE COUNTY AERIAL PHOTOGRAPH.