

**U.S. NATIONAL ARBORETUM**  
**REVISED MASTER PLAN**  
New York Avenue and Bladensburg Road, NE  
Washington, D.C.

Report to the United States Department of Agriculture

November 2, 2000

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*Abstract*

The U.S. National Arboretum was established by an act of Congress in 1927, and opened to the public in 1959. During the intervening years the Arboretum has developed a fine research program in ornamental horticulture and outstanding plant exhibits. As more and more people visit, the Arboretum is faced with growing challenges of accommodating these visitors and providing educational opportunities.

In 1996, the Arboretum developed a strategic plan to prepare the institution for the next century. The revised Master Plan responds to the goals articulated in the strategic plan and is designed to guide the future development of the Arboretum over the next 20 years.

*Authority*

Section 5 of the National Capital Planning Act of 1952, as amended (40 U.S.C. 71d).

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*Commission Action*

The Commission:

- **Approves** the revised Master Plan for the U.S. National Arboretum, Washington, DC, as shown on NCPC Map File No. 43.20 (05.12) 40840; and

- **Requires** that the Arboretum and their consultants, in consultation with Commission staff, incorporate the following comments:
  - A. In the required five-year update of the Master Plan:
    1. Retain the Maryland Avenue (M Street) entrance gate and entry road configuration as a symbolic gateway and future entrance to the Arboretum.
    2. Do not preclude the New York Avenue entrance as a future entrance to the Arboretum.
    3. Identify specific connections to link the Arboretum with pedestrian pathways and bike and water trails in Anacostia River Park.
    4. Consult with the DC State Historic Preservation Office (SHPO) in the development of a plan for the Brick Yard that will maintain and preserve the historic structures and allow for their public interpretation.
    5. Develop a Cultural Resources Management Plan that identifies future plans for, and maintenance and preservation of, the contributing features of this (the Arboretum) National Register-listed site.
  - B. In the further development of the following projects:
    1. Coordinate the new Bladensburg Road main entrance throughout the planning and design process to ensure compatibility and compliance with federal plans and regulations, including NEPA and NHPA.
    2. Conduct early consultation with Commission staff in the siting and design of the Visitor Center. The design of the new Visitor Center should result in a landmark structure that incorporates a major environmental education theme resulting in green building architecture.
    3. Ensure the appropriateness and compatibility of the Primary Parking Lot in relation to the Visitor Center and incorporate mitigation measures in the siting and design of both the Primary and Overflow Parking Lots.

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## BACKGROUND AND STAFF EVALUATION

### *DESCRIPTION OF PROPOSAL*

#### Location

The U.S. National Arboretum is located in northeast Washington, D.C. at the corner of New York Avenue and Bladensburg Road. The Arboretum is a 446-acre facility.

#### Context

The U.S. National Arboretum was established by an act of Congress in 1927, and opened to the public in 1959. During the intervening years the Arboretum has developed not only a fine research program in ornamental horticulture but also outstanding plant exhibits. Consequently, more and more people are visiting the Arboretum. The Arboretum is faced with growing challenges of properly handling these visitors while providing educational opportunities.

The last master plan for the Arboretum was updated in 1989 from a plan prepared in 1984. In 1996, the Arboretum developed a strategic plan to prepare the institution for the next century. Master Plan 2000 responds to the goals articulated in the strategic plan and is designed to guide the future development of the Arboretum over the next 20 years.

- The Arboretum is a well-established research institution with a well-deserved reputation of excellence. An integral part of the Master Plan is to plan for the facilities that will allow the Arboretum to continue to elevate its research efforts and to adapt its research program to maintain this high standard of excellence.
- The Master Plan is also driven by the need to educate the public about tree and plant life. To do this the Arboretum must better serve its visitors. The need for providing facilities that allow for effective orientation, ease of both vehicular and pedestrian traffic flow, and basic amenities, is an integral part of the plan.
- The Arboretum is also a 446-acre island of green, providing refuge and spiritual renewal, especially to residents of the Washington, D.C. area. The plan recognizes the importance of maintaining the open meadows, vistas and large-scale landscapes in order to preserve the qualities of the site that visitors treasure.

#### Goals of the National Arboretum

The following summarizes the key goals developed in the strategic plan that have an impact on the physical development of the site and on the Master Plan:

- *Research* – The Arboretum will carry out a state-of-the-art, interdisciplinary research program that is responsive to changing problems and priorities affecting trees, shrubs, and floral plants.
- *Education* – The Arboretum will develop a comprehensive educational program to meet the needs of its cooperators and its customers.

- *Gardens and Collections* – The Arboretum will maintain, improve, and develop gardens, collections, and natural areas for diverse uses.

In addition, there was an additional goal that came out of the master planning process that was not mentioned in the strategic plan:

- *Visitation* – The Arboretum will provide for an increase in the number of visitors. The Master Plan will enable the Arboretum to serve approximately 750,000 visitors a year.

The Master Plan begins to quantify the facilities that will be needed and to suggest locations and ways that they can be developed so as to improve the functioning of the entire site.

### Master Plan Recommendations of the National Arboretum

#### *Recommendations for the Arboretum as a Scientific Institution*

- The Arboretum's research goals are to expand research programs on site. This includes improvements to the growing and research facilities that presently exist. It is recommended that the Arboretum do the following:
  - Renovate the greenhouse complex.
  - Modernize the administration building and construct a new wing to house laboratories.
  - Build a new maintenance building.
  - Enlarge the area devoted to research plots and increase the area devoted to collections.
  - Develop an efficient composting and staging facility.

#### *Recommendations for Serving the Community*

- There are three main goals related to visitors: to attract more visitors, to make sure they feel welcome and want to return, and to enhance the educational opportunities that the Arboretum offers. It is recommended that the Arboretum implement the following:
  - Build a new main entrance on Bladensburg Road that is as attractive as the rest of the Arboretum experience; close all the other entrances to the public.
  - Build a new Visitor Center to serve as the gateway to the Arboretum. This facility will provide an orientation to the site and to the Arboretum's programs and serve as a clear starting point for a tour of the grounds. It will also contain classrooms and educational support facilities.
  - Construct parking areas to handle approximately 1,000 vehicles with easy access to the new Visitor Center.
  - Create a core pedestrian precinct around the ellipse linking the Visitor Center with nearby gardens, collections and displays.
  - Create a perennial display within the core.
  - Build a garden about the "Origin of Cultivated Plants."
  - Create an area that engages families and educates and enchants the next generation of Arboretum supporters.
  - Simplify the existing circulation to create a series of loops for visitors to tour the grounds.

- Provide tram service, in lieu of personal vehicles, to access the gardens and collections.
- Provide a network of educational and visitor facilities throughout the site, including interpretive centers, restrooms, tram stations and limited satellite parking lots.
- Develop a pedestrian path system to provide handicapped access as well as a safer and more pleasant experience for walkers.
- Renovate and modernize existing infrastructure.
- Create a comprehensive introduction to the Arboretum on the Internet.

### Urban Design Framework

Located in Northeast Washington, D.C., the great significance of the National Arboretum is that it is 446 acres of green in an urban area. Although the Arboretum is physically connected to the fabric of greenways in the area and is at the terminus of one of the major avenues emanating from the U.S. Capitol, it is isolated from these and other elements of the urban framework by topography and incompatible uses.

Maryland Avenue does not serve to tie the Arboretum to the urban fabric, even though it starts at the Capitol and terminates at the Arboretum. With the existing condition of the Avenue in this area and with no plans to extend M Street across the Anacostia River, developing the Arboretum as the grand terminus to the Avenue is not feasible at this time.

The Arboretum is also located next to Anacostia River Park, a National Park Service facility that includes Kenilworth Aquatic Gardens located about a half mile upstream from the Arboretum. The Arboretum is not currently accessible from the park.

The entire Arboretum has been designated a Category II Landmark or “Historical Place” and is listed on the National Register of Historic Properties. Additionally, the New York Avenue Brick Kilns are listed separately on the National Register.

### Traffic, Circulation and Parking

#### *The Main Entrance*

**One of the Arboretum’s main goals is to provide education to the public about trees and plants. Because the Arboretum is currently a driving experience with multiple entrances, without immediate orientation, the perception is that visitors are entering a park rather than an educational and research institution. The Arboretum looks to focus visitors and orient them to the facility. To achieve this objective it is felt critical to bring visitors to a single entrance, to deliver them to a centralized parking area, and to get them out of their cars and into a building to receive an orientation to the Arboretum and its programs.**

The existing New York Avenue entrance is minimally functional due to the difficulty of entering from the east and leaving to the west. New York Avenue is such a heavily traveled road that it cannot be used as the ultimate main entrance to the Arboretum. In addition, District transportation officials have indicated that it will not be possible to install a signal at the entrance because of the disruption to traffic flow and its proximity to the intersection of New York

Avenue and Bladensburg Road, which is proposed to be grade-separated. A grade-separated entrance is also not feasible due to the cost and amount of land that would be required.

The R Street entrance is currently functioning as the primary Arboretum entrance used by the majority of visitors. However, this entrance utilizes a residential street and is not suitable as the main entrance to this major facility. Increases in visitation will add to the aggravation of both residents and visitors alike.

**The proposed Master Plan would close all of the current entrances to the Arboretum and open a new main entrance on Bladensburg Road. The R Street neighborhood entrance will be used only as a staff entrance, taking the majority of the current traffic off this residential street; the New York Avenue entrance will be closed, leaving traffic flow unimpeded on this major arterial; and the Maryland Avenue (M Street) entrance will remain closed but available if neighboring conditions change and future needs warrant its opening.**

After consulting with the District, the main entrance off of Bladensburg Road will require an improved intersection with a traffic light and left turn lane. Because peak usage of the Arboretum entrance falls between the rush hours, the traffic signal may not need to be activated during rush hour – thus maintaining traffic flow on Bladensburg Road at these critical times of the day.

### *Parking*

The Arboretum currently has three major parking lots situated at each of the entrances. The large lots at New York Avenue and M Street are rarely used and the majority of visitors try to park in the R Street lot and in the small satellite lots at the gardens and collections. The lot at R Street can accommodate 143 cars and is largely taken up with staff and volunteer parking. In addition, many of the largest visitor attractions and most of the Arboretum facilities are clustered at the R Street entrance resulting in congestion in this area.

**In the same way that the Arboretum must simplify its entrance situation to create one main entrance, it also must simplify parking and circulation. The Master Plan proposes that all of the major parking lots be concentrated in a single location adjacent to the new Visitor Center, which would be located away from the existing concentration of visitor facilities and attractions.**

The Arboretum's goal is to increase visitation from 500,000 to 750,000 visitors per year. This will require a parking lot for 930 cars and 12 bus spaces. If visitation were to reach one million visitors, the Arboretum would require approximately 1,240 parking spaces.

**Three parking lots are proposed to service the Visitor Center complex. The lot closest to the Visitor Center would park 320 cars. Buses would be directed to the road south of this lot to drop visitors off at a special bus entrance where tours can be met. The second and third lots would be located south of the first lot and could park an additional 360 and 310, cars respectively. Overflow bus parking needs can also be met in these lots.**

### *Interior Circulation*

Visitors are currently permitted to drive on all Arboretum roads. Most of the two-way road system offers very little directional signage, resulting in confusion. The Arboretum would like to reduce the reliance on private vehicles and increase the use of trams. Trams have the added advantage of providing an educational opportunity through guided tours. While it may not be feasible to remove cars completely from the Arboretum, it is a goal of the institution to remove them from certain roads, to set up a coherent loop driving tour, and to limit driving at the busiest times to prevent potential conflicts.

The Master Plan would simplify the visitor circulation system into a series of loops that vary in length and type; all terminate at the Visitor Center. This system deliberately emphasizes pedestrian movement by encouraging visitors to walk to the gardens, where they will experience the Arboretum's best qualities.

The inner loop will circle the Central Meadow, where the most intense core gardens are planned. The intermediate loop will start at the Visitor Center, reach the eastern shore of the Beech Spring Pond System and return to the Visitor Center along the eastern edge of the Central Meadow. The intermediate loop will connect less intense features than the core loop. The outer loop will allow visitors to tour those collections that are farthest from the Visitor Center.

- *The Inner Loop* – circles the Central Meadow. A new “Flowering Tree Walk” connects the gardens and features within the visitor core area, including the existing: Capitol Columns, National Bonsai and Penjing Museum, National Herb Garden, Friendship Garden and Azalea Collections. New features include the “Origin of Cultivated Plants Garden” and the “Perennial Garden.”
- *The Intermediate Loop* – is the second tier circulation system that connects the gardens and collections that flank the core area. Features here are not as intensively developed as the core, although they are still intended for ultimate enjoyment by pedestrians who walk the loop or get off of the tram.
- *The Outer Loop* – is the third tier circulation system that connects the landscapes and collections on the periphery of the Arboretum. Due to their distance from the Visitor Center, tram users with a special interest in these displays will typically access features on the outer loop. A pedestrian loop is maintained to these outer collections for those wanting to walk and explore. The pedestrian path passes through each of these exhibits on a new handicapped-accessible route to provide access to at least a portion of these areas.
- *Seasonal Loop* – the Master Plan shows a seasonal tram loop from the Visitor Center to the Azalea Collections and the Mount Hamilton overlook. When the azaleas are not flowering, these landscapes can be viewed by walking paths that are easily accessible from the Inner Loop.

### *The Tram*

The current tram loop schedule is limited to weekends. Anticipating a visitation increase, the tram is planned to run more frequently. Although the Master Plan has evolved in part due to the desire to get visitors out of their cars and in touch with the plants, some visitors are not able to

walk the site. They either physically cannot make the trip, want to get an overview of the Arboretum prior to walking, or do not have the time to spend intimately exploring each garden or collection. Therefore, it is important to provide a tram option to visitors. The tram will run on the outer loop, and seasonal service will be provided to the Azalea Collections.

To make it easy for visitors to use the tram system, the main loading area is proposed to be directly adjacent to the Visitor Center. Tram stops are planned at key intersections with pedestrian paths. The tram route is designed to take approximately 40 minutes to complete, including time for visitors to get off and experience key favorite attractions.

### The Visitor Center

The new Visitor Center is located in the southern portion of the Arboretum where it can take advantage of ample parking, prime vistas to the Capitol Columns, and the meadow and its associated rolling topography.

**The new Visitor Center creates a building for the future that adequately reflects the goals of the Arboretum as a whole and those of the education and visitor services unit in particular. It will serve the needs of a fully staffed Arboretum at its maximum capacity.**

The Visitor Center design is proposed as a cruciform plan with visitors entering on the west and circulating out to the tram tour to the north, to the walking garden tour to the south, and to the overlook terraces to the east. It is anticipated that the Visitor Center will be approximately 50,000 gross square feet. The building is proposed to be divided into four zones: the lobby area, the office/multi-purpose wing, the classroom wing and the gift shop wing.

An events pavilion is also proposed outside the south door of the Visitor Center. This is convenient to both the building and to parking. Its location also allows the flexibility to use both the pavilion and the Visitor Center for the largest events. It is a permanent covered structure with a floor, surrounded by a large lawn, which will provide spillover space for large events. The space is visually and physically separated from the other Arboretum activities in order to give the area privacy.

### Existing Facilities

#### *Research and Administration*

One of the major goals of this Master Plan is the desire to bring a better understanding to the public of the vital role that research plays on the various collections and exhibits at the Arboretum. Through informative signage and interpretive centers, the Arboretum visitor will become aware of the inter-relationship between the Arboretum's research program and the plants they are enjoying. Although it will be possible for visitors to tour the research test fields, these components of the site are not designated as destination points in the Master Plan. Moreover, the Master Plan closes a large area of the Arboretum to the public and more area has been devoted to research fields.

The Master Plan also identifies several major improvements to existing research facilities. The Administration Building will be completely modernized. A new lab wing will consolidate all

existing labs, as well as provide additional lab space in a state-of-the-art facility. This should allow for future growth in the research programs. The herbarium will be restored to its former size, and the utilities will be upgraded to improve climate control.

#### *Maintenance and Greenhouse Complex*

The Greenhouse Complex will be renovated and the existing Headhouse Building will be brought up to standards. A new greenhouse and outdoor potting area will be added to the east end of the existing greenhouses. A new storage facility will be built for “garden unit” vehicles. This reworking will also allow consolidation of the Garden Unit offices, equipment, and vehicles into one convenient area.

#### *Brick Yard*

Although the Brick Yard is a fascinating historical artifact, it is peripheral to the mission of the Arboretum. Removing degraded concrete areas and planting them to meadow could clean up the area. The Brick Yard could be accessible as a sculptural landscape viewed from New York Avenue and as a side trip within the Arboretum. Visitors could drive or walk to the site. The Brick Yard also offers the opportunity to develop an Environmental Education Laboratory to present the efforts to renovate Hickey Run and restore the Anacostia River.

#### *Storm Water Management*

Storm water from the Visitor Center and its associated roads and parking lots needs to be handled in an environmentally sensitive and aesthetically pleasing way. The Arboretum has the opportunity to demonstrate that it is sensitive to runoff issues in the Anacostia Watershed. Sand filters under the parking lots and roof drain infiltrators will handle storm water management in association with retention and detention facilities. The Arboretum proposes to create additional wetland areas of about an acre at the bottom of Rhododendron Valley to receive runoff from the Primary Parking Lot. For the runoff from the Overflow Parking Lots, the Arboretum proposes to reserve an acre of land to the east of these lots for a bio-retention basin. These water treatment and runoff solutions can serve as demonstration projects.

#### *Utilities*

The major new facilities identified in the Master Plan must be served by utilities. In addition to the new Visitor Center, new restrooms are located around the site and will be provided with water, sewer, gas and electric service.

#### *CONSULTATION*

Arboretum staff consulted jointly with staff of the National Capital Planning Commission and the Commission of Fine Arts. The plan was prepared in accordance with Master Plan Guidelines provided by the National Capital Planning Commission.

Planning also benefited from input from the Friends of the National Arboretum, the National Capital Area Federation of Garden Clubs, Arboretum neighbors, and various governmental agencies including those of the District of Columbia and the Agricultural Research Service.

### *EVALUATION*

The Master Plan for the U.S National Arboretum represents a thorough and comprehensive planning effort. The Arboretum is commended for their coordination with Arboretum neighbors, and governmental planning agencies.

Implementation of the Master Plan will result in a significant enhancement of the visitor experience. This, in turn, will allow the Arboretum to better achieve its key strategic plan goals in the areas of research, education, and garden/collections. The Master Plan will enable the Arboretum to continue to maintain its high standard of excellence.

Staff is encouraged that the Master Plan recognizes the importance of maintaining the open meadows, vistas and large-scale landscapes in order to preserve the qualities that visitors treasure. Staff is pleased that access to the facility will not be restricted and that no fee will be charged. To this end staff feels that it is important to not preclude future access from the New York Avenue and Maryland Avenue (M Street) entrances and to provide pedestrian and bike trail connections to the Anacostia River parkland. The Arboretum should look for reasons and opportunities to develop these points of access.

In reviewing the Master Plan staff requests that the following comments be included in the ongoing master planning process, future revisions to the Master Plan and in the further project development of specific projects, as applicable.

- ***Maryland Avenue (M Street) Entrance*** – The Maryland Avenue (M Street) entrance should not be precluded as a future entrance to the Arboretum. Moreover, the Master Plan should plan for the reestablishment of this gateway as a major entrance. Located in close proximity to the Visitor Center and immediately adjacent to the proposed parking lots, this entrance could initially serve as a secondary entrance and/or exit at times of peak visitation. However, given the significance of Maryland Avenue in the context of the L’Enfant Plan, the urban design framework and the urban fabric of Washington, D.C., consideration must be given to the long-term development of this symbolic gateway at the terminus of Maryland Avenue – should M Street be extended across the Anacostia River and the existing conditions currently surrounding the avenue and the area change.
- ***New York Avenue Entrance*** – A New York Avenue entrance should not be precluded in the future should the need arise for multiple entrances and, likewise, should Metro station access be provided in this area. While both supporting the proposed new Bladensburg Road main entrance to the Arboretum and acknowledging the traffic constraints associated with New York Avenue, staff feels that a secondary entrance off of New York Avenue would not only enhance the movement of vehicles but also contribute to the use of the Arboretum.

- **Anacostia River Park Linkage** – the Master Plan should identify specific connections to link the Arboretum with Anacostia River parkland. More specifically, these connections should tie to existing, planned and proposed pedestrian pathways and bike and water trails in Anacostia River Park.
- **Bladensburg Road Entrance** – The planning and design of the new Bladensburg Road entrance is requested to be coordinated with staff throughout the design process so as to ensure compatibility and compliance with the various levels of federal plans and regulations applicable to this project. Staff is concerned that the design of this entrance not only be appropriate to the main entrance of the National Arboretum but also to the historic context of the area and the specifics of this site. It appears that the design will necessitate considerable grading, the possible displacement of several well-established trees, and the construction of a retaining wall or walls. NEPA and Section 106 Historic Preservation requirements will apply.
- **Visitor Center** – The new Visitor Center is proposed to be located on a highly visible site within the Arboretum. This location affords the opportunity to take advantage of prime vistas to the Capitol Columns and the meadow. In that the new Visitor Center will be the first building encountered and the most prominent, the design of this building is of utmost importance to the perception and image of the Arboretum. The Visitor Center should be considered a landmark structure. In this regard NCPC staff envisions a landmark structure that incorporates a major environmental education theme resulting in green building architecture within the natural environment and setting of the Arboretum, e.g., a low building, integrated into the topography, possibly incorporating natural plant materials – possibly a new garden or collection – on the roof, or a highly visible building that sits in this landscape, e.g., a pavilion or greenhouse structure.
- **Primary Parking Lot** – The location of the Primary Parking Lot (320 cars) should ensure its appropriateness and compatibility in its relationship to the Visitor Center and within the overall context of the Arboretum. The design of the facility should consider breaking the lot into two or more smaller lots and the incorporation of other design measures, e.g., the introduction of a change in level, tree islands, landscape screening, etc.
- **Overflow Parking Lots** – The Overflow Parking Lots (670 cars) are currently shown on the Master Plan as two large lots. These lots should be broken in size and other design mitigation measures introduced, including alternatives to paving, e.g., gravel, “grasscrete,” and/or parking on the grass.

The design of these parking lots offers the opportunity to provide examples of environmentally sensitive and aesthetically pleasing parking lot design. These facilities can contribute to the overall educational experience of the Arboretum.

- **Brick Yard** – Although peripheral to the mission of the Arboretum, this National Register Historic Site is a fascinating artifact. The Brick Yard should be made accessible as a sculptural landscape, as viewed from New York Avenue, and as a side trip within the Arboretum for viewing and interpretation. The Arboretum and their consultants should

consult with the DC SHPO in the development of a plan for the Brick Yard that will maintain and preserve the historic structures and allow for their public interpretation.

- ***Cultural Resource Management Plan*** – The Arboretum should also develop a Cultural Resources Management Plan that identifies future plans for, and maintenance and preservation of, the contributing features of this National Register-listed site.

Staff requests that the Arboretum and their consultants, in consultation with NCPC staff, continue to study these elements and incorporate the above comments both within the further development of these projects, as applicable, and within the Master Plan not later than the required five-year update, whichever comes first.

Understanding that none of the specific proposals contained in the Master Plan has been designed beyond the level of that shown on the accompanying maps, staff notes that the Arboretum will submit projects for review by the Commission as they are developed for implementation. The Arboretum has assured staff of its desire for close coordination with the Commission as the design and implementation phases progress. Staff notes that all major projects will require compliance with NEPA and Section 106 Historic Preservation regulations.

Staff recommends approval of the Master Plan for the U.S. National Arboretum.

#### *THE COMMISSION OF FINE ARTS*

The Commission of Fine Arts (CFA) approved the revised Master Plan for the U.S. National Arboretum at its meeting on October 19, 2000. CFA also expressed their desire that the design of the Visitor Center incorporate green architecture.

#### *COORDINATION*

##### Coordinating Committee

The Coordinating Committee reviewed this item at its meeting on October 11, 2000, and forwarded the proposal to the Commission with the statement that the project has been coordinated with all agencies participating. The participating agencies were NCPC; the District of Columbia Office of Planning; the Fire Department; the Department of Housing and Community Development; and the Washington Metropolitan Area Transit Authority.

##### Federal Capital Improvements Program

The updated National Arboretum Master Plan consists of two projects that were included in the Federal Capital Improvements Program, Fiscal Years 2001-2005, as adopted by the Commission on August 3, 2000. These projects include:

- *Visitor Entrance (Bladensburg Road)* – \$3,500,000 to construct a grand entrance to the Arboretum along Bladensburg Road. Construction of the new entrance is, in part, a result of traffic flow on New York Avenue. The R Street entrance is in a residential neighborhood and is not acceptable for high visitation and traffic volumes. Total Project Cost: \$4,000,000.

- *Education and Visitor Center* – \$21,436,000 (Total Project Cost) for the construction of a new 63,000-square-foot facility. This facility will provide the Education and Visitor Center with space needed to support both research and education.

At its August 3, 2000 meeting, the Commission recommended that the National Arboretum submit an updated master plan and a detailed site plan identifying the location of the new entrance.

The Federal Capital Improvements Program recommends that the status of all approved master plans should be assessed every five years by federal agencies and revised, as needed, to incorporate all project proposals prior to submitting them to the Commission as part of the Capital Improvements Program.

### Comprehensive Plan

The revised U.S. National Arboretum Master Plan is not inconsistent with Federal Planning Policies established in the Comprehensive Plan for the National Capital Region. An applicable policy states: “All major Federal Facilities in the Region should have a Master Plan to guide their long-range development consistent with the Comprehensive Plan in order to promote the effective use of Federal property.”

### *CONFORMANCE*

#### National Environmental Policy Act

Pursuant to the regulations implementing the National Environmental Policy Act (NEPA), the National Arboretum (USNA) completed an Environmental Assessment (EA) of the proposed Master Plan in late September 2000. USNA, in conformance with its NEPA compliance procedures, 7 CFR, Part 520, revised January 1, 1997, issued a Finding of No Significant Impact (FONSI) in late October 2000.

The existing USNA property contains 446 acres in northeast Washington involving an array of display gardens, collections, and limited monuments set among native stands of eastern deciduous trees. The facility, in essence, is a living biological museum where trees, shrubs, and herbaceous plants are cultivated for scientific and educational purposes. Industrial sites, high-density housing, and heavily traveled public roads dominate the immediate surrounding vicinity of the USNA. The eastern and southern boundaries of the complex, however, abut the Anacostia River and the Langston Public Golf Course, a portion of the Anacostia River Park Unit owned by the National Park Service.

Alternatives presented in the EA involve two proposals. The preferred alternative includes the major features of the proposed Master Plan which are a new main entrance off of Bladensburg Road, a new entrance drive, and a 50,000-square-foot Visitor Center that will provide visitor and education facilities. Visitor parking will be consolidated at this facility and the New York Avenue entrance will be removed. The Second alternative has the same program elements, but locates the Visitor Center and its associated parking adjacent to the existing New York Avenue entrance. The new main USNA entrance, as required by the District, remains at the same

location on Bladensburg Road. Because the program is the same, the potential environmental impacts of both alternatives are similar regarding hydrology and wetlands, soils and topography, energy conservation, storm water run off, and historic and aesthetic effects. The first alternative has a more positive effect on traffic and functional aspects by producing a shorter entry road that disturbs a reduced portion of the USNA.

The major environmental attributes to the USNA are the significant vegetation areas and the important watershed drainage features of this facility situated adjacent to the Anacostia River. A third aspect of the facility is its role as significant open space and wildlife habitat located in northeast Washington. The proposed Master Plan intends to both highlight and preserve the three environmental attributes; however, limitations exist because of the USNA's unique location within the Anacostia River watershed and the current poor environmental quality of the Anacostia watershed as a whole.

The foremost environmental feature to the USNA is the vegetation of the federal complex. The vegetation is basically divided into three types: intensive plantings, underplantings, and natural vegetation.

The intensive plantings are the highly managed plant collections established in gardens or existing as plant specimens. Maintained grass lawns normally surround these areas and have the general appearance of formal gardens or collections.

Underplantings are also managed plant areas but exist beneath or adjacent to natural vegetation areas. With some exceptions, the underplantings are usually located in the USNA along shady walkways, the roadway system, and near parking areas.

The natural vegetation of the USNA is characterized by mostly native or naturalized plants that have developed without direct human planting and have become established by the succession of natural growth. Natural growth represents a significant portion of the USNA and exists generally along environmental (orientation and micro-climate) gradients.

Six natural plant associations have been defined in the Master Plan and include the Chestnut Oak Community, Tuliptree Community, White Oak Community, Beech Community, Virginia Pine Community, and Boxelder Community. In addition to the specific plant associations, several selected plant species exist in the USNA that are not native within the District of Columbia. These include mature Eastern Hemlock, Japanese Holly, Bush Honeysuckles, and English Ivy.

The Master Plan EA has found three natural stands of vegetation in the USNA that are excellent examples of native vegetation. Mapping defining Stand No. 1 (Chestnut Oak Community), Stand No. 4 (Beech Community) and Stand No. 5 (White Oak Community) are all very high quality vegetation representing unique and outstanding examples of dominant plant species that have essentially disappeared in the District of Columbia. Staff fully supports efforts to completely preserve these areas and limit disturbances of any kind in these areas.

Other mapped plant associations in the Master Plan have all experienced considerable disturbance over decades and thus are of lesser significance as natural stands but do have extreme importance as candidates for restoration or conversion to horticultural plantings. Additionally these stands serve important functions as wildlife habitat, air quality mitigation, and

open green space. Stand No. 2 (Tuliptree Community) in particular is highlighted as a potential cooler microclimate that would be useful in plant cultivation. Stands No. 8 and 7 (White Oak Community) also could serve as underplanting areas.

Wildlife habitat is an important element of the Anacostia River watershed and the USNA is a contributing feature to this aspect of the river ecosystem. Located directly on the western shore of the river, both the USNA natural and cultivated areas serve as habitat that is traversed easily by mammals and birds. However, with the surrounding urbanization, the limited acreage of the USNA grounds creates a wildlife biological island that is problematic in the context of the watershed as a whole. Many species of wildlife, including the commonly referred “urban species” such as squirrels, rabbits, chipmunks, crows, raccoon and songbirds are found at the USNA. The absence of other nearby ranges of important wildlife is due again to the poor water quality of the Anacostia River.

The final major environmental issue regarding the USNA involves the aquatic resources of the property. The surface water drainage of both the site and the most significant District of Columbia tributary of the Anacostia River, Hickey Run, flow through the Arboretum.

Hickey Run is a partial direct free-flowing stream within the lower watershed of the Anacostia River. The stream is tidally influenced along the lowest quarter mile reach in the vicinity of its shared ownership boundary between the USNA and the National Park Service. Hickey Run joins the tidal river immediately upstream of Kingman Lake, at the boundary between the National Arboretum and the Langston Golf Course, and is approximately a mile downstream of the District-Maryland boundary line. The Hickey Run subwatershed is generally outlined by South Dakota Avenue to the north and east, Bladensburg Road to the north and west, and the southern portion of the Arboretum to the south.

Hickey Run is a highly urbanized subwatershed, largely developed prior to the enactment of stormwater management requirements. It is dominated by industrial and residential land uses, and major road and railway corridors traverse the middle of the subwatershed. The Hickey Run subwatershed has the highest percentage of industrial land use (30 percent) within the Anacostia River watershed. The upper portion of the subwatershed has been radically altered as a result of the older character of its development. The drainage network is completely enclosed, with no natural channel section remaining upstream of New York Avenue. In the southern half of the subwatershed, Hickey Run exits a storm drain system at the downstream side of New York Avenue within the USNA. From this point, the stream flows in both natural and lined open channels across the USNA that is comprised of meadow, lawn and forest. The downstream tidally influenced reach of Hickey Run, owned by the National Park Service, flows through a natural open channel along a narrow forested embankment and subsequently joins the tidal Anacostia River.

Hickey Run has a history of chronic and episodic petroleum hydrocarbon pollution that extends back in excess of 50 years. Through the combination of uncontrolled stormwater runoff, extensive modification through enclosure of the natural drainage system in the upper subwatershed, and the long history and ongoing problem of waste petroleum hydrocarbon dumping to the storm drain system, Hickey Run has the dubious distinction of being the most

degraded stream in the Anacostia watershed and one of the most degraded urban streams in the entire Chesapeake Bay drainage area. The Anacostia Watershed Restoration Committee has designated Hickey Run as a priority subwatershed for restoration, and a subwatershed Action Plan has been prepared by the Metropolitan Washington Council of Governments (COG). Transportation related activities, which dominate the upper drainage area above New York Avenue, are believed to be the source of this pollution (Shepp, 1991). A joint effort between the District government (DCRA-ERA) and COG to solve the hydrocarbon problem is underway, but only one of three phases of the project is complete.

All local Arboretum surface water runoff finds its way to the Anacostia River. About 12 percent drains directly to the river; about 66 percent drains via Hickey Run; and about 22 percent of the drainage is conveyed through the District of Columbia storm drainage system.

In the USNA Master Plan it is proposed that several measures be undertaken to improve Hickey Run within the Arboretum. These efforts have been developed in the context of a conceptual approach to the control of stormwater drainage in this vicinity of Hickey Run and will require substantial investments of both time and funding. These include:

- Accurately inventorying the existing stormwater infrastructure of the USNA to include location, condition, and size of the elements. Additional data to be included involves design parameters, flood elevation and a hydraulic cross-section.
- Instituting a formal stormwater maintenance program.
- Modification of the Hickey Run outfall at New York Avenue for improvement to collect debris, remove upstream petroleum pollution, with a by-pass for large storm event flows.
- Restoring the Hickey Run floodplain function within the USNA.
- Restoring limited meander to the flow line of Hickey Run.
- Reintroducing habitat diversity to the streambed of Hickey Run within the USNA.
- Using armoring and bioengineering to stabilize the streambank of Hickey Run.
- Cleaning existing organic matter from existing USNA ponds.
- Enhancing existing drainage dry detention facilities.
- Installing erosion and sedimentation controls with the USNA at various subwatershed areas of Hickey Run to reduce channel incising, headcutting, and dissipate erosive water flow energy.
- Developing stormwater inlet designs for the USNA that meet the needs of the Arboretum.
- Establishing improved roadside drainage.
- Repairing existing sinkhole damage within the USNA.

No development associated with the Master Plan would significantly impact four of the five existing wetlands of the USNA. The wetland near Rhododendron Valley would be modified and require additional permitting in order to be utilized in the revised drainage proposed for the Master Plan and the improvement to tributary brooks of Hickey Run.

The USNA has also instituted several procedural changes to improve water quality. The Master Plan will not affect any of these procedures. The Arboretum started using Integrated Pest Management (IPM) to manage all of its gardens and collections in 1992. In two years, pesticide use dropped to 25 percent of the former volume of pesticide sprayed. Plant losses have also decreased, and cost savings have been realized as a result of decreased equipment cost, expenditure on protective clothing, health monitoring for employees, and decreased spending for pesticides. The USNA IPM Program has utilized a grant from the Wallace Genetic Foundation to teach homeowners and professionals in the green industries to adopt IPM Practices.

The USNA has also begun to formulate a comprehensive nutrient management plan for gardens and plant collections. Soil type, erosive potential, and nutrient status will be evaluated in considering the plants to be grown. Recommendations for management practices that attempt to reduce erosion, nutrient leaching, and water runoff are being implemented, along with a program to build native fertility and organic matter in cultivated areas.

The impact of the USNA upon the existing water supply and sanitary sewage system is anticipated to be minimal. However, there is a sanitary sewer, whose support walls are crumbling and whose integrity is in question, that crosses Hickey Run and the USNA. The Hickey Run storm water management concept design recommends several ways to mitigate this deteriorating situation. Most importantly, however, is that the facility is owned by the Washington Area Sanitary Authority and will require a jointly coordinated effort to stem any adverse contamination episode.

The Master Plan is designed to reduce car traffic within the USNA and to encourage walking, biking, and the use of an expanded tram system. Roads in the proposed plan have been eliminated or closed to cars and a new pedestrian loop system has been designed to take visitors to all the collections and gardens. As the number of visitors increases, the tram will run more frequently. The existing tram system has been enhanced in the Master Plan with tram stops all along the route where riders can get on and off to explore areas on foot. With the addition of stops the tram becomes an effective internal campus transportation system assisting in the reduction of contributing vehicle air pollution.

In regard to transport efficiency, the USNA is investigating better public bus service to the USNA as a whole. One option is to have Metrobus come to the new proposed Visitor Center. The other option, shown on the Master Plan, is to locate a bus stop at the USNA new entrance on Bladensburg Road, and to provide a tram stop adjacent to it where visitors can pick up a shuttle to the Visitor Center.

Currently, USNA visitors enter the facility via R Street or New York Avenue, NE. Both entrances have functional problems: R Street is disruptive and within a residential neighborhood, and New York Avenue has limited traffic movements due to a right-turn-only intersection. Additionally, the District of Columbia Department of Public Works plans to

construct an interchange at the intersection of Bladensburg Road and New York Avenue which, due to stacking needs, eliminates the possibility of improving the New York Avenue USNA entrance. Therefore, the updated Master Plan proposes a new main entrance to the Arboretum that would be located on Bladensburg Road. The entrance would potentially be signaled during non-peak rush hour travel times. The District of Columbia Department of Public Works has coordinated the improvements with their proposed new work on Bladensburg Road and at this time believes no major impediments exist to implementing the proposal. The New York Avenue entrance will be closed and the R Street entrance will be gated and limited to use by neighborhood pedestrians and USNA staff with an access card.

In examining all of the above major environmental attributes of the USNA Master Plan, the staff is most concerned with the potential long-range impact of surface water effects to the Anacostia River from this initiative. Nevertheless, the USNA has identified a significant watershed drainage improvement plan that, if implemented, should substantially improve the watershed area within the Arboretum and subsequently enhance the immediate environs of the Anacostia River. The USNA demonstrates, through its planning, its ability to strive to enhance the Anacostia watershed. This effort is commendable, however, only if the USNA can adhere to its planning direction through specific implementation. Staff anticipates fully coordinated preliminary plans, complying with all necessary environmental and water quality permits, which will be developed for all surface water drainage improvements and provided to the Commission for review and comment. Most importantly, staff expects state-of-the-art design implementation efforts for upgrading Hickey Run (particularly the extent of proposed new ponds to be verified and found compatible with the purposes of the ponds and suitability with adjacent woodlands), the minimization of on-site parking (whether for employees or visitors), and the preservation of Vegetation Stands No. 1, 4, and 5, with little or no development in those areas of the Arboretum, to maintain maximum forested areas adjacent to the immediate margins of the Anacostia River.

#### National Historic Preservation Act

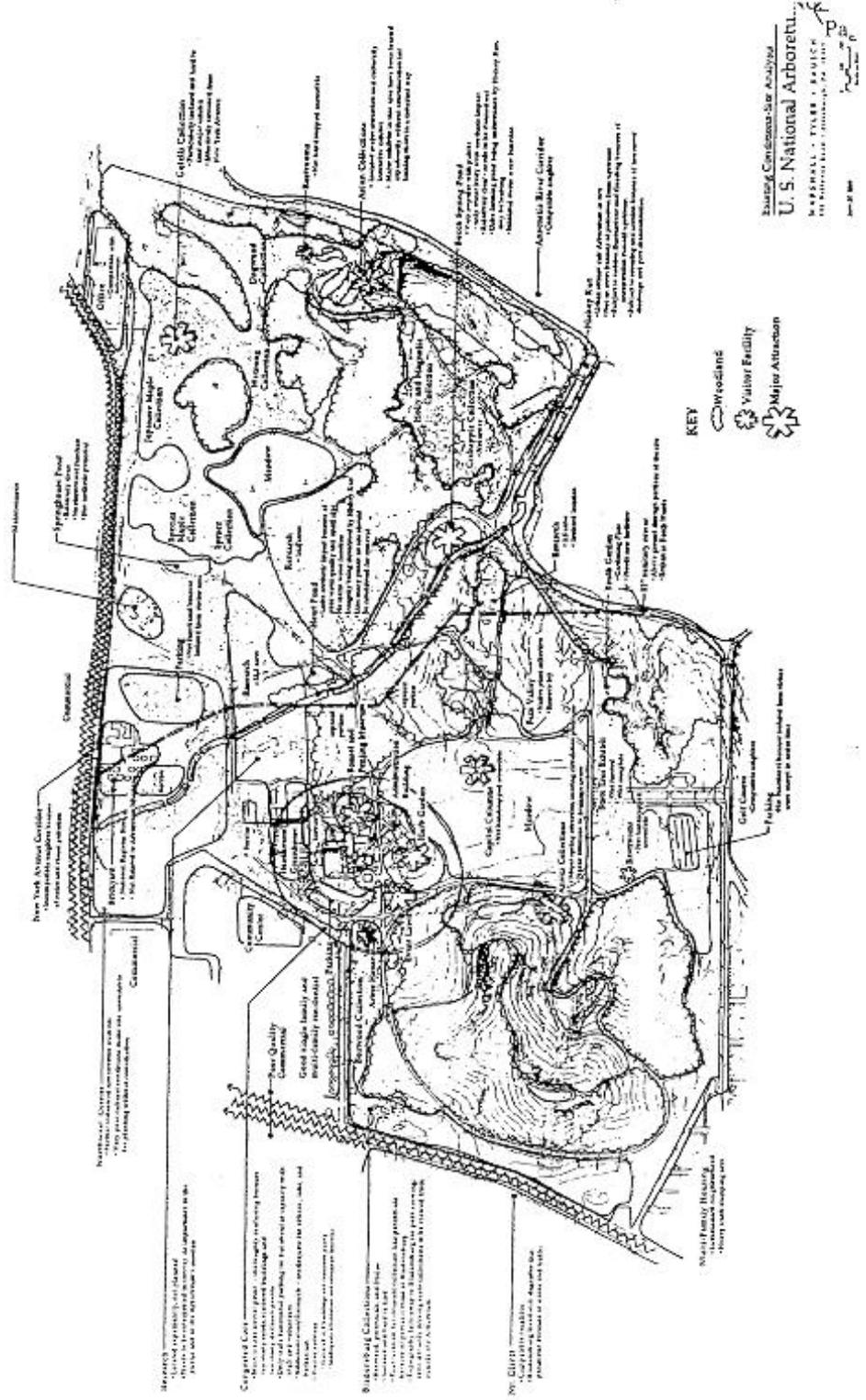
The National Arboretum is listed in the National Register of Historic Places. An inventory of cultural resources within the site was completed this summer. Fourteen features were determined to be contributing historic elements, including gazebos, gardens, and the gates on the outside fence, walls, a fountain and springhouses. In addition, the road system is a contributing feature, as is the brick kiln complex. Some of these features would be affected by proposals in the Master Plan, in particular, the road system. Section 106 review will need to be undertaken as each proposal is developed.

The brick kiln complex consists of the remains of kilns that formed an industrial center for brick making in the District of Columbia. While not related to the mission of the Arboretum, the brick kilns are located on federal land and contain important information about the commercial and industrial history of the city. It is incumbent upon the National Arboretum, as a federal agency, to maintain the brick kilns in an adequate state of preservation so that the history of the site can continue to be conveyed. The Arboretum could also develop either an active or passive interpretive program that would allow the public to view and learn about the brick kiln complex.

For the next five-year update of the Master Plan, a fully developed Historic Resource Management Plan should be incorporated in the document. The National Arboretum may also wish to consider developing a Programmatic Agreement with the D.C. State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation, so that future routine work can proceed without the need for review of individual projects. The staff recommends early consultation with the DC SHPO on the major elements proposed in the Master Plan. Further, the Arboretum should consult with the DC SHPO about any further treatment and appropriate interpretation of the brick kiln complex.







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NATIONAL PARK SERVICE  
WASHINGTON, D.C.

June 28, 1968



