

“For decades we all treated this stream as a threat, a problem, as our back alley. Finally, a handful of folks decided that it didn’t have to be that way - that with vision, creativity and cooperation it could become a beautiful front door that united our communities. That vision of a hopeful future for this place has been painted. Now we need to find the collective will to make it real.”

Judy Guse-Noritake, Co-Chair, Joint Task Force

The purpose of the Four Mile Run Restoration Master Plan is to provide a vision for the future of the lower 2.3 miles of Four Mile Run and a road map for achieving this vision. It does not, however, constitute a fiscal commitment; as such, implementation will occur in phases and will require the identification of a variety of funding sources. Given the scope and breadth of the effort, implementation of the Master Plan vision will occur over an extended period of time, and will require the establishment of an effective management structure that can “champion” all phases of this effort and can ensure that the vision and goals established for the stream corridor are, indeed, brought to fruition. This management structure may include the continued involvement of the JTF as appropriate, particularly during the planning and design of the demonstration project. As the first step in the strategy for implementing the Master Plan, the demonstration project will begin to improve the corridor immediately while, at the same time, providing a glimpse of the longer-range potential for this area.

This chapter describes both the demonstration project and the Corps of Engineers’ forthcoming feasibility study. It also suggests possible management strategies and addresses regulatory and policy changes that might need to occur in order to implement the Master Plan. Finally, this chapter presents a cost estimate for the Master Plan and outlines potential sources of funding.

A. Next Steps

THE DEMONSTRATION PROJECT

Funding for the master planning effort has included a reserve fund of approximately \$3.3 million that has been earmarked for the completion of a demonstration project that will implement a representative segment of the Master Plan. The process of identifying a preferred demonstration project began with an initial decision to limit the area considered for the demonstration project to the tidal portion of the corridor from Mount Vernon Avenue to Potomac Yard. This decision reflected the importance of integrating urban and recreational amenities with in-stream restoration in the upstream tidal reaches. The ACG and JTF then identified five possible options within the tidal reach and evaluated each potential project based on a number of criteria established for the demonstration project. These criteria included:

- A project that ties together Arlington’s and Alexandria’s communities
- A project that demonstrates visible environmental, engineering and design improvements

- The “Aha!” factor: a visible project that will be noted as a significant, positive change for the corridor
- A project that is located east of the Mount Vernon Avenue bridge
- A project that will be sustainable, involving limited risks of failure (or “blow out”) of the in-stream restoration work
- A project that can either meet the anticipated budget, or that identifies feasible alternative strategies for meeting that budget, including flood protection methods
- A project that does not require private land acquisition at this time
- A project that can work with the existing transmission lines in place

After considerable discussion and analysis, the ACG and JTF agreed on a preferred option for the demonstration project that met all of the above criteria. (Figure 6.1) The preferred project would occur on both sides of the stream, in the area bounded by Route 1 to the east and an area just west of the proposed Commonwealth Avenue pedestrian/bicyclist bridge. Components of this project include:

- The removal of gabions on both sides of the stream
- Restoration of stream banks on both sides of the stream
- Creation of a tidal bar
- The construction of the Commonwealth Avenue pedestrian/bicyclist bridge
- Litter control
- Information box (signage explaining the project)

Potential costs for the demonstration project are outlined in Figure 6.1.

THE U.S. ARMY CORPS OF ENGINEERS’ FEASIBILITY STUDY

While the master planning project will go a long way to improving the ecology, aesthetics and function of lower Four Mile Run, it does not address other aspects of concern on a watershed-wide scale. Fortunately, the master planning effort is paired with a broader watershed-scale effort in partnership with the U.S. Army Corps of Engineers. The Corps of Engineers has provided a substantial amount of support for the master planning effort as part of the agency coordination effort. In addition, the Corps of Engineers has joined with the local jurisdictions to conduct a feasibility study for

environmental enhancements and flood protection in the Four Mile Run watershed. Ultimately, when the feasibility study document reaches completion, it will provide a road map for enhancing water quality, ecology, and stream and watershed functions throughout the Four Mile Run drainage area.

The feasibility study is the second phase of the Corps of Engineers’ planning process; the first phase included a favorable reconnaissance report and the execution of a feasibility cost-sharing agreement (FCSA) between the Corps of Engineers and the City of Alexandria and Arlington County. The feasibility study lays the necessary groundwork to allow cost-sharing during the implementation of project elements.

The identified study goals for the watershed are: 1) restore the historic natural infrastructure; 2) enhance, restore and create aquatic habitat and improve nutrient removal functions; 3) restore natural stream channels and remove fish blockages; 4) reduce incidental flood damages in conjunction with habitat improvement; 5) maintain the authorized level of flood protection provided by the existing Corps project; and 6) determine the need, if any, for additional flood protection on Four Mile Run.

The feasibility study follows a planning process that includes the following six steps:

- Specify problems and opportunities related to water and related land resources
- Inventory, forecast, and analyze water and related land resource conditions within the planning area as relevant to the identified problems and opportunities
- Formulate alternative plans
- Evaluate effects of the alternative plans
- Compare alternative plans
- Select a recommended plan based on the comparison of alternative plans

The study area is defined as the Four Mile Run watershed, which includes portions of Alexandria, Arlington, Fairfax and Falls Church.

The feasibility study is currently estimated at a total cost of \$3.72 million; this amount is being cost-shared 50-50, with the Corps of Engineers contributing \$1.86 million and Alexandria and Arlington providing \$1.86 million of professional services. The study is currently scheduled for completion in September 2008, subject to receiving sufficient funding.

DEMONSTRATION PROJECT

Base components include:

- Demolition of gabions and disposal of debris
- Stream restoration and reforestation
- Wetland bars
- Litter control
- Site furnishings
- Information box/signage

Subtotal: \$1 million

Additional components in anticipation of additional funds :

- Pedestrian/bicyclist bridge crossing stream between South Eads Street and Commonwealth Avenue
- Associated lighting
- Temporary interim connecting trails

Subtotal: \$5.9 million

TOTAL: \$6.9 million



- Removal of Gabions on Both Sides of the Stream
- Restoration of Stream Banks on Both Sides of the Stream
- Creation of a Tidal Bar
- Construction of the Commonwealth Avenue Pedestrian/Bicyclist Bridge
- Information Box (Signage Explaining the Project)

Please note: ramps and promenades will not be constructed as part of demonstration project

FIGURE 6.1 DEMONSTRATION PROJECT : PREFERRED OPTION AND POTENTIAL COSTS

B. Coordination and Management

Just as the Master Plan for the Four Mile Run corridor could not have been accomplished without close coordination among the many stakeholders with an interest in its future, the implementation of the Master Plan will rely on the continued coordination between a large number of groups and individuals. These stakeholders include:

- Arlington County's elected officials, staff and citizenry
- The City of Alexandria's elected officials, staff and citizenry
- The U.S. Army Corps of Engineers
- The Northern Virginia Regional Commission
- Other entities impacting decisions in the stream corridor as well as in the entire watershed, including Fairfax County, the City of Falls Church, the National Park Service, the U.S. Environmental Protection Agency, Congressman James Moran's Office, the Northern Virginia Regional Park Authority, Dominion Power, the Washington Metropolitan Area Transit Authority, and others

Added to this complexity are the multiple layers of the Master Plan itself that will require long-term shepherding and stewardship to accomplish the vision defined for the Four Mile Run corridor in terms of both planning and design implementation as well as corridor management. These layers include: environmental restoration (both in-stream and near-stream), recreational resource enhancement (passive and active recreational pursuits as well as programmed and unprogrammed activities), circulation improvements (including pedestrian amenities and linkages, bikeways, traffic calming and intersection improvements, parking, and transit resources), aesthetic improvements and the design components related to creating a successful urban context for the corridor.

It is clear that a strong and clearly defined management structure is needed both to implement the Master Plan and to provide continuous coordination and management services for the Four Mile Run corridor. This structure could take several different forms. First, it might follow the model that was put in place to guide the master planning process: (a) a technical advisory group, the Agency Coordination Group, comprised of key representatives from the Corps of Engineers, the Northern Virginia Regional Commission, those Arlington and Alexandria agencies most involved in stream restoration issues, and two citizen representatives; and (b) the Joint Task Force of Arlington and Alexandria residents representing the various relevant boards, commissions and associations in their respective jurisdictions. Together, these groups provided

structure, technical advice and guidance to the master planning effort. This management structure would provide ongoing multi-jurisdictional representation and would ensure the continued collaboration of all key stakeholder groups.

A second possible management structure is the creation of a new entity that would be empowered to work on behalf of both jurisdictions. This organization—whether developed as an authority, a non-profit 501(c)3, a public-private venture, or as some other legal entity—would have its own full-time staff, and would be guided by a management group, such as an Advisory Board, that includes representation by key stakeholders in both the public and private sectors from both jurisdictions, from the federal government, and from appropriate regional organizations. There are numerous examples of this type of management structures established for similar kinds of river restoration efforts, including the recent establishment of the Anacostia Waterfront Corporation in Washington, D.C. This latter group is charged by the Government of the District of Columbia with the revitalization of public lands along the Anacostia River and with the advocacy and coordination of environmental and programming initiatives to promote river clean up, public awareness and enjoyment of the Anacostia.

A third possible management structure would be the establishment of formal intergovernmental agreements between Arlington and Alexandria. Under such agreements, one or the other jurisdiction would have full-time staff committed to this effort. The staff would be guided by a policy group appointed by the two jurisdictional governing bodies and/or their chief executive officers. The advantage of this type of structure is that it does not require the creation of a new entity but uses existing governmental systems, management support, administrative policies (such as procurement, contracting and insurance) and procedures, all of which are already in place. Costs would be shared by the jurisdictions using agreed-upon formulae. Precedents for successful agreements between Alexandria and Arlington already include two major environmental projects (the Arlington Advanced Wastewater Treatment facility and the Alexandria-Arlington Waste-to-Energy facility) for which there have been significant capital investments and operations. By using an existing administrative structure to implement elements of the Four Mile Run Master Plan, the hired staff can focus on achieving the goals of the plan and not be distracted by the need to create new systems, processes, and procedures.

The management structure that is ultimately chosen for the Four Mile Run corridor restoration efforts should include the following responsibilities:

- *Ongoing actions to implement the Master Plan*, including the management of project phasing, fund raising, design and construction oversight, and ongoing public outreach.
- *Close coordination with Arlington and Alexandria elected officials and staff* to

ensure that all actions taken within the Four Mile Run corridor are compatible with, and beneficial to, other planning efforts near the corridor in both jurisdictions.

- *Coordination with other public and private sector efforts impacting the Four Mile Run corridor.* These efforts would include, but would not be limited to, the Four Mile Run feasibility study being carried out by the Corps of Engineers, the implementation of the Northern Virginia Regional Commission's Four Mile Run Total Maximum Daily Load (TMDL) study, other jurisdictional and regional efforts to improve the Four Mile Run watershed (i.e., the Alice Ferguson Foundation's efforts to reduce trash in the watershed), utility improvements both within and adjacent to the stream (such as developing a strategy for the eventual undergrounding of the electric transmission lines, or ensuring close coordination with the design for the Water Pollution Control Plant), the linking of new Four Mile Run trails to existing National Park Service and Northern Virginia Regional Park Authority trails, the establishment of an educational entity (i.e., a nature-cultural center) in the corridor and the continued coordination with public and private donors to create this facility.
- *Provision of ongoing programming of events and activities within the Four Mile Run corridor.* These activities might include festivals, performances, educational and interpretive sessions and other strategies that will bring people into the corridor to experience and enjoy the full range of opportunities offered.
- *Continuous responsibility for providing a well-maintained, safe and secure corridor.* This will include a high level of vigilance with respect to anticipating and addressing potential issues before they occur, and to providing the necessary manpower and resources needed to establish a model maintenance program for both in-stream and near-stream facilities (including habitat area maintenance, recreational and open space upkeep and maintenance, trash collection and facility repairs), and a safe and secure setting for those using the corridor.

C. Regulatory and Policy Issues

ENVIRONMENTAL ACTIONS

Environmental quality is a central component of the Master Plan, and achieving the Master Plan's vision of a "green" corridor will require additional regulatory and policy actions.

Stormwater Management

Implementing the Master Plan presents the opportunity for Alexandria and Arlington to build on existing stormwater management programs by raising the bar for future development. Such efforts are already underway. However, most of the stormwater impacts in the watershed today are a result of the development and street network already in place, rather than ongoing new development and redevelopment. Consequently, there is a critical need for watershed-scale programs and projects ranging from street-sweeping to stormwater treatment facilities to stream restoration. The ongoing Corps of Engineers' feasibility study and work occurring throughout the Four Mile Run watershed by both jurisdictions will further these goals by addressing the significant impacts of existing development.

In the longer term, achieving the Master Plan's vision of Four Mile Run as a national model for stormwater management will require site plan review and planning processes that expand stormwater management beyond standard approaches to more comprehensive management solutions that expand on such techniques as low impact development, underground storage, where applicable, and other creative approaches that enhance the public realm in addition to managing stormwater. However, further study will be necessary to assess the applicability of recommended stormwater management strategies in some locations. Successful implementation of such management strategies are contingent on many factors, including the suitability of soils and site-specific data on soil percolation.

Habitat Restoration

Chapter 4 identifies plant species recommended as part of the restoration project. While the habitat restoration recommendations in the Master Plan represent the preferred approach at this time, the detailed design phases should revisit these recommendations to ensure that the species selected are appropriate for the corridor.

LAND USE CHANGES

Some actions recommended in the Master Plan will require the acquisition of land anticipated for public use through voluntary transactions or agreements with existing



ACQUISITION OF LAND FOR PUBLIC PLAZA ON MOUNT VERNON AVENUE

owners. Depending on ownership, proposed future uses and other characteristics of the land in question, possible methods of land acquisition include both future purchase of property and negotiating easements and dedications to enable use of the land for intended purposes described in the Master Plan.

Acquisition of Land for Public Plaza on Mount Vernon Avenue

The public plaza envisioned on Mount Vernon Avenue adjacent to Four Mile Run and the reconfigured multipurpose field will require the voluntary sale of private property for use as open space, consistent with Alexandria's approved Open Space Plan. This change in land use is also consistent with recommendations included in the *Long-Term Vision for the Arlandria Neighborhood*, which similarly envisions the retail properties at the northeastern corner of Mount Vernon Avenue as future community open space.

Acquisition of Land for Trail Right-of Way in Alexandria

The trail recommended alongside the edge of the stream in Alexandria will require either the acquisition of the land through voluntary sale or other mechanisms to ensure continuous public use of the trail right-of-way on the Alexandria side of the stream. Likely mechanisms for assembling the trail right-of-way include conservation ease-



ACQUISITION OF LAND FOR TRAIL RIGHT-OF-WAY IN ALEXANDRIA

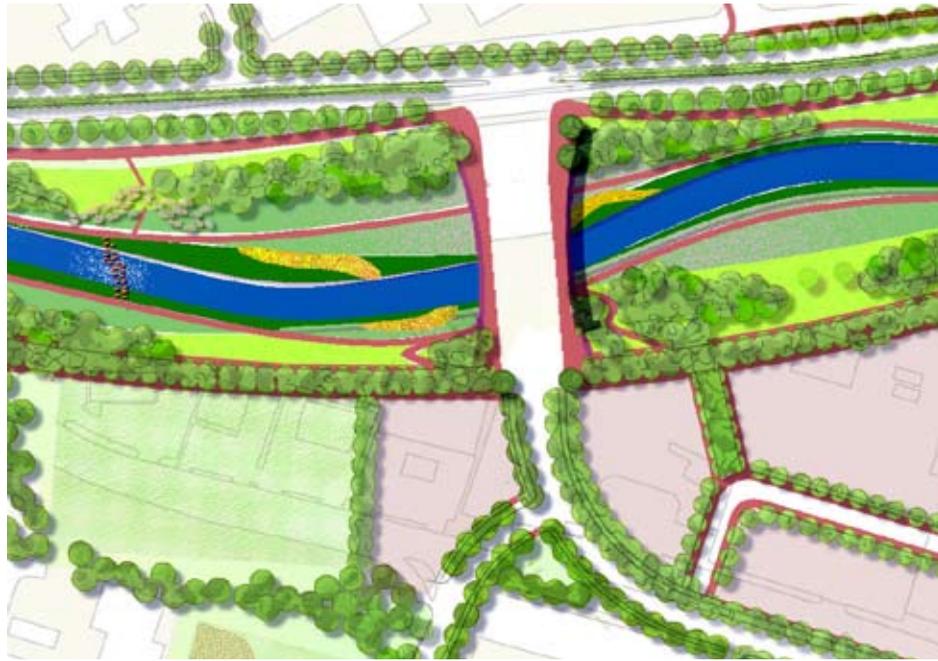
ments, public access easements and open space dedications. Any land acquisition will be consistent with the approved Alexandria Open Space Plan.

Acquisition of Land for the Realignment of the South and West Glebe Intersections

As recommended in the Master Plan, the new configuration of the intersection of West and South Glebe Roads will require the acquisition, through voluntary means, of private property to create space for the new West Glebe Road right-of-way located to the east of the existing West Glebe Road. The acquisition of this land will also enable the creation of a new recreational field on the land bordering the eastern edge of the existing West Glebe Road alignment. Given the conceptual acceptance of this proposal, it is understood that additional public meetings are required to bring this proposal into the design phase. These actions also require a study of potential impacts of the realignment, as described below in Section D ("Infrastructure Actions").

Urban Redevelopment Opportunities

The Master Plan identifies a number of areas that represent opportunities for future urban redevelopment. Before any redevelopment can occur, however, changes in land ownership and, in some cases, zoning may be prerequisites to any proposed actions.



ACQUISITION OF LAND FOR THE REALIGNMENT OF THE SOUTH AND WEST GLEBE INTERSECTIONS

DESIGN GUIDELINES

Creation of specific design guidelines to establish a cohesive design identity for the corridor, as envisioned by the Master Plan and described in Chapter 5, will be required to ensure design consistency and compatibility during each phase of the evolution of the Four Mile Run corridor plan. Intended as a guide for both public management entities and private developers, these guidelines would build upon the design language in Chapter 5, but with a greater specificity regarding design requirements, styles and materials. These guidelines will not, however, supersede or supplant existing design standard elements for roadway design.

D. Infrastructure Actions

The Master Plan recommends two major actions impacting the existing transportation and power utility infrastructure within the Four Mile Run corridor. The first of these is the relocation and realignment of the South and West Glebe Road intersections with the creation of a new vehicular bridge. The second action is the undergrounding of the high voltage electrical transmission lines that currently occupy, and visually dominate, the corridor, both in the stream and alongside it. This section discusses the prerequisites needed for these important, yet complex, possible actions to occur.



URBAN REDEVELOPMENT OPPORTUNITIES

Realignment of the South and West Glebe Road Intersections

This action is intended to yield a more direct connection to Arlington County outside the zone of influence of the I-395 interchange and to yield more common green space. As called for in the Master Plan, the existing bridge at the intersection of South and West Glebe Roads would be replaced by a new pedestrian/bicyclist bridge while a new, larger bridge would be constructed further to the east. This new configuration, while alleviating current I-395 interchange issues by providing smoother and more efficient and more direct vehicular access across Four Mile Run, also allows for the creation of additional usable open space on the south side of the stream. Prior to any further action, however, it will be necessary for the City of Alexandria to undertake a study of the proposed change in order to determine the anticipated impacts to traffic, adjacent neighborhoods, and safety as a result of this action.

Undergrounding of the Dominion Virginia Power Transmission Lines

One of the major issues raised by the public during the many meetings held as part of the master planning process was that of the transmission lines. There were numerous comments regarding the visual blight caused by the existence of these lines, which are located both alongside and within the stream. Given the high level of importance placed



WITH TRANSMISSION LINES



WITHOUT TRANSMISSION LINES

FOUR MILE RUN: WITH AND WITHOUT DOMINION POWER TRANSMISSION LINES

on this action, counterbalanced by the potentially high costs associated with it, a separate study was completed to explore the specific actions needed and costs related to undergrounding the lines within the stream corridor. These projected costs are provided in section E of this chapter on cost estimates.

The study explored phasing of the project in three parts: (1) undergrounding the circuits from Potomac Yard to the existing Glebe substation; (2) undergrounding the circuits from the Glebe substation to I-395; and/or (3) undergrounding the circuits from the Glebe substation to the Arlington substation north of the Four Mile Run corridor area. It should be noted that only phases 1 and 2 directly impact the visual conditions within the Four Mile Run corridor. Given the high costs for any of these undergrounding actions, it appears likely that other physical improvements will be made within the Four Mile Run corridor before any action will be taken to bury the lines. If, however, funds for undergrounding could be secured via various means—either partially or wholly—such as through an eventual need to replace outdated and obsolete power systems, or through future development activities, the positive impact on the corridor of relocating these lines underground would be significant.

When implemented, the other physical enhancements to the corridor presented in the Master Plan will provide important visual benefits for the area and will, it is anticipated,

draw one’s eye away from the transmission lines to the more beautiful setting provided by the stream, its green and lush banks, and its inviting pedestrian/bicyclist bridges.

E. Cost Estimates

The related costs estimated for the restoration of Four Mile Run will be significant, as would be expected given the breadth and scope of the restoration Master Plan. Nevertheless, the impact of these costs on either Arlington County or the City of Alexandria can be mitigated through the identification of cost-sharing opportunities and project phasing. Some of the potential sources of funding are identified in the next section of this chapter. During the coming year, the ACG will begin to define the projects that will need to be tackled in the short- and mid-terms and the most realistic cost-sharing strategies for each of these “early priority” actions.

It should be noted that the costs provided are estimates only, appropriate to the master planning level of project definition. To view the more detailed background data that was used to determine these costs, please go to the project website at: www.novaregion.org/restoration.

The order-of-magnitude cost estimate is outlined in Figure 6.3, while Figure 6.2 identifies the cost estimate areas.

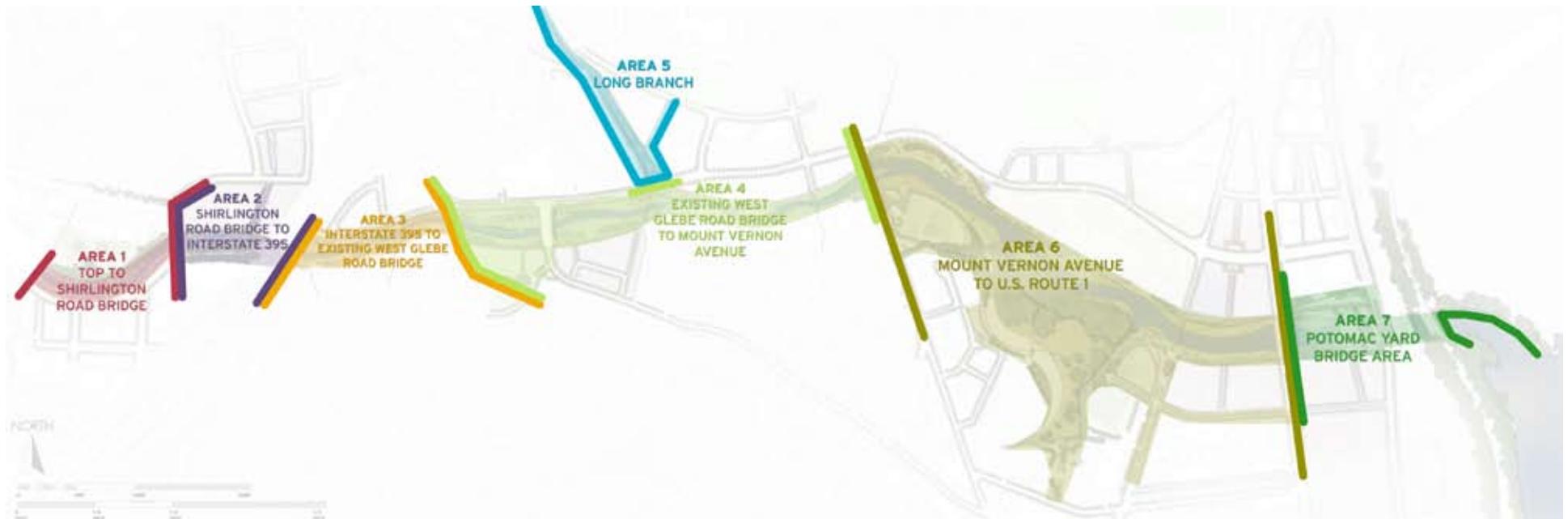


FIGURE 6.2 ORDER-OF-MAGNITUDE COST ESTIMATE AREAS

AREA 1
Top to Shirlington Road Bridge
 Major components include:

- Demolition of riprap and debris
- Stream restoration and reforestation
- Pedestrian/bicyclist promenade
- Stormwater management components
- Step-pools
- Site furnishings and lighting
- Public art component

TOTAL \$15,000,000

AREA 2
Shirlington Road Bridge to Interstate 395
 Major components include:

- Demolition of riprap, debris and portions of concrete flood walls
- Stream restoration and reforestation
- Stormwater management components
- Pedestrian/cyclist promenade
- Site furnishings and lighting
- Aesthetic upgrades to underside of Interstate 395

TOTAL \$12,000,000

AREA 3
Interstate 395 to Existing West Glebe Road Bridge
 Major components include:

- Demolition of gabions and removal of riprap
- Stream restoration and reforestation
- Stormwater management components
- Trails and walkways
- Site furnishings and lighting

TOTAL \$9,000,000

AREA 4
Existing West Glebe Road Bridge to Mount Vernon Avenue
 Major components include:

- Removal of existing West Glebe Road vehicular bridge
- Demolition of portions of West Glebe Road
- New multi-purpose Field
- South Glebe Road realignment
- *New vehicular bridge
- *New pedestrian / bicyclist Bridges
- Demolition of gabions and portions of floodwalls and disposal of debris
- Stream restoration and reforestation
- Stormwater management components
- Trails and walkways
- Site furnishings and lighting

TOTAL: \$86,000,000

AREA 5
Long Branch
 Major components include:

- Stream restoration and reforestation
- Stormwater management components
- Trails and walkways
- Site furnishings and lighting
- Removal of riprap and disposal of debris

TOTAL: \$5,000,000

AREA 6
Mount Vernon Avenue to U.S. Route 1
 Major components include:

- Commonwealth Avenue improvements
- *New road from U.S. Route 1 to Four Mile Run Park
- Mount Vernon Avenue improvements
- *Nature Center
- *Pedestrian/bicyclist bridges
- Stream restoration and reforestation
- Wetland bar creation
- Four Mile Run Park wetland enhancements
- Stormwater management components
- Trails and walkways
- Site furnishings and lighting
- Demolition of gabions
- Removal of riprap and disposal of debris
- New sports fields and associated facilities
- Public plaza
- *Flood Control Structure

TOTAL: \$116,000,000

AREA 7
Potomac Yard Bridge Area
 Major components include:

- Demolition of one disused rail bridge
- Demolition of gabions and disposal of debris
- Public plaza on remaining rail bridge
- Wetland bar creation
- Trails and walkways
- Promenades
- Stream restoration and reforestation
- Stormwater management components
- Site furnishings and lighting

TOTAL: \$18,000,000

TOTAL FOR AREAS 1-7:
\$ 261,000,000

ADDITIONAL COSTS⁺
 Undergrounding of power lines

TOTAL: \$94,000,000

Additional stormwater management components situated on private property

TOTAL: \$4,500,000

NOTES:

1. Accuracy and Usage: The estimates shown above are considered order-of-magnitude cost estimates, in 2005 dollars, and are expected to be accurate to +50%/ -30%. They are suitable for use in project evaluation and planning. Actual construction costs will vary from these estimates due to market conditions, actual costs of purchased materials, quantity variations, regulatory requirements, and other factors existing at the time of construction.
2. Gabion removal assumes stone can be reused on site for stream restoration, path construction, etc.
3. Debris hauling and disposal costs are highly variable, depending on material quality and hauling distances.
4. The unit cost of a pedestrian bridge is highly dependent on the level of architectural design and the dimensions. The cost can range from \$1 Million for a pre-fabricated bridge with a 15 ft wide trail to upwards of \$6 Million dollars for a bridge similar to the ones depicted in the renderings, with two trails totaling 30 ft width.
5. The lump sum cost for this road is included in the project area from Mount Vernon Avenue to the bridges, although the road crosses over the boundary into the bridges section.
6. The cost of transport and disposal of cut or purchase of fill was estimated assuming no re-use of existing fill. This could be reduced if the existing fill is of good quality and the project can be phased in such a way as to re-use the excavated material. In disposal cost the fill is assumed to be clean. Any contamination will increase the cost of disposal significantly.
7. Stream restoration plantings include vegetation proposed to the top of the flood wall slope.
8. Flood control structures are assumed to include the "ring levee and associated pump station" proposed by the USACE in 1973. Costs of \$5.25 million in 1973 were updated to \$20.74 million in 2005 dollars, based on the Engineering News Record Construction Cost Index (ENRCCI) change from 1895 in 1973 to 7478 in August 2005. A DETAILED ANALYSIS AND PUBLIC OUTREACH PROCESS WILL BE CONDUCTED AS PART OF THE IMPLEMENTATION PHASE FOR THE MASTER PLAN TO DETERMINE IF THE RISK OF FLOODING IS ACCEPTABLE TO ALL STAKEHOLDERS AND TO DETERMINE IF ANY ADDITIONAL FLOOD MITIGATION IS REQUIRED.

Does not include:

1. Land acquisition
2. Demolition of any buildings associated with land acquisition
3. Reclamation of land as part of 'A Long to Vision and Action Plan for the Arlandria Neighborhood' Plan
4. Realignment of Shirlington Road as part of Nauck Village redevelopment
5. Potential urban redevelopment opportunities
6. Investigation / remediation of hazardous materials



* Represents components of significant cost.
 + These "additional costs" are provided individually as they comprise actions that can be dealt with separately from other Master Plan elements.

FIGURE 6.3 ORDER-OF-MAGNITUDE COST ESTIMATE

F. Funding Opportunities

One of the most significant challenges in implementing the Master Plan vision will be obtaining sufficient funding. Implementation will require the identification of a variety of funding sources, as well as matching these funding sources with specific projects. The upcoming year-long implementation planning process conducted by the ACG will begin to identify potential funding sources and appropriate projects. Portions of the overall restoration effort will need to compete for increasingly scarce municipal Capital Improvement Program monies. Other efforts will require additional federal, state and private funding sources, and some efforts will require multi-layered funding plans.

The list below provides a starting point for investigating potential sources of funding and resources to implement the Master Plan. This list does not guarantee access to listed funding sources, nor is it intended to be exhaustive. It will be the obligation of the ACG, or any future management structure that supersedes the ACG/JTF, to investigate these and other potential funding sources to support the implementation of the Master Plan.

LOCAL CAPITAL IMPROVEMENT PROGRAM (CIP) FUNDS

On a periodic basis, both Arlington County and the City of Alexandria prepare six-year jurisdiction-wide comprehensive capital improvement programs (CIPs) that detail expected capital projects to be executed within each jurisdiction. Typical projects run the gamut of municipal infrastructure including roadway construction, municipal facilities installations, park land acquisition, bridge replacement, multi-use trail expansion, etc. The Four Mile Run Restoration project will require substantial capital improvements within the project area. Such improvements comprise an array of items, such as new pedestrian/bicyclist bridges, park enhancements, multi-use trail extensions, in-stream adjustments, and possible vehicular bridge modifications or replacements. This level of capital expenditure must be planned for well in advance. The CIP plans offer an excellent opportunity for programming these commitments in the advance timeframe required.

Additionally, it is likely that any future federal funding for the restoration project will require some level of matching obligation from Alexandria and Arlington. Each of these matching requirements will vary depending on the type of federal funding.

As is the case with any CIP planning or budget process, each capital project competes for limited local resources for funding. This competitive process means that when each proposed CIP is prepared and then decided upon in both jurisdictions, each proposed element of the Master Plan will need to compete and be prioritized along with all other County and City capital improvement projects in order to determine which and how many components of this Master Plan can be funded at any point in time. The estimated

costs for implementing the entire Master Plan constitute a larger budget than the jurisdictions will be able to fund with local monies. Therefore, it will be imperative to identify and obtain substantial external federal, state and private funds.

FEDERAL FUNDS

Corps of Engineers Partnership Funds

Through the feasibility study effort underway with the Corps of Engineers, the project partners are examining all facets to determine which portions will be eligible for partnership with the Corps of Engineers. Funding for those project aspects that are eligible can typically be split between the Corps of Engineers and a local partner at a 65-35 allocation, with Corps of Engineers providing 65 percent of the project cost and the local project partner responsible for 35 percent of the project cost. If some particular project pieces fall under Corps of Engineers' Section (§) 1135 authority, they can be rolled into that program. Under the §1135 authority, the Corps of Engineers shares the cost of the projects on a 75-25 basis with the local partner. It is important to note that §1135 opportunities for partnering with the Corps of Engineers will be limited to those flood control and ecosystem restoration projects directly associated with the levee corridor or upstream ecosystem restoration projects. These funds also depend on Congressional appropriations as well as internal Corps of Engineers budgeting processes.

OTHER FEDERAL FUNDING OPPORTUNITIES⁸

Agriculture Department

- Natural Resources Conservation Service: Watershed Protection and Flood Prevention (also known as the "Small Watershed Program" and "PL 566 Program")

Provides technical and financial assistance to address resource and related economic problems on a watershed basis. Eligible projects include those related to watershed protection, flood prevention, water supply, water quality, erosion and sediment control, wetland creation and restoration, fish and wildlife habitat enhancement, and public recreation.

Commerce Department

- Grants for Public Works and Economic Development

Provides grants for public works improvements related to restoration efforts.

- National Marine Fisheries Service: Community-Based Restoration

Supports riparian and in-stream habitat improvements.

- National Marine Fisheries Service: Habitat Conservation

Provides funding for research, management, public education and conservation of wetlands and other coastal habitats.

- National Marine Fisheries Service: National Fisheries Habitat Program

Promotes local hands-on involvement in habitat restoration projects.

Environmental Protection Agency (EPA)

- Environmental Education Grants

Provides financial support for projects that design, demonstrate, or disseminate environmental education practices, methods or techniques.

- Nonpoint Pollution Implementation Grants (\$319)

Provides funds to states for on-the-ground projects to reduce nonpoint source pollution runoff under the Clean Water Act. Funds are directed to states, but may be re-granted to local governments or non-profits.

- Sustainable Development Challenge Grants

Encourages community members, businesses and government to work cooperatively to develop community-based projects that promote environmentally and economically sustainable development.

- Watershed Assistance Grants

Supports organizational development and capacity building for watershed partnerships through a cooperative agreement with EPA.

- Wetlands Protection Development Grants

Supports initial development of wetland protection, restoration or management programs or enhancement of existing programs.

Interior Department

- Land and Water Conservation Fund

Provides funds to acquire and protect land and water resources.

- Fish and Wildlife Service: North American Wetlands Conservation Act (NAWCA)

Provides funds to conserve wetland ecosystems, waterfowl and the other migratory birds and fish that depend on these habitats.

- National Park Service: Rivers, Trails, and Conservation Assistance Program

Provides staff assistance to support partnerships between government and citizens to increase the number of rivers and landscapes protected, and trails established, nationwide.

- National Park Service: Urban Park and Recreation Recovery

Provides federal grants to local governments for the rehabilitation of urban recreation areas and facilities. Provides both planning grants and rehabilitation capital grants.

STATE GRANTS

There are a variety of state grants that could be applied to certain pieces of the restoration project. Possible funding sources include:

Virginia Department of Transportation

- Transportation Enhancements

Projects must have a relationship to surface transportation systems, pedestrian and bicycle facilities, bike racks, underpasses, landscaping and scenic beautification, or trailhead interpretation.

Department of Conservation and Recreation

- Virginia Recreational Trails Fund Program

Provides grants for new trails, maintenance and rehabilitation of existing trails, development of trailside and trailhead facilities, and construction of features that facilitate use by people with impairments. Planning is not eligible.

- Urban and Community Forestry Assistance Grants

Provides funding for greenway development planning, tree planting, landscaping, and brownfield site rehabilitation.

PUBLIC/PRIVATE PARTNERSHIPS

There are many examples in local government where localities work in partnership with private entities to accomplish a local good. For example, Coastal America, the abbreviated name for the National Corporate Wetlands Restoration Partnership is a public-

private entity structured to encourage private corporations to join forces with federal and state agencies, local communities and non-profit organizations to restore wetlands and other aquatic habitats. Corporations contribute funds to private foundations or state trust funds, which are in turn matched by federal funds. Further research can help identify other public/private partnership opportunities.

Private Grants

There may also be various private grants that could be applied to certain pieces of the Four Mile Run Restoration Project. Possible funding opportunities include:

- American Rivers-NOAA Community-Based Restoration Program Partnership

Provides funds for fish passage improvements (i.e., dam removal, fish ladders, by-pass channels, culvert removal/retrofit) and preliminary analysis essential to development of the project (i.e., engineering, design, sediment analysis.)

- Chesapeake Bay Trust Stewardship Grants Program

Supports schoolyard habitat projects; hands-on Bay education programs; workshops and forums that advance the public's knowledge of Bay restoration techniques; on-the-ground projects that demonstrate the range of restoration approaches and increase public awareness about the Bay; and watershed planning and assessments that identify specific restoration opportunities that can involve the public. In addition, the Chesapeake Bay Small Watershed Grants program provides small grants to organizations working on a local level to protect and improve watersheds in the Chesapeake Bay basin while building citizen-based resource stewardship.

- National Fish and Wildlife Foundation: Various Grant Programs

Funding opportunities include NFWF Challenge Grants for projects that address priority actions promoting fish and wildlife conservation, involve other conservation and community interests, and leverage Foundation funding.

LOCAL ACTIONS

Infrastructure Projects

Within the project area, multiple existing infrastructure projects will, on occasion, need maintenance or refurbishing. These projects include the Arlington County Water Pollution Control Plant, City, County and State maintained roadways and bridges, linear infrastructure projects (sewer, potable water, stormwater, power lines, gas lines, etc.), and park lands. As portions of this infrastructure age, each will require a certain

amount of care, and maintenance and eventual rehabilitation or replacement. At points deemed appropriate for such infrastructure improvements, these projects should consider the possibility of implementing related components of the Master Plan.

Developer Proffers and Conditions of Approval

With the amount of development approved or proposed in the City of Alexandria and Arlington County and with more to occur, it is likely that developers will request special use/special exception permits from either the City Council or County Board. These elected bodies should be conscious of each development project's impact on Four Mile Run and the benefits derived from a restored Four Mile Run in negotiating the permits. Such negotiations could result in proffers or conditions of approval that work to complete various components of the Master Plan.

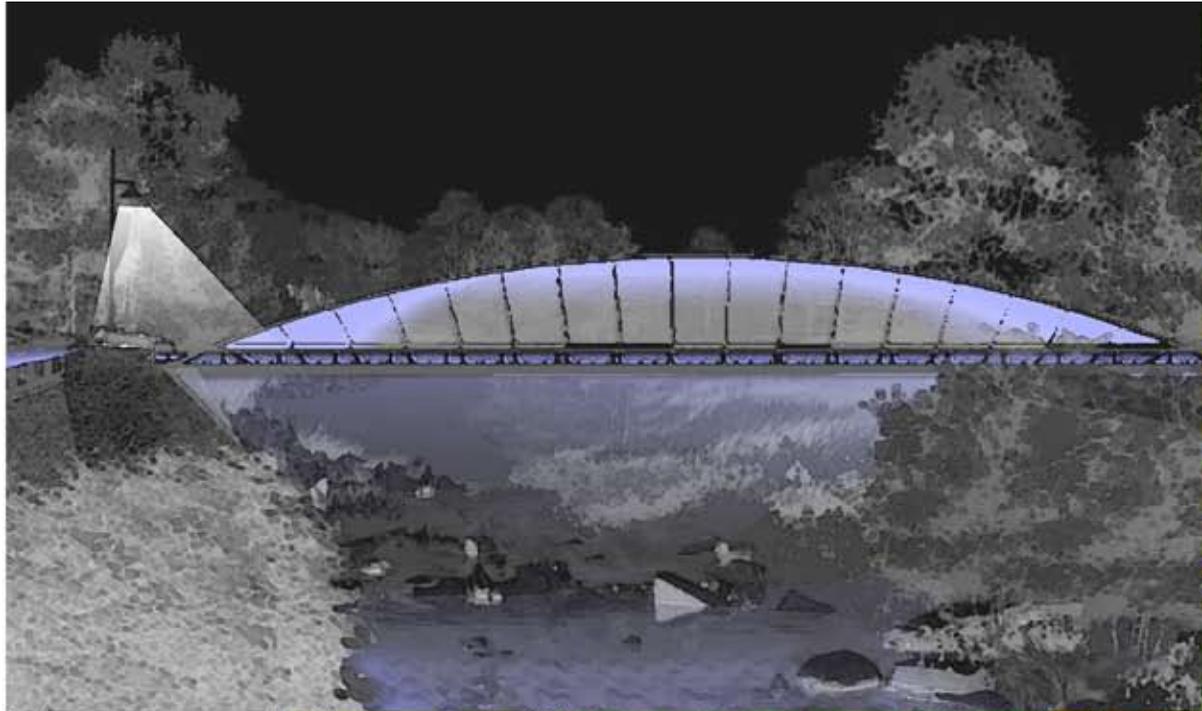
Contributions to the Water Quality Improvement Fund

Both Arlington County and the City of Alexandria have instruments through which funds are collected through certain development projects for watershed improvements in the respective jurisdictions. Although these funds can be spent jurisdiction-wide on an array of water quality improvement measures, it is likely that there will be opportunities to apply some of these funds in the project area.

G. Four Mile Run: The Collaboration Continues...

The Master Planning process has established an inspiring model of jurisdictional collaboration for the improvement of a significant local and regional resource. The future of the Four Mile Run corridor depends on the continuation of this collaborative effort. The degradation of the Four Mile Run corridor has been a gradual process, occurring over many years. So, too, will be its progressive restoration. As such, it will need the ongoing guidance, support and commitment from both County and City leadership.

Eventually, the community vision established for Four Mile Run will be realized: Four Mile Run will become a model of urban ecological restoration. It will be a place along which the communities of both Arlington County and the City of Alexandria can gather, recreate and celebrate a shared waterfront legacy. This Master Plan is the first step toward realizing the vision.



END NOTES

¹ U.S. Census Bureau, Census 2000.

² Northern Virginia Regional Commission, *Flood Frequency Analysis for Four Mile Run at USGS Gaging Station 1652500* (November 9, 2004), 7.

³ Field research, including a field tour of the Four Mile Run Park Wildlife Sanctuary with City of Alexandria plant ecologist Roderick Simmons, occurred on May 31, 2005; additional wetlands data came from the National Wetlands Inventory and the City of Alexandria. The U.S. Army Corps of Engineers will conduct formal wetland delineation during a later phase of its study.

⁴ Virginia Native Plant Society, 2004 site observations.

⁵ Metropolitan Washington Airports Authority bird survey (2005)

⁶ See, for example, the standards recommended by the International Dark-Skies Association in its *Outdoor Lighting Code Handbook* (September 2002). Available online at <http://www.darksky.org>.

⁷ For more information on green buildings, see the U.S. Green Building Council web site at <http://www.usgbc.org>.

⁸ For more information on these and other funding opportunities, see the American Rivers report *Restoring Riverfronts: A Guide to Selected Federal Funding Sources* (Washington, D.C.: American Rivers, 2002). The report is available online at <http://www.AmericanRivers.org>.

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