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July 29, 2008

P. N. 206046.02

Mr. Todd Miller  
United States Army Corps of Engineers  
9100 Arboretum Parkway, Suite 235  
Richmond, VA 23236

**RE: Addendum to the Byrd Creek Mitigation Bank Umbrella Agreement  
Elk Island Bank Prospectus  
Latitude/Longitude: 37°43'30.00"N/78°06' 34.67"W  
Goochland County, Virginia**

Dear Mr. Miller:

Please find enclosed a Prospectus for the Elk Island Environmental Bank (EEB) to be included under the Byrd Creek Mitigation Bank Umbrella agreement. Byrd Creek Mitigation Bank proposes to sponsor and establish a wetland bank to provide off-site compensation for wetland, stream and environmental impacts in the James River watershed. The EEB will service the same areas as the existing Byrd Creek Mitigation Bank (HUC codes: 2080203, 2080204, 2080205, 2080206 and 2080207).

Byrd Creek Mitigation Bank requests that the U.S. Army Corps of Engineers assemble a Mitigation Bank Review Team (MBRT) to review, in accordance with the existing Byrd Creek Mitigation Bank's consensus Mitigation Banking Instrument (MBI) and Bank Development Plan (BDP) instrument that meets the needs of regulatory agencies governing environmental impacts in the Commonwealth of Virginia. Byrd Creek Mitigation Bank requests authorization from the Chair of the MBRT to proceed with the development of the aforementioned bank located in Goochland County, Virginia. We look forward to your review.

We have enclosed several additional bound copies of the Report for your use and distribution. If you need any additional information or have any questions, please contact me at the referenced sources.

Sincerely,

John H. Brooks, III, PWD  
Assistant Vice President, Environmental  
Virginia Certified Professional Wetland Delineator, No. 3

/sbd

Enclosure

cc: Mr. Kelby Morgan, Byrd Creek Mitigation Bank

9560 Kings Charter Drive • P.O. Box 6160 • Ashland, VA 23005-6160  
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RECYCLED PAPER

**ELK ISLAND ENVIRONMENTAL BANK PROSPECTUS  
ADDENDUM TO THE BYRD CREEK MITIGATION BANK  
UMBRELLA AGREEMENT  
GOOCHLAND COUNTY, VIRGINIA**

**Sponsor:  
BYRD CREEK MITIGATION BANK**

**Prepared and Managed by:  
RESOURCE INTERNATIONAL, LTD.  
9560 Kings Charter Drive  
Ashland, Virginia 23005**

**JULY 2008**

**P.N. 206046\*02**



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**ELK ISLAND ENVIRONMENTAL BANK (EEB)**  
**PROSPECTUS**  
**ADDENDUM TO THE BYRD CREEK MITIGATION**  
**BANK UMBRELLA AGREEMENT**

**Sponsor:**

**BYRD CREEK MITIGATION BANK**

**Prepared and Managed by:**

**Resource International, Ltd.**

9560 Kings Charter Drive  
Ashland, Virginia 23005  
804-550-9200

July 2008

**I INTRODUCTION**

Byrd Creek Mitigation Bank (Byrd Creek) will serve as bank sponsor for the Elk Island Environmental Bank (EEB) to be included under the Byrd Creek Mitigation Bank Umbrella agreement. EEB will provide pre-approved Environmental Credits for use in the compensatory mitigation of unavoidable environmental impacts within an approved service area. The environmental credits proposed by the bank sponsor and managed by Resource International, Ltd. (Resource) will meet the guidelines, ratios and habitat success requirements of the U.S. Army Corp of Engineers, Virginia Department of Environmental Quality, US Fish and Wildlife Service and EPA Region III. The geographic limits of the bank's service area will be determined by the sponsor and the Mitigation Bank Review Team (MBRT) and will be authorized in the Mitigation Banking Instrument (MBI) approved by signatory agencies. The bank sponsor will request authorization for any activity requiring a Local, State, or Federal permit prior to permitted activity commencing.

Upon completion, EEB will be managed to provide replacement functions and values for wetlands, streams, and adjacent riparian habitat ecosystems. The creation and restoration of these systems will be managed for functional hydrologic and forest regimes representative of naturally occurring habitats found in the James River watershed. EEB may provide created, preserved, enhanced, and restored natural ecosystems. These diverse and dynamic wetland and stream complexes will enhance supplemental water retention, promote infiltration, improve

water quality and contribute to the hydrology of the James River basin. The bank will accomplish these goals by creating and preserving contiguous wetland corridors, and restoring straightened streams along and adjacent to the James River.

The EEB site of approximately 103± acres is currently under contract by Byrd Creek and available for initial environmental credit management. The site is currently agricultural fields, drained by a system of straightened streams. The area under consideration for the subject environmental bank has historically been used for agricultural purposes. The site drains through the series of straightened streams and flows toward the James River.

The project site includes approximately 2.34± acres of existing non-tidal forested wetlands; and approximately 5,875± linear feet of jurisdictional waters in the form of straightened streams that are intermittent. The remainder of the property (approximately 100± acres) exists currently in the form of upland agricultural fields with wooded buffers. The preservation and creation of the forested wetland system will entail the restoration of the intermittent streams where bankfull discharge will again flow into the fields, and will therefore, allow the agricultural fields to retain the necessary hydrology to support the proposed created wetland system (see *Appendix D – Water Budget* for supporting evidence). The stream restoration, along with preservation and enhancement of the wooded buffer along the James River will allow for the availability of stream credits.

Habitats utilized for credits within the bank may be composed of preservation and restoration of wetlands, streams, and other wildlife habitat. The sponsor, Byrd Creek, will implement a Bank Development Plan (BDP) that develops and manages approximately seventy-three (73±) acres of non-tidal forested wetland credits, as well as approximately 915 linear feet of stream credits and associated buffers (30± acres). The credits at the EEB will be for use by authorized permits. These credits will target the associated long-term regulatory needs of the James River basin in the next five to fifteen years.

## **II SITE CHARACTERISTICS**

The Elk Island 103± acre property is located south of Interstate 64, to the east of State Route 6, and to the east of State Route 603 in Goochland County, Virginia (Figure 1). The site consists of agricultural fields along the James River. The site is located in the central Piedmont Physiogeographic Province and exhibits characteristics consistent with typical upland areas adjacent to mid-order Piedmont rivers.

Site visits by Resource scientists, and published NRCS documents have identified that soils within the proposed banking area include transported silt loams as a result of alluvial soil deposition, extending down to 63 inches. The transported soils are typically deposited on terraces resulting from the inherent movement of the river. The project site elevations range from approximately 220 feet mean seal level (MSL) to 198 feet MSL with the majority of the site existing at an average 200 feet MSL. Surface water observations included straightened streams which transport water to the James River.

Research into previous studies as well as geographical references do not indicate any legal encumbrances on the site proposed for EEB, as the entire site is owned by the sponsor. Should further study indicate the presence of an encumbrance, it will be resolved.

### **III THE ENVIRONMENTAL BANK PROPOSAL**

#### **Project Goals and Objectives**

Byrd Creek Mitigation Bank proposes to:

- Develop a comprehensive environmental bank composed of wetland creation and preservation, and stream restoration with associated buffers along the James River.

Primary design and management goals for the Elk Island Environmental Bank:

- Preserve and manage approximately 2.3± acres of existing non-tidal forested wetlands;
- Create and manage approximately 73± acres of non-tidal forested wetlands consistent with those found in the James River basin;
- Restore approximately 5,875 linear feet of stream, which includes approximately 30± acres of stream buffer
- Create wetland ecology with low impact engineering methods;
- Provide multiple types of hydro periods and encourage seasonal draw downs common in non-tidal forested wetlands of Virginia;
- Establish a naturally self-maintaining functional wetland system requiring little or no long-term management;
- Restore the previously straightened streams to a form and function that is consistent with other natural streams within the region using Rosgen techniques;
- Provide pre-approved wetland, stream and environmental credit compensation through the creation, preservation and enhancement of varied forested wetland systems.

Byrd Creek Mitigation Bank (Byrd Creek) will create, enhance, and preserve forested wetland systems, and enhance and preserve riparian habitat adjacent to the James River, as well as restore previously straightened streams and their associated stream buffers. These habitats will be used for resolution of environmental impacts in the banks approved service area. Management of the existing natural resources and development of created wetlands will be guided by a Bank Development Plan (BDP) developed by the Sponsor and its managing entity Resource International, Ltd. This BDP may include recommendation and guidance developed by the MBRT. Final success criteria, design guidelines, construction methods and implementation plans will be provided in the approved MBI and BDP. These project success criteria and design guidelines will be expressed in the signatory copy of the Mitigation Banking Instrument and final support document referred to as the Bank Development Plan.

The establishment of the bank will be performed in one to two development phases over a two to three year period of time, responding to the market needs of the watersheds impact types. Detailed design plans in the form of a BDP will be utilized for ongoing development of each stream/wetland/upland preservation, restoration or creation phase. The sponsor will develop these natural systems in advance as pre-approved regulatory solutions for unavoidable impacts to

jurisdictional waters and wetlands. Existing on-site resources and adjacent indigenous habitats with similar landscape position will provide long-term reference systems of natural functions.

Credit ratios will be established by the sponsor and the MBRT for each established ecological system. These ratios will be specified in the signatory copy of the MBI and BDP. The regulatory authorization of the banks MBI and BDP plans will allow approved credits to be transferred as compensation for authorized impacts within the service area. The proposed service area will include VA HUC Codes 2080203, 2080204, 2080205, 2080206 and 2080207, and will be consistent with the established Byrd Creek Mitigation Bank, as well as other banks authorized in the James River Watershed. In addition, presale credits will be requested as a percentage of the overall proposed bank creation acreage.

Environmental presale credits resolved at the bank will be secured by adequate financial assurances for a reasonable period of time. At the request of the sponsor, use of the bank for impacts outside the service area by authorized permit entities will be considered on a case-by-case basis for unavoidable environmental impacts. This case-by-case review will be given consideration for the health, welfare, and safety needs of the public.

#### **Technical Overview**

Environmentally sensitive construction, moist soil management, natural hydrologic and bio-engineering techniques, and specific low impact construction techniques will be used to guide the implementation of each bank phase. These techniques will be adjusted in response to adaptive management strategies utilized to accommodate specific on-site conditions that become apparent during implementation of the project. This approach to site development and management of existing and proposed systems will allow the sponsor to respond to ever changing site conditions.

To establish baseline information for the project the site characteristics, land use history, landscape position and previous site studies were reviewed. The various published baseline data researched included the Virginia Hydrologic Unit Code Map (Figure 4), Cartersville USGS 7.5-minute quadrangle map (Figure 1), US Department of Agriculture Soil Survey Map, Goochland County (Figure 2) and the National Wetlands Inventory Map for the USGS 7.5-minute Cartersville, Virginia quadrangle map (Figure 3). Actual topographic conditions will be verified by additional aerial photography with interpretation and mapping of one-foot topography to guide bank development and selection of areas requiring minimal construction for wetland and stream restoration. Site visits were conducted by Resource International, Ltd. and relevant baseline data was gathered along with additional site-specific information.

Background data and a preliminary wetland study suggest that limited jurisdictional wetlands and Waters of the U.S. are present within the site boundaries. A jurisdictional determination (JD) by the U.S. Army Corps of Engineers has been requested for the site and is expected to be issued later this year. The site location adjacent to the James River makes the site ideal for wetland creation and preservation to help improve the water quality within the James River basin.

The existing natural resources within the project area will receive perpetual management, enhancement, and preservation. The sponsor will create forested wetland and stream systems consistent with natural wetland and stream systems in the James River watershed.

Site development will follow strict programmatic design guidelines. These guidelines include: development of micro-topography/surface roughness to promote infiltration and water retention versus run-off which will be determined once the water level is dropped; the establishment of site stabilization techniques that promote establishment and colonization of natural vegetation; implementation of strict moist soil management practices and preservation of natural soil densities by using low ground pressure construction equipment so as not to compact the soils during construction; preservation of organics by retaining and incorporating natural debris and organics in the topsoil; allowing adjacent upland areas to contribute to the watershed of both the existing and restoration areas; promotion of a natural watershed flow to existing wetlands; and practicing natural resource management by promoting diversity and sound design concepts to restore and preserve functional high value natural resources.

To establish a functional environmental bank the sponsor, Byrd Creek, and the MBRT will develop and identify criteria to gauge the development and functional success of the natural systems proposed. These success criteria will guide the release of bank credits to be used for the liability resolution of unavoidable environmental impacts authorized by regulatory agencies. All success criteria will be established in the MBI and will be consistent with the guidelines used for other authorized environmental banks in the James River watershed.

Success criteria may include:

- ◆ Establishment of hydrology, plant communities, function and values in the existing and proposed wetland and stream systems;
- ◆ Successful preservation and restoration of hydrologic regimes found in existing wetlands and streams as per MBI & BDP guidelines;
- ◆ Establishment of hydrologic regimes targeting soil saturation, or ponding during the growing season and non-tidal regimes as per MBI & BDP guidelines for target communities;
- ◆ Monitoring of system hydrology with groundwater wells as per MBI & BDP guidelines;
- ◆ Establishment and monitoring of selected wetland communities and forest plant material as per MBI & BDP guidelines;
- ◆ Establishment of direct accountability by the sponsor for all implementation and development practices assuring compliances and adherence to the authorized MBI and BDP designs;
- ◆ Restoration of documented streams / riparian systems modified by historic agricultural activities.

Use of these success criteria by the sponsor and MBRT during the construction, maintenance and monitoring period will allow the development of on-site reference data to be used in long-term project management. Specific project data will be compiled and compared with regional climate

trends, on-site reference systems and site specific monitoring. Local climate trends and local reference systems will be used to gauge success in any typical year.

### **General Approach to Relevant Banking Issues**

**Environmental Bank Credits and Debits:** The development of actual available credits at the bank will be determined by the MBI and active credit ledger. Credits will be available at the ratios specified in the MBI for each type of ecological system.

**Credit Ledger System:** A ledger system will be established and approved by the MBRT to document credit availability and credit/debit withdrawals from the bank. The sponsor will submit annual reports to the MBRT chair of the approved transactions that have occurred at the bank. Upon written request the bank credit ledger will be available for inspection and accounting review.

**Credit Availability and Release:** Release of credits from the bank will be determined by the MBRT and authorized by success criteria outlined in the MBI. The sponsor upon signature of the MBI will make advance presale credits available for use by signatory agencies.

**Financial Assurances:** The sponsor will offer adequate financial assurances for all transferred credits. No credits will be transferred until financial assurances are in place. Financial assurances in the form of letter of credit, or licensed corporate surety bond will be provided in favor of the Norfolk District of the USACOE.

**Annual Reporting of site conditions, field adaptations and success monitoring:** The sponsor will prepare annual reports detailing the activity on the site. These reports will document any substantial design changes, amount of construction completed, planting success, review of the proposed hydrologic character on the site.

**Provisions for Long-term Management and Maintenance:** The sponsor will provide long-term protection in the form of a perpetual legal instrument or conservation real estate easement that is agreeable to the MBRT. Perpetual easement will be transferred concurrently with approved credit transfers. A permanent management fund will be established to allow for perpetual stewardship of the bank site.

## **IV REQUEST FOR AUTHORIZATION TO PROCEED**

The Bank Sponsor requests authorization from the Chair of the MBRT to proceed with the development of the EEB located in Goochland County, Virginia. The sponsor also requests the U.S. Army Corps of Engineers assemble an MBRT to review, guide and develop a consensus MBI and BDP instrument that meets the needs of regulatory agencies governing environmental impacts in the Commonwealth of Virginia.

## **V FIGURES**

- Figure 1: Site Location and Topographic Map
- Figure 2: US Department of Agriculture Soil Survey Map
- Figure 3: National Wetlands Inventory (NWI) Map
- Figure 4: Virginia Hydrologic Unit Code Map
- Figure 5: USGS Historical Topographic Map

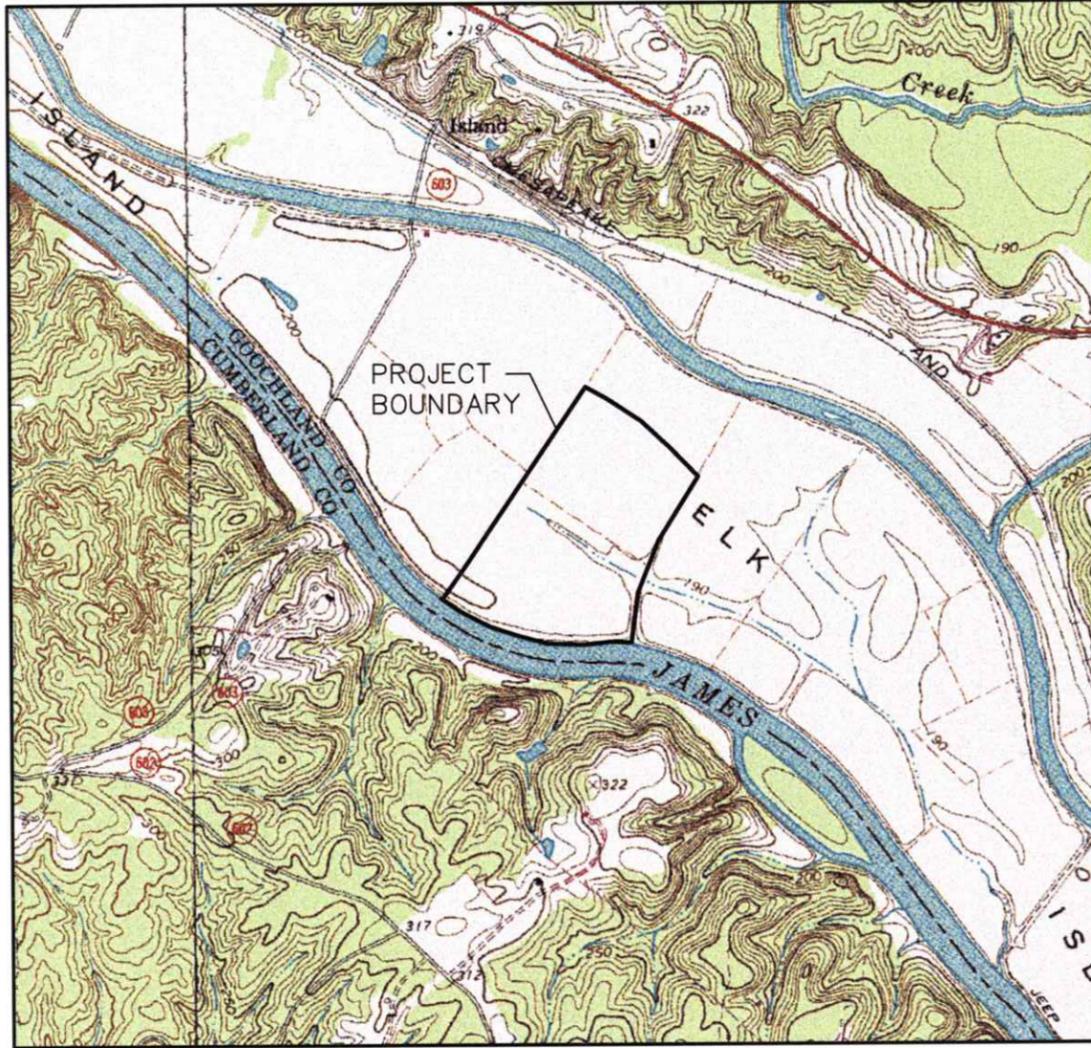
## **VI APPENDICES**

- Appendix A: Prospectus
- Appendix B: Approximate Limits of Waters of the U.S.
- Appendix C: Photographs
- Appendix D: Water Budget
- Appendix E: Historical Aerial Photographs

ELK ISLAND ENVIRONMENTAL BANK PROSPECTUS					
Mitigation Bank Type	Ratio	Total Stream Length (LF)	Stream Buffer Adjustment Factor (1 = 200'; 0.5 = 100')	Acres	Total Potential Credits for Mitigation Bank
Stream Preservation (w/100' Buffer one-sided) (LF)	07:01	4809.00	2404.50	-	343.50
Stream Restoration (w/100' Buffer two-sided) (LF)	01:01	3275.00	3275.00	-	3,275.00
Wetland Creation (Ac)	01:01	-	-	73	73.00
Wetland Preservation (Ac)	10:01	-	-	2.3	0.23
TOTAL	-	8084.00	5679.50	75.30	3,618.50
Note <sup>1</sup> : The data presented above is for informational purposes only and is subject to change. No warranties or guarentees are implied or inferred by this estimate.					
Note <sup>2</sup> : The potential credits for stream preservation and restoration are based on the existing linear feet of the straightened streams onsite. Once completed, the natural meanders and sinuosity of the restored channels will increase the linear footage of potential mitigation credits.					

## **FIGURES**

**FIGURE 1**  
**SITE LOCATION AND TOPOGRAPHIC MAP**



U.S.G.S. 7.5 MINUTE SERIES QUADRANGLE  
CARTERSVILLE QUADRANGLE, VIRGINIA 1969 (REVISED 1979)  
SCALE: 1" = 2000'



NOTE: ALL LOCATIONS ARE APPROXIMATE.

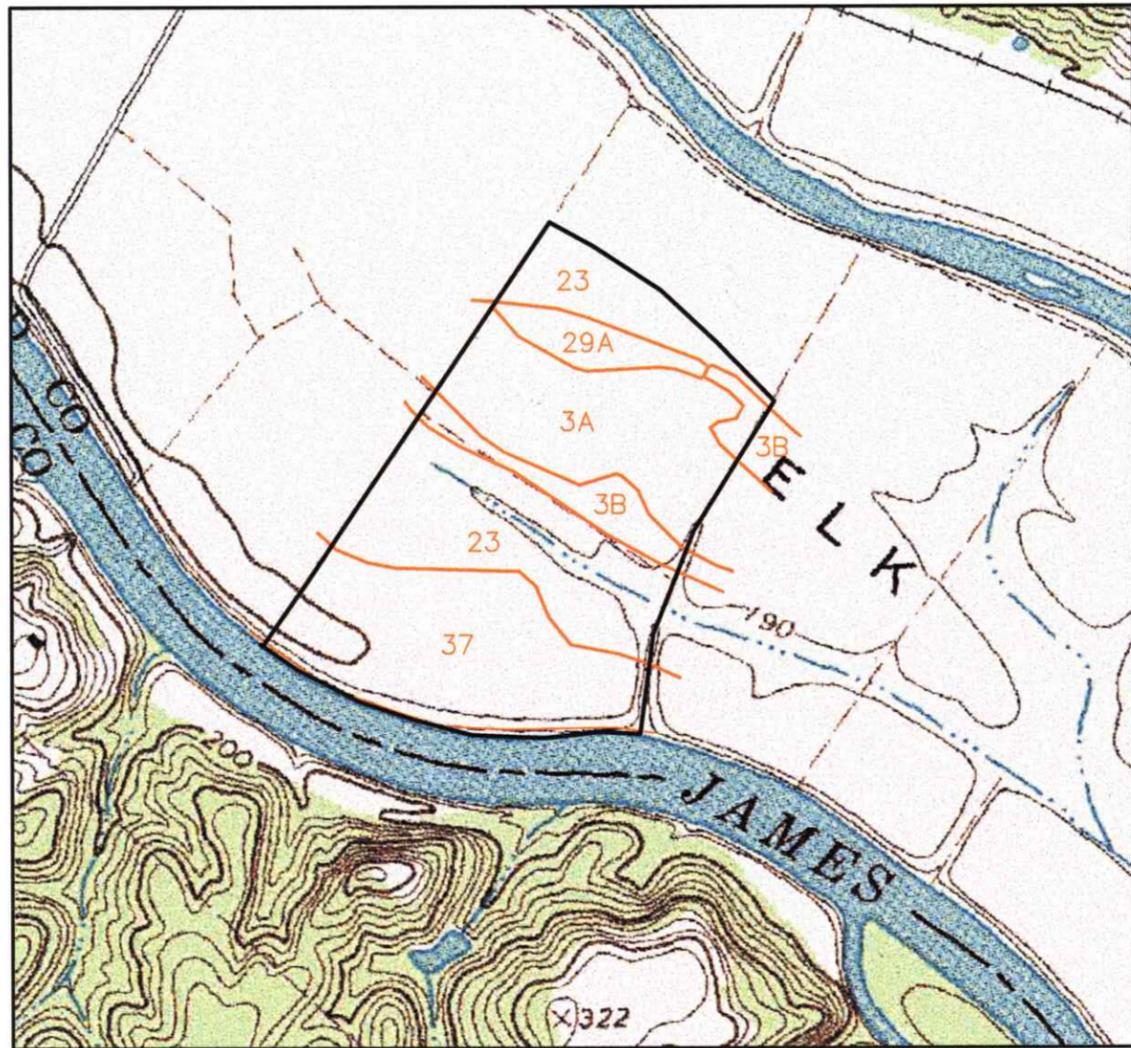
**FIGURE 1**  
**SITE LOCATION AND TOPOGRAPHIC MAP**  
**ELK ISLAND**  
**(APPROXIMATELY 103+/- ACRES)**  
**LIESFIELD CONTRACTOR, INC.**  
**GOOCHLAND COUNTY, VIRGINIA**  
**JUNE 16, 2008**



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**FIGURE 2**  
**USDA – NRCS NATIONAL COOPERATIVE SOILS**  
**SURVEY MAP**



U.S.G.S. 7.5 MINUTE SERIES QUADRANGLE  
CARTERSVILLE QUADRANGLE, VIRGINIA 1969 (REVISED 1979)  
USDA NRCS SOIL SURVEY GEOGRAPHIC (SSURGO)  
DATABASE FOR GOOCHLAND COUNTY, VIRGINIA, 12/04/2006  
SCALE: 1" = 1000'

SOIL SURVEY OF GOOCHLAND COUNTY, VIRGINIA LEGEND

- 3A - BOLLING SOILS, 0 TO 2 PERCENT SLOPES
- 3B - BOLLING SOILS, 2 TO 7 PERCENT SLOPES
- 23 - MONACAN SILT LOAM
- 29A - PAMUNKEY LOAM, 0 TO 4 PERCENT SLOPES
- 37 - TUCKAHOE SOILS

\* DENOTES HYDRIC SOILS

NOTE: ALL LOCATIONS ARE APPROXIMATE.

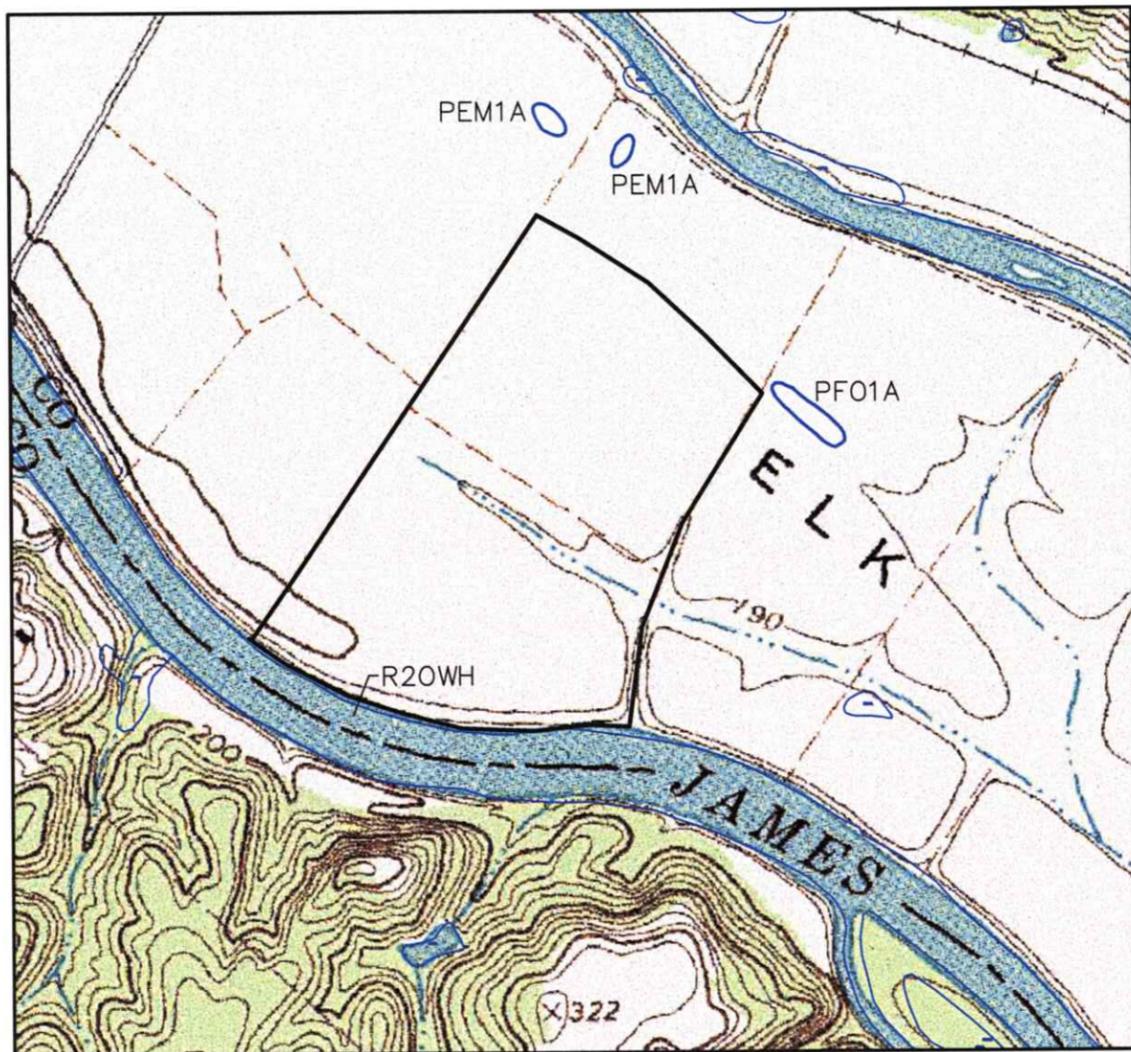
**FIGURE 2**  
**USDA-NRCS-NATIONAL COOPERATIVE**  
**SOIL SURVEY MAP**  
**ELK ISLAND**  
**(APPROXIMATELY 103+/- ACRES)**  
**LIESFIELD CONTRACTOR, INC.**  
**GOOCHLAND COUNTY, VIRGINIA**  
**JUNE 16, 2008**



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**FIGURE 3**  
**NATIONAL WETLANDS INVENTORY MAP**



U.S.FISH AND WILDLIFE SERVICE  
 NATIONAL WETLANDS INVENTORY (NWI) MAP  
 7.5 MINUTE QUADRANGLE, CARTERSVILLE, VIRGINIA  
 AVAILABLE URL: [HTTP://WETLANDSFWS.ER.USGS.GOV/WTLNDS/LAUNCH.HTML](http://wetlandsfws.er.usgs.gov/wtlnds/launch.html)  
 ACCESSED: 06/11/08  
 SCALE: 1" = 1000'

NATIONAL WETLANDS INVENTORY MAP LEGEND

- PEM1A - PALUSTRINE, EMERGENT, PERSISTENT, TEMPORARY
- PFO1A - PALUSTRINE, FORESTED, BROAD-LEAVED DECIDUOUS, TEMPORARY
- R20WH RIVERINE, LOWER PERENNIAL, OPEN WATER/UNKNOWN BOTTOM, PERMANENT

NOTE: ALL LOCATIONS ARE APPROXIMATE.

**FIGURE 3**  
**NATIONAL WETLANDS INVENTORY MAP**  
**ELK ISLAND**  
**(APPROXIMATELY 103+/- ACRES)**  
**LIESFIELD CONTRACTOR, INC.**  
**GOOCHLAND COUNTY, VIRGINIA**  
**JUNE 16, 2008**

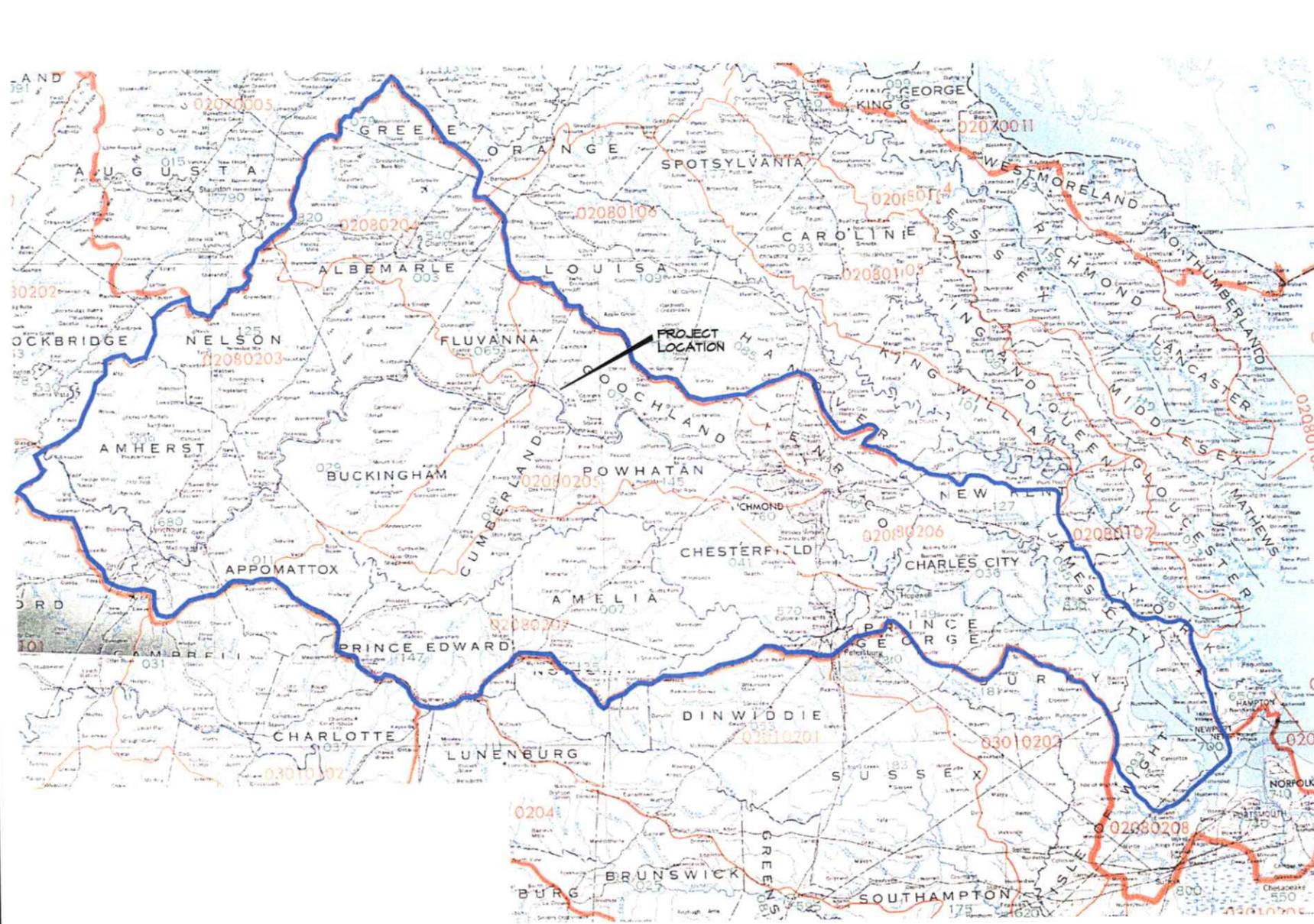


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**FIGURE 4**  
**VIRGINIA HYDROLOGIC UNIT CODE MAP**

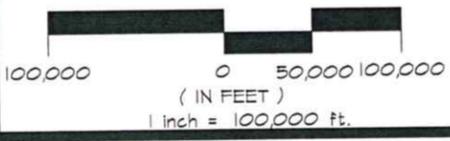
C:\CIVIL 3D PROJECTS\206046\_02\HUC CODE FIGURE\HMB-FIGURE 4.DWG



- LEGEND**
- PRIMARY HYDROLOGIC UNIT CODE (HUC) BOUNDARY (02080206)
  - 02080203 HYDROLOGIC UNIT CODE
  - 02080204 HYDROLOGIC UNIT CODE
  - 02080205 HYDROLOGIC UNIT CODE
  - 02080206 HYDROLOGIC UNIT CODE
  - 02080207 HYDROLOGIC UNIT CODE

**FIGURE 4**  
**VIRGINIA HYDROLOGIC UNIT CODE MAP**  
**EIK ISLAND**  
**APPROX. 103 ACRES**  
**GOOCHLAND COUNTY, VIRGINIA**  
**JULY 29, 2008**

UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY  
 HYDROLOGIC UNIT MAP - 1974  
 STATE OF VIRGINIA  
 INTERIOR-GEOLOGICAL SURVEY RESTON, VA - 1980, REPRINTED 1984



**FIGURE 5**  
**USGS HISTORIC TOPOGRAPHIC MAP**



0 5,000 10,000 15,000 20,000  
Feet

NOTE: ALL LOCATIONS ARE APPROXIMATE

Figure 5  
USGS 1977 Historic Topographic Map  
Elk Island  
Approximately 103 Acres  
Liesfeld Contractor, Inc.  
Goochland County, Virginia



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## **APPENDICES**

**APPENDIX A**  
**PROSPECTUS**

**ELK ISLAND ENVIRONMENTAL BANK PROSPECTUS  
ADDENDUM TO THE BYRD CREEK MITIGATION BANK  
UMBRELLA AGREEMENT  
JULY 2008**

**I. INTRODUCTION**

Byrd Creek Mitigation Bank proposes to sponsor and establish an umbrella environmental bank to provide effective off-site compensation for wetland, stream, and environmental impacts, which can not be avoided as a result of development projects within the proposed service areas.

Primary Geographic Service Areas

The primary Geographic Service Area is defined by the Hydrologic Units Codes (HUC) as the Middle James River Watershed (HUC Codes 2080203, 2080204, 2080205), and the Lower James River Watershed (HUC Codes 2080206 and 2080207). These requests shall be reviewed on a case-by-case basis by the MBRT members.

Wetland mitigation sequencing as indicated in the EPA's Section 404 (b) (1) Guidelines shall be utilized by any applicant to the bank (i.e. avoidance, minimization and restoration) to the maximum extent practical in its planning, design and construction programs.

The banking instrument and the development and operation of the bank will be in accordance with the Code of VA Sect. 33.1-223.2.1 Wetland Banking and the "Federal Guidance for the Establish, Use and Operation of Mitigation Banks", published in Volume 60, Number 228 of the Federal Register, November 28, 1995, referred to hereafter as Federal Banking Guidance.

An Individual Plan of Development (POD) will be developed by Byrd Creek Mitigation Bank and sponsored by Byrd Creek Mitigation Bank to establish the Bank. The POD will include location maps, land use plans for the property, banking master plan, banking phasing plans, hydrologic analysis and performance models, bank success criteria, preliminary specifications and construction methodologies for the project development.

The focus of the Bank will be compensation for impacts to Jurisdictional Waters and Wetlands of the United States, stream systems, and other environmental systems. The goals and objectives of the POD will target important ecological functions and related habitat values. The preservation, enhancement and creation of wetlands and forested buffers on this site will provide a positive contribution within the drainage basin and will contribute to improved water quality of the James River watershed.

## **I. LOCATION OF THE BANK**

The proposed Bank is located along the James River in Goochland County, Virginia. It is located on the Cartersville 7.5 minute USGS quadrangle. The property is approximately 103± acres. The site is currently agricultural fields, drained by a system of ditches. The area under consideration for the subject environmental bank has historically been used for agricultural purposes. The site drains through the series of ditches and flows toward the James River.

## **III. MEASURES TO BE TAKEN BY COMPANY TO ESTABLISH BANK**

The sponsor, Byrd Creek Mitigation Bank, will establish this bank by enhancing and preserving approximately 2.3± acres of existing non-tidal forested wetlands; enhancing and preserving riparian habitat along the James River; creating and managing approximately 73± acres of non-tidal forested wetlands; and restoring approximately 5,875 linear feet of previously straightened intermittent streams; consistent with those found in the James River basin. To accomplish this Byrd Creek Mitigation Bank will develop the bank consistent with the Mitigation Banking Instrument (MBI), and will include the following components:

1. Provide proof of assigned power of attorney for the referenced property, and financial surety for the development and maintenance of the project. Show the ability to complete the wetland/stream mitigation bank on the approximately 103± acre property and indicate a commitment to provide a dynamic and diverse ecological system and provide for long term maintenance.
2. Develop a detailed Plan of Development (POD) that will include clearly stated goals and objectives for the bank. The POD will be based on specific soils, hydrologic criteria, engineering enhancement concepts and will provide a land use plan, phasing plan, detailed grading plan, long term planting plan, and construction specifications for the preservation, enhancement, and creation of a diverse wetland banking system. The work will include the following basic elements:
  - a. Establish wetland hydrology through such measures as: minor grading to regulate surface runoff, in-ground hydrologic barriers, soil enhancement to increase water storage capacity and reduce soil permeability rates. The manipulation of the site may also include the installation of small hydrological control devices in existing swales to regulate water flow.
  - b. Design and implement a hydrological monitoring plan for confirmation of target wetland hydrology regimes that are consistent with the vegetative goals and objectives of the bank and that ensure success of all wetland systems.

c. Develop wetland-planting schemes that reflect the goals and objectives of the project are compatible with the native wetland communities of the watershed and are indigenous to the region.

d. Develop performance criteria and long term goals for success and acceptance of the project as an environmental and wetland mitigation bank

e. Develop and implement construction and post construction monitoring and contingency measures as necessary to meet established performance criteria.

3. Provide assurances of financial resources for the construction and maintenance of the Bank through a post construction monitoring period to ensure that all performance criteria are met.

4. Byrd Creek Mitigation Bank will administer the compensation credit accounting of the Bank during its operational life (until all credits are debited) and provide for the long-term preservation and management of the wetlands within the bank.

#### **IV. OPERATING CRITERIA**

**A. Crediting \ debiting \ accounting:** Decisions concerning credit withdrawal from a bank will be made in accordance with the Code of Virginia Section 33.1-223.2.1 Wetland Banking and Sections II.D.6 and 7 of the Federal Banking Guidance (November 28, 1995). In addition, the following general guidelines apply to this bank:

a. Availability of credit will be based on the level of achievement of those goals and objectives contained in the POD approved by the MBRT. Pre-released credits will be determined by the MBRT.

b. Debits of available credit from the bank ledger account to compensate for the impacts of authorized projects will be based on the permit requirements for those projects. The permit requirement will normally reflect consideration of the value of the wetlands impacted along with the value of the available compensation credit in the Bank. Standard compensation ratios consistent with those used by the permitting agencies for created wetlands will be applied at the time of the application.

c. This Bank can be considered as a compensation site for any project in the Primary Geographic Service Area where on-site compensation is demonstrably impracticable. The bank also reserves the right to service public projects under the guidelines developed by state agencies. The use of the bank will be review on an individual basis by the MBRT consistent with regulatory guidelines.

**2. Accounting Procedures:** The Bank will establish and maintain an accounting system (i.e. ledger) which documents credits and debits to the bank account. Each time an approved debit/credit transaction occurs, Byrd Creek Mitigation Bank will submit a statement to the permitting agencies. Company will also generate an annual ledger report

to be submitted to all members of the MBRT. The ledger will be available for inspection upon written request by any participating agency.

**3. Achievement of Performance Criteria:** Remedial action may be necessary during the operational life of the bank to meet the performance criteria. If the bank does not follow the approved POD, and as a result, the performance criteria are not achieved, the Bank will develop and implement corrective measures to achieve performance criteria or identify other successful areas not previously included and monitored for compensation credit within the bank. If the Bank has followed the approved plan but the performance criteria are still not fully met, the MBRT will work cooperatively to determine measures to achieve the performance criteria while minimizing additional costs. If the Bank has not sold any credits for an undeveloped phase of the project, it reserves the right not to develop future phases not currently obligated by permit regulations.

#### **V. LONG-TERM MONITORING AND MAINTENANCE**

**A. Long-term Operation:** Decisions concerning the operational life of the bank, long-term monitoring/management, remedial actions, and financial assurances will be made in accordance with Section II.E. of the Federal Banking Guidance (November 28, 1995). These decisions will be agreed upon in the final MBI signed by the sponsor and the participating agencies.

**B. Long-term Protection:** The Approved and debited credits in the Bank will be retained for 10 years by the Bank or an agreed upon land trust or public agency. The Bank may seek that this land be assigned or transferred to a land trust or public agency for the long-term protection of its resources.

**APPENDIX B**  
**APPROXIMATE LIMITS OF WATERS**  
**OF THE U.S.**



**APPENDIX C**  
**PHOTOGRAPHS**



View of agricultural field facing east, away from river.



View of agricultural field facing southeast.



View of sample point located within an existing forested wetland area.



View of existing channel intended to drain agricultural field.



View of existing channel intended to drain agricultural field.



View of existing culvert at end of an existing channel.

**APPENDIX D**  
**WATER BUDGET**

Water Budget Summary - Runoff Future Average

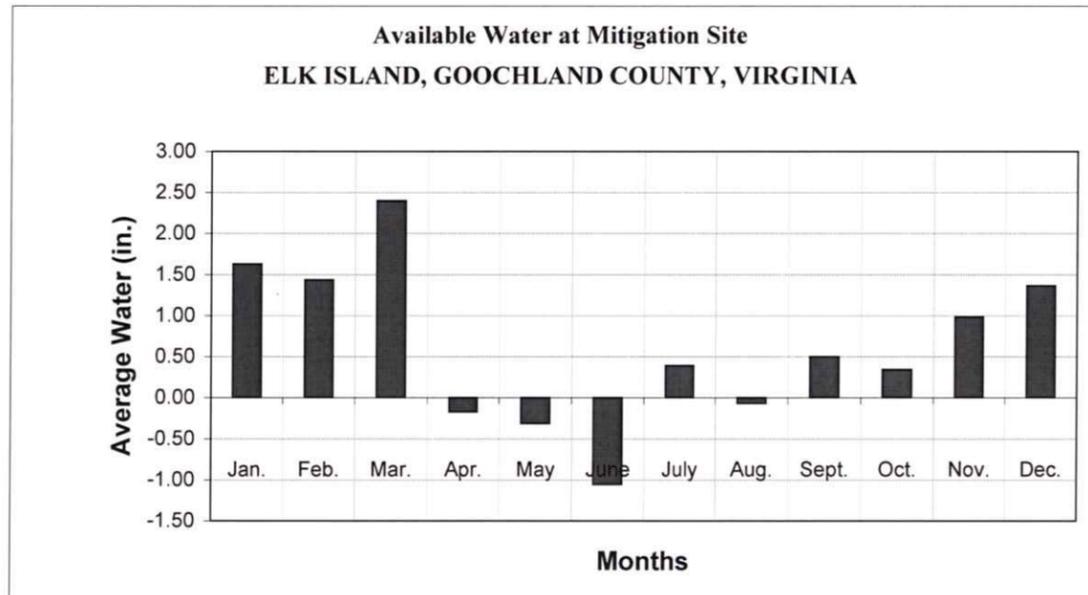
ELK ISLAND, GOOCHLAND COUNTY, VIRGINIA

(A) (B) (C) (D) (E)

Month	Average Precipitation (in) (1)	Estimated Average Run on (in) (2)	Estimated Average Runoff (in) (3)	Estimated Evapotranspiration (in)	Available Water (in) (4)
Jan.	3.29	0.00	0.00	1.67	1.63
Feb.	2.87	0.34	0.00	1.78	1.44
Mar.	4.07	0.94	0.00	2.62	2.40
Apr.	3.13	0.02	0.00	3.33	-0.18
May	3.89	0.01	0.00	4.22	-0.31
June	3.69	0.00	0.00	4.75	-1.06
July	4.92	0.58	0.00	5.10	0.39
Aug.	4.57	0.07	0.00	4.72	-0.07
Sept.	3.99	0.34	0.00	3.83	0.50
Oct.	3.36	0.00	0.00	3.02	0.34
Nov.	3.02	0.21	0.00	2.25	0.99
Dec.	3.13	0.00	0.00	1.77	1.36
					<b>7.43</b>

Notes:

1. Richmond (RIC) ,Virginia, weather station, 1968 - 2004 averages
2. Average monthly runoff to site calculated using the TR-55 methodology, where 1994 rainfall data was used.
3. Runoff is captured at selected points along the banks of the mitigation site and will stand until it infiltrates.
4. (Precipitation + Runon) - (Runoff + Evapotranspiration)
5. Available Water (E) = (A+B) - (C+D)
6. Channels on the mitigation site will be designed to keep water on the site and raise the ground water table closer to the surface. Data will be collected from weekly monitoring between February 15 and April 30, from piezometers installed before the channels are restored.



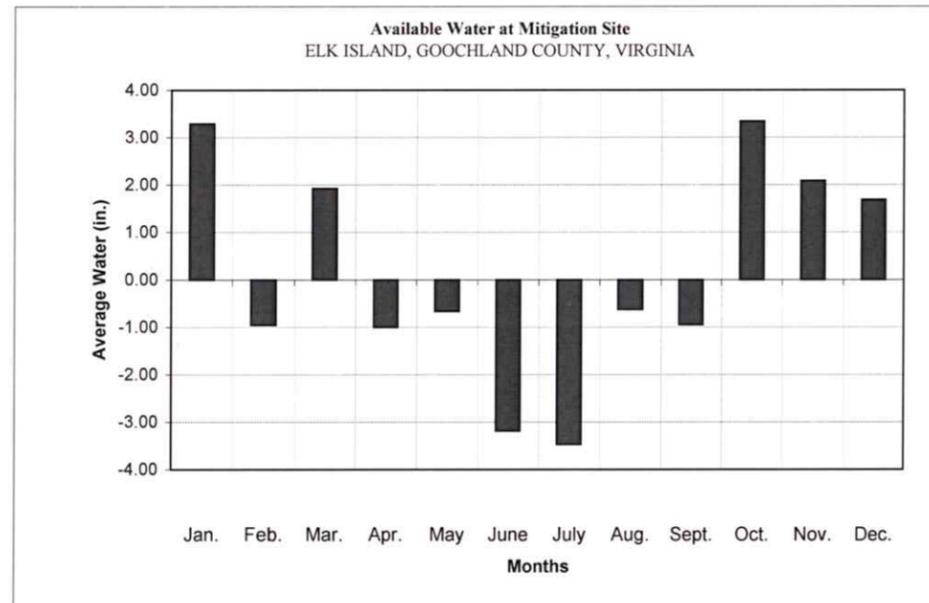
Water Budget Summary - Runoff Future Average Dry

ELK ISLAND, GOOCHLAND COUNTY, VIRGINIA

	(A)	(B)	(C)	(D)	(E)
Month	Average Precipitation (in) (1)	Estimated Average Run on (in) (2)	Estimated Average Runoff (in) (3)	Estimated Evapotranspiration (in)	Available Water (in) (4)
Jan.	3.58	1.37	0.00	1.67	3.29
Feb.	0.82	0.00	0.00	1.78	-0.96
Mar.	4.48	0.06	0.00	2.62	1.92
Apr.	2.33	0.00	0.00	3.33	-1.00
May	3.49	0.06	0.00	4.22	-0.67
June	1.56	0.00	0.00	4.75	-3.19
July	1.63	0.00	0.00	5.10	-3.47
Aug.	3.18	0.91	0.00	4.72	-0.63
Sept.	2.88	0.00	0.00	3.83	-0.95
Oct.	6.09	0.27	0.00	3.02	3.35
Nov.	4.28	0.05	0.00	2.25	2.08
Dec.	3.45	0.00	0.00	1.77	1.69
					<b>1.46</b>

Notes:

1. Richmond (RIC) ,Virginia, weather station, 1968 - 2004 averages
2. Average monthly runoff to site calculated using the TR-55 methodology, where 2002 rainfall data was used.
3. Runoff is captured at selected points along the banks of the mitigation site and will stand until it infiltrates.
4. (Precipitation + Runon) - (Runoff + Evapotranspiration)
5. Available Water (E) = (A+B) - (C+D)
6. Channels on the mitigation site will be designed to keep water on the site and raise the ground water table closer to the surface. Data will be collected from weekly monitoring between February 15 and April 30, from piezometers installed before the channels are restored.



Water Budget Summary - Runoff Future Average WET (Based on 1996 data)

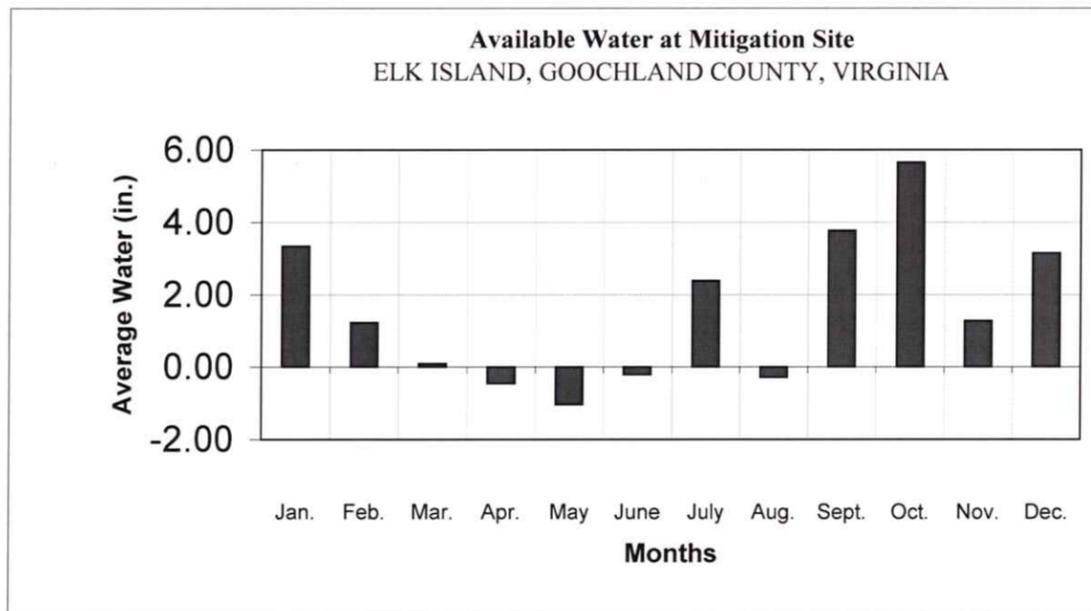
ELK ISLAND, GOOCHLAND COUNTY, VIRGINIA

(A) (B) (C) (D) (E)

Month	Average Precipitation (in) (1)	Estimated Average Run on (in) (2)	Estimated Average Runoff (in) (3)	Estimated Evapotranspiration (in) (4)	Available Water (in) (5)
Jan.	4.65	0.36	0.00	1.67	3.34
Feb.	2.97	0.03	0.00	1.78	1.22
Mar.	2.71	0.00	0.00	2.62	0.09
Apr.	2.88	0.00	0.00	3.33	-0.45
May	3.18	0.00	0.00	4.22	-1.04
June	4.35	0.19	0.00	4.75	-0.21
July	6.51	0.98	0.00	5.10	2.38
Aug.	4.40	0.03	0.00	4.72	-0.28
Sept.	6.87	0.73	0.00	3.83	3.77
Oct.	7.18	1.49	0.00	3.02	5.66
Nov.	3.52	0.01	0.00	2.25	1.28
Dec.	4.91	0.00	0.00	1.77	3.14
					<b>18.91</b>

Notes:

1. Richmond (RIC), Virginia, weather station, 1968 - 2004 averages
2. Average monthly runoff to site calculated using the TR-55 methodology, where 1996 rainfall data was used.
3. Runoff is captured at selected points along the banks of the mitigation site and will stand until it infiltrates.
4. (Precipitation + Runon) - (Runoff + Evapotranspiration)
5. Available Water (E) = (A+B) - (C+D)
6. Channels on the mitigation site will be designed to keep water on the site and raise the ground water table closer to the surface. Data will be collected from weekly monitoring between February 15 and April 30, from piezometers installed before the channels are restored.



Calculation of Typical Year

Annual

Year	Total (in)
1 1970	28.29
2 2001	31.52
3 1968	33.10
4 1997	34.13
5 1995	34.44
6 1976	34.76
7 1974	35.70
8 1991	35.78
9 1981	35.87
10 1986	36.56
11 1988	37.26
12 2002	37.77
13 1987	40.27
14 1973	40.50
15 1980	41.13
16 1992	41.55
17 1990	41.93
18 1993	42.25
19 2000	43.15
20 1983	43.43
21 1994	43.81
22 1977	44.08
23 1971	44.95
24 1984	46.04
25 1982	46.48
26 1998	46.75
27 1978	47.62
28 1999	48.20
29 1985	49.08
30 1989	49.74
31 1996	54.13
32 1969	56.33
33 1979	57.12
34 2004	58.38
35 1972	59.34
36 1975	61.31
37 2003	63.27

21 1994 **43.81** Closest to Average Year

37 Year Average **43.95**

Calculation of Average "Dry" Year

1970	28.29	-9.48
2001	31.52	-6.25
1968	33.10	-4.67
1997	34.13	-3.64
1995	34.44	-3.33
1976	34.76	-3.01
1974	35.70	-2.07
1991	35.78	-1.99
1981	35.87	-1.90
1986	36.56	-1.21
1988	37.26	-0.51
2002	37.77	0.00
1987	40.27	2.50
1973	40.50	2.73
1980	41.13	3.36
1992	41.55	3.78
1990	41.93	4.16
1993	42.25	4.48
2000	43.15	5.38
1983	43.43	5.66
1994	43.81	6.04

Average Dry

37.77

2002 Closest to Average Dry

Calculation of Average "Wet" Year

1977	44.08	-7.97
1971	44.95	-7.10
1984	46.04	-6.01
1982	46.48	-5.57
1998	46.75	-5.30
1978	47.62	-4.43
1999	48.20	-3.85
1985	49.08	-2.97
1989	49.74	-2.31
1996	54.13	2.08
1969	56.33	4.28
1979	57.12	5.07
2004	58.38	6.33
1972	59.34	7.29
1975	61.31	9.26
2003	63.27	11.22

Average Wet

52.05

1996 Closest to Average Wet

**APPENDIX E**  
**HISTORICAL AERIAL PHOTOGRAPHS**  
**VIRGINIA DEPARTMENT OF**  
**TRANSPORTATION;**  
**JANUARY 17, 1968**  
**FEBRUARY 1, 1984**



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15 A  
15 B  
15 C



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